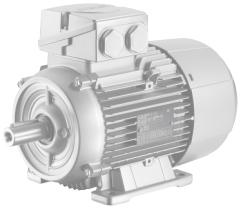

Edition 01/2025

LIST MANUAL

SINAMICS

G220

Converter

SIEMENS

SIEMENS

SINAMICS

G220
SINAMICS G220 converters

List Manual

Introduction 1

Fundamental safety instructions 2

Parameters 3

Function diagrams 4

Faults and alarms 5

Valid for firmware version V6.4 HF2

01/2025, FW V6.4 HF2
A5E51781505B AB

Legal information

Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

⚠ **DANGER**
indicates that death or severe personal injury **will** result if proper precautions are not taken.

⚠ **WARNING**
indicates that death or severe personal injury **may** result if proper precautions are not taken.

⚠ **CAUTION**
indicates that minor personal injury can result if proper precautions are not taken.

NOTICE
indicates that property damage can result if proper precautions are not taken.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper use of Siemens products

Note the following:

⚠ **WARNING**
Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

Trademarks

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Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

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1 Introduction

1.1 About SINAMICS

Description

With the SINAMICS converter series, you can solve drive tasks from low voltage through to DC voltage. All Siemens drive components, such as converters, motors, and controls, are matched to each other and can be integrated into your existing automation systems.

You can find more information via the SINAMICS YouTube playlist (https://www.youtube.com/playlist?list=PLw7lLwXw4H53rtHeTeifKtVMr2aXTYt0X).

1.2 About this manual

1.2.1 Content

Overview

The List Manual describes the meaning, setting options and dependencies of the converter parameters.

The List Manual contains information about all parameters, function diagrams, faults and alarms required to commission and service the system.

1.2.2 Target group

Overview

The List Manual addresses the following target groups:

- Project engineers
- Programmers
- Commissioning engineers
- Service and maintenance personnel

1.2.3 Standard scope

The functions of the system as delivered can only be found in the order documents.

Further functions may be executable in the system, which are not explained in this documentation. However, there is no entitlement to these functions in the case of a new delivery or service.

This documentation does not contain all detailed information on all types of the product. Furthermore, this documentation cannot take into consideration every conceivable type of installation, operation and service/maintenance.

The machine manufacturer must document any additions or modifications they make to the product themselves.

1.2.4 Websites of third-party companies

This document may contain hyperlinks to third-party websites. Siemens is not responsible for and shall not be liable for these websites and their content. Siemens has no control over the information which appears on these websites and is not responsible for the content and information provided there. The user bears the risk for their use.

1.3 Product documentation

Description

The project documentation for the converter can be found on the Internet:

SIOS Portal (https://support.industry.siemens.com/cs/ww/en/view/109807358)

You can display documents or download them in PDF and HTML5 format.

The product documentation for the converter comprises the following documents:

Table 1-1 Product documentation

Information	Document	Content
Information about the converter	Operating instructions SINAMICS G220	Installing, commissioning and maintaining the converter
	List Manual SINAMICS G220	Meaning, setting options and dependencies of the parameters and messages of the converter
	Protective devices for SINAMICS G220	Suitable components for overcurrent protection of the converter Expansion of components contained in the operating instructions
General information	Industrial Cybersecurity Configuration Manual	Industrial Cybersecurity functions and safe operation of the converter

Information	Document	Content
Information about the optional components	Operating instructions Smart Drive Interface SDI Pro 5.5"	Commissioning and performing diagnostics of the converter using the Smart Drive Interface SDI Pro 5.5" operating unit
	SINAMICS Smart Adapter operating instructions	Installing a local wireless network with the SINAMICS Smart Adapter to commission and diagnose the converter using an operating unit
	Equipment Manual SINAMICS S120 Control Units and Additional System Components	Installation and connection of DRIVE-CLiQ components that can also be operated on the SINAMICS G220.

1.4 Service and Support

1.4.1 ID link and Siemens Online Support

You can find additional information about the product:

- via ID link
- using the Siemens Industry Online Support
  - Website: SIOS (https://support.industry.siemens.com/cs/ww/en/)
  - App Industry Online Support (for Apple iOS and Android)

Product-specific information via ID link

The QR code on your product and on the product packaging contains the ID link.

ID link is a globally unique identifier according to IEC 61406-1.

You can use the ID link to access product data, manuals, Declarations of Conformity, certificates and other information about your product.

Figure 1-1 QR code with ID link included

The ID link is characterized by a frame with a black corner at the bottom right.

Content of Siemens Online Support

- Product support
- Global forum for information and best practice sharing between users and specialists

- Local contact persons via the contact person database (→ Contact)
- Product information
- FAQs (frequently asked questions)
- Application examples
- Manuals
- Downloads
- Compatibility tool
- Newsletter with product selection
- Catalogs/brochures
- Certificates

1.4.2 Spare parts services

The online spare part service "Spares on Web (https://www.sow.siemens.com)" offers spare parts for the product.

1.5 Important product information

1.5.1 Names of drive technology terms

Overview

This manual contains simplified names of drive technology terms which have other names in normal usage or in a different context.

Description

Drive, frequency converter, AC/AC converter, servo converter or converter is the name for an electronic device for variable speed control of an electric motor. The electric motor is available in different versions as an induction motor, synchronous motor or synchronous reluctance motor.

In this document, Siemens uses the names "converter" and "drive" to mean the same thing and regardless of whether a converter or servo converter is meant.

A drive system means all of the components that are required to implement a drive task. For instance, a drive system comprises line-side switchgear, rectifier transformers, converters, output filters, motors, encoders, conductors, monitoring equipment, open-loop and closed-loop controlling systems.

In this document, Siemens uses the term "drive system" regardless of whether a converter or servo converter is meant in the context of a motor and cables.

A drive line-up is a system of converters that are supplied via a shared DC link or that communicate via DRIVE-CLiQ with a shared Control Unit, e.g. SINAMICS S210, S120 or S220.

In this document, Siemens uses the term "converter" regardless of whether a single converter or a drive line-up is meant.

1.5.2 Firmware updates and constraints

Description

Firmware updates and constraints for the converters with the current firmware are available in SIOS:

Updates and constraints, SINAMICS G220 (https://support.industry.siemens.com/cs/ww/en/view/109807094)

1.5.3 Open-source software (OSS)

Description

The license conditions and copyright information of the open-source software components used by the device are saved on the device itself. You can download license and copyright information onto your PC via the support page of the integrated web server.

1.5.4 Compliance with the General Data Protection Regulation

Description

Siemens complies with the principles of the **General Data Protection Regulation (EU),** in particular the principle of data minimization ("privacy by design"). For this SINAMICS product, this means:

- **User management and access control (UMAC)**
  The product processes or stores the following personal data:
  - Login data for user management and access control:
    User name, group, password, role, rights.

  The data for user management and access control is stored in the converter and optionally on a memory card.
- **Support data (optional)**
  For optimal support in service cases, the end user or machine manufacturer (OEM) can optionally store contact data (header, email address, telephone number, homepage) in the converter.
  If this data is created, the author must give thought to data protection consent for this optional data. Siemens takes no responsibility for this data.
  This support contact data can be read and is freely accessible in, for example, the user interface as well as in the diagnostics report. This data is not encrypted.

This data is used for user management and access control (UMAC) and for the support function. The storage of this data is appropriate and limited to what is necessary, as it is essential to identify the authorized operators and service contact.

The personal data is also available as part of the backup system to ensure fast recovery of use cases.

The above-mentioned personal data cannot be stored anonymously or pseudonymized, as it serves the purpose of identifying the operating personnel. The anonymization or pseudonymization, e.g. of the login data, must be performed using suitable login names and contact data by the plant/machine operator.

Our product does not provide any functions for automatically deleting personal data. Individual UMAC data can be deleted manually by authorized personnel as soon as this is deemed recommended/required.

Fundamental safety instructions 2

2.1 General safety instructions

⚠ WARNING

Danger to life if the safety instructions and residual risks are not observed

If the safety instructions and residual risks in the associated hardware documentation are not observed, accidents involving severe injuries or death can occur.

- Observe the safety instructions given in the hardware documentation.
- Consider the residual risks for the risk evaluation.

⚠ WARNING

Malfunctions of the machine as a result of incorrect or changed parameter settings

As a result of incorrect or changed parameterization, machines can malfunction, which in turn can lead to injuries or death.

- Protect the parameterization against unauthorized access.
- Handle possible malfunctions by taking suitable measures, e.g. emergency stop or emergency off.

2.2 Warranty and liability for application examples

Application examples are not binding and do not claim to be complete regarding configuration, equipment, or any eventuality which may arise. Application examples do not represent customer-specific solutions, but merely serve to provide assistance with typical tasks.

As the user you yourself are responsible for ensuring that the products described are operated correctly. Application examples do not relieve you of your responsibility for safe handling when using, installing, operating and maintaining the equipment.

2.3 Cybersecurity information

Siemens provides products and solutions with industrial cybersecurity functions that support the secure operation of plants, systems, machines and networks.

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial cybersecurity concept. Siemens' products and solutions constitute one element of such a concept.

Customers are responsible for preventing unauthorized access to their plants, systems, machines and networks. Such systems, machines and components should only be connected to an enterprise network or the internet if and to the extent such a connection is necessary and only when appropriate security measures (e.g. firewalls and/or network segmentation) are in place.

For additional information on industrial cybersecurity measures that may be implemented, please visit
https://www.siemens.com/cybersecurity-industry.

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends that product updates are applied as soon as they are available and that the latest product versions are used. Use of product versions that are no longer supported, and failure to apply the latest updates may increase customer's exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Cybersecurity RSS Feed under
https://new.siemens.com/cert.

Further information is provided on the Internet:

Configuration Manual Industrial Cybersecurity (https://support.industry.siemens.com/cs/ww/en/view/109975311)

⚠ WARNING

Unsafe operating states resulting from software manipulation

Software manipulations, e.g. viruses, Trojans, or worms, can cause unsafe operating states in your system that may lead to death, serious injury, and property damage.

- Keep the software up to date.
- Incorporate the automation and drive components into a state-of-the-art, integrated industrial cybersecurity concept for the installation or machine.
- Make sure that you include all installed products in the integrated industrial cybersecurity concept.
- Protect files stored on exchangeable storage media from malicious software by with suitable protection measures, e.g. virus scanners.
- Carefully check all cybersecurity-related settings once commissioning has been completed.

Parameters

3

3.1 Explanation of the parameter list

Description

The parameters are displayed according to the following pattern.

---

rxxxx **Parameter name / short parameter name**

Variant:	Product variant	
Data type: Integer16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Name of the group(s)	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min: -	**Max:** -	**Factory setting:** -
Type of signal interconnection:	Binary sink	**Scaling:**
Factory interconnection:	Fixed value: 0	

Description: Text

Value:
0: Name of value 0
10: Name of value 10

Recommendation: Text

Index:
[0] = Name and meaning of index 0
[1] = Name and meaning of index 1

Bit array:

Bit	Signal name	1 signal	0 signal	FD
00	Name of bit 0	Yes	No	-
01	Name of bit 1	Yes	No	-

Dependency: Text
See also: pxxx, rxxx
See also: Fxxxxx, Axxxxx, Cxxxxx

Danger / Caution / Warning / Notice: Safety-related note corresponding to the warning note concept

Note: Text

The representation of a parameter includes as a maximum the information listed below. Depending on the specific parameter, some of the listed information is not applicable.

- **Parameter number (rxxxx)**
  The parameter number is made up of a "p", "r" or "c", followed by several numbers and optionally an index and bit array.
  The parameter number has the following syntax: pxxxx[0...n], rxxxx[0...n], cxxxx[0...n], pxxxx.0...15 or rxxxx.0...15, cxxxx.0...15, pxxxx[0...n].0...15 or rxxxx[0...n].0...15, cxxxx[0...n].0...15.
  Examples of representation in the parameter list:

• p...	Setting parameters (read and write)
• r...	Display parameters (read-only)
• c...	Interconnection parameter (signal sink)
• p0972	Setting parameter 972
• p0089[0...2]	Setting parameter 89, indices 0 to 2
• p1001[0...n]	Setting parameter 1001, indices 0 to n (n = configurable)
• r0945	Display parameter 945
• r0196[0...255].4...15	Display parameter with index 0 to 255 and bit array, bit 0 to bit 15
• r2139.0...15	Display parameter 2139 with bit array from bit 0 to bit 15
• c8997[0...2]	Signal sink 8997 index 0 to 2
Other examples of the notation in the documentation:	
• p1213[1]	Setting parameter 1213, index 1
• p1151[1].2	Setting parameter 1151, index 1 bit 2
• r0945[2]	Display parameter 945, index 2
• p0795.4	Setting parameter 795, bit 4
• c10022	Signal sink

- **Parameter name / short parameter name**
  Shows the parameter name in the long form and separated by a slash in the short form.
- **Variant**
  Specifies the product variant for which the parameter is valid. This information is not applicable if a parameter is the same for all product variants used in the parameter list.
- **Data type**
  Each parameter is assigned one of the following data types:

• Integer8	8-bit integer
• Integer16	16-bit integer
• Integer32	32-bit integer
• Unsigned8	8-bit without sign
• Unsigned16	16-bit without sign
• Unsigned32	32-bit without sign
• FloatingPoint32	32-bit floating-point number
• FloatingPoint64	64-bit floating-point number

- **Visible in**
  You change the number of parameters displayed in the commissioning tool via:
  - Standard display
    Only the basic parameters are displayed.
  - Extended display
    The full scope of parameters is displayed.
- **Rights**
  The user and rights management (UMAC) controls access to the parameters.
  You require runtime function rights to read and set parameters.
  The following read rights are available:
  - Read drive data or acknowledge messages

  The following write permissions are available:
  - Control drive in manual mode
  - Perform drive diagnostics
  - Perform firmware update
  - Create backup or load drive data to Startdrive
  - Edit device configuration or drive applications
  - Edit Safety Integrated application
  - Edit web server configuration
  - Manage users and roles
  - Edit drive data encryption
  - Edit other security settings
  - Read security events

  Runtime function rights depend on user roles, which are assigned in the commissioning tool being used (Startdrive, web server). As a consequence, setting parameters can be write-protected.
  The commissioning tool provides additional support.

- **Can be changed in the operating state**
  Parameters can be changed in certain operating states. The change only becomes active after exiting the state.
  The following states exist:

State	Explanation of state	Parameters marked as follows can be changed in this state
Operation	Current flows through the motor.	- Operation
Ready for operation	The motor is de-energized and commissioning is not performed.	- Operation - Ready for operation
Commissioning	The motor is de-energized. Commissioning is performed.	- Operation *) - Ready for operation *) - Commissioning
Commissioning (Safety Integrated)	Commissioning for Safety Integrated is performed. The motor is de-energized. Commissioning is performed.	- Operation *) - Ready for operation *) - Commissioning - Commissioning (Safety Integrated)

Parameters marked "Operation" or "Ready for operation" may be changed automatically, and should be adapted after commissioning has been completed.

- **Parameter group**
  A parameter group contains parameters that are functionally associated with one another.
- **Not relevant for motor type**
  This parameter has no significance for the specified motor types.
- **Dynamic index**
  The following information is specified for parameters with a dynamic index [0...n]:
  - Data set (optional)
  - Parameter specifying the number of indices (n = number - 1).

  Example: **Dyn. index [0...n]:** MDS n defined by: p0130
  Data set types:
  - CDS (Command Data Set)
  - DDS (Drive Data Set)
  - EDS (Encoder Data Set)
  - MDS (Motor Data Set)
  - PDS (Power unit Data Set)

  You create and delete data sets in the commissioning tool.
- **Calculated**
  Parameters, which are influenced by automatic calculations, are marked "automatic".

- **Unit**
  Shows the default unit of the parameter. For setting parameters, the unit is additionally specified according to the values (Min, Max, Factory setting) in square brackets.
- **Unit group and unit selection**
  Depending on the selection of the standard, a different unit is shown for the performance data of the converter and motor. Therefore, for some parameters the unit is switched over. The "Unit selection" shows for which parameter the unit is changed.
  The units for the different standards are stored in unit groups.
  Example:
  Unit group: 14_6, unit selection: p0100
  The parameter belongs to the unit group 14_6 and the unit is switched over via p0100.
  All available unit groups and possible unit selections are listed below.
  Unit group and unit selection
  Depending on the selection of the standard, a different unit is shown for the performance data of the converter and motor. Therefore, for some parameters the unit is switched over. The "Unit selection" shows for which parameter the unit is changed.
  The units for the different standards are stored in unit groups.
  Example:
  Unit group: 14_6, unit selection: p0100
  The parameter belongs to the unit group 14_6 and the unit is switched over via p0100.
  All available unit groups and possible unit selections are listed below.

Unit group	Unit selection for p0100 =		Reference value for %
	0, 2	1	
7_4	Nm	lbf ft	-
8_4	N	lbf	-
14_2	W	W	-
14_6	kW	HP	-
14_13	W/A	HP/A	-
14_14	W min/1000	HP min/1000	-
14_15	W/A^2	HP/A^2	-
14_16	$W\ min^2/1000^2$	$HP\ min^2/1000^2$	-
25_1	kgm^2	$lb\ ft^2$	-
27_1	kg	lb	-
28_1	Nm/A	lbf ft/A	-
29_1	N/Arms	lbf/Arms	-
30_1	m	ft	-
47_1	kW s/K	HP s/K	-
48_1	W/K	HP/K	-
48_2	W min/1000 K	HP min/1000 K	-
48_3	$W\ min^2/1000^2\ K$	$HP\ min^2/1000^2\ K$	-
50_1	K/W	K/HP	-

Unit group	Unit selection for p0349 =		Reference value for %
	1 System of units, physical	2 System of units, referred	
15_1	mH	%	-
16_1	ohm	%	-

Unit group	Unit selection for p0505 =				Reference value for %
	1 System of units SI	2 System of units referred/SI	3 System of units US	4 System of units referred/US	
2_1	Hz	%	Hz	%	-
2_2	kHz	%	kHz	%	-
3_1	rpm	%	rpm	%	-
4_1	m/min	%	ft/min	%	-
4_2	m/min	m/min	ft/min	ft/min	-
5_1	Vrms	%	Vrms	%	-
5_2	V	%	V	%	-
5_3	V	%	V	%	-
6_1	mArms	%	mArms	%	-
6_2	Arms	%	Arms	%	-
6_3	mA	%	mA	%	-
6_4	A	%	A	%	-
6_5	A	%	A	%	-
7_1	Nm	%	lbf ft	%	-
7_2	Nm	Nm	lbf ft	lbf ft	-
7_3	Nm	%	lbf ft	%	-
8_1	N	%	lbf	%	-
8_2	N	N	lbf	lbf	-
8_3	N	%	lbf	%	
14_1	W	%	HP	%	
14_3	W	%	HP	%	
14_4	W	%	HP	%	
14_5	kW	%	HP	%	
14_7	kW	%	HP	%	
14_8	kW	%	HP	%	
14_9	W	W	HP	HP	
14_10	kW	kW	HP	HP	
14_11	var	%	var	%	
14_12	kvar	%	kvar	%	
14_17	VA	%	VA	%	
14_18	kVA	%	kVA	%	
17_1	Nms/rad	%	lbf ft s/rad	%	

Unit group	Unit selection for p0505 =				Reference value for %
	1 System of units SI	2 System of units referred/SI	3 System of units US	4 System of units referred/US	
18_1	V/A	%	V/A	%	
19_1	A/V	%	A/V	%	
21_1	°C	°C	°F	°F	
21_2	K	K	°F	°F	
22_1	m/s^2	m/s^2	ft/s^2	ft/s^2	
22_2	m/s^2	%	ft/s^2	%	
23_1	Veff s/m	Veff s/m	Veff s/ft	Veff s/ft	
24_1	Ns/m	Ns/m	lbf s/ft	lbf s/ft	
24_2	Ns/m	%	lbf s/ft	%	
26_1	m/s^3	m/s^3	ft/s^3	ft/s^3	
39_1	$1/s^2$	%	$1/s^2$	%	
49_1	Nm/rad	%	lbf ft/rad	%	

Unit group	Unit selection for p0595 =		Reference value for %
	Value	Unit	
9_1	The set values and the technological units are shown in p0595.		

Unit group	Unit selection for p2496 =		Reference value for %
	Value	Unit	
10_3 10_4	The set values and the technological units are shown in p2496.		

Unit group	Unit selection for p2497 =		Reference value for %
	Value	Unit	
11_3 11_4	The set values and the technological units are shown in p2497.		

Unit group	Unit selection for p2498 =		Reference value for %
	Value	Unit	
12_3 12_4	The set values and the technological units are shown in p2498.		

Unit group	Unit selection for p2499 =		Reference value for %
	Value	Unit	
13_3 13_4	The set values and the technological units are shown in p2499.		

Min, Max, Factory setting

The parameter value when delivered from the factory is specified under "Factory setting" with the relevant unit in square parentheses.

The value can be adjusted within the range defined by "Min" and "Max".

This information is not applicable for display parameters.

Min	Minimum value of the parameter [unit]
Max	Maximum value of the parameter [unit]
Factory setting	Value when delivered [unit]

Signal interconnection

Interconnectable parameter types:

- Source numeric
- Source binary
- Source binary/numeric
- Sink numeric
- Binary sink

For parameters, type Signal sink, the factory interconnection is also specified.

Interconnection options for signal sinks:

- Fixed value
- Parameters

When commissioned for the first time or when restoring factory settings, it is possible that a value other than the factory interconnection is visible.

In general, the following combinations are permitted when creating signal interconnections.

In individual cases, the signal interconnections can be restricted further.

Signal source parameter	**Signal sink parameter**						
	Sink numeric						**Sink binary**
	Integer16	**Unsigned16**	**Integer32**	**Unsigned32**	**Floating Point32**	**Floating Point64**	**Unsigned8**
Numeric: Unsigned8	x	x	x	x	-	.	-
Numeric: Unsigned16	x	x	x	x	r2050	r2050	-
Numeric: Integer16	x	x	x	x	-	-	-
Numeric: Unsigned32	x	x	x	x	-	-	-
Numeric: Integer32	x	x	x	x	r2060	r2060	-
Numeric: FloatingPoint32	x	x	x	x	x	[1]	-
Numeric: FloatingPoint64	x	x	x	x	[1]	x	-
Binary: Unsigned8	.	-	.	-	-	-	x

Signal source parameter	Signal sink parameter						
	Sink numeric						Sink binary
	Integer16	Unsigned16	Integer32	Unsigned32	Floating Point32	Floating Point64	Unsigned8
Binary: Unsigned16	.	-	.	-	-	-	x
Binary: Integer16	.	-	.	-	-	-	x
Binary: Unsigned32	.	-	.	-	-	-	x
Binary: Integer32	.	-	.	-	-	-	x

x: Signal interconnection permitted

–: Signal interconnection not permitted

[1] : Only permitted for parameters that permit this interconnection.

rxxxx: Signal interconnection only permitted for the specified source parameters

Scaling

Specifies the reference variable, with which a signal value is automatically converted for a signal interconnection.

The following reference variables are available:

- p2000 ... p2007: Reference speed, reference voltage, etc.
- PERCENT: 1.0 = 100 %
- 4000H: 4000 hex = 100 % (word) or 4000 0000 hex = 100 % (double word)

Description

Explanation of the function of a parameter.

Values

List of the possible values of a parameter.

Recommendation

Information about recommended settings.

Index

Indexed parameters represent the name and its significance for each individual index.

The following applies to the values (Min, Max, Factory setting) of indexed setting parameters:

- Min, Max:
  The adjustment range and unit apply to all indices.
- Factory setting:
  When all indices have the same factory setting, index 0 is specified with the unit to represent all indices.
  When the indices have different factory settings, they are all listed individually together with the unit.

Bit array

For parameters with bit arrays, the following information is provided for each bit:

- Bit number and signal name
- Meaning for signal states 0 and 1
- Function diagram (optional)
  The signal is shown in this function diagram.

Dependency

Specification of interactions that this parameter can potentially have:

- Effect on other parameters
- Dependent on the parameter settings (dependent on the selected functions)
- List of other parameters to be considered
- List of faults and alarms to be considered

Danger / Caution / Warning / Notice

The safety-relevant notes correspond to the warning notice concept and contain the following information:

- Important information that must be observed to avoid the risk of physical injury or material damage.
- Information that must be observed to avoid any problems.
- Information that the user may find useful.

Note

Additional explanations about parameters

3.2 List of parameters

Parameters

The following list contains parameters of product G220.

Product: SINAMICS G220, Version: 604037002, Language: eng
Objects: G220, G220 Clean Power

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r0002 **Drive operating display / Drv op_display**

Data type: Integer16	**Visible in:** Standard display		
Read permission:	Read drive data or acknowledge messages		
Parameter group:	Status parameters, Diagnostics general, Drive enable signals		
Not relevant for motor type:	-		
Dyn. index [0...n]:	-	**Calculated:** -	
Unit: -	**Unit group:** -	**Unit selection:** -	

Description: Operating display for the drive.

Value:

0:	Operation - Everything enabled
10:	Operation - Set "enable setpoint" = "1"
11:	Operation - Set "Enable speed controller" = "1"

12: Operation - RFG frozen, set "RFG start" = "1"
13: Operation - Set "enable RFG" = "1"
14: Operation - MotID, excitation running or brake opens, SS2
15: Operation - Open brake (p1215)
16: Operation - Withdraw braking with OFF1 using "ON/OFF1" = "1"
17: Operation - Braking with OFF3 can only be interrupted with OFF2
18: Operation - Brake on fault, remove fault, acknowledge
19: Operation - DC braking/armature short-cct active (c1230, p1231)
21: Ready for operation - Set "Enable operation" = "1" (c0852)
22: Ready for operation - De-magnetizing running (p0347)
23: Ready for operation - Set "Infeed operation" = "1" (c0864)
31: Ready for switching on - Set "ON/OFF1" = "0/1" (c0840)
35: Switching on inhibited - Carry out first commissioning
41: Switching on inhibited - Set "ON/OFF1" = "0"
42: Switching on inhibited - Set "Operating condition/OFF2" = "1"
43: Switching on inhibited - Set "Operating condition/OFF3" = "1"
44: Switching on inhibited - Supply STO terminal w/ 24 V (hardware)
45: Switching on inhibited - Rectify fault, acknowledge fault, STO
46: Switching on inhibited - Exit commissioning mode
60: Drive deactivated/not operational
70: Initialization
200: Wait for run-up/partial run-up
250: Device signals a topology error

Dependency: See also: r0046

NOTICE
For several missing enable signals, the corresponding value with the highest number is displayed.

Note
OC: Operating condition
EP: Enable Pulses (pulse enable)
RFG: Ramp-function generator
COMM: Commissioning
MotID: Motor data identification

r0020 Speed setpoint smoothed / Speed setpoint

Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Mode signals / displays
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: rpm **Unit group:** 3_1 **Unit selection:** p0505

Description: Displays the currently smoothed speed setpoint at the input of the speed controller or U/f characteristic (after the interpolator).

Note
Smoothing time constant = 100 ms
The signal is not suitable as a process quantity and may only be used as a display quantity.
The speed setpoint is available smoothed (r0020) and unsmoothed (r1438 for experts).

r0021 Speed actual value smoothed / Speed actual value

Data type: FloatingPoint32 **Visible in:** Standard display

Read permission: Read drive data or acknowledge messages
Parameter group: Diagnostics, Mode signals / displays
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: rpm **Unit group:** 3_1 **Unit selection:** p0505
Type of signal interconnection: Source numeric **Scaling:** p2000

Description: Displays the smoothed actual value of the motor speed. The speed is calculated for motors without a speed encoder.
Frequency components from the slip compensation (for induction motors) are not included.

Dependency: See also: r0063

Note
Smoothing time constant = 100 ms
The signal is not suitable as a process quantity and may only be used as a display quantity.
The speed actual value is available smoothed (r0021, r0022) and unsmoothed (r0063).

r0022 Speed actual value rpm smoothed / Actual speed rpm

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Mode signals / displays
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: rpm **Unit group:** - **Unit selection:** -

Description: Displays the smoothed actual value of the motor speed. The speed is calculated for motors without a speed encoder.
Frequency components from the slip compensation (for induction motors) are not included.
r0022 is identical to r0021, however, its units are always rpm.

Dependency: See also: r0021, r0063

Note
Smoothing time constant = 100 ms
The signal is not suitable as a process quantity and may only be used as a display quantity.
The speed actual value is available smoothed (r0021, r0022) and unsmoothed (r0063).

r0024 Output frequency smoothed / Output frequency

Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: U/f control, Mode signals / displays, Power unit
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: Hz **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** p2000

Description: Displays the smoothed output frequency.
Frequency components from the slip compensation (for induction motors) are included.

Dependency: See also: r0066

Note
Smoothing time constant = 100 ms
The signal is not suitable as a process quantity and may only be used as a display quantity.
The output frequency is available smoothed (r0024) and unsmoothed (r0066).

r0025 Output voltage smoothed / Output voltage

Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages

Parameter group: U/f control, Mode signals / displays, Power unit
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: Vrms **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** p2001

Description: Displays the smoothed output voltage of the power unit.

Dependency: See also: r0072

Note
Smoothing time constant = 100 ms
The signal is not suitable as a process quantity and may only be used as a display quantity.
The output voltage is available smoothed (r0025) and unsmoothed (r0072).

r0026 DC link voltage smoothed / DC link voltage

Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Brake control, Mode signals / displays
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: V **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** p2001

Description: Displays the smoothed actual value of the DC link voltage.

Dependency: See also: r0070

Note
Smoothing time constant = 100 ms
The signal is not suitable as a process quantity and may only be used as a display quantity.
The DC link voltage is available smoothed (r0026) and unsmoothed (r0070).

r0027 Absolute actual current smoothed / I_act AbsV smth

Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Mode signals / displays, Power unit
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: Arms **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** p2002

Description: Displays the smoothed absolute current actual value.

Dependency: See also: r0068

NOTICE
This smoothed signal is not suitable for diagnostics or evaluation of dynamic operations. In this case, the unsmoothed value should be used.

Note
Smoothing time constant = 300 ms
The signal is not suitable as a process quantity and may only be used as a display quantity.
The absolute current actual value is available smoothed (r0027) and unsmoothed (r0068).

r0028 Modulation depth smoothed / mod_depth smth

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Mode signals / displays

Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -

Description: Displays the smoothed actual value of the modulation depth.

Dependency: See also: r0074

Note
Smoothing time constant = 100 ms
The signal is not suitable as a process quantity and may only be used as a display quantity.
The modulation depth is available smoothed (r0028) and unsmoothed (r0074).

r0029 Current actual value field-generating smoothed / Id_act smth

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Current controller, Mode signals / displays, Power unit
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: Arms **Unit group:** - **Unit selection:** -

Description: Displays the smoothed field-generating actual current.

Dependency: See also: r0076

Note
Smoothing time constant = 300 ms
The signal is not suitable as a process quantity and may only be used as a display quantity.
The field-generating current actual value is available smoothed (r0029) and unsmoothed (r0076).

r0030 Current actual value torque-generating smoothed / Iq_act smth

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Current controller, Mode signals / displays, Power unit
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: Arms **Unit group:** - **Unit selection:** -

Description: Displays the smoothed torque-generating actual current.

Dependency: See also: r0078

Note
Smoothing time constant = 300 ms
The signal is not suitable as a process quantity and may only be used as a display quantity.
The torque-generating current actual value is available smoothed (r0030) and unsmoothed (r0078).

r0031 Actual torque smoothed / Torque actual val

Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Mode signals / displays
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: Nm **Unit group:** 7_1 **Unit selection:** p0505

Description: Displays the smoothed torque actual value.

Dependency: See also: r0080

Note
Smoothing time constant = 100 ms
The signal is not suitable as a process quantity and may only be used as a display quantity.
The torque actual value is available smoothed (r0031) and unsmoothed (r0080).

r0032 Active power actual value smoothed / Active power ActV

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Mode signals / displays	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: kW	**Unit group:** 14_10	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** r2004

Description: Display and numerical signal source for the smoothed actual value of the active power.

Dependency: See also: r0082

NOTICE
This smoothed signal is not suitable for diagnostics or evaluation of dynamic operations. In this case, the unsmoothed value should be used.

Note
Power delivered at the motor shaft.
The active power is available smoothed (r0032 with 100 ms) and unsmoothed (r0082).

r0033 Torque utilization smoothed / M_util smooth

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Mode signals / displays	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -

Description: Displays the smoothed torque utilization as a percentage.
The torque utilization is obtained from the required smoothed torque in reference to the torque limit, scaled using p2196.

Dependency: This parameter is only available for vector control. For U/f control r0033 = 0 %.

Note
Smoothing time constant = 100 ms
The signal is not suitable as a process quantity and may only be used as a display quantity.
The torque utilization is available smoothed (r0033) and unsmoothed (r0081).
For M_set total (r0079) > 0, the following applies:
- Required torque = M_set total
- Actual torque limit = M_max upper effective (r1538)
For M_set total (r0079) <= 0, the following applies:
- Required torque = - M_set total
- Actual torque limit = - M_max lower effective (r1539)
For the actual torque limit = 0, the following applies: r0033 = 100 %
For the actual torque limit < 0, the following applies: r0033 = 0 %

r0034 Motor utilization thermal / Mot_util therm

Data type: FloatingPoint32	**Visible in:** Standard display
Read permission:	Read drive data or acknowledge messages
Parameter group:	Motor temperature, Mode signals / displays

Not relevant for motor type: Induction motor, Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: - **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** PERCENT

Description: Displays the motor utilization from motor temperature model 1 (I2t) or 3.
For motor temperature model 1 (I2t) (p0612.0 = 1), the following applies:
- r0034 = (motor model temperature - p0613) / p0627 * 100 %
For motor temperature model 3 (p0612.2 = 1), the following applies:
- r0034 = (motor model temperature - p0613 / (p5390 - p0613) * 100 %

Dependency: See also: p0605, p0611, p0612, p0613, p0627, r0632
See also: F07011, A07012

NOTICE
After the drive is switched on, the system starts to determine the motor temperature with an assumed model value. This means that the value for the motor utilization is only valid after a stabilization time.

Note
Smoothing time constant = 100 ms
The signal is not suitable as a process quantity and may only be used as a display quantity.
For r0034 = -200.0 %, the following applies:
The value is invalid (e.g. the motor temperature model is not activated or has been incorrectly parameterized).

r0035 Motor temperature / Mot temp

Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Motor temperature, Mode signals / displays
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: °C **Unit group:** 21_1 **Unit selection:** p0505
Type of signal interconnection: Source numeric **Scaling:** p2006

Description: Displays the actual temperature in the motor.

Note
The measured temperature is displayed if a temperature sensor (p0600, p0601) is parameterized.
If a temperature sensor is not parameterized, but a motor model, then the calculated model temperature of the winding (r0632) is displayed.
A value of -200°C is displayed if neither a temperature sensor nor a motor model (p0612.) is parameterized.

r0036[0...2] Power unit overload / PU overload

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Mode signals / displays, Power unit
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** PERCENT

Description: Display when the power unit is overloaded.
A reference value is defined for the monitoring functions.
An overload (0 %) is not displayed if the reference value is not exceeded.
The display value increases if the reference value is exceeded.
An alarm is output if an overload is active over a certain time period; a fault is output when 100% is reached.

Index: [0] = I2t (AC)
[1] = Active power
[2] = I2t (DC)

Dependency: See also: p0290
See also: F30005, A30256, A30257, F30258, A30267, F30268

Note
For index [0]:
This index shows the actual state of the I2t monitoring on the AC side.
The reference value represents the AC current that the power unit can permanently provide, without the influence of switching losses (e.g. the continuously permissible current of capacitors, inductances, busbars, etc.).

For index [1]:
This index shows the actual state of the active power monitoring.
The reference value represents the active power that the power unit can continuously provide.

For index [2]:
This index shows the actual state of the I2t monitoring on the DC side.
The reference value represents the DC current that can continuously flow in the DC link.

r0037[0...10] Power unit temperatures / PU temperatures

Variant: G220
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Mode signals / displays, Power unit
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: °C **Unit group:** 21_1 **Unit selection:** p0505
Type of signal interconnection: Source numeric **Scaling:** p2006

Description: Displays the temperatures in the power unit.

Index: [0] = Inverter maximum value
[1] = Depletion layer maximum value
[2] = Rectifier maximum value
[3] = Air intake
[4] = Interior of power unit
[5] = Cooling unit liquid intake
[6] = Capacitor air discharge
[7] = Depletion layer maximum value 1
[8] = Depletion layer maximum value 2
[9] = Depletion layer maximum value 3
[10] = Depletion layer maximum value 4

Note
The value of -200 indicates that there is no measuring signal.
r0037[0]: Maximum value of the inverter temperatures
r0037[1]: Maximum value of the depletion layer temperatures
r0037[2]: Maximum value of the rectifier temperatures
The maximum value is the temperature of the hottest inverter, depletion layer, or rectifier.
In the case of a fault, the particular shutdown threshold depends on the power unit, and cannot be read out.

r0037[0...10] Power unit temperatures / PU temperatures

Variant: G220 Clean Power
Data type: FloatingPoint32 **Visible in:** Extended display

Read permission: Read drive data or acknowledge messages
Parameter group: Mode signals / displays, Power unit
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: °C **Unit group:** 21_1 **Unit selection:** p0505
Type of signal interconnection: Source numeric **Scaling:** p2006

Description: Displays the temperatures in the power unit.

Index:
[0] = Inverter maximum value
[1] = Depletion layer maximum value
[2] = Reserved
[3] = Air intake
[4] = Interior of power unit
[5] = Cooling unit liquid intake
[6] = Capacitor air discharge
[7] = Depletion layer maximum value 1
[8] = Depletion layer maximum value 2
[9] = Depletion layer maximum value 3
[10] = Depletion layer maximum value 4

Note
The value of -200 indicates that there is no measuring signal.
r0037[0]: Maximum value of the inverter temperatures
r0037[1]: Maximum value of the depletion layer temperatures
The maximum value is the temperature of the hottest inverter, depletion layer, or rectifier.
In the case of a fault, the particular shutdown threshold depends on the power unit, and cannot be read out.

r0038 Power factor smoothed / Cos phi smooth

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Mode signals / displays
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the smoothed actual power factor. This refers to the electrical power of the basic fundamental signals at the converter output terminals.

Note
Smoothing time constant = 300 ms
The signal is not suitable as a process quantity and may only be used as a display quantity.

r0039[0...2] Energy display / Energy display

Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Mode signals / displays, Power loss optimization
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: kWh **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** -

Description: Display and numerical signal source for the energy values at the output terminals of the power unit.

Recommendation: r0042 should be used as process energy display.

Index: [0] = Energy balance (sum)
[1] = Energy drawn
[2] = Energy returned

Note
For a signal interconnection, signal source r0039 supplies the floating-point value in Ws.
For index [0]:
Difference between the energy drawn and energy that is returned.
For index [2]:
Energy fed back into the braking resistor or the line supply. For converters without energy recovery and without braking resistor, the electrical losses of the motor and power unit are displayed.

r0042[0...2] Process energy display / Proc energy disp

Data type: Integer32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Mode signals / displays, Power loss optimization	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Wh	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** -

Description: Display for the energy values at the power unit output terminals.

Index: [0] = Energy balance (sum)
[1] = Energy drawn
[2] = Energy fed back

Dependency: See also: c0043

Note
The signal can be displayed as process variable (scaling: 1 = 1 Wh).
The enable is realized using c0043. The counter value remains constant when the enable is withdrawn. The display starts at zero when the enable is set.
If an enable signal is active in c0043 when the converter runs up, then the value from r0039 is transferred into r0042.
As r0039 serves as a reference signal for r0042, due to format reasons, the process energy display can only process values of r0039 up to 2147483 kWh. r0039 should also be reset using this value.

c0043 Enable process energy usage measurement / Enable energy meas

Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Mode signals / displays, Power loss optimization	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal to enable/reset process energy management in r0042.
for a 1 signal, the following applies:
The process energy measurement is enabled in r0042 and started with 0 Wh.
for a 0 signal, the following applies:
The process energy measurement in r0042 is stopped.

Dependency: See also: r0042

r0044 Thermal converter utilization / Conv_util therm

Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Mode signals / displays, Power unit
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** PERCENT

Description: Displays the thermal converter utilization as a percentage.
With this value, various thermal monitoring functions are taken into account.

Dependency: See also: r0034

Note
The thermal motor utilization is displayed in parameter r0034.

p0045 Display values smoothing time constant / Disp_val Tc_smth

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Mode signals / displays
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: ms **Unit group:** - **Unit selection:** -

Min:	**Max:**	**Factory setting:**
0.00 [ms]	10000.00 [ms]	4.00 [ms]

Description: Sets the smoothing time constant for the following display values:
r0063[1], r0068[1], r0076[1], r0078], r0080[1], r0082[1], r1732[1], r1733[1].

r0046.0...31 Missing enable signals / Missing enable sig

Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Control/status words, Drive enable signals
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Display for missing enable signals that are preventing the closed-loop drive control from being commissioned.

Bit array:

Bit	Signal name	1 signal	0 signal
00	OFF1 enable missing	Yes	No
01	OFF2 enable missing	Yes	No
02	OFF3 enable missing	Yes	No
03	Operation enable missing	Yes	No
04	Armature short-circuit / DC braking enable missing	Yes	No
05	STOP2 enable missing	Yes	No
08	Safety enable missing	Yes	No
09	Infeed enable missing	Yes	No
10	Ramp-function generator enable missing	Yes	No
11	Ramp-function generator start missing	Yes	No

	12	Speed setpoint enable missing	Yes	No
	15	QuickStop enable missing	Yes	No
	16	OFF1 enable internal missing	Yes	No
	17	OFF2 enable internal missing	Yes	No
	18	OFF3 enable internal missing	Yes	No
	19	Pulse enable internal missing	Yes	No
	20	Armature short-circuit/DC braking internal enable missing	Yes	No
	21	STOP2 enable internal missing	Yes	No
	24	License missing	Yes	No
	25	Function bypass active	Yes	No
	26	Drive inactive or not operational	Yes	No
	27	De-magnetizing not completed	Yes	No
	28	Brake open missing	Yes	No
	30	Speed controller enable missing	Yes	No
	31	Jog setpoint active	Yes	No

Dependency: See also: r0002

Note
Value = 0 indicates that all enable signals for this drive are present.

Bit 00 = 1 (enable signal missing), if:
- Signal sink c0840 has a 0 signal.
- Switching on inhibited is active.

Bit 01 = 1 (enable signal missing), if:
- Signal sink c0844 or c0845 has a 0 signal.

Bit 02 = 1 (enable signal missing), if:
- Signal sink c0848 or c0849 has a 0 signal.

Bit 03 = 1 (enable signal missing), if:
- Signal sink c0852 has a 0 signal.

Bit 04 =1 (armature short-circuit active), if:
- Signal sink c1230 has a 1 signal.

Bit 05: Being prepared

Bit 08 = 1 (enable signal missing), if:
- Safety functions have been enabled and STO (Safe Torque Off) is active.
- STO is selected via onboard terminals or PROFIsafe.
- A safety-relevant signal is active with STO (Safe Torque Off) response.
- Additional details relating to the reason that STO was selected, see parameter r10352.

Bit 09 = 1 (enable signal missing), if:
- Signal sink c0864 has a 0 signal.

Bit 10 = 1 (enable signal missing), if:
- Signal sink c1140 has a 0 signal.

Bit 11 = 1 (enable signal missing) if the speed setpoint is frozen, because:
- Signal sink c1141 has a 0 signal.
- The speed setpoint from jogging is specified and the two signal sinks for jog 1 (c1055) and jog 2 (c1056) have a 1 signal.

Bit 12 = 1 (enable signal missing), if:
- Signal sink c1142 has a 0 signal.

Bit 15: Being prepared

Bit 16 = 1 (enable signal missing), if:
- There is an OFF1 fault response. The system is only enabled if the fault is removed and was acknowledged and the "switching on inhibited" withdrawn with OFF1 = 0.

Bit 17 = 1 (enable signal missing), if:
- The commissioning mode is selected.
- There is an OFF2 fault response.

Bit 18 = 1 (enable signal missing), if:
- OFF3 has still not been completed or an OFF3 fault response is present.

Bit 19 = 1 (internal pulse enable missing), if:
- Synchronization is running between the basic clock cycle, DRIVE-CLiQ clock cycle and application clock cycle.

Bit 20 =1 (internal armature short-circuit active), if:

- The drive is not in the state "S4: Operation" or "S5x" (refer to function diagram 2610).
- The internal pulse enable is missing (r0046.19 = 0).

Bit 21 = 1 (enable signal missing), if:
The pulses have been enabled and the speed setpoint has still not been enabled, because:
- The holding brake opening time (p1216) has still not expired.
- The motor has still not been magnetized (induction motor).
- The encoder has not been calibrated (U/f vector and synchronous motor).

Bit 25 = 1 (enable signal missing), if:
the motor was switched to the line supply using the bypass function (p1260, c1266). The converter is in the standby mode.

Bit 26 = 1 (enable signal missing), if:
- The drive is inactive or not capable of operation.
- The drive is in the "PROFIenergy energy-saving mode" (r5600).

Bit 27 = 1 (enable signal missing), if:
- De-magnetization not completed.

Bit 28 = 1 (enable signal missing), if:
- The holding brake is closed or has still not been opened.

Bit 30 = 1 (speed controller inhibited), if one of the following reasons is present:
- A 0 signal is present via binary signal sink c0856.
- The function generator with current setpoint is active.
- The measuring function "current controller reference frequency characteristic" is active.
- The pole position identification is active.
- Motor data identification is active (only certain steps).

Bit 31 = 1 (enable signal missing), if:
- The speed setpoint from jog 1 or 2 is specified.

r0047 Motor data identification and speed controller optimization / MotID and n_opt

Data type: Integer16	**Visible in:** Extended display		
Read permission:	Read drive data or acknowledge messages		
Parameter group:	Motor data identification routine, Rotating measurement/speed controller optimization		
Not relevant for motor type:	-		
Dyn. index [0...n]:	-	**Calculated:** -	
Unit: -	**Unit group:** -	**Unit selection:** -	

Description: Displays the actual status for the motor data identification (stationary measurement) and the speed controller optimization with determination of the rated magnetizing current and saturation characteristic (rotating measurement).

Value:

0:	No measurement
115:	Measurement q leakage inductance (part 2)
120:	Speed controller optimization (vibration test)
140:	Calculate speed controller setting
150:	Measurement moment of inertia
170:	Measurement magnetizing current and saturation characteristic
190:	Speed encoder test
195:	Measurement q leakage inductance (part 1)
200:	Rotating measurement selected
210:	Pole position identification selected

220: identification leakage inductance
230: Identification rotor time constant
240: Identification stator inductance
250: Identification stator inductance LQLD
251: Identification saturation pole Id
260: Identification circuit
262: Identification saturation characteristic 5/5
264: Identification saturation characteristic 4/5
266: Identification saturation characteristic 3/5
268: Identification saturation characteristic 2/5
270: Identification saturation characteristic 1/5
280: Identification stator resistance
290: Identification valve lockout time
295: Calibration output voltage measurement
300: Stationary measurement selected

Note
For r0047 = 300:
This value is also displayed if encoder calibration p1990 is selected.

r0049[0...3] Motor data set/encoder data set effective / MDS/EDS effective

Data type: Unsigned8 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Mode signals / displays, Data sets
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the effective Motor Data Set (MDS) and the effective Encoder Data Sets (EDS).

Index:
[0] = Motor Data Set MDS effective
[1] = Motor encoder encoder data set EDS effective
[2] = Encoder 2 Encoder Data Set EDS effective
[3] = Reserved

Dependency: See also: p0186, p0187, p0188

Note
Value 99 means the following: No encoder assigned (not configured).

r0050.0...1 Command Data Set CDS effective / CDS effective

Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Mode signals / displays, Command data sets CDS, Configuration
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Displays the effective Command Data Set (CDS).

Bit array:

Bit	Signal name	1 signal	0 signal
00	CDS effective bit 0	On	Off
01	CDS effective bit 1	On	Off

Dependency: See also: c0810, c0811, r0836

Note
The combination of bits indicates which data set is active.
The command data set, selected using binary signal sinks c0810 and c0811, is indicated using r0836.

r0051.0...3 Drive Data Set DDS effective / DDS effective

Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Mode signals / displays, Drive data sets DDS
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Displays the effective Drive Data Set (DDS).

Bit array:

Bit	Signal name	1 signal	0 signal
00	DDS effective bit 0	On	Off
01	DDS effective bit 1	On	Off
02	DDS effective bit 2	On	Off
03	DDS effective bit 3	On	Off

Dependency: See also: c0820, c0821, c0822, c0823, r0837

Note
The drive data set changeover is suppressed when selecting the motor identification, during the rotating measurement, the encoder calibration and the friction characteristic record.

r0052.0...15 Status word 1 / ZSW 1

Data type: Unsigned16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Control/status words, Mode signals / displays
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Display for status word 1.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Ready for switching on	Yes	No
01	Ready	Yes	No
02	Operation enabled	Yes	No
03	Fault present	Yes	No
04	Coast down active (OFF2)	No	Yes
05	Quick Stop active (OFF3)	No	Yes
06	Switching on inhibited active	Yes	No
07	Alarm present	Yes	No
08	Deviation setpoint/actual speed	No	Yes
09	Control requested	Yes	No
10	Maximum speed exceeded	Yes	No
11	I, M or P limit not reached	Yes	No
12	Motor holding brake open	Yes	No
13	Alarm motor overtemperature	No	Yes
14	Motor rotates forwards	Yes	No
15	Alarm drive converter overload	No	Yes

Note
For r0052:
The status bits have the following sources:
Bit 00: r0899 Bit 0
Bit 01: r0899 Bit 1
Bit 02: r0899 Bit 2
Bit 03: r2139 Bit 3 (or r1214.10 for p1210 > 0)
Bit 04: r0899 Bit 4
Bit 05: r0899 Bit 5
Bit 06: r0899 Bit 6
Bit 07: r2139 Bit 7
Bit 08: r2197 Bit 7
Bit 09: r0899 Bit 7
Bit 10: r2197 bit 12
Bit 11: r0056 Bit 13 (negated)
Bit 12: r0899 Bit 12
Bit 13: r2135 Bit 14 (negated)
Bit 14: r2197 Bit 3
Bit 15: r2135 Bit 15 (negated)

r0053.0...11 Status word 2 / ZSW 2

Data type: Unsigned16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Control/status words, Mode signals / displays
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Display for status word 2.

Bit array:

Bit	Signal name	1 signal	0 signal
00	DC braking active	Yes	No
01	|n_act| > p1226 (n_standstill)	Yes	No
02	|n_act| > p1080 (n_min)	Yes	No
03	I_act >= p2170	Yes	No
04	|n_act| > p2155	Yes	No
05	|n_act| <= p2155	Yes	No
06	|n_act| >= r1119 (n_set)	Yes	No
07	Vdc <= p2172	Yes	No
08	Vdc > p2172	Yes	No
09	Ramp-up/ramp-down completed	Yes	No
10	Technology controller output at the lower limit	Yes	No
11	Technology controller output at the upper limit	Yes	No

Note
The following status bits are displayed in r0053:
Bit 00: r1239 Bit 8
Bit 01: r2197 Bit 5 (negated)
Bit 02: r2197 Bit 0 (negated)
Bit 03: r2197 Bit 8
Bit 04: r2197 Bit 2
Bit 05: r2197 Bit 1
Bit 06: r2197 Bit 4
Bit 07: r2197 Bit 9
Bit 08: r2197 Bit 10
Bit 09: r1199 Bit 2 (negated)
Bit 10: r2349 Bit 10
Bit 11: r2349 Bit 11

r0054.0...15 Control word 1 / STW 1

Data type: Unsigned16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Control/status words, Mode signals / displays
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Displays control word 1.

Bit array:

Bit	Signal name	1 signal	0 signal
00	ON/OFF1	ON	OFF
01	No coast-down / coast-down (OFF2)	No OFF2	OFF2
02	No Quick Stop / Quick Stop (OFF3)	No OFF3	OFF3
03	Enable operation	Yes	No
04	Enable ramp-function generator	Yes	No
05	Continue ramp-function generator	Yes	No
06	Enable speed setpoint	Yes	No
07	Acknowledge fault	Yes	No
08	Jog 1 ON/jog 1 OFF	ON	OFF
09	Jog 2 ON/jog 2 OFF	ON	OFF
10	Control by PLC	Yes	No
11	Direction reversal (setpoint)	Yes	No
12	Enable speed controller	Yes	No
13	Motorized potentiometer raise	Yes	No
14	Motorized potentiometer lower	Yes	No
15	CDS bit 0	Yes	No

Note
The following control bits are displayed in r0054:
Bit 00: r0898 Bit 0
Bit 01: r0898 Bit 1
Bit 02: r0898 Bit 2
Bit 03: r0898 Bit 3
Bit 04: r0898 Bit 4
Bit 05: r0898 Bit 5
Bit 06: r0898 Bit 6
Bit 08: r0898 Bit 8
Bit 09: r0898 Bit 9
Bit 10: r0898 Bit 10
Bit 11: r1198 Bit 11
Bit 13: r1198 Bit 13
Bit 14: r1198 Bit 14
Bit 15: r0836 Bit 0

r0055.0...15 Supplementary control word / Suppl STW

Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Control/status words, Mode signals / displays
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Display for supplementary control word.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Fixed setpoint bit 0	Yes	No
01	Fixed setpoint bit 1	Yes	No
02	Fixed setpoint bit 2	Yes	No
03	Fixed setpoint bit 3	Yes	No
04	DDS selection bit 0	Yes	No
05	DDS selection bit 1	Yes	No
08	Technology controller enable	Yes	No
09	DC braking enable	Yes	No
11	Droop enable	Yes	No
12	Torque control active	Yes	No
13	External fault 1 (F07860)	No	Yes
15	CDS bit 1	Yes	No

Note
The following control bits are displayed in r0055:
Bit 00: r1198.0
Bit 01: r1198.1
Bit 02: r1198.2
Bit 03: r1198.3
Bit 04: r0837.0
Bit 05: r0837.1
Bit 08: r2349.0 (negated)
Bit 09: r1239.11
Bit 11: r1406.11
Bit 12: r1406.12
Bit 15: r0836.1

CDS: Command Data Set
DDS: Drive Data Set

r0056.0...15 Status word, closed-loop control / ZSW cl-lp ctrl

Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Control/status words, Mode signals / displays
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Displays the status word of the closed-loop control.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Initialization completed	Yes	No
01	De-magnetizing completed	Yes	No
02	Pulse enable available	Yes	No
03	Soft starting present	Yes	No
04	Magnetizing completed	Yes	No
05	Voltage boost when starting	Active	Inactive
06	Acceleration voltage	Active	Inactive
07	Frequency negative	Yes	No
08	Field weakening active	Yes	No
09	Voltage limit active	Yes	No
10	Slip limit active	Yes	No
11	Frequency limit active	Yes	No
12	Current limiting controller voltage output active	Yes	No
13	Current/torque limiting	Active	Inactive
14	Vdc_max controller active	Yes	No
15	Vdc_min controller active	Yes	No

r0060 Speed setpoint before the setpoint filter / n_set before filt

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Mode signals / displays, Speed setpoint filter
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -

	Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
	Type of signal interconnection:	Source numeric	**Scaling:** p2000
Description:	Displays the currently unsmoothed speed setpoint at the input of the speed controller or U/f characteristic (after the interpolator).		

r0061[0...2] Speed actual value from the encoder / n_act from encoder

	Data type: FloatingPoint32	**Visible in:** Extended display	
	Read permission:	Read drive data or acknowledge messages	
	Parameter group:	Encoder evaluation, Mode signals / displays	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	**Calculated:** -
	Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
	Type of signal interconnection:	Source numeric	**Scaling:** p2000
Description:	Displays the speed actual values sensed by the encoders.		
Index:	[0] = Motor encoder [1] = Encoder 2 [2] = Reserved		

Note
With a parameterized filter time constant p1441, the speed signal from encoder 1 is displayed corrected by the following error.

r0062 Speed setpoint after the filter / n_set after filter

	Data type: FloatingPoint32	**Visible in:** Extended display	
	Read permission:	Read drive data or acknowledge messages	
	Parameter group:	U/f control, Speed controller, Mode signals / displays, Speed setpoint filter	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	**Calculated:** -
	Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
	Type of signal interconnection:	Source numeric	**Scaling:** p2000
Description:	Displays the speed setpoint after the setpoint filters.		

r0063[0...2] Speed actual value / Speed actual value

	Data type: FloatingPoint32	**Visible in:** Extended display	
	Read permission:	Read drive data or acknowledge messages	
	Parameter group:	U/f control, Speed messages, Speed controller, Speed actual value filter, Mode signals / displays	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	**Calculated:** -
	Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
	Type of signal interconnection:	Source numeric	**Scaling:** p2000
Description:	Display and numerical signal source for the speed actual value.		
Index:	[0] = Unsmoothed [1] = Smoothed with p0045 [2] = Calculated from f_set - f_slip (unsmoothed)		
Dependency:	See also: r0021, r0022		

Note

Frequency components from the slip compensation (for induction motors) are not included. The speed actual value is calculated in encoderless operation and for U/f control.

The speed actual value r0063[0] – smoothed with p0045 – is additionally displayed in r0063[1]. r0063[1] can be used as process variable for the appropriate smoothing time constant p0045.

The speed (r0063[2]) calculated from the output frequency and slip frequency can only be compared with the speed actual value (r0063[0]) in the steady-state.

The speed actual value (r0063[0]) is available as a display quantity with additional smoothing in r0021.

Only for U/f control:

When slip compensation is deactivated (see p1335) the synchronous speed for the output frequency is indicated in r0063[0] and a mechanical speed, calculated from the output frequency and the slip, is indicated in r0063[2].

Only for vector control:

The speed actual value r0063[0] is the input signal of the smoothing (p1442, p1452) upstream of the speed controller.

For vector control or Dynamic Drive Control (p0504 = 2) with encoder, r0063[0] is retrieved at the output of speed actual value filter 5.

r0064 Speed controller system deviation / n_ctrl SysDev

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Speed controller, Mode signals / displays	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000

Description: Displays the actual system deviation of the speed controller.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

r0065 Slip frequency / f_slip

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	U/f control, Mode signals / displays	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Hz	**Unit group:** 2_1	**Unit selection:** p0505

Description: Displays the slip frequency for induction motors (ASM).

r0066 Output frequency / f_outp

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Mode signals / displays, Power unit	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Hz	**Unit group:** 2_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000

Description: Displays the unsmoothed output frequency of the power unit.

Frequency components from the slip compensation (induction motor) are included.

Dependency: See also: r0024

Note

The output frequency is available smoothed (r0024) and unsmoothed (r0066).

r0067 Output current maximum / Current max

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: U/f control, Torque limiting, Current controller, Mode signals / displays, Power unit
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: Arms **Unit group:** 6_2 **Unit selection:** p0505
Type of signal interconnection: Source numeric **Scaling:** p2002

Description: Displays the maximum output current of the power unit.

Dependency: The maximum output current is determined by the parameterized current limit and the motor and converter thermal protection.
See also: p0290, p0640

r0068[0...1] Absolute current actual value / I_act AbsV

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: U/f control, Mode signals / displays, Power unit
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: Arms **Unit group:** 6_2 **Unit selection:** p0505
Type of signal interconnection: Source numeric **Scaling:** p2002

Description: Displays actual absolute current.

Index: [0] = Unsmoothed
[1] = Smoothed with p0045

Dependency: See also: r0027

NOTICE
The value is updated with the current controller sampling time.

Note
Absolute current value = sqrt(Iq^2 + Id^2)
The absolute value of the current actual value is available smoothed (r0027 with 300 ms, r0068[1] with p0045) and unsmoothed (r0068[0]).

r0069[0...8] Phase current actual value / I_phase ActV

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Mode signals / displays, Power unit
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: A **Unit group:** 6_5 **Unit selection:** p0505
Type of signal interconnection: Source numeric **Scaling:** p2002

Description: Displays the measured actual phase currents as peak value.

Index: [0] = Phase U
[1] = Phase V
[2] = Phase W
[3] = Phase U offset
[4] = Phase V offset
[5] = Phase W offset
[6] = Total U, V, W
[7] = Alpha component
[8] = Beta component

Note
In indices 3 ... 5, the offset currents of the 3 phases, which are added to correct the phase currents, are displayed. The sum of the 3 corrected phase currents is displayed in index 6.

r0070 Actual DC link voltage / Vdc act val

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Dynamic braking, Vdc-min/max controller, Flux setpoint, Mode signals / displays, Power unit
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: V **Unit group:** 5_2 **Unit selection:** p0505
Type of signal interconnection: Source numeric **Scaling:** p2001

Description: Display for the measured actual value of the DC link voltage.

Dependency: See also: r0026

Note
The DC link voltage is available smoothed (r0026) and unsmoothed (r0070).

r0071 Maximum output voltage / Voltage max

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: U/f control, Torque limiting, Flux setpoint, Mode signals / displays, Power unit
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: Vrms **Unit group:** 5_1 **Unit selection:** p0505

Description: Displays the maximum output voltage.

Dependency: The maximum output voltage depends on the actual DC link voltage (r0070) and the maximum modulation depth (p1803).

Note
As the (driven) motor load increases, the maximum output voltage drops as a result of the reduction in DC link voltage.

r0072 Output voltage / U_output

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: U/f control, Current controller, Flux setpoint, Mode signals / displays, Power unit
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: Vrms **Unit group:** 5_1 **Unit selection:** p0505
Type of signal interconnection: Source numeric **Scaling:** p2001

Description: Display and numerical signal source for the actual output voltage of the power unit.

Dependency: See also: r0025

Note
The output voltage is available smoothed (r0025) and unsmoothed (r0072).

r0073 Maximum modulation depth / mod_depth max

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Flux setpoint, Mode signals / displays, Power unit
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -

Description: Displays the maximum modulation depth.
Dependency: See also: p1803

r0074 Modulation depth / mod_depth

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Mode signals / displays, Power unit
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** PERCENT

Description: Display for the actual modulation depth.
Dependency: See also: r0028

Note
For space vector modulation, 100% corresponds to the maximum output voltage without overcontrol.
Values above 100% indicate an overcontrol condition - values below 100% indicate no overcontrol.
The phase voltage (phase-to-phase, rms) is calculated as follows:(r0074 x r0070) / (sqrt(2) x 100 %).
The modulation depth is available smoothed (r0028) and unsmoothed (r0074).

r0075 Current setpoint field-generating / Id_set

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Torque limiting, Current controller, Mode signals / displays
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: - **Calculated:** -
Unit: Arms **Unit group:** 6_2 **Unit selection:** p0505
Type of signal interconnection: Source numeric **Scaling:** p2002

Description: Display and numerical signal source for the field-generating current setpoint (Id_set).
Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

Note
This value is irrelevant for the U/f control mode.

r0076[0...1] Current actual value field-generating / Id_act

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: U/f control, Current controller
Not relevant for motor type: -

	Dyn. index [0...n]:	-	**Calculated:** -
	Unit: Arms	**Unit group:** 6_2	**Unit selection:** p0505
	Type of signal interconnection:	Source numeric	**Scaling:** p2002

Description: Display and numerical signal source for the field-generating current setpoint (Id_act).

Index: [0] = Unsmoothed
[1] = Smoothed with p0045

Dependency: See also: r0029

Note
This value is irrelevant for the U/f control mode.
The field-generating current actual value is available smoothed (r0029) and unsmoothed (r0076).

r0077 Current setpoint torque-generating / Iq_set

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Current controller, Mode signals / displays	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Arms	**Unit group:** 6_2	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2002

Description: Displays the torque-generating current setpoint.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

Note
This value is irrelevant for the U/f control mode.

r0078[0...1] Current actual value torque-generating / Iq_act

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	U/f control, Current controller, Mode signals / displays	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Arms	**Unit group:** 6_2	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2002

Description: Display for the torque-generating current actual value (Iq_act).

Index: [0] = Unsmoothed
[1] = Smoothed with p0045

Dependency: See also: r0030

Note
This value is irrelevant for the U/f control mode.
The torque-generating current actual value is available smoothed (r0030 with 300 ms) and unsmoothed (r0078).

r0079 Torque setpoint / M_set

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Torque limiting, Mode signals / displays	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Nm	**Unit group:** 7_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2003

Description: Displays the torque setpoint at the output of the speed controller.
Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

r0080[0...1] Torque actual value / Torque actual val

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Motor model, Mode signals / displays
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: Nm **Unit group:** 7_1 **Unit selection:** p0505
Type of signal interconnection: Source numeric **Scaling:** p2003

Description: Displays the actual torque value.
Index: [0] = Unsmoothed
[1] = Smoothed with p0045
Dependency: See also: r0031, p0045

Note
The value is available smoothed (r0031 with 100 ms, r0080[1] with p0045) and unsmoothed (r0080[0]).

r0081 Torque utilization / M_utilization

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Torque limiting, Mode signals / displays
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: - **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** PERCENT

Description: Displays the torque utilization as a percentage.
The torque utilization is obtained from the required smoothed torque referred to the torque limit.
Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: r0033

Note
The torque utilization is available smoothed (r0033) and unsmoothed (r0081).
The torque utilization is obtained from the required torque referred to the torque limit as follows:
- Positive torque: r0081 = (r0079 / r1538) * 100 %
- Negative torque: r0081 = (-r0079 / -r1539) * 100 %

r0082[0...2] Active power actual value (motor) / P_act (motor)

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Motor model, Mode signals / displays
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: kW **Unit group:** 14_5 **Unit selection:** p0505
Type of signal interconnection: Source numeric **Scaling:** r2004

Description: Displays the instantaneous active power.
Index: [0] = Unsmoothed
[1] = Smoothed with p0045
[2] = Electric power
Dependency: See also: r0032

Note
The mechanical active power is available smoothed (r0032 with 100 ms, r0082[1] with p0045) and unsmoothed (r0082[0]).

r0083 Flux setpoint / Flux set

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Flux setpoint, Mode signals / displays	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** PERCENT

Description: Displays the flux setpoint.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

r0084[0...1] Flux actual value / Flux actual value

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Motor model, Mode signals / displays	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** PERCENT

Description: Displays the flux actual value.

Index: [0] = Unsmoothed
[1] = Smoothed

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

r0087 Actual power factor / Cos phi act

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Motor model, Mode signals / displays	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** -

Description: Displays the actual active power factor.
This value refers to the electrical power of the basic fundamental signals at the output terminals of the converter.

r0089[0...2] Actual phase voltage (motor) / U_phase (motor)

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Mode signals / displays, Power unit	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: V	**Unit group:** 5_3	**Unit selection:** p0505

Description: Displays the actual phase voltage.

Index: [0] = Phase U
[1] = Phase V
[2] = Phase W

r0093 Pole position angle electrically scaled / Pole pos el scale

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Mode signals / displays
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: ° **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** p2005

Description: Displays the scaled electrical pole position angle.
Dependency: See also: r0094, p0431, r1778

r0094 Transformation angle / Transformat_angle

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Mode signals / displays
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: ° **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** p2005

Description: Displays the transformation angle.
Dependency: See also: r0093, p0431, r1778

Note
The transformation angle corresponds to the electrical commutation angle.
If no pole position identification is carried out (p1982), and the encoder is adjusted, the following applies:
The encoder supplies the value and indicates the electrical angle of the flux position (d axis).

p0100 IEC/NEMA Standards / IEC/NEMA Standards

Data type: Integer16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Commissioning
Parameter group: Motor data, Units, Quick commissioning
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0	2	0

Description: Defines whether the motor and drive converter power settings (e.g. rated motor power, p0307) are expressed in [kW] or [hp].
Depending on the selection, the rated motor frequency (p0310) is either set to 50 Hz or 60 Hz.
For p0100 = 0, 2, the following applies: The power factor (p0308) should be parameterized.
For p0100 = 1, the following applies: The efficiency (p0309) should be parameterized.

Value:
0: IEC (50 Hz line, SI units)
1: NEMA (60 Hz line, US units)

2: NEMA (60 Hz line, SI units)

Dependency: When changing the standard, all motor rated parameters are reset. Only then are possible unit changeovers made.
The units of all motor parameters are changed that are involved in the selection of IEC or NEMA (e.g. r0206, p0307, r0333, r0334, p0341, p0344).
See also: r0206, p0210, p0300, p0304, p0305, p0307, p0308, p0309, p0310, p0311, p0314, p0320, p0322, p0323, p0335, r0337, p1800

p0112 Sampling times presetting p0115 / t_samp for p0115

Variant:	G220	
Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Sampling times	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	5	3

Description: Pre-assignment of the sampling times in p0115.
The clock cycles for the current controller / speed controller / flux controller / setpoint channel / position controller / positioning / technology controller are pre-assigned as follows:
p0112 = 2: 200 / 1000 / 1000 / 1000 / 2000 / 4000 / 4000 µs
p0112 = 3: 250 / 1000 / 1000 / 1000 / 2000 / 4000 / 4000 µs
p0112 = 5: 250 / 250 / 1000 / 500 / 2000 / 2000 / 2000 µs

Value:
0: Sampling times can be changed
2: Fixed values 5 kHz (current controller)
3: Fixed values 4 kHz (standard)
5: Fixed values 4 kHz (speed controller)

Recommendation: When changing the sampling times of the speed controller (see also p0115), after exiting commissioning, it is recommended that the speed controller is optimized again (see also p1900 = 3).

Dependency: For output frequencies above 480 Hz for Dynamic Drive Control and closed-loop speed/torque control, a current controller clock cycle below 250 µs is required. This can be achieved by selecting p0112 = 2.

Note
For p0112 = 0 (sampling time can be changed), the individual sampling times in p0115 can be enabled. The current controller sampling time can then be set to the following values: 200 / 250 / 375 / 400 / 500 µs.

p0112 Sampling times presetting p0115 / t_samp for p0115

Variant:	G220 Clean Power	
Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Sampling times	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	5	3

Description: Pre-assignment of the sampling times in p0115.
The clock cycles for the current controller / speed controller / flux controller / setpoint channel / position controller / positioning / technology controller are pre-assigned as follows:
p0112 = 3: 250 / 1000 / 1000 / 1000 / 2000 / 4000 / 4000 µs
p0112 = 5: 250 / 250 / 1000 / 500 / 2000 / 2000 / 2000 µs

Value:
0: Sampling times can be changed
2: Fixed values 5 kHz (current controller)
3: Fixed values 4 kHz (standard)
5: Fixed values 4 kHz (speed controller)

Recommendation: When changing the sampling times of the speed controller (see also p0115), after exiting commissioning, it is recommended that the speed controller is optimized again (see also p1900 = 3).

Note
For p0112 = 0 (sampling time can be changed), the individual sampling times in p0115 can be enabled. The current controller sampling time can then be set to the following values: 250 / 375 / 400 / 500 µs.

p0115[0...6] Sampling times for internal control loops / t_samp int ctrl

Variant:	G220	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Sampling times	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: µs	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [µs]	16000.00 [µs]	[0] 250.00 [µs] [1] 1000.00 [µs] [2] 1000.00 [µs] [3] 1000.00 [µs] [4] 2000.00 [µs] [5] 4000.00 [µs] [6] 4000.00 [µs]

Description: Sets the sampling times for the control loops.

Recommendation: When changing the sampling times of the current and speed controllers (see also p0115), it is recommended that the controller settings are recalculated after exiting commissioning.

Index:
[0] = Current controller
[1] = Speed controller
[2] = Flux controller
[3] = Setpoint channel
[4] = Position controller
[5] = Positioning
[6] = Technology controller

Dependency: The sampling times can only be separately set if p0112 is 0 (sampling time can be changed). Values that can be set are: 200 µs. 250 µs, 375 µs. 400 µs, 500 µs (below 250 µs: license is required).

If a sampling time is changed, then sampling times of higher-level control loops are adapted. The adaptations are realized up to a limit of 8 ms.

Higher-level controls must be calculated in integral ratios with respect to lower-level controls (e.g. p0115[1] = N * p0115[0]; where N is an integer number).

Additional supplementary conditions:

p0115[1] <= 8 * p0115[0]

p0115[2] <= 2 * p0115[1]

p0115[3] <= 4 * p0115[1]

The sampling times for setpoint channel (p0115[3]), position controller (p0115[4]), positioning (p0115[5]) and technology controller (p0115[6]) must have at least 2x the value of the current controller sampling time (p0115[0]).

See also: p0112

Note

For functions that can be activated (e.g. technology controller), the parameter values are pre-assigned.

p0115[0...6] Sampling times for internal control loops / t_samp int ctrl

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Sampling times	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: µs	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [µs]	16000.00 [µs]	[0] 250.00 [µs] [1] 1000.00 [µs] [2] 1000.00 [µs] [3] 1000.00 [µs] [4] 2000.00 [µs] [5] 4000.00 [µs] [6] 4000.00 [µs]

Description: Sets the sampling times for the control loops.

Recommendation: When changing the sampling times of the current and speed controllers (see also p0115), it is recommended that the controller settings are recalculated after exiting commissioning.

Index: [0] = Current controller
[1] = Speed controller
[2] = Flux controller
[3] = Setpoint channel
[4] = Position controller
[5] = Positioning
[6] = Technology controller

Dependency: The sampling times can only be separately set if p0112 is 0 (sampling time can be changed). Values that can be set are: 250 µs, 500 µs.

If a sampling time is changed, then sampling times of higher-level control loops are adapted. The adaptations are realized up to a limit of 8 ms.

Higher-level controls must be calculated in integral ratios with respect to lower-level controls (e.g. p0115[1] = N * p0115[0]; where N is an integer number).

Additional supplementary conditions:

p0115[1] <= 8 * p0115[0]

p0115[2] <= 2 * p0115[1]

p0115[3] <= 4 * p0115[1]

The sampling times for setpoint channel (p0115[3]), position controller (p0115[4]), positioning (p0115[5]) and technology controller (p0115[6]) must have at least 2x the value of the current controller sampling time (p0115[0]).

See also: p0112

Note

For functions that can be activated (e.g. technology controller), the parameter values are pre-assigned.

p0120 Number of Power unit Data Sets (PDS) / PDS count

Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Data sets	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
1	2	1

Description: Sets the number of Power unit Data Sets (PDS).

The value corresponds to the number of power units connected together for a parallel connection.

Note

This parameter is only assigned with values > 1 for power units connected in parallel.

p0130 Number of Motor Data Sets (MDS) / Number of MDS

Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Data sets	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
1	16	1

Description: Sets the number of Motor Data Sets (MDS).

p0133[0...n].0...15 Motor configuration / Motor config

Data type: Unsigned16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	

Write permission:	Edit device configuration or drive applications		
Can be changed in the operating state:	Commissioning		
Parameter group:	Motor data, Quick commissioning		
Not relevant for motor type:	Synchronous or reluctance motor with starting cage		
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -	
Unit: -	**Unit group:** -	**Unit selection:** -	
Min:	**Max:**	**Factory setting:**	
-	-	0000 0000 0000 0000 bin	

Description: Motor configuration when commissioning the motor.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Motor connection type	Delta	Star
01	Motor 87/104 Hz operation	Yes	No
15	Motor parameter write protection	Canceled	Set

Dependency: For standard induction motors (p0301 > 10000), bit 00 is automatically pre-assigned the connection type of the selected data set. Bit 00 should be appropriately changed if the motor is operated with a different connection type. For third-party motors, setting the connection type is of no significance. It is only used to enable the 87/104 Hz selection.
See also: p0304, p0305, p1082

Note
For bit 00: Not for synchronous motors
When changing the bits, the rated motor voltage p0304 and the rated motor current p0305 are automatically converted to the selected connection type (star/delta).
For motors with rating plate input, selecting the connection type has no impact on the commissioning results. Only the nameplate entries are relevant in this case.
For bit 01: Not for synchronous motors
87 Hz operation is only possible in the delta connection type. When selected, the maximum speed p1082 is automatically pre-assigned for a maximum output frequency of 87 Hz (for p0100 = IEC) or 104 Hz (for p0100 = NEMA).
Bit 01 must not be used for 2KJ3 and 2KJ8 motors.
For bit 15:
Motor parameter write protection can be withdrawn for motors listed in the motor database. This is realized automatically when performing the motor data identification.

p0140 Number of Encoder Data Sets (EDS) / EDS count

Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Data sets	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
1	16	1

Description: Sets the number of Encoder Data Sets (EDS).

Note
When parameterizing the drive with "no encoder" there must be at least one encoder data set (p0140 >= 1).

p0170 Number of Command Data Sets (CDS) / CDS count

Data type: Unsigned8	**Visible in:** Extended display
Read permission:	Read drive data or acknowledge messages

Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Command data sets CDS	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
2	4	2

Description: Sets the number of Command Data Sets (CDS).

Note
Using this data set switchover, a switch can be made between interconnectable command parameters.

p0180 Number of Drive Data Sets (DDS) / DDS count

Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Drive data sets DDS	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
1	16	1

Description: Sets the number of Drive Data Sets (DDS).

p0186[0...n] Motor Data Sets (MDS) number / MDS number

Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Data sets	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	15	0

Description: Using the parameter, each Drive Data Set (= index) is assigned the associated Motor Data Set (MDS).
The parameter value therefore corresponds to the number of the assigned motor data set.

p0187[0...n] Motor encoder encoder data set number / Mot enc EDS number

Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Data sets	

Not relevant for motor type: -

Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	99	99

Description: Assigns a drive data set (= index) the associated encoder data set (EDS) for the motor encoder.
The value corresponds to the number of the assigned encoder data set.
Example:
Motor encoder in drive data set 2 should be assigned encoder data set 0.
--> p0187[2] = 0

Note
A value of 99 means that no encoder has been assigned to this drive data set (not configured).

p0188[0...n] Encoder 2 encoder data set number / Enc 2 EDS number

Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Data sets	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	99	99

Description: Assign a drive data set (= index) the corresponding encoder data set (EDS) for encoder 2.
The value corresponds to the number of the assigned encoder data set.
Example:
Encoder 2 in drive data set 2 should be assigned to encoder data set 1.
--> p0188[2] = 1

Note
A value of 99 means that no encoder has been assigned to this drive data set (not configured).

r0192.0...26 Power unit firmware properties 1 / PU FW properties 1

Data type: Unsigned32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	System identification	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Description: Displays the properties that are supported by the power unit firmware.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Support of optimized pulse patterns	Yes	No
01	Support of asynchronous pulse frequencies for vector/infeed	Yes	No
02	Support of measuring type "Moving average" wobbulation	Yes	No
08	Support of the simulation mode	Yes	No
09	Support of internal armature short-circuit	Yes	No
10	Support of autonomous armature short-circuit	Yes	No
16	Reserved	Yes	No

18	Reserved	Yes	No
19	Support of closed-loop current limiting control	Yes	No
20	Support of component status	Yes	No
22	Support of lower device supply voltage	Yes	No
23	Support of test pulse operation	Yes	No
26	Support of phase mode	Yes	No

Dependency: See also: r0193

NOTICE
The supported firmware properties do not reflect the actual hardware configuration (e.g. bit 22 = 1 does not mean that the hardware also supports a reduced supply voltage).

Note

For bit 09:

The converter supports the internal armature short-circuit. The function is internally required for voltage protection (p1231 = 3).

For bit 10:

The converter supports the autonomous internal voltage protection.

If the "internal voltage protection" function is activated (p1231 = 3) the converter decides autonomously - using the DC link voltage - as to whether the short-circuit is activated.

For bit 23:

The component supports connecting (injecting) additive voltage pulses as well as sensing current actual values averaged over a short time.

r0193.1...31 Power unit firmware properties 2 / PU FW properties 2

Data type: Unsigned32 **Visible in:** Extended display

Read permission: Read drive data or acknowledge messages

Parameter group: System identification

Not relevant for motor type: -

Dyn. index [0...n]: - **Calculated:** -

Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the properties supported by the power unit firmware.

Bit array:

Bit	Signal name	1 signal	0 signal
01	Reserved	Yes	No
05	SW supports tolerant response to overvoltages	Yes	No
08	SW supports reduced undervoltage threshold while precharging	Yes	No
12	SW supports DC link forming	Yes	No
15	Motor holding brake with variable brake voltage	Yes	No
24	Coprocessor zero-sequence system bit 0	Yes	No
25	Coprocessor zero-sequence system bit 1	Yes	No
26	Coprocessor zero-sequence system bit 2	Yes	No
27	Coprocessor zero-sequence system bit 3	Yes	No
28	Coprocessor zero-sequence system bit 4	Yes	No
29	Coprocessor zero-sequence system bit 5	Yes	No
30	Coprocessor zero-sequence system bit 6	Yes	No
31	Coprocessor zero-sequence system bit 7	Yes	No

Dependency: See also: r0192

r0196[0...255].0...15 Topology component status / Top comp stat

Data type: Unsigned32 **Visible in:** Extended display

Read permission: Read drive data or acknowledge messages

Parameter group: Diagnostics general

Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the status of the components.
r0196[0]: Group status of all components
r0196[1]: Status of component with component number 1
...
r0196[255]: Status of component with component number 255

Bit array:

Bit	Signal name	1 signal	0 signal
00	Component status bit 0	High	Low
01	Component status bit 1	High	Low
02	Component status bit 2	High	Low
03	Component status bit 3	High	Low
04	Component state	Active	Inactive/parking
06	Topology problem active	Yes	No
07	Part of the target topology	Yes	No only act topo
08	Alarm present	Yes	No
09	Safety message present	Yes	No
10	Fault present	Yes	No
11	Alarm class bit 0	High	Low
12	Alarm class bit 1	High	Low
13	Maintenance required	Yes	No
14	Maintenance urgently required	Yes	No
15	Fault gone/can be acknowledged	Yes	No

Note
For bit 03 ... 00:
Bit 3, 2, 1, 0 = 0, 0, 0, 0 --> component not available.
Bit 3, 2, 1, 0 = 0, 0, 0, 1 --> power up, non-cyclic DRIVE-CLiQ communication (LED = orange).
Bit 3, 2, 1, 0 = 0, 0, 1, 0 --> operating mode, cyclic DRIVE-CLiQ communication (LED = green).
Bit 3, 2, 1, 0 = 0, 0, 1, 1 --> alarm (LED = green).
Bit 3, 2, 1, 0 = 0, 1, 0, 0 --> fault (LED = red).
Bit 3, 2, 1, 0 = 0, 1, 0, 1 --> detection via LED and operating mode (LED = green/orange).
Bit 3, 2, 1, 0 = 0, 1, 1, 0 --> detection via LED and alarm (LED = green/orange).
Bit 3, 2, 1, 0 = 0, 1, 1, 1 --> detection via LED and fault (LED = red/orange).
Bit 3, 2, 1, 0 = 1, 0, 0, 0 --> firmware being downloaded (LED = green/red with 0.5 Hz).
Bit 3, 2, 1, 0 = 1, 0, 0, 1 --> firmware download completed, wait for POWER ON (LED = green/red with 2.0 Hz).
For bits 12 ... 11:
These status bits are used for the classification of internal alarm classes and are intended for diagnostic purposes only on certain automation systems with integrated SINAMICS functionality.

r0200[0...n] Power unit code number actual / PU code no act

Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: System identification, Power unit
Not relevant for motor type: -
Dyn. index [0...n]: PDS n defined by: p0120 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the unique code number of the power unit.

Note
r0200 = 0: No power unit data found

p0201[0...n] Power unit code number / PU code no

Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Power unit	
Not relevant for motor type:	-	
Dyn. index [0...n]:	PDS n defined by: p0120	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	65535	0

Description: Sets the code number of the power unit. This value is automatically entered when the drive is commissioned for the first time.

r0203[0...n] Actual power unit type / PU actual type

Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	System identification, Power unit	
Not relevant for motor type:	-	
Dyn. index [0...n]:	PDS n defined by: p0120	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Description: Displays the type of power unit found.

Value:

0:	No power unit
100:	SINAMICS S
114:	PM240 (SINAMICS G2xx)

Note
For parallel connections, the parameter index is assigned to a power unit.

r0204[0...n].0...21 Power unit hardware properties / PU HW properties

Data type: Unsigned32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	System identification, Power unit	
Not relevant for motor type:	-	
Dyn. index [0...n]:	PDS n defined by: p0120	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Description: Displays the properties supported by the power unit hardware.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Device type	DC/AC device	AC/AC device
01	RFI filter available	Yes	No
08	Internal Braking Module	Yes	No
12	Safe Brake Control (SBC) supported	No	Yes
13	Safety Integrated supported	Yes	No
19	Heat sink fan	Yes	No
20	Auxiliary fan 1	Yes	No
21	Auxiliary fan 2	Yes	No

r0206[0...3] Rated power unit power / PU P_rated

Data type: FloatingPoint32 **Visible in:** Extended display

Read permission: Read drive data or acknowledge messages
Parameter group: System identification, Power unit
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: kW **Unit group:** 14_6 **Unit selection:** p0100

Description: Displays the rated power of the power unit (rating plate).

Index: [0] = Rated value
[1] = Rated value in the second voltage range
[2] = Rated value dependent on the motor type
[3] = Rated value dependent on the motor type, second voltage range

Dependency: IEC drives (p0100 = 0): Units kW
NEMA drives (p0100 = 1): Units hp
See also: p0100, r0214

r0207[0...3] Rated power unit current / PU PI_rated

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: System identification, Power unit
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: Arms **Unit group:** - **Unit selection:** -

Description: Displays the rated current of the power unit (rating plate).

Index: [0] = Rated value
[1] = Rated value in the second voltage range
[2] = Rated value dependent on the motor type
[3] = Rated value dependent on the motor type, second voltage range

Dependency: See also: r0214

r0208 Rated power unit line voltage / PU U_rated

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: System identification, Power unit
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: Vrms **Unit group:** - **Unit selection:** -

Description: Displays the rated line voltage of the power unit.
r0208 = 400: 380 - 480 V +/-10 %
r0208 = 500: 500 - 600 V +/-10 %
r0208 = 690: 660 - 690 V +/-10 %

r0209[0...3] Power unit maximum current / PU I_max

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: System identification, Power unit
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: Arms **Unit group:** - **Unit selection:** -

Description: Displays the maximum output current of the power unit.

Index: [0] = Catalog
[1] = Rated value in the second voltage range
[2] = Rated value dependent on the motor type
[3] = Rated value dependent on the motor type, second voltage range

Dependency: See also: r0214

p0210 Device supply voltage / U_supply

Variant:	G220	
Data type: Unsigned16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Power unit, Quick commissioning, Line data/operating mode	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: V	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
70 [V]	690 [V]	400 [V]

Description: Sets the device supply voltage (rms value of the phase-to-phase line voltage).

Dependency: For p1254, p1294 (automatic detection of the Vdc switch-on levels) = 0, the intervention thresholds of the Vdc_max controller (r1242, r1282) are directly determined from p0210.

NOTICE

If, in the switched-off state (pulse inhibit), the supply voltage is higher than the entered value, the Vdc controller may be automatically deactivated in some cases to prevent the motor from accelerating the next time the system is switched on. In this case, an appropriate alarm A07401 is output.

Note

Setting ranges for p0210 as a function of the rated power unit voltage:
U_rated = 230 V:
- p0210 = 200 ... 240 V
U_rated = 400 V:
- p0210 = 380 ... 500 V
U_rated = 690 V:
- p0210 = 525 ... 690 V

p0210 Device supply voltage / U_supply

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Power unit, Quick commissioning, Line data	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Vrms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
70 [Vrms]	1000 [Vrms]	400 [Vrms]

Description: Sets the device supply voltage (3-ph. AC).
The value corresponds to the rms value of the phase-to-phase rated line voltage.

Dependency: The following applies for preassigning the setpoint of the DC link voltage: p3510 = 1.5 x p0210.
For p1254, p1294 (automatic detection of the Vdc switch-on levels) = 0, the intervention thresholds of the Vdc_max controller (r1242, r1282) are directly determined from p0210.
See also: r3400

⚠ WARNING
All connected motors must be suitable for pulsed operation at the selected device supply voltage (p0210) and the associated DC link voltage (p3510). Otherwise the motors could be damaged.

NOTICE
If the device supply voltage is more than 10% higher than the value in p0210, then in some instances the Vdc_max controller is automatically deactivated to prevent the motor from accelerating the next time the system is switched on. In this case, an appropriate alarm A07401 is output.

Note
The voltage range for the supply voltage depends on the type and the voltage class of the power unit.
The following applies for the normal range of the supply voltage:
400/500 V devices: 380 V <= p0210 <= 500 V
500/690 V devices: 500 V <= p0210 <= 690 V

p0211 Rated line frequency / Rated line freq

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Line data, Line supply PLL	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Hz	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
10 [Hz]	100 [Hz]	50 [Hz]

Description: Sets the rated line frequency for the infeed.

Dependency: See also: p3409

NOTICE
For p3409 = 1, the following applies:
After operation has been enabled, the rated line frequency (p0211) is automatically set to a value of 50 Hz or 60 Hz corresponding to the currently measured frequency. This means that the parameter value of p0211 is, under certain circumstances, changed.
For p3409 = 0, the following applies:
The system does not change parameter p0211.

p0212.8 Power unit configuration / PU config

Variant:	G220	
Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Power unit	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -

Unit: - **Unit group:** - **Unit selection:** -
Min: **Max:** **Factory setting:**
- - 0000 0001 0000 0000 bin

Description: Sets the power unit configuration.

Bit array:

Bit	Signal name	1 signal	0 signal
08	Reduction of the activation threshold of the braking chopper	Yes	No

Dependency: See also: p0210

Note
For bit 08 = 1: The activation threshold of the braking chopper (referred to the DC link voltage) is reduced as a function of p0210. The shutdown threshold is also reduced as a result of a DC link overvoltage (r0297).

p0212.8...9 Power unit configuration / PU config

Variant: G220 Clean Power
Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Ready for operation
Parameter group: Power unit
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Min: **Max:** **Factory setting:**
- - 0000 0011 0000 0000 bin

Description: Sets the power unit configuration.

Bit array:

Bit	Signal name	1 signal	0 signal
08	Reduction of the activation threshold of the braking chopper	Yes	No
09	Infeed reduces output current	Yes	No

Dependency: See also: p0210

Note
For bit 08 = 1:
The activation threshold of the braking chopper (referred to the DC link voltage) is reduced as a function of p0210. The shutdown threshold is also reduced as a result of a DC link overvoltage (r0297).
For bit 09 = 1:
For an overload condition, the infeed can reduce the maximum power unit output current. The reduced current can be read out of r0289. The reduction is not active for p0290 = 1, 3, 13.

r0214 Power unit active rated values / Power unit Idx

Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: System identification, Control/status words, Power unit
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** -

Description: Displays the active power unit rated values. The parameter contains the index of parameters r0206, r0207, r0209.

p0215 Braking resistor selection / Brk resistor sel

Variant: G220
Data type: Integer16 **Visible in:** Standard display

Read permission:	Read drive data or acknowledge messages		
Write permission:	Edit device configuration or drive applications		
Can be changed in the operating state:	Commissioning		
Parameter group:	Dynamic braking, Quick commissioning		
Not relevant for motor type:	-		
Dyn. index [0...n]:	-	**Calculated:** -	
Unit: -	**Unit group:** -	**Unit selection:** -	
Min:	**Max:**	**Factory setting:**	
0	3	0	

Description: Sets the external braking resistor.

Value:
0: No braking resistor
1: External braking resistor (without software monitoring)
2: Siemens braking resistor (with software monitoring)
3: Third-party braking resistor (with software monitoring)

Dependency: p0215 = 1 cannot be set if the chopper power of the converter must be monitored.
See also: p0216, p0218, p0219

Note
p0215 = 0:
An externally connected braking resistor is not controlled.
p0215 = 1:
An externally connected braking resistor is controlled (without any additional thermal software monitoring).
p0215 >= 2:
An externally connected braking resistor is controlled and also thermally monitored per software.

p0215 Braking resistor selection / Brk resistor sel

Variant:	G220 Clean Power		
Data type: Integer16	**Visible in:** Standard display		
Read permission:	Read drive data or acknowledge messages		
Write permission:	Edit device configuration or drive applications		
Can be changed in the operating state:	Commissioning		
Parameter group:	Dynamic braking, Quick commissioning		
Not relevant for motor type:	-		
Dyn. index [0...n]:	-	**Calculated:** -	
Unit: -	**Unit group:** -	**Unit selection:** -	
Min:	**Max:**	**Factory setting:**	
0	3	0	

Description: Sets the external braking resistor.

Value:
0: No braking resistor
2: Siemens braking resistor (with software monitoring)
3: Third-party braking resistor (with software monitoring)

Dependency: See also: p0216, p0218, p0219

Note
p0215 = 0:
An externally connected braking resistor is not controlled.
p0215 = 2:
An externally connected braking resistor is controlled and also thermally monitored per software.
p0215 = 3:
An externally connected braking resistor is controlled and also thermally monitored per software.
Parameters p0216, p0218 and p0219[0] and p0219[1] must be set in order that the monitoring functions.
Chopper operation is not possible if the values are not set.

p0216 Braking resistance value / Resistance value

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Dynamic braking, Quick commissioning	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: ohm	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [ohm]	1000.0 [ohm]	0.0 [ohm]

Description: Sets the resistance value of a connected external braking resistor.
Dependency: The parameter is only relevant for p0215 = 2, 3.

p0218 Braking resistor duration at maximum power / Brk res dT Pmax

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Dynamic braking, Quick commissioning	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [s]	2000.00 [s]	0.00 [s]

Description: Sets the maximum duration when operating the braking resistor at its maximum power level.
Dependency: The parameter is only relevant for p0215 = 2, 3.

p0219[0...1] Braking resistor braking power / R_brake P_brake

Variant:	G220	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Dynamic braking, Quick commissioning	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -

Unit: kW	**Unit group:** 14_6	**Unit selection:** p0100
Min:	**Max:**	**Factory setting:**
0.00 [kW]	20000.00 [kW]	0.00 [kW]

Description: Sets the braking power of the connected braking resistor.

Index: [0] = Maximum power
[1] = Rated power

Dependency: Outside of commissioning, the braking power can only be changed by selecting p0215 = 1.
See also: p1127, p1240, p1280, p1531

Note
When setting a value for the maximum braking power, the following calculations are made:
- p1240, p1280: Vdc_max control is deactivated.
- p1531 = - p0219[0]: the power limit when generating is set (limited to - p1530).
- The minimum ramp-down time is calculated (p1127) as a function of p0341, p0342 and p1082 (not for vector control with speed encoder).

If the parameter is reset again to zero, then the Vdc_max controller is reactivated and the power limit as well as the ramp-down time are recalculated.

p0219[0...1] Braking resistor braking power / R_brake P_brake

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Dynamic braking, Quick commissioning	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: kW	**Unit group:** 14_6	**Unit selection:** p0100
Min:	**Max:**	**Factory setting:**
0.00 [kW]	20000.00 [kW]	0.00 [kW]

Description: Sets the braking power of the connected braking resistor.

Index: [0] = Maximum power
[1] = Rated power

Dependency: See also: p1127, p1240, p1280, p1531

Note
When setting a value for the maximum braking power, the following calculations are made:
- p1240, p1280: Vdc_max control is deactivated.
- p1531 = - p0219[0]: the power limit when generating is set (limited to - p1530).
- The minimum ramp-down time is calculated (p1127) as a function of p0341, p0342 and p1082 (not for vector control with speed encoder).

If the parameter is reset again to zero, then the Vdc_max controller is reactivated and the power limit as well as the ramp-down time are recalculated.

r0220[0...1] Infeed line filter type / INF line filt type

Variant:	G220 Clean Power	
Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Line filter	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Description: Displays the line filter type.

Value: -1: AIM internal
0: Not configured

Recommendation: The parameter is automatically preset for the recommended combination of ALM and AIM, which ensures safe and reliable operation of the drive system in compliance with the applicable standards.

Index: [0] = Line filter 1
[1] = Reserved

> ⚠ **WARNING**
> A deviation from the recommended filter installation influences the converter system harmonics with respect to the line supply. These are relevant from a standards perspective, and can damage the ALM, line filter, additional system components or other loads connected to the line supply.
> In individual cases, after assessing the overall system and the requirements, adaptation is possible. If necessary, contact Siemens support for clarification.

r0221[0...3] Infeed filter capacitance / INF C_filter

Variant: G220 Clean Power
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Line filter
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: µF **Unit group:** - **Unit selection:** -

Description: Displays the filter capacitance of the line filter (connected in a delta configuration).

Index: [0] = Capacitance line filter 1
[1] = Reserved
[2] = Capacitance EMC filter 1
[3] = Capacitance EMC filter 2

r0223 Infeed inductance between filter and power unit / INF L filter/PU

Variant: G220 Clean Power
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Current controller
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: mH **Unit group:** - **Unit selection:** -

Description: Displays the inductance of the line reactor.

p0225 Infeed inductance between line supply and filter / INF L line/filter

Variant: G220 Clean Power
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Ready for operation
Parameter group: Line data
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: mH **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0.000 [mH]	1000.000 [mH]	0.000 [mH]

Description: Sets the inductance between line supply and filter.

Recommendation: It is recommended that the default value is kept if the effective line inductance at the converter connecting point is not known.

Typical line impedance values are assumed when automatically setting a rugged controller response (r3421, r3424).

Note

For instance, this value includes the overall effective inductance - comprising line transformer, line reactor and additional line components connected in parallel.

r0228 Infeed filter inductance line side / INF L_filt L side

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Current controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mH	**Unit group:** -	**Unit selection:** -

Description: Displays the inductance of a line reactor in the filter.

p0230 Drive filter type motor side / Drv filt type mot

Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Power unit, Quick commissioning	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	4	0

Description: Sets the type of the filter at the motor side.

Value:

0: No filter
1: Motor reactor
2: dv/dt filter
4: Sine-wave filter third-party

Dependency: The following parameters are influenced using p0230:
p0230 = 1:
--> p0233 (power unit, motor reactor) = filter inductance
p0230 = 2, 4: Test signal technique (p1750 bit 5) not possible
p0230 = 4: Not for reluctance motors (p0300 = 6xxx)
--> p0290 (power unit overload response) = inhibit pulse frequency reduction
--> p1802 (modulator modes) = space vector modulation without overcontrol
The user must set the following parameters according to the data sheet of the sine-wave filter and also the user must check whether they are permitted.
--> p0233 (power unit, motor reactor) = filter inductance
--> p0234 (power unit sine-wave filter capacitance) = filter capacitance
--> p1082 (maximum speed) = Fmax filter / pole pair number
--> p1800 (pulse frequency) >= nominal pulse frequency of the filter
The test signal technique (p1750 bit 5) for reluctance and synchronous motors cannot be used.
See also: p0233, p0234, p0290, p1082, p1800, p1802

Note
The parameter cannot be changed if the power unit has an internal sine-wave filter.
For sine-wave filters, the test pulse evaluation to detect short-circuits is always deactivated.
If a filter type cannot be selected, then this filter type is not permitted for the power unit.
p0230 = 1:
Power units with motor reactor are limited to output frequencies of 150 Hz.

p0233 Power unit motor reactor / PU mot reactor

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Power unit, Quick commissioning	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mH	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000 [mH]	1000.000 [mH]	0.000 [mH]

Description: Sets the inductance of a filter connected at the power unit output.

Dependency: This parameter is automatically preset when you select a filter via p0230 if a SIEMENS filter is defined for the power unit.
See also: p0230

Note
For the automatic calculation, the value is not overwritten when commissioning is exited.

p0234 Power unit sine-wave filter capacitance / PU sine filter C

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Power unit, Quick commissioning	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: µF	**Unit group:** -	**Unit selection:** -

Min:	Max:	Factory setting:
0.000 [µF]	2000.000 [µF]	0.000 [µF]

Description: Sets the capacitance of a sine-wave filter connected at the power unit output.

Dependency: This parameter is automatically preset when you select a filter via p0230 if a SIEMENS filter is defined for the power unit.
See also: p0230

Note
The parameter value includes the sum of all of the capacitances of a phase connected in series (phase - ground).
For the automatic calculation, the value is not overwritten when commissioning is exited.

p0235 Motor reactor in series number / L_mot in SeriesQty

Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Power unit, Quick commissioning	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
1	3	1

Description: Sets the number of reactors connected in series at the power unit output.

Dependency: See also: p0230

NOTICE
The reactor inductances should be the same.
If the number of motor reactors connected in series does not correspond to this parameter value, then this can result in an unfavorable control behavior.

p0240 Infeed total DC link capacitance / INF C total

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Power unit	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mF	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.20 [mF]	1000.00 [mF]	1.00 [mF]

Description: Sets the total DC link capacitance.

Dependency: See also: F07950

Note
The setting value for the total DC link capacitance should be adapted if components with internal DC link capacitors are connected to the DC link.
The controller setting (r3422) is updated according to p0240.

p0247.0...9 Voltage measurement configuring / U_mes config

Data type: Unsigned32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Flying restart, Power unit	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-	-	0000 0001 0100 0001 bin

Description: Sets the configuration for the output voltage measurement of the power unit.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Voltage measurement active	Yes	No
05	Reserved	Yes	No
06	Voltage calibration active	Yes	No
07	Voltage calibration always active	Yes	No
08	Voltage plausibility check active	Yes	No
09	Voltage monitoring always active	Yes	No

Note
Bit 05: A change is transferred in p1270 bit 05 and it is automatically deleted.
Bit 06: The voltage is calibrated once when the pulses are enabled.
Bit 07: The voltage is calibrated each time the pulses are enabled.
Bit 08: The voltage plausibility is performed once when the pulses are enabled.
Bit 09: The voltage plausibility is performed each time the pulses are enabled.

r0257[0...29] Power unit temperatures / PU temperatures

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Mode signals / displays, Power unit	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °C	**Unit group:** 21_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2006

Description: Display and numerical signal source for temperatures in the power unit.

Index: [0] = Power unit 1
[1] = Power unit 2
[2] = Power unit 3
[3] = Power unit 4
[4] = Power unit 5
[5] = Power unit 6
[6] = Depletion layer 1
[7] = Depletion layer 2
[8] = Depletion layer 3
[9] = Depletion layer 4
[10] = Depletion layer 5
[11] = Depletion layer 6
[12] = Depletion layer 7
[13] = Depletion layer 8
[14] = Depletion layer 9
[15] = Depletion layer 10
[16] = Depletion layer 11
[17] = Depletion layer 12
[18] = Depletion layer 13
[19] = Depletion layer 14
[20] = Depletion layer 15
[21] = Depletion layer 16
[22] = Depletion layer 17
[23] = Depletion layer 18
[24] = Depletion layer 19
[25] = Depletion layer 20
[26] = Depletion layer 21
[27] = Depletion layer 22
[28] = Depletion layer 23
[29] = Depletion layer 24

NOTICE
Only for internal Siemens troubleshooting.

Note
The value of -200 indicates that there is no measuring signal.
In the case of a fault, the particular shutdown threshold depends on the power unit, and cannot be read out.

r0277[0...2] Power unit fan wear counter / PU fan wear_count

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Power unit	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -

Description: Displays the wear counter of the fan in the power unit.
After a fan has been replaced, using an appropriate button, the value can be reset in the commissioning tool to 0.

Index: [0] = Heat sink fan
[1] = Auxiliary fan 1
[2] = Auxiliary fan 2

Dependency: See also: A30042

p0280 DC link voltage maximum steady-state / Vdc_max stat

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	DC link voltage controller, Messages / Monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: V	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
50 [V]	1500 [V]	640 [V]

Description: Sets the maximum steady-state DC link voltage. When the DC link voltage setpoint reaches the threshold, alarm A06800 is output.

The setpoint for the DC link voltage in p3510 is limited to the value in p0280.

The voltage can be increased (boosted) using the modulation depth reserve controller. The modulation depth reserve (p3480) can be too low if p0210 (device supply voltage) was incorrectly parameterized or a line overvoltage condition exists.

Dependency: See also: p0210

See also: A06800

⚠ WARNING

Setting value p0280 must be less than the activation level of the Vdc_max controller (r1242, r1282) minus a safety margin of 3 percent so that the Vdc_max controller does not become active for a line overvoltage that would then cause the motor to accelerate.
To allow a higher setting value p0280, if necessary, the activation level of the Vdc_max controller can be increased using p1241 and p1244 taking into careful consideration the warning notes.
Before increasing p0280, it should be checked whether the motors connected to the DC link are specified for the higher motor voltages.
The warning notes associated with p0210 should be carefully observed.

⚠ CAUTION

All motors connected to the DC link must be rated for the maximum DC link voltage set in this parameter.

Note

A brief dynamic increase of the DC link voltage does not result in an alarm.
Presetting values:
380 ... 500 V AC/AC devices: 1.6 * p0210
Maximum values:
380 ... 500 V AC/AC devices: 792 V

p0281 Line overvoltage alarm threshold / U_l_over A thr

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Line data, Messages / Monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -

Min:	Max:	Factory setting:
100 [%]	200 [%]	110 [%]

Description: Sets the alarm threshold for a line overvoltage condition.
The setting is made as a percentage of the device supply voltage (p0210).

Dependency: See also: p0210

p0282 Line undervoltage alarm threshold / U_l_under A thr

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Line data, Messages / Monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
10 [%]	100 [%]	80 [%]

Description: Sets the alarm threshold for a line undervoltage condition.
The setting is made as a percentage of the device supply voltage (p0210).

Dependency: See also: p0210, p0283
See also: A06105

p0283 Line undervoltage shutdown (trip) threshold / U_l_under tr_thr

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Line data, Messages / Monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
10 [%]	100 [%]	75 [%]

Description: Sets the shutdown threshold for the line undervoltage.
The setting is made as a percentage of the device supply voltage (p0210).

Dependency: See also: p0210, p0282
See also: F06100

p0284 Line frequency exceeded alarm threshold / f_l_exc A thr

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Line data, Messages / Monitoring	

Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
100.0 [%]	300.0 [%]	110.0 [%]

Description: Sets the alarm threshold for an excessively high line frequency.

Dependency: Set as a percentage of the rated line frequency.
See also: p0211

p0285 Line frequency undershot alarm threshold / f_l_under A thr

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Line data, Messages / Monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [%]	100.0 [%]	90.0 [%]

Description: Sets the alarm threshold for an excessively low line frequency.

Dependency: Set as a percentage of the rated line frequency.
See also: p0211

p0287[0...1] Ground fault monitoring shutdown threshold / Gnd flt threshold

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Power unit, Messages / Monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [%]	100.0 [%]	[0] 6.0 [%] [1] 16.0 [%]

Description: Sets the shutdown thresholds for the ground fault monitoring.
The setting is made as a percentage of the maximum current of the power unit (r0209).

Index: [0] = During precharging
[1] = Regular

Dependency: See also: F30021

Note
The parameter only applies to booksize and chassis power units.
Sets the thresholds:
- The prerequisite is at least firmware version 2.2 of the power unit.
Deactivate ground fault monitoring:
- Sequence: --> p0287[1] = 0 --> p0287[0] = 0
- Irrespective of the firmware version of the power unit.

r0289 Maximum power unit output current / PU I_outp max

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	U/f control, Torque limiting, Power unit	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Arms	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** p2002

Description: Display and numerical signal source for the actual maximum output current of the power unit.
Derating factors must be taken into account for this value.

p0290 Power unit overload response / PU overl response

Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Power unit	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	13	2

Description: Sets the response to a thermal overload condition of the power unit.
The following quantities can result in a response to thermal overload:
- Heat sink temperature (r0037[0]).
- Chip temperature (r0037[1]).
- Power unit overload I2t (r0036).
Possible measures to avoid thermal overload:
- Reduce the output current limit r0289 and r0067 (for closed-loop speed or torque control) or the output frequency (for U/f control indirectly via the output current limit and the intervention of the current limiting controller).
- Reduction of the pulse frequency.
A reduction, if parameterized, is always realized after an appropriate alarm is output.

Value:
0: Reduce output current
1: No reduction shutdown when overload threshold is reached
2: Reduce the pulse frequency and output current
3: Reduce the pulse frequency
12: Automatic pulse frequency and output current reduction
13: Automatic pulse frequency reduction

Dependency: The overload response is preset depending on the power unit type.

If a sine-wave filter is parameterized as output filter (p0230 = 3, 4), then only responses can be selected without reducing the pulse frequency (p0290 = 0, 1).

For a thermal power unit overload, an appropriate alarm or fault is output and r2135.15 or r2135.13 set.

See also: r0036, r0037, p0230, r2135

NOTICE
If the thermal overload of the power unit is not sufficiently reduced by the actions taken, the drive is always shut down. This means that the power unit is always protected irrespective of the setting of this parameter.

Note

Under overload conditions, the current and torque limit are reduced, and therefore the motor is braked and forbidden speed ranges (e.g. minimum speed p1080 and suppression [skip] speeds p1091 ... p1094) can be passed through.

When the motor data identification routine is selected, parameter p0290 cannot be changed.

For p0290 = 0, 2, 12:

This is setting is only practical if the load decreases with decreasing speed (e.g. for applications with variable torque such as for pumps and fans).

For p0290 = 2, 3, 12, 13:

The I2t overload detection of the power unit does not influence the response "Reduce pulse frequency".

For p0290 = 12, 13:

The possible load duty cycles, calculated based on the previous model (p0290 = 0, 1, 2, 3) for booksize power units cannot be transferred in every case. This is the reason that we recommend that you contact our application support department if you are uncertain about dimensioning the device.

For short-circuit/ground fault detection, when the test pulse evaluation is active via p1901 "Test pulse evaluation configuration", the pulse frequency at the instant of switch on is briefly reduced.

p0292[0...1] Power unit temperature alarm threshold / PU T_alarm thr

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Power unit	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °C	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [°C]	25 [°C]	[0] 5 [°C] [1] 5 [°C]

Description: Sets the alarm threshold for power unit overtemperatures. The value is set as a difference to the tripping (shutdown) temperature.

Drive:

If this threshold is exceeded, an overload alarm is generated and the system responds as parameterized in p0290.

Infeed:

When the threshold value is exceeded, only an overload alarm is output.

Index: [0] = Overtemperature heat sink

[1] = Temperature rise power semiconductor (chip)

Dependency: See also: r0037, p0290

p0295 Fan run-on time / Fan run-on time

Data type: FloatingPoint32	**Visible in:** Extended display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications

Can be changed in the operating state:	Operation	
Parameter group:	Power unit	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [s]	600 [s]	0 [s]

Description: Sets the fan run-on time after the pulses for the power unit have been canceled.

Note
- Under certain circumstances, the fan can continue to run for longer than was set (e.g. as a result of the excessively high heat sink temperature).
- For values less than 1 s, a 1 s run on time for the fan is active.

r0296 DC link voltage undervoltage threshold / Vdc U_under_thr

Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Power unit	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: V	**Unit group:** -	**Unit selection:** -

Description: Threshold to detect a DC link undervoltage.
If the DC link voltage falls below this threshold, the drive unit is tripped due to a DC link undervoltage condition.

Dependency: See also: F30003

Note
The actual threshold value depends on the device type and the selected device supply voltage (p0210).

r0297 DC link voltage overvoltage threshold / Vdc U_over_thr

Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Power unit	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: V	**Unit group:** -	**Unit selection:** -

Description: Threshold to detect a DC link overvoltage.
If the DC link voltage exceeds the threshold specified here, the drive device is tripped due to DC link overvoltage.

Dependency: See also: F30002

p0300[0...n] Motor type selection / Mot type sel

Data type: Integer16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Motor data, Quick commissioning	
Not relevant for motor type:	-	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Min:	Max:	Factory setting:
0	10001	0

Description: Selects the motor type or starts to read in the motor parameters for a motor with DRIVE-CLiQ (p0300 = 10000 or 10001, if there is a second data set).

For p0300 < 10000 the following applies:

The first digit of the parameter value always defines the general motor type and corresponds to the third-party motor belonging to a motor list:

1 = induction motor, also: 1LE1/5/6 motors without code number

2 = synchronous motor

6 = reluctance motor

8 = synchronous or reluctance motor with starting cage (e.g. 1FUx)

xxx = motor with code number (for 5-digit code numbers)

xxxx = motor with code number (for 8-digit code numbers)

The type information must be entered to filter motor-specific parameters and to optimize the operating characteristics and behavior. For example, for synchronous motors, power factor (p0308) is neither used nor displayed.

The following applies for values < 100:

Motor data must be manually entered.

The following applies for values >= 100:

Motor data are automatically loaded from an internal list.

Value:

0:	No motor
1:	Induction motor
2:	Synchronous motor
6:	Reluctance motor
8:	Synchronous or reluctance motor with starting cage
100:	1LE1 induction motor
101:	1PC1 induction motor
103:	1PH3 induction motor
105:	1LE5 induction motor
108:	1PH8 induction motor
133:	2KJ3 induction motor
200:	1PH8 synchronous motor
231:	1FG1 synchronous geared motor
237:	1FK7 synchronous motor
264:	1FW4 synchronous motor
283:	1FW3 synchronous motor
600:	1FP1 synchronous reluctance motor
603:	1FP3 synchronous reluctance motor OEM
608:	1PH8 synchronous reluctance motor
632:	2KJ3 synchronous reluctance motor
1000:	1LE1 induction motor
1001:	1PC1 induction motor
1005:	1LE5 induction motor
1020:	1PH3 induction motor
1022:	1PH8 induction motor
1040:	2KJ3 induction motor
2020:	1PH8 synchronous motor
2023:	1FG1 synchronous geared motor
2024:	1FK7 synchronous motor
2040:	1FW3 synchronous motor
2050:	1FW4 synchronous motor

2100: 1FZ1 synchronous motor
2101: 1FZ3 synchronous motor
2102: 1FZ4 synchronous motor
2103: 1FZ5 synchronous motor
2104: 1FZ8 synchronous motor
6000: 1FP1 synchronous reluctance motor
6001: 1FP3 synchronous reluctance motor OEM
6002: 1PH8 synchronous reluctance motor
6010: 2KJ3 synchronous reluctance motor
10000: Motor with DRIVE-CLiQ
10001: Motor with DRIVE-CLiQ 2nd data set

Dependency: For p0504 = 1 (Standard Drive Control), synchronous motor types cannot be selected.
Synchronous or reluctance motors with starting cage can only be operated with U/f control (see p1300, p0504 = 0).

NOTICE

If a catalog motor is selected (p0300 >= 100) and an associated motor code number (p0301), then the parameters that are associated with this list cannot be changed (write protection). The write protection is canceled if the motor type p0300 is set to a non-Siemens motor that matches p0301 (e.g. p0300 = 1 for p0301 = 1xxxx) - or configuration bit 15 in p0133 is set. Write protection is automatically canceled (p0133 bit 15 = 1) when the results of motor data identification are copied to the motor parameters.
The motor type of a catalog motor corresponds to the upper four digits of an 8-digit motor code number.
For 5-digit motor code numbers, the following still applies:
The motor type of a catalog motor corresponds to the upper three digits of the code number or the following assignment (examples):
Type/code number ranges
100 / 100xx, 110xx, ..., 190xx
108 / 108xx, 118xx, ..., 158xx
600 / 600xx, 610xx, 620xx

Note

Motor without DRIVE-CLiQ: After the converter has run-up for the first time or for the factory settings, the motor type is automatically preassigned as induction motor (p0300 = 1).
With p0300 = 10000, for a motor with DRIVE-CLiQ, the motor parameters are automatically downloaded, with p0300 = 10001, the motor parameters of a second data set (if available). Motors with DRIVE-CLiQ, whose type is not entered in p0300, also cannot be operated.
If a motor type has not been selected (p0300 = 0), then the drive commissioning routine cannot be exited.
A motor type with a value above p0300 >= 100 describes motors for which a motor parameter list exists.
Motor types with a value below p0300 < 100 correspond to the selection of a third-party motor. When appropriately selected, this means that the motor parameters are pre-assigned the settings for a third-party motor.
This also applies for parameters for a motor with DRIVE-CLiQ. In this case p0300 can only be set to p0300 = 10000 or 10001 (read motor parameters) or to the corresponding non-Siemens motor (first digit of the motor code number) in order to be able to cancel the write protection.

p0301[0...n] Motor code number selection / Mot code no sel

Data type: Unsigned32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Motor data, Quick commissioning	
Not relevant for motor type:	-	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	99999999	0

Description: The parameter is used to select a motor from a motor parameter list.
When changing the code number (with the exception to 0), all of the motor parameters are pre-assigned from the internally available parameter lists.

1PH8 induction motors must be commissioned using the motor ID.
The motor ID can be determined using the following links:
Internal Siemens: https://pridanet.siemens.com/PridaWeb/SIS/ConverterData.aspx
Industry Online Support (Internet): https://support.industry.siemens.com/cs/ww/en/view/109808686

Dependency: Only code numbers (5-digit or 8-digit) can be selected for motor types that correspond to the motor type selected in p0300.
See also: p0300

Note
The motor code number can only be changed if the matching catalog motor was first selected in p0300.
If a change is made to a non-catalog motor, then the motor code number should also be reset (p0301 = 0).
For a motor with DRIVE-CLiQ, p0301 cannot be changed. In this case, p0301 is automatically written to the code number of the motor parameter read in (r0302) if p0300 is set to 10000.
When selecting a catalog motor (p0300 >= 100), drive commissioning can only be exited if a code number is selected.
1LE1, 1LE5 and 1LE6 motors are available with and without code numbers. Motors without code numbers should be commissioned with p0300 = 1 (induction motor) and parameterization of the rating plate.

r0302[0...n] Motor code number of motor with DRIVE-CLiQ / Mot code mot w/ DQ

Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Motor data, Quick commissioning
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: MDS n defined by: p0130 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the motor code number from the saved motor data of a motor with DRIVE-CLiQ.

Note
Drive commissioning can only be exited if the code number that was downloaded (r0302) matches the stored code number (p0301). If the numbers differ, then the motor data set should be re-loaded using p0300 = 10000.
The motor data are always expected from the first encoder that is assigned to the drive data sets (refer to p0187 = encoder 1) data set number.
The value is not updated cyclically but only on specific events (e.g. update DRIVE-CLiQ device).
r0302 = 0: No motor with DRIVE-CLiQ found

r0303[0...n].0...7 Motor with DRIVE-CLiQ status word / Motor w/ DQ ZSW

Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Motor data
Not relevant for motor type: -
Dyn. index [0...n]: MDS n defined by: p0130 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the status word of the automatic motor parameter sensing of a motor with DRIVE-CLiQ.
Motor parameter sensing is performed for the following events if the SMI is connected to the converter and the encoder is activated:
- Restart.
- Downloading projects.
- Where p0300 = 10000, 10001.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Motor data set selected	MDS1	MDS0

01	Motor connection type	Delta	Star
02	Windings can be changed	Yes	No
03	Windings can be changed number	2	0
07	Load gearbox torque protection	Off	On

Dependency: See also: p0300

Note
SMI: SINAMICS Sensor Module Integrated

p0304[0...n] Rated motor voltage / Mot U_rated

Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Commissioning
Parameter group: Motor data, U/f control, Quick commissioning
Not relevant for motor type: -
Dyn. index [0...n]: MDS n defined by: p0130 **Calculated:** -
Unit: Vrms **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0 [Vrms]	20000 [Vrms]	0 [Vrms]

Description: Sets the rated motor voltage (rating plate).

Dependency: See also: p0349

NOTICE
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write-protected. Information in p0300 should be carefully observed when removing write protection.

Note
When the parameter value is entered the connection type of the motor (star-delta) must be taken into account.
When commissioned for the first time or after the factory settings have been restored, the parameter is preassigned a value that matches the power unit; this value also depends on the set standard (IEC/NEMA, p0100).

p0305[0...n] Rated motor current / Mot I_rated

Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Commissioning
Parameter group: Motor data, Quick commissioning
Not relevant for motor type: -
Dyn. index [0...n]: MDS n defined by: p0130 **Calculated:** -
Unit: Arms **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0.00 [Arms]	10000.00 [Arms]	0.00 [Arms]

Description: Sets the rated motor current (rating plate).

Dependency: See also: p0349

NOTICE

When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write-protected.
Information in p0300 should be carefully observed when removing write protection.
If p0305 is changed, then the maximum current p0640 is preassigned accordingly.
If the rated motor current exceeds twice the maximum drive converter current (r0209), then the maximum current is reduced due to the current harmonics that increase overproportionally (r0067).

Note

When the parameter value is entered the connection type of the motor (star-delta) must be taken into account.
When commissioned for the first time or after the factory settings have been restored, the parameter is preassigned a value that matches the power unit; this value also depends on the set standard (IEC/NMA, p0100).

p0306[0...n] Number of motors connected in parallel / Motor qty

Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Motor data, Quick commissioning	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous reluctance motor	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
1	50	1

Description: Number of motors that can be operated in parallel using one motor data set.
Depending on the motor number entered, internally an equivalent motor is calculated.
The following should be carefully observed for motors connected in series:
The following rating plate data should only be entered for one motor:
- Resistances and inductances: p0350 ... p0360
- Currents: p0305, p0320
- Power ratings: p0307
- Masses/moments of inertia: p0341, p0344

All other parameters take into account the replacement/equivalent motor (e.g. r0331, r0333).

Recommendation: For motors connected in parallel, external thermal protection should be provided for each individual motor.

Dependency: See also: r0331

⚠ CAUTION

The motors to be connected up in parallel must be of the same type and the same size (power rating) (identical Article No. [MLFB]).
The mounting regulations when connecting motors in parallel must be carefully maintained!
The number of motors set must correspond to the number of motors that are actually connected in parallel.
For induction motors that are connected in parallel, but which are not mechanically coupled with one another, then the following applies:
- An individual motor must not be loaded beyond its stall point.

NOTICE

If p0306 is changed during quick commissioning, then the maximum current p0640 is preassigned accordingly.

Note

When more than 10 identical motors are connected in parallel, then it only makes sense to operate with U/f characteristic.

p0307[0...n] Rated motor power / Mot P_rated

Data type: FloatingPoint32	**Visible in:** Standard display
Read permission:	Read drive data or acknowledge messages

Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Motor data, Quick commissioning	
Not relevant for motor type:	-	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: kW	**Unit group:** 14_6	**Unit selection:** p0100
Min:	**Max:**	**Factory setting:**
-100000.00 [kW]	100000.00 [kW]	0.00 [kW]

Description: Sets the rated motor power (rating plate).

Dependency: IEC drives (p0100 = 0): Units kW
NEMA drives (p0100 = 1): Units hp
NEMA drives (p0100 = 2): Unit kW
See also: p0100

NOTICE
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write-protected. Information in p0300 should be carefully observed when removing write protection.

Note
When commissioned for the first time or after the factory settings have been restored, the parameter is pre-assigned a value that matches the power unit; this value also depends on the set standard (IEC/NEMA, p0100).
For generators, a negative rated power should be entered.

p0308[0...n] Rated motor power factor / Mot cos phi rated

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Motor data, Quick commissioning	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-0.990	1.000	0.000

Description: Sets the rated motor power factor (cos phi, rating plate).
For a parameter value of 0.000, the power factor is internally calculated and displayed in r0332.

Dependency: The parameter is only visible for p0100 = 0, 2.
See also: p0100, p0309, r0332

NOTICE
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write-protected. Information in p0300 should be carefully observed when removing write protection.

Note
The parameter is not used for synchronous motors (p0300 = 2xx).
When commissioned for the first time or after the factory settings have been restored, the parameter is preassigned a value that matches the power unit; this value also depends on the set standard (IEC/NEMA, p0100).

p0309[0...n] Rated motor efficiency / Mot eta_rated

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	

Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Motor data, Quick commissioning	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [%]	99.9 [%]	0.0 [%]

Description: Sets the rated motor efficiency (rating plate).

For a parameter value of 0.0, the power factor is internally calculated and displayed in r0332.

Dependency: The parameter is only visible for p0100 = 1.

See also: p0100, p0308, r0332

NOTICE

When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write-protected. Information in p0300 should be carefully observed when removing write protection.

Note

The parameter is not used for synchronous motors (p0300 = 2xx).

p0310[0...n] Rated motor frequency / Mot f_rated

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Motor data, U/f control, Quick commissioning	
Not relevant for motor type:	-	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: Hz	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000 [Hz]	3000.000 [Hz]	0.000 [Hz]

Description: Sets the rated motor frequency (rating plate).

Dependency: The number of pole pairs (r0313) is automatically re-calculated when the parameter is changed (together with p0311), if p0314 = 0.

The rated frequency is restricted to values between 1.00 Hz and 650.00 Hz.

See also: p0311, r0313, p0314

NOTICE

When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write-protected. Information in p0300 should be carefully observed when removing write protection.

If p0310 is changed, then the maximum speed p1082 is preassigned accordingly.

Note

When commissioned for the first time or after the factory settings have been restored, the parameter is preassigned a value that matches the power unit; this value also depends on the set standard (IEC/NEMA, p0100).

p0311[0...n] Rated motor speed / Mot n_rated

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	

Can be changed in the operating state:	Commissioning	
Parameter group:	Motor data, Quick commissioning	
Not relevant for motor type:	-	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: rpm	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [rpm]	210000.00 [rpm]	0.00 [rpm]

Description: Sets the rated motor speed (type plate).

For p0311 = 0, the rated motor slip of induction motors is internally calculated and displayed in r0330.

It is especially important to correctly enter the rated motor speed for vector control and slip compensation for U/f control.

Dependency: If p0311 is changed and for p0314 = 0, the pole pair (r0313) is re-calculated automatically.

See also: p0310, r0313, p0314

NOTICE

When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write-protected. Information in p0300 should be carefully observed when removing write protection.

If p0311 is changed, then the maximum speed p1082 is preassigned accordingly.

Note

When commissioned for the first time or after the factory settings have been restored, the parameter is preassigned a value that matches the power unit; this value also depends on the set standard (IEC/NEMA, p0100).

r0313[0...n] Motor pole pair number, actual (or calculated) / MotPolePair no act

Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Motor data, Quick commissioning	
Not relevant for motor type:	-	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** -

Description: Displays the number of motor pole pairs. The value is used for internal calculations.

r0313 = 1: 2-pole motor

r0313 = 2: 4-pole motor, etc.

Dependency: For p0314 > 0, the entered value is displayed in r0313.

For p0314 = 0, the pole pair number (r0313) is automatically calculated from the rated power (p0307), rated frequency (p0310) and rated speed (p0311).

See also: p0307, p0310, p0311, p0314

Note

For the automatic calculation, the pole pair number is set to the value of 2 if the rated speed or the rated frequency is zero.

p0314[0...n] Motor pole pair number / Mot PolePair no

Data type: Unsigned16	**Visible in:** Extended display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications
Can be changed in the operating state:	Commissioning
Parameter group:	Motor data, Quick commissioning
Not relevant for motor type:	Synchronous or reluctance motor with starting cage, Synchronous reluctance motor

Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	255	0

Description: Sets the motor pole pair number.
p0314 = 1: 2-pole motor
p0314 = 2: 4-pole motor, etc.

Dependency: For p0314 = 0, the pole pair number is automatically calculated from the rated frequency (p0310) and the rated speed (p0311) and displayed in r0313.

NOTICE
If p0314 is changed, then the maximum speed p1082 is preassigned accordingly.
For induction motors, the value need only be input if the rated data of a generator is entered therefore resulting in a negative rated slip. In this case, the number of pole pairs in r0313 is too low by 1 and must be manually corrected.

p0316[0...n] Motor torque constant / Mot kT

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor data, Quick commissioning	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: Nm/A	**Unit group:** 28_1	**Unit selection:** p0100
Min:	**Max:**	**Factory setting:**
0.000 [Nm/A]	400.000 [Nm/A]	0.000 [Nm/A]

Description: Sets the torque constant of the synchronous motor.
p0316 = 0:
The torque constant is calculated from p0307.
p0316 > 0:
The set value is used as torque constant.

Dependency: See also: r0334

NOTICE
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write-protected. Information in p0300 should be carefully observed when removing write protection.

Note
This parameter is not used for induction motors (p0300 = 1xx).

p0317[0...n] Motor voltage constant / Mot kE

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor data	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: Vrms	**Unit group:** -	**Unit selection:** -

Min:	Max:	Factory setting:
0.0 [Vrms]	24000.0 [Vrms]	0.0 [Vrms]

Description: Sets the voltage constant for synchronous motors.
Units for rotating synchronous motors: Vrms/(1000 rpm), phase-to-phase

NOTICE
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write-protected. Information in p0300 should be carefully observed when removing write protection.

Note
The parameter is not used for induction motors (p0300 = 1xxx) and reluctance motors (p0300 = 6xxx).

p0318[0...n] Motor stall current / Mot I_standstill

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Motor data	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: Arms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [Arms]	10000.00 [Arms]	0.00 [Arms]

Description: Sets the stall current for synchronous motors (p0300 = 2xx).

NOTICE
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write-protected. Information in p0300 should be carefully observed when removing write protection.

Note
The parameter is used for the I2t monitoring of the motor (refer to p0611).
This parameter is not used for induction motors (p0300 = 1xx).

p0320[0...n] Motor rated magnetizing current/short-circuit current / Mot I_mag_rated

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor data, Motor data identification routine, Rotating measurement/speed controller optimization	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: Arms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000 [Arms]	5000.000 [Arms]	0.000 [Arms]

Description: Induction motors:
Sets the rated motor magnetizing current.
For p0320 = 0.000 the magnetizing current is internally calculated and displayed in r0331.
Synchronous motors:
Sets the rated motor short-circuit current.

NOTICE
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write-protected.
Information in p0300 should be carefully observed when removing write protection.

Note
The magnetizing current p0320 for induction motors is reset when quick commissioning is exited with automatic calculation.
If, for induction motors, the magnetizing current p0320 is changed outside the commissioning phase, then the magnetizing inductance p0360 is changed so that EMF r0337 remains constant.

p0322[0...n] Maximum motor speed / Mot n_max

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Motor data, Quick commissioning	
Not relevant for motor type:	-	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: rpm	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [rpm]	210000.0 [rpm]	0.0 [rpm]

Description: Sets the maximum motor speed.

Dependency: See also: p1082

NOTICE
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write-protected.
Information in p0300 should be carefully observed when removing write protection.
If p0322 is changed, then the maximum speed p1082 is preassigned accordingly.

Note
The parameter has no significance for a value of p0322 = 0.

p0323[0...n] Maximum motor current / Mot I_max

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Motor data, Torque limiting, Current controller, Quick commissioning	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: Arms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [Arms]	20000.00 [Arms]	0.00 [Arms]

Description: Sets the maximum permissible motor current (e.g. de-magnetizing current for synchronous motors).

NOTICE
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write-protected.
Information in p0300 should be carefully observed when removing write protection.
If p0323 is changed, then the maximum current p0640 is preassigned accordingly.

Note
The parameter has no effect for induction motors.
The parameter has not effect for synchronous motors if a value of 0.0 is entered.
The user-selectable current limit is entered into p0640.

p0324[0...n] Winding maximum speed / Winding n_max

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Motor data, Quick commissioning	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: rpm	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [rpm]	210000.0 [rpm]	0.0 [rpm]

Description: Sets the maximum speed for the winding.
The following applies when calculating the maximum speed (p1082):
- For p0324 = 0 or p0532 = 0, p0322 is used.
- For p0324 > 0 and p0532 > 0, the minimum value from the two parameters is used.

Dependency: See also: p0322, p0532, p1082

NOTICE
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write-protected.
Information in p0300 should be carefully observed when removing write protection.
If p0324 is changed, then the maximum speed p1082 is preassigned accordingly.

p0325[0...n] Motor pole position identification current 1st phase / Mot PolID I 1st ph

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor data, Pole position identification/encoder calibration	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: Arms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000 [Arms]	10000.000 [Arms]	0.000 [Arms]

Description: Sets the current for the 1st phase of the two-stage technique for pole position identification routine.
The current of the 2nd phase is set in p0329.
The two-stage technique is selected with p1980 = 4.

Dependency: See also: p0329, p1980, r1985, r1987
See also: F07969

p0327[0...n] Optimum motor load angle / Mot phi_load opt

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	

Can be changed in the operating state:	Operation	
Parameter group:	Motor data	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: °	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [°]	135.0 [°]	90.0 [°]

Description: Sets the optimum load angle for synchronous motors with reluctance torque.
The load angle is measured at the rated motor current.

NOTICE
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write-protected. Information in p0300 should be carefully observed when removing write protection.

Note
This parameter has no significance for induction motors.
For synchronous motors without reluctance torque, an angle of 90 degrees must be set.
After changing the motor parameter, when quick commissioning is exited, then the parameter is reset if a catalog motor has not been selected (p0300).

p0328[0...n] Motor reluctance torque constant / Mot kT_reluctance

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor data	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: mH	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-1000.00 [mH]	1000.00 [mH]	0.00 [mH]

Description: Sets the reluctance torque constant for synchronous motors with reluctance torque (e.g. 1FE ... motors).
This parameter has no significance for induction motors.

Dependency: See also: p0356, p0357

NOTICE
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write-protected. Information in p0300 should be carefully observed when removing write protection.

Note
For synchronous motors without reluctance torque, the value 0 must be set. The parameter is calculated as follows for motors without current-dependent inductances:
p0328 = 3/2 * pole pair number * (stator leakage inductance - stator leakage inductance, d axis)

Pole pair number = r0313
Stator leakage inductance = p0356
Stator leakage inductance d axis = p0357

p0329[0...n] Motor pole position identification current / Mot PolID current

Data type: FloatingPoint32 **Visible in:** Extended display

Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor data, Pole position identification/encoder calibration	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: Arms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [Arms]	10000.00 [Arms]	0.00 [Arms]

Description: Sets the current for the pole position identification routine (p1980 = 1, 8).
For a two-stage technique (p1980 = 4), the current is set for the 2nd phase.
The current for the 1st phase is set in p0325.

Dependency: If a maximum current (p0323) was not parameterized, then p0329 is limited to the rated motor current.
The following applies to permanent-magnet synchronous motors:
If p0329 is too small in order to determine the pole position (for p1980 = 1), then p0323 must be first parameterized and significantly greater than p0329.
See also: p0325, p1980, r1985, r1987
See also: F07969

NOTICE
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write-protected. Information in p0300 should be carefully observed when removing write protection.

r0330[0...n] Rated motor slip / Mot slip_rated

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Motor data, U/f control	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: Hz	**Unit group:** -	**Unit selection:** -

Description: Displays the rated motor slip.

Dependency: The rated slip is calculated from the rated frequency, rated speed and number of pole pairs.
See also: p0310, p0311, r0313

Note
The parameter is not used for synchronous motors (p0300 = 2xx).

r0331[0...n] Actual motor magnetizing current/short-circuit current / Mot I_mag_rtd act

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Motor data, Flying restart, Flux setpoint	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: Arms	**Unit group:** -	**Unit selection:** -

Description: Induction motor:
Displays the rated magnetizing current from p0320.
For p0320 = 0, the internally calculated magnetizing current is displayed.
Synchronous motor:
Displays the rated short-circuit current from p0320.

Dependency: If p0320 was not entered, then the parameter is calculated from the rating plate parameters.

Note
In the case of multi-motor operation r0331 is increased by the factor p0306 compared to p0320.

r0332[0...n] Rated motor power factor / Mot cos phi rated

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Motor data
Not relevant for motor type: Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: MDS n defined by: p0130 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the rated power factor for induction motors.
For p0100 = 0.2, the following applies:
For p0308 = 0, the internally calculated power factor is displayed.
For p0308 > 0, this value is displayed.
For p0100 = 1, the following applies:
For p0309 = 0, the internally calculated power factor is displayed.
For p0309 > 0, this value is converted into the power factor and displayed.

Dependency: If p0308 is not entered, the parameter is calculated from the rating plate parameters.

Note
The parameter is not used for synchronous motors (p0300 = 2xx).

r0333[0...n] Rated motor torque / Mot M_rated

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Motor data
Not relevant for motor type: -
Dyn. index [0...n]: MDS n defined by: p0130 **Calculated:** -
Unit: Nm **Unit group:** 7_4 **Unit selection:** p0100

Description: Displays the rated motor torque.

Dependency: IEC drives (p0100 = 0): unit Nm
NEMA drives (p0100 = 1): unit lbf ft

Note
For induction and reluctance motors, r0333 is calculated from p0307 and p0311.
For synchronous motors, r0333 is calculated from p0305, p0316, p0327 and p0328.
For synchronous motors, r0333 is calculated from p0307 and p0311. If p0307 is not known, then r0333 is calculated from p0305, p0316, p0327 and p0328.
In the case of multi-motor operation, r0333 is increased by the factor p0306 compared to the rated torque of an individual motor.

r0334[0...n] Actual motor-torque constant / Mot kT act

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Motor data, Extended torque control
Not relevant for motor type: Induction motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor
Dyn. index [0...n]: MDS n defined by: p0130 **Calculated:** -
Unit: Nm/A **Unit group:** 28_1 **Unit selection:** p0100

Description: Displays the torque constant of the synchronous motor used.

Dependency: IEC drives (p0100 = 0): unit Nm / A
NEMA drives (p0100 = 1): unit lbf ft / A
See also: p0316

Note
This parameter is not used for induction motors (p0300 = 1xx).
For synchronous motors, parameter r0334 = p0316 is displayed. For p0316 = 0, r0334 is calculated from p0305 or from p0305, p0307 and p0311.

p0335[0...n] Motor cooling type / Mot cool type

Data type: Integer16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Motor data, Quick commissioning	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	128	0

Description: Sets the motor cooling system used.

Value:

0:	Natural ventilation
1:	Forced cooling
2:	Liquid cooling
4:	Natural ventilation and internal fan
5:	Forced cooling and internal fan
6:	Liquid cooling and internal fan
128:	No fan

Dependency: For 1LA5 and 1LA7 motors (p0300), the parameter is preset as a function of p0307 and p0311.

NOTICE
When selecting a catalog motor (motor code number > 0), this parameter is automatically pre-assigned and is write protected. Information about the motor type must be considered when removing write protection.

Note
The parameter influences the thermal 3 mass model of the induction motor.
1LA1 and 1LA8 motors are characterized by the fact that they have an internal rotor fan. This "internal cooling" lies within the motor frame and is not visible. Air is not directly exchanged with the motor ambient air.
For 1PQ8 motors, p0335 should be set to 5 as these motors are force-ventilated motors.
The setting p0335 = 128 applies for 1LA7 motors, frame size 56 (these are operated without a fan).

r0336[0...n] Actual rated motor frequency / Mot f_rated act

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Motor data	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: Hz	**Unit group:** -	**Unit selection:** -

Description: Displays the rated frequency of the motor.
For p0310 > 0, this value is displayed.

Dependency: See also: p0311, p0314

Note
For p0310 = 0 or for synchronous motors, the rated motor frequency r0336 is calculated from the rated speed and the pole pair number.
For p0310 > 0, this value is displayed (not for synchronous motors).

r0337[0...n] Rated motor EMF / Mot EMF_rated

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Motor data, Motor data identification routine, Rotating measurement/speed controller optimization
Not relevant for motor type: Synchronous or reluctance motor with starting cage, Synchronous reluctance motor
Dyn. index [0...n]: MDS n defined by: p0130 **Calculated:** -
Unit: Vrms **Unit group:** - **Unit selection:** -

Description: Displays the rated EMF of the motor.

Note
EMF: Electromotive force

r0339[0...n] Rated motor voltage / Mot U_rated

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Motor data
Not relevant for motor type: Induction motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor
Dyn. index [0...n]: MDS n defined by: p0130 **Calculated:** -
Unit: Vrms **Unit group:** - **Unit selection:** -

Description: Displays the rated motor voltage.

Note
For induction motors (p0300 = 1xx) the parameter is set to p0304.
For synchronous motors, parameter r0339 = p0304 is displayed. If p0304 = 0, then r0339 is calculated from p0305 and p0316.

p0341[0...n] Motor moment of inertia / Mot m_inert

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Motor data, Acceleration model, Rotating measurement/speed controller optimization
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: MDS n defined by: p0130 **Calculated:** automatic
Unit: kgm^2 **Unit group:** 25_1 **Unit selection:** p0100

Min:	Max:	Factory setting:
0.000000 [kgm^2]	100000.000000 [kgm^2]	0.000000 [kgm^2]

Description: Sets the motor moment of inertia (without load).

Dependency: IEC drives: unit kg m^2
NEMA drives: unit lb ft^2
The parameter value is included, together with p0342, in the rated starting time of the motor.
See also: p0342, r0345

NOTICE
When selecting a catalog motor (motor code number > 0), this parameter is automatically pre-assigned and is write protected. Information about the motor type must be considered when removing write protection.

Note
The product p0341 * p0342 is taken into account when automatically calculating the speed controller.

p0342[0...n] Ratio between the total and motor moment of inertia / Mot m_inert ratio

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor data, Acceleration model, Rotating measurement/speed controller optimization	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
1.000	10000.000	1.000

Description: Sets the ratio between the total moment of inertia (load + motor) and the intrinsic motor moment of inertia (no load).

Dependency: This means that together with p0341, the rated starting time of the motor is calculated.
See also: p0341, r0345, p1498

Note
The product p0341 * p0342 is taken into account when automatically calculating the speed controller.

p0344[0...n] Motor weight (for the thermal motor model) / Mot weightThermMod

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Motor data	
Not relevant for motor type:	-	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** automatic
Unit: kg	**Unit group:** 27_1	**Unit selection:** p0100
Min:	**Max:**	**Factory setting:**
0.0 [kg]	50000.0 [kg]	0.0 [kg]

Description: Sets the motor weight.

Dependency: IEC drives: unit kg
NEMA drives: unit lb

NOTICE
When selecting a catalog motor (motor code number > 0), this parameter is automatically pre-assigned and is write protected. Information about the motor type must be considered when removing write protection.

Note
The parameter influences the thermal 3 mass model of the induction motor.
The parameter is not used for synchronous motors (permanent magnet motors).

r0345[0...n] Nominal motor starting time / Mot t_start_rated

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Motor data, Rotating measurement/speed controller optimization	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -

Description: Displays the rated motor starting time.
This time corresponds to the time from standstill up to reaching the rated motor speed and the acceleration with motor rated torque (r0333).

Dependency: See also: r0313, r0333, r0336, p0341, p0342

p0346[0...n] Motor excitation build-up time / Mot t_excitation

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	U/f control, Motor holding brake, Flying restart, Drive enable signals, Flux setpoint	
Not relevant for motor type:	-	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** automatic
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-20.000 [s]	20.000 [s]	0.000 [s]

Description: Sets the excitation build-up time of the motor.
This involves the wait time between enabling the pulses and enabling the ramp-function generator. The induction motor is magnetized during this time.

⚠ CAUTION
If there is insufficient magnetization under load or if the acceleration rate is too high, then an induction motor can stall (refer to the note). This is especially true for sensorless vector control or U/f control.

Note
The parameter is preassigned by the automatic calculation when exiting commissioning.
For induction motors, the result depends on the rotor time constant (r0384). If this time is excessively reduced, this can result in an inadequate magnetizing of the induction motor. This is the case if the current limit is reached while building up magnetizing. For induction motors, the parameter cannot be set to 0 s (internal limit: 0.1 * r0384).
For permanent-magnet synchronous motors and vector control, the value depends on the stator time constant (r0386). Here, it defines the time to establish the current for encoderless operation immediately after the pulses have been enabled.
The current to excite the induction motor can be limited in p0644.

p0347[0...n] Motor de-excitation time / Mot t_de-excitat

Data type: FloatingPoint32	**Visible in:** Extended display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications
Can be changed in the operating state:	Operation

Parameter group:	U/f control, DC braking, Flying restart, Drive enable signals, Flux setpoint	
Not relevant for motor type:	-	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** automatic
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000 [s]	20.000 [s]	0.000 [s]

Description: Sets the de-magnetizing time (for induction motors) after the inverter pulses have been inhibited.
The inverter pulses cannot be switched in (enabled) within this wait time.

Note
The parameter is calculated using the automatic calculation (also after the motor data identification).
For induction motors, the result depends on the rotor time constant (r0384).
If this time is shortened too much, then this can result in an inadequate de-magnetizing of the induction motor and in an overcurrent condition when the pulses are subsequently enabled (only when the flying restart function is activated and the motor is rotating).

p0349 System of units motor equivalent circuit diagram data / Unit_sys mot ESB

Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Motor data, Units	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
1	2	1

Description: Sets the actual system of units for motor equivalent circuit diagram data.

Value:
1: System of units, physical
2: System of units, referred

Dependency: The parameter can only be changed in an offline project using the commissioning tool.
See also: p0304, p0305, p0310

Note
The reference parameter for resistances of the rated motor impedance Z = p0304 / (1.732 * p0305) is in the % units system.
Inductances are converted into a resistance using factor 2 * Pi * p0310.
If a reference parameter (p0304, p0305, p0310) is zero, then it is not possible to make a changeover to "referred" values (per unit values).

p0350[0...n] Motor stator resistance cold / Mot R_stator cold

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor data, Motor data identification routine	
Not relevant for motor type:	-	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** automatic
Unit: ohm	**Unit group:** 16_1	**Unit selection:** p0349

Min:	Max:	Factory setting:
0.00000 [ohm]	2000.00000 [ohm]	0.00000 [ohm]

Description: Sets the stator resistance of the motor at ambient temperature p0625 (phase value).

Dependency: See also: p0625

Note
The motor identification determines the stator resistance from the total stator resistance minus the cable resistance (p0352).
When selecting a catalog motor (motor code number > 0), this parameter is automatically pre-assigned and is write protected. Information about the motor type must be considered when removing write protection.

p0351[0...n] Motor stator resistance 20 °C / Mot R_stator 20°C

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor data	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: ohm	**Unit group:** 16_1	**Unit selection:** p0349
Min:	**Max:**	**Factory setting:**
0.00000 [ohm]	20000.00000 [ohm]	2000.00000 [ohm]

Description: Sets the stator resistance of the motor at ambient temperature 20 °C (phase value).

Dependency: See also: p0612
See also: F07011, A07012

NOTICE
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write-protected. Information in p0300 should be carefully observed when removing write protection.

p0352[0...n] Cable resistance / R_cable

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor data, Motor data identification routine	
Not relevant for motor type:	-	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: ohm	**Unit group:** 16_1	**Unit selection:** p0349
Min:	**Max:**	**Factory setting:**
0.00000 [ohm]	120.00000 [ohm]	0.00000 [ohm]

Description: Sets the resistance of the power cable between the power unit and the motor.

⚠ CAUTION
The cable resistance should be entered prior to motor data identification. If it is used subsequently, the difference by which p0352 was changed must be subtracted from the stator resistance p0350 or motor data identification must be repeated.

Note
The parameter influences the temperature adaptation of the stator resistance.
The motor identification sets the cable resistance to 20% of the measured total resistance if p0352 is zero at the time that the measurement is made. If p0352 is not zero, then the value is subtracted from the measured total stator resistance to calculate stator resistance p0350. In this case, p0350 is a minimum of 10% of the measured value.
Exception:
The cable resistance is reset when quick commissioning is exited with automatic calculation.
If the stator resistance is available in a motor list, and if p0352 is still 0, then the cable resistance is generated from the difference between the measured value and list value.

p0353[0...n] Motor series inductance / Mot L_series

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor data, Motor data identification routine	
Not relevant for motor type:	-	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: mH	**Unit group:** 15_1	**Unit selection:** p0349
Min:	**Max:**	**Factory setting:**
0.000 [mH]	1000000.000 [mH]	0.000 [mH]

Description: Sets the series inductance.

Note
For the automatic calculation, the calculation of p1715 is influenced by p0353.
The series inductance is reset when quick commissioning is exited after entering the motor parameters.

p0354[0...n] Motor rotor resistance cold / damping resistance d axis / Mot R_r cold/R_D d

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor data, Motor data identification routine	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** automatic
Unit: ohm	**Unit group:** 16_1	**Unit selection:** p0349
Min:	**Max:**	**Factory setting:**
0.00000 [ohm]	300.00000 [ohm]	0.00000 [ohm]

Description: Sets the rotor/secondary section resistance of the motor at the ambient air temperature p0625.

Dependency: See also: p0625

NOTICE
When selecting a catalog motor (motor code number > 0), this parameter is automatically pre-assigned and is write protected. Information about the motor type must be considered when removing write protection.

Note
The parameter is not used for synchronous motors.
The parameter value is automatically calculated using the motor model or using the motor data identification (p1910).

p0356[0...n] Motor stator leakage inductance / Mot L_stator leak

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor data, Motor data identification routine	
Not relevant for motor type:	-	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** automatic
Unit: mH	**Unit group:** 15_1	**Unit selection:** p0349
Min:	**Max:**	**Factory setting:**
0.00000 [mH]	1000.00000 [mH]	0.00000 [mH]

Description: Induction motor:

Sets the stator leakage inductance of the motor.

Synchronous motor:

Sets the stator quadrature inductance of the motor.

NOTICE

When selecting a catalog motor (motor code number > 0), this parameter is automatically pre-assigned and is write protected. Information about the motor type must be considered when removing write protection.

Note

The parameter value is automatically calculated using the motor model or using the motor identification (p1910). For permanent-magnet synchronous motors, the value of the quotient of stator quadrature flux and stator quadrature current at the rated operating point (saturated value). If the stator leakage inductance (p0356) for induction motors is changed outside the commissioning phase, then the magnetizing inductance (p0360) is automatically adapted to the new EMF (r0337). You are then advised to repeat the measurement for the saturation characteristic (p1960).

p0357[0...n] Motor stator inductance d axis / Mot L_stator d

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor data, Motor data identification routine	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** automatic
Unit: mH	**Unit group:** 15_1	**Unit selection:** p0349
Min:	**Max:**	**Factory setting:**
0.00000 [mH]	1000.00000 [mH]	0.00000 [mH]

Description: Sets the stator direct-axis inductance of the synchronous motor.

The parameter value is automatically calculated using the motor model or using the motor identification (p1910).

Note

For permanent-magnet synchronous motors, the value of the quotient of stator direct-axis flux and stator direct-axis current at the rated operating point (saturated value).

p0358[0...n] Motor rotor leakage inductance / damping inductance d axis / Mot L_r leak / LDd

Data type: FloatingPoint32	**Visible in:** Extended display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications
Can be changed in the operating state:	Operation

Parameter group: Motor data, Motor data identification routine
Not relevant for motor type: Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor
Dyn. index [0...n]: MDS n defined by: p0130 **Calculated:** automatic
Unit: mH **Unit group:** 15_1 **Unit selection:** p0349

Min:	Max:	Factory setting:
0.00000 [mH]	1000.00000 [mH]	0.00000 [mH]

Description: Sets the rotor/secondary section leakage inductance of the motor.

NOTICE
When selecting a catalog motor (motor code number > 0), this parameter is automatically pre-assigned and is write protected. Information about the motor type must be considered when removing write protection.

Note
The value is automatically calculated using the motor model or using the motor identification (p1910).
The parameter is not used for synchronous motors (p0300 = 2xx).
If the rotor leakage inductance (p0358) for induction motors is changed outside the commissioning phase, then the magnetizing inductance (p0360) is automatically adapted to the new EMF (r0337). You are then advised to repeat the measurement for the saturation characteristic (p1960).

p0360[0...n] Motor magnetizing inductance/magn. inductance d axis saturated / Mot Lh/Lh d sat

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Motor data, Motor data identification routine, Rotating measurement/speed controller optimization
Not relevant for motor type: Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor
Dyn. index [0...n]: MDS n defined by: p0130 **Calculated:** automatic
Unit: mH **Unit group:** 15_1 **Unit selection:** p0349

Min:	Max:	Factory setting:
0.00000 [mH]	10000.00000 [mH]	0.00000 [mH]

Description: Sets the magnetizing inductance of the motor.

NOTICE
When selecting a catalog motor (motor code number > 0), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note
The parameter is not used for synchronous motors.
The parameter value is automatically calculated using the motor model or using the motor identification (p1910).

p0362[0...n] Motor saturation characteristic flux 1 / Mot sat flux 1

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Motor data, Rotating measurement/speed controller optimization
Not relevant for motor type: Synchronous or reluctance motor with starting cage, Synchronous reluctance motor
Dyn. index [0...n]: MDS n defined by: p0130 **Calculated:** -

Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
10.0 [%]	800.0 [%]	60.0 [%]

Description: Sets the y coordinate (flux) for the 1st value pair of the saturation characteristic curve.
The saturation characteristics (flux as a function of the magnetizing current) is defined using 4 points.
The flux value in [%] is referred to the rated motor flux (100 %).

Dependency: The following applies for the flux values:
p0362 < p0363 < p0364 < p0365
For permanent magnet synchronous motors (PMSM), the following also applies:
The value 100 % is an immanent point of the characteristic, and therefore not part of the parameter entry.
If the parameters are not set in an ascending order, or they contain a value of 100 %, then the quadrature flux is calculated with constant quadrature inductance (p0356).
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p0366

Note
For p0362 = 100 %, the following applies:
- For induction motors, this corresponds to the rated motor flux.
- For permanent magnet synchronous motors, this corresponds to the product of saturated quadrature inductance (p0356) and rated motor quadrature current.
For the automatic calculation, if a catalog motor is not set, then the parameters are reset when exiting quick commissioning.

p0363[0...n] Motor saturation characteristic flux 2 / Mot sat flux 2

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor data, Rotating measurement/speed controller optimization	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
10.0 [%]	800.0 [%]	85.0 [%]

Description: The saturation characteristics (flux as a function of the magnetizing current) is defined using 4 points. This parameter specifies the y coordinate (flux) for the 2nd value pair of the characteristic. The flux value in [%] is referred to the rated motor flux (100 %).

Dependency: The following applies for the flux values:
p0362 < p0363 < p0364 < p0365
For permanent magnet synchronous motors (PMSM), the following also applies:
The value 100 % is an immanent point of the characteristic, and therefore not part of the parameter entry.
If the parameters are not set in an ascending order, or contain a value of 100 %, then the quadrature flux is calculated with constant quadrature inductance (p0356).
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p0367

Note
For induction motors, p0363 = 100 % corresponds to the rated motor flux.
For permanent magnet synchronous motors, p0363 = 100 % corresponds to the product of saturated quadrature inductance (p0356) and rated motor quadrature current.
For the automatic calculation, if a catalog motor is not set, then the parameters are reset when exiting quick commissioning.

p0364[0...n] Motor saturation characteristic flux 3 / Mot sat flux 3

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor data, Rotating measurement/speed controller optimization	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
10.0 [%]	800.0 [%]	115.0 [%]

Description: The saturation characteristics (flux as a function of the magnetizing current) is defined using 4 points. This parameter specifies the y coordinate (flux) for the 3rd value pair of the characteristic. The flux value in [%] is referred to the rated motor flux (100 %).

Dependency: The following applies for the flux values:

p0362 < p0363 < p0364 < p0365

For permanent magnet synchronous motors (PMSM), the following also applies:

The value 100 % is an immanent point of the characteristic, and therefore not part of the parameter entry.

If the parameters are not set in an ascending order, or contain a value of 100 %, then the quadrature flux is calculated with constant quadrature inductance (p0356).

Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

See also: p0368

Note

For induction motors, p0364 = 100 % corresponds to the rated motor flux.

For permanent magnet synchronous motors, p0364 = 100 % corresponds to the product of saturated quadrature inductance (p0356) and rated motor quadrature current.

For the automatic calculation, if a catalog motor is not set, then the parameters are reset when exiting quick commissioning.

p0365[0...n] Motor saturation characteristic flux 4 / Mot sat flux 4

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor data, Rotating measurement/speed controller optimization	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
10.0 [%]	800.0 [%]	125.0 [%]

Description: The saturation characteristics (flux as a function of the magnetizing current) is defined using 4 points. This parameter specifies the y coordinate (flux) for the 4th value pair of the characteristic. The flux value in [%] is referred to the rated motor flux (100 %).

Dependency: The following applies for the flux values:
p0362 < p0363 < p0364 < p0365
For permanent magnet synchronous motors (PMSM), the following also applies:
The value 100 % is an immanent point of the characteristic, and therefore not part of the parameter entry.
If the parameters are not set in an ascending order, or contain a value of 100 %, then the quadrature flux is calculated with constant quadrature inductance (p0356).
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p0369

Note
For induction motors, p0365 = 100 % corresponds to the rated motor flux.
For permanent magnet synchronous motors, p0365 = 100 % corresponds to the product of saturated quadrature inductance (p0356) and rated motor quadrature current.
For the automatic calculation, if a catalog motor is not set, then the parameters are reset when exiting quick commissioning.

p0366[0...n] Motor saturation characteristic I_mag 1 / Mot sat I_mag 1

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor data, Rotating measurement/speed controller optimization	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
5.0 [%]	800.0 [%]	50.0 [%]

Description: The saturation characteristics (flux as a function of the magnetizing current) is defined using 4 points. This parameter specifies the x coordinate (magnetizing current) for the 1st value pair of the characteristic.
Induction motors (ASM):
The magnetizing current in [%] is referred to the rated magnetizing current r0331.
Permanent magnet synchronous motors (PMSM):
The stator quadrature current in [%] is referred to the rated motor quadrature current.

Dependency: The following applies for the magnetizing currents:
p0366 < p0367 < p0368 < p0369
For permanent magnet synchronous motors (PMSM), the following also applies:
The value 100 % is an immanent point of the characteristic, and therefore not part of the parameter entry.
If the parameters are not set in an ascending order, or contain a value of 100 %, then the quadrature flux is calculated with constant quadrature inductance (p0356).
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p0362

Note
For the automatic calculation, if a catalog motor is not set, then the parameters are reset when exiting quick commissioning.

p0367[0...n] Motor saturation characteristic I_mag 2 / Mot sat I_mag 2

Data type: FloatingPoint32	**Visible in:** Extended display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications
Can be changed in the operating state:	Operation

Parameter group:	Motor data, Rotating measurement/speed controller optimization	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
5.0 [%]	800.0 [%]	75.0 [%]

Description: The saturation characteristics (flux as a function of the magnetizing current) is defined using 4 points. This parameter specifies the x coordinate (magnetizing current) for the 2nd value pair of the characteristic.

Induction motors (ASM):

The magnetizing current in [%] is referred to the rated magnetizing current r0331.

Permanent magnet synchronous motors (PMSM):

The stator quadrature current in [%] is referred to the rated motor quadrature current.

Dependency: The following applies for the magnetizing currents:

p0366 < p0367 < p0368 < p0369

For permanent magnet synchronous motors (PMSM), the following also applies:

The value 100 % is an immanent point of the characteristic, and therefore not part of the parameter entry.

If the parameters are not set in an ascending order, or contain a value of 100 %, then the quadrature flux is calculated with constant quadrature inductance (p0356).

Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

See also: p0363

Note

For the automatic calculation, if a catalog motor is not set, then the parameters are reset when exiting quick commissioning.

p0368[0...n] Motor saturation characteristic I_mag 3 / Mot sat I_mag 3

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor data, Rotating measurement/speed controller optimization	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
5.0 [%]	800.0 [%]	150.0 [%]

Description: The saturation characteristics (flux as a function of the magnetizing current) is defined using 4 points. This parameter specifies the x coordinate (magnetizing current) for the 3rd value pair of the characteristic.

Induction motors (ASM):

The magnetizing current in [%] is referred to the rated magnetizing current r0331.

Permanent magnet synchronous motors (PMSM):

The stator quadrature current in [%] is referred to the rated motor quadrature current.

Dependency: The following applies for the magnetizing currents:

p0366 < p0367 < p0368 < p0369

For permanent magnet synchronous motors (PMSM), the following also applies:

The value 100 % is an immanent point of the characteristic, and therefore not part of the parameter entry.

If the parameters are not set in an ascending order, or contain a value of 100 %, then the quadrature flux is calculated with constant quadrature inductance (p0356).

Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

See also: p0364

Note
For the automatic calculation, if a catalog motor is not set, then the parameters are reset when exiting quick commissioning.

p0369[0...n] Motor saturation characteristic I_mag 4 / Mot sat I_mag 4

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor data, Rotating measurement/speed controller optimization	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
5.0 [%]	800.0 [%]	210.0 [%]

Description: The saturation characteristics (flux as a function of the magnetizing current) is defined using 4 points. This parameter specifies the x coordinate (magnetizing current) for the 4th value pair of the characteristic.

Induction motors (ASM):

The magnetizing current in [%] is referred to the rated magnetizing current r0331.

Permanent magnet synchronous motors (PMSM):

The stator quadrature current in [%] is referred to the rated motor quadrature current.

Dependency: The following applies for the magnetizing currents:

p0366 < p0367 < p0368 < p0369

For permanent magnet synchronous motors (PMSM), the following also applies:

The value 100 % is an immanent point of the characteristic, and therefore not part of the parameter entry.

If the parameters are not set in an ascending order, or contain a value of 100 %, then the quadrature flux is calculated with constant quadrature inductance (p0356).

Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

See also: p0365

Note
For the automatic calculation, if a catalog motor is not set, then the parameters are reset when exiting quick commissioning.

r0374[0...n] Motor rotor resistance cold / damping resistance d axis / Mot R_r cold/R_D d

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Motor data, Motor data identification routine	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: ohm	**Unit group:** 16_1	**Unit selection:** p0349

Description: Displays the rotor/secondary section resistance of the motor for the ambient air temperature p0625.

Dependency: See also: p0625

Note
The parameter is not used for synchronous motors (motor type = 2xx).

r0376[0...n] Rated motor rotor resistance / Mot rated R_rotor

Data type: FloatingPoint32	**Visible in:** Extended display

Read permission: Read drive data or acknowledge messages
Parameter group: Motor data
Not relevant for motor type: Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor
Dyn. index [0...n]: MDS n defined by: p0130 **Calculated:** -
Unit: ohm **Unit group:** 16_1 **Unit selection:** p0349

Description: Displays the nominal rotor / secondary section resistance of the motor at the rated temperature.
The rated temperature is the sum of p0625 and p0628.

Dependency: See also: p0628

Note
The parameter is not used for synchronous motors (p0300 = 2xx).

r0377[0...n] Motor leakage inductance total / Mot L_leak total

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Motor data, Motor data identification routine
Not relevant for motor type: -
Dyn. index [0...n]: MDS n defined by: p0130 **Calculated:** -
Unit: mH **Unit group:** 15_1 **Unit selection:** p0349

Description: Displays the total stray inductance of the motor.
Induction motor:
Displays the stator leakage inductance of the motor, including the series inductance (p0353) and the motor reactor (p0233).
Synchronous motor:
Displays the stator quadrature inductance of the motor including the series inductance (p0353) and the motor reactor (p0233).

r0378[0...n] Motor stator inductance d axis / Mot L_stator d

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Motor data
Not relevant for motor type: Induction motor, Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: MDS n defined by: p0130 **Calculated:** -
Unit: mH **Unit group:** 15_1 **Unit selection:** p0349

Description: Displays the stator direct-axis inductance of the synchronous motor including the series inductance (p0353) and the motor reactor (p0233).

r0380[0...n] Motor inductance d axis / Mot L_d

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Motor data
Not relevant for motor type: Induction motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor
Dyn. index [0...n]: MDS n defined by: p0130 **Calculated:** -
Unit: mH **Unit group:** 15_1 **Unit selection:** p0349

Description: Displays the unsaturated inductance of the permanent-magnet synchronous motor used (d axis), including the series inductance (p0353).

r0381[0...n] Motor inductance q axis / Mot L_q

Data type: FloatingPoint32 **Visible in:** Extended display

Read permission: Read drive data or acknowledge messages
Parameter group: Motor data
Not relevant for motor type: Induction motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor
Dyn. index [0...n]: MDS n defined by: p0130 **Calculated:** -
Unit: mH **Unit group:** 15_1 **Unit selection:** p0349

Description: Displays the unsaturated quadrature inductance of the permanent-magnet synchronous motor, including the series inductance (p0353) and the motor reactor (p0233).

r0382[0...n] Motor magnetizing inductance transformed / Lh d axis saturated / Mot L_m tr/Lhd sat

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Motor data, Motor data identification routine, Rotating measurement/speed controller optimization
Not relevant for motor type: Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor
Dyn. index [0...n]: MDS n defined by: p0130 **Calculated:** -
Unit: mH **Unit group:** 15_1 **Unit selection:** p0349

Description: Displays the magnetizing inductance of the motor.

Note
The parameter is not used for synchronous motors (motor type = 2xx).

r0384[0...n] Motor rotor time constant / damping time constant d axis / Mot Tc_rotor/T_Dd

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Motor data, Motor data identification routine, Rotating measurement/speed controller optimization
Not relevant for motor type: Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor
Dyn. index [0...n]: MDS n defined by: p0130 **Calculated:** -
Unit: ms **Unit group:** - **Unit selection:** -

Description: Displays the rotor time constant.

Note
The parameter is not used for synchronous motors.
The value is calculated from the total of the inductances on the rotor side (p0358, p0360) divided by the rotor/damping resistance (p0354). The temperature adaptation of the rotor resistance for induction motors is not taken into account.

r0386[0...n] Motor stator leakage time constant / Mot Tc_stator leak

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Motor data, Motor data identification routine
Not relevant for motor type: -
Dyn. index [0...n]: MDS n defined by: p0130 **Calculated:** -
Unit: ms **Unit group:** - **Unit selection:** -

Description: Displays the stator leakage time constant.

Note
The value is calculated from the total of all leakage inductances (p0233, p0356, p0358) divided by the total of all motor resistances (p0350, p0352, p0354). The temperature adaptation of the resistances is not taken into account.

p0391[0...n] Current controller adaptation starting point Kp / I_adapt point Kp

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor data, Current controller, Rotating measurement/speed controller optimization	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** automatic
Unit: Arms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [Arms]	6000.00 [Arms]	0.00 [Arms]

Description: Sets the starting point of the current-dependent current controller adaptation where the current controller gain p1715 is effective.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: p0392, p0393, p1402, p1715

NOTICE
When selecting a catalog motor (motor code number > 0), this parameter is automatically pre-assigned and is write protected. Information about the motor type must be considered when removing write protection.

Note
With the automatic calculation, if a catalog motor is not set, then the parameters are reset when exiting quick commissioning.

p0392[0...n] Current controller adaptation starting point Kp adapted / I_adapt pt Kp adpt

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor data, Current controller, Rotating measurement/speed controller optimization	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** automatic
Unit: Arms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [Arms]	6000.00 [Arms]	0.00 [Arms]

Description: Sets the starting point of the current-dependent current controller adaptation where the adapted current controller gain p1715 x p0393 is effective.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: p0391, p0393, p1402, p1715

NOTICE
When selecting a catalog motor (motor code number > 0), this parameter is automatically pre-assigned and is write protected. Information about the motor type must be considered when removing write protection.

Note
With the automatic calculation, if a catalog motor is not set, then the parameters are reset when exiting quick commissioning.

p0393[0...n] Current controller adaptation P gain scaling / I_adapt Kp scal

Data type: FloatingPoint32	**Visible in:** Extended display

Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor data, Current controller, Rotating measurement/speed controller optimization	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** automatic
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [%]	1000.00 [%]	100.00 [%]

Description: Sets the factor for the current controller P gain in the adaptation range (e.g. r0078 > p0392, if p0392 > p0391).
The value is referred to the P gain of the current controller p1715.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: p0391, p0392, p1402, p1715

NOTICE
When selecting a catalog motor (motor code number > 0), this parameter is automatically pre-assigned and is write protected. Information about the motor type must be considered when removing write protection.

Note
For p0393 = 100 % or p1402.2 = 0, the current controller adaptation is deactivated and p1715 is effective over the entire range.
With the automatic calculation, if a catalog motor is not set, then the parameters are reset when exiting quick commissioning.

r0395[0...n] Actual stator resistance / R_stator act

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Motor data, U/f control, Motor temperature	
Not relevant for motor type:	-	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: ohm	**Unit group:** 16_1	**Unit selection:** p0349

Description: Displays the actual stator resistance (phase value).
The parameter value also contains the temperature-independent cable resistance.

Dependency: In the case of induction motors the parameter is also affected by the motor temperature model.
See also: p0350, p0352, p0620

Note
In each case, only the stator resistance of the active Motor Data Set is included with the stator temperature of the thermal motor model.

r0396[0...n] Actual rotor resistance / R_rotor act

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Motor data, U/f control, Motor temperature	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: ohm	**Unit group:** 16_1	**Unit selection:** p0349

Description: Displays the actual rotor/secondary section resistance (phase value).
The parameter is affected by the motor temperature model.

Dependency: See also: p0354, p0620

Note
In each case, only the rotor resistance of the active Motor Data Set is included with the rotor temperature of the thermal motor model.

p0400[0...n] Encoder type selection / Enc_type sel

Data type: Integer16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Encoder evaluation, Quick commissioning	
Not relevant for motor type:	-	
Dyn. index [0...n]:	EDS n defined by: p0140	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	10100	0

Description: Selects the encoder from the list of encoder types supported.

Value:

0:	No encoder
202:	DRIVE-CLiQ encoder AS20, singleturn
204:	DRIVE-CLiQ encoder AM20, multiturn 4096
222:	DRIVE-CLiQ encoder AS22, singleturn
224:	DRIVE-CLiQ encoder AM22, multiturn 4096
242:	DRIVE-CLiQ encoder AS24, singleturn
244:	DRIVE-CLiQ encoder AM24, multiturn 4096
262:	DRIVE-CLiQ encoder AS26, singleturn
264:	DRIVE-CLiQ encoder AM26, multiturn 4096
1001:	Resolver 1 speed
1002:	Resolver 2 speed
1003:	Resolver 3 speed
1004:	Resolver 4 speed
2001:	2048, 1 Vpp, A/B C/D R
2002:	2048, 1 Vpp, A/B R
2003:	256, 1 Vpp, A/B R
2004:	400, 1 Vpp, A/B R
2005:	512, 1 Vpp, A/B R
2006:	192, 1 Vpp, A/B R
2007:	480, 1 Vpp, A/B R
2008:	800, 1 Vpp, A/B R
2010:	18000, 1 Vpp, A/B R distance-coded
2012:	420, 1 Vpp, A/B R
2013:	675, 1 Vpp, A/B R
2020:	1024, 1 Vpp, A/B
2051:	2048, 1 Vpp, A/B, EnDat, multiturn 4096
2052:	32, 1 Vpp, A/B, EnDat, multiturn 4096
2053:	512, 1 Vpp, A/B, EnDat, multiturn 4096
2054:	16, 1 Vpp, A/B, EnDat, multiturn 4096
2055:	2048, 1 Vpp, A/B, EnDat, singleturn
2081:	2048, 1 Vpp, A/B, SSI, singleturn
2082:	2048, 1 Vpp, A/B, SSI, multiturn 4096

2083: 2048, 1 Vpp, A/B, SSI, singleturn, error bit
2084: 2048, 1 Vpp, A/B, SSI, multiturn 4096, error bit
2086: 2048, 1 Vpp, A/B, SSI, multiturn 4096, single transfer
3001: 1024 HTL A/B R
3002: 1024 TTL A/B R
3003: 2048 HTL A/B R
3005: 1024 HTL A/B
3006: 1024 TTL A/B
3007: 2048 HTL A/B
3008: 2048 TTL A/B
3009: 1024 HTL A/B unipolar
3011: 2048 HTL A/B unipolar
3020: 2048 TTL A/B R, with sense
3081: SSI, singleturn, 24 V
3082: SSI, multiturn 4096, 24 V
3088: 1024, HTL, A/B, SSI, singleturn
3090: 4096, HTL, A/B, SSI, singleturn
9010: Simulated motor encoder
9999: User defined
10100: Identify encoder (waiting)

NOTICE
An encoder type with p0400 < 9999 defines an encoder for which there is an encoder parameter list. When selecting a catalog encoder (p0400 < 9999) the parameters from the encoder parameter list cannot be changed (write protection). To remove write protection, the encoder type should be set to "user defined" (p0400 = 9999).

Note

The connected encoder can be identified using p0400 = 10100. This means that the encoder must support this, and is possible in the following cases:
- Motor with DRIVE-CLiQ
- Encoder with EnDat interface
- DRIVE-CLiQ encoder
- Encoder with SSI interface

The encoder data (e.g. pulse number p0408) can only be changed when p0400 = 9999.
When using an encoder with track A/B and zero pulse, as standard, fine synchronization is not set using a zero mark. If, for a synchronous motor, fine synchronization is to be realized using a zero mark, then the following must be executed:
- Set p0400 to 9999
- Set p0404.15 to 1

Prerequisite:
Coarse synchronization must be selected (e.g. pole position identification) and the zero pulse of the encoder must be either mechanically or electronically (p0431) adjusted to the pole position.
For p0400 = 10100 the following applies:
The connected encoder is identified. If identification is not possible, then p0400 remains set = 10100, and the system waits until identification is possible.

p0402[0...n] Gearbox type selection / Gearbox type sel

Data type: Integer16	**Visible in:** Standard display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications
Can be changed in the operating state:	Commissioning
Parameter group:	Encoder evaluation
Not relevant for motor type:	-

	Dyn. index [0...n]:	EDS n defined by: p0140	**Calculated:** -
	Unit: -	**Unit group:** -	**Unit selection:** -
	Min:	**Max:**	**Factory setting:**
	1	10100	9999

Description: Selects the gearbox type to preset the inversion and the gearbox factor.
Measuring gearbox factor = motor or load revolutions / encoder revolutions.

Value:
1: Gearbox 1:1 not inverted
2: Gearbox 2:7 inverted
3: Gearbox 4:17 inverted
4: Gearbox 2:10 inverted
9999: Gearbox user-defined
10100: Identify gearbox

Dependency: See also: p0410, p0432, p0433

Note
For p0402 = 1:
Automatic setting of p0410 = 0000 bin, p0432 = 1, p0433 = 1.
For p0402 = 2:
Automatic setting of p0410 = 0011 bin, p0432 = 7, p0433 = 2.
For p0402 = 3:
Automatic setting of p0410 = 0011 bin, p0432 = 17, p0433 = 4.
For p0402 = 4:
Automatic setting of p0410 = 0011 bin, p0432 = 10, p0433 = 2.
For p0402 = 9999:
No automatic setting of p0410, p0432, p0433. The parameters should be manually set.
For p0402 = 10100:
It is only possible to identify the gearbox type for a motor with DRIVE-CLiQ. Parameters p0410, p0432 and p0433 are set corresponding to the identified gearbox. If an identification is not possible, then p0402 is set to 9999.

p0404[0...n].0...23 Encoder configuration effective / Enc_config eff

	Data type: Unsigned32	**Visible in:** Standard display	
	Read permission:	Read drive data or acknowledge messages	
	Write permission:	Edit device configuration or drive applications	
	Can be changed in the operating state:	Commissioning	
	Parameter group:	Encoder evaluation	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	EDS n defined by: p0140	**Calculated:** -
	Unit: -	**Unit group:** -	**Unit selection:** -
	Min:	**Max:**	**Factory setting:**
	-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin

Description: Settings for the basic encoder properties.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Linear encoder	Yes	No
01	Absolute encoder	Yes	No
02	Multiturn encoder	Yes	No
03	Track A/B square-wave	Yes	No
04	Track A/B sine	Yes	No
05	Track C/D	Yes	No
06	Hall sensor	Yes	No
08	EnDat encoder	Yes	No

09	SSI encoder	Yes	No
10	DRIVE-CLiQ encoder	Yes	No
11	Digital encoder	Yes	No
12	Equidistant zero mark	Yes	No
13	Irregular zero mark	Yes	No
14	Distance-coded zero mark	Yes	No
16	Acceleration	Yes	No
17	Track A/B analog	Yes	No
20	Voltage level 5 V	Yes	No
21	Voltage level 24 V	Yes	No
22	Remote sense	Yes	No
23	Resolver excitation	Yes	No

NOTICE

This parameter is automatically preassigned for encoders from the encoder list and for identify encoder (p0400).
When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.
If an SSI encoder (bit 9 = 1) is used as motor encoder for permanent-magnet synchronous motors, then this is only permissible in conjunction with an additional A/B track (bit 3 = 1 or bit 4 = 1).

Note

If a technique to determine the commutation information/data has not been selected (e.g. track C/D, Hall sensor), and the encoder pulse number is an integer multiple of the pole number, then the following applies:
The track A/B is adjusted to match the magnetic position of the motor.
For bit 01, 02 (absolute encoder, multiturn encoder):
These bits can only be selected for EnDat encoders, SSI encoders or DRIVE-CLiQ encoders.
For bit 10 (DRIVE-CLiQ encoder):
This bit is only used for the large-scale integrated DRIVE-CLiQ encoders that provide their encoder data directly in DRIVE-CLiQ format without converting this data. Therefore, this bit is not set for first generation DRIVE-CLiQ encoders.
For bit 12 (equidistant zero mark):
The zero marks occur at regular intervals (e.g. rotary encoder with 1 zero mark per revolution or linear encoder with constant zero mark distance).
The bit activates the monitoring of the zero mark distance (p0425) and zero mark monitoring is activated.
For bit 13 (irregular zero mark):
The zero marks occur at irregular intervals (e.g. a linear scale with only 1 zero mark in the traversing range). The zero mark distance is not monitored.
For bit 14 (distance-coded zero mark):
The distance (clearance) between two or several consecutive zero marks allows the absolute position to be calculated.
ZM: Zero mark
SMC: Sensor Module Cabinet

p0405[0...n].0...6 Square-wave encoder track A/B / Sq-wave enc A/B

Data type: Unsigned32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Encoder evaluation	
Not relevant for motor type:	-	
Dyn. index [0...n]:	EDS n defined by: p0140	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-	-	0000 1111 bin

Description: Settings for the track A/B in a square-wave encoder.
For square-wave encoders, p0404.3 must also be 1.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Signal	Bipolar	Unipolar
01	Level	TTL	HTL
02	Track monitoring	A/B <> -A/B	None
03	Zero pulse	Same as A/B track	24 V unipolar
04	Switching threshold	High	Low
05	Pulse/direction	Active	Inactive
06	Clockwise/counterclockwise	Active	Inactive

NOTICE
This parameter is automatically preassigned for encoders from the encoder list and for identify encoder (p0400).
When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.

Note
For bit 02:
When the function is activated, track monitoring can be deactivated by setting p0437.26.
For bit 05:
When the function is activated, a frequency setpoint and a direction for traveling can be specified via an encoder interface.
For bit 06:
When the function is activated, a clockwise and counterclockwise signal (CW/CCW) for traveling can be specified via an encoder interface.

p0408[0...n] Rotary encoder pulse number / Rot enc pulse no

Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Commissioning
Parameter group: Encoder evaluation
Not relevant for motor type: -
Dyn. index [0...n]: EDS n defined by: p0140 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0	16777215	2048

Description: Sets the number of pulses for a rotary encoder.
In conjunction with the fine resolution, the pulse number defines the transfer format for position actual values Gn_XIST1 (r0482) and Gn_XIST2 (r0483).

NOTICE
This parameter is automatically preassigned for encoders from the encoder list and for identify encoder (p0400).
When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.

Note
The smallest permissible value is 1 pulse.
The number of pole pairs for a resolver is entered here.
This value does not always correspond to the pulse number of the measuring device. For a DRIVE-CLiQ encoder, a value is entered here that facilitates optimum transfer of the resolution (p0423).

p0410[0...n].0...1 Encoder invert actual value / Enc inv actual val

Data type: Unsigned16	**Visible in:** Standard display		
Read permission:	Read drive data or acknowledge messages		
Write permission:	Edit device configuration or drive applications		
Can be changed in the operating state:	Commissioning		
Parameter group:	Encoder evaluation		
Not relevant for motor type:	-		
Dyn. index [0...n]:	EDS n defined by: p0140	**Calculated:** -	
Unit: -	**Unit group:** -	**Unit selection:** -	
Min:	**Max:**	**Factory setting:**	
-	-	0000 bin	

Description: Setting to invert actual values.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Invert speed actual value	Yes	No
01	Invert position actual value	Yes	No

Note
The inversion influences the following parameters:
Bit 00: r0061, r0063 (exception: encoderless control), r0094
Bit 01: r0482, r0483

p0411[0...n].0...3 Measuring gearbox configuration / Meas gear config

Data type: Unsigned32	**Visible in:** Standard display		
Read permission:	Read drive data or acknowledge messages		
Write permission:	Edit device configuration or drive applications		
Can be changed in the operating state:	Commissioning		
Parameter group:	Encoder evaluation		
Not relevant for motor type:	-		
Dyn. index [0...n]:	EDS n defined by: p0140	**Calculated:** -	
Unit: -	**Unit group:** -	**Unit selection:** -	
Min:	**Max:**	**Factory setting:**	
-	-	0000 bin	

Description: Sets the configuration for position tracking of a measuring gearbox.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Measuring gearbox activate position tracking	Yes	No
01	Axis type	Linear axis	Rotary axis
02	Measuring gearbox reset position	Yes	No
03	Meas. gearbox, activate pos. tracking for incremental encoders	Yes	No

NOTICE
For p0411.3 = 1 the following applies:
If position tracking is activated for incremental encoders, only the position actual value is stored. Axis or encoder motion is not detected when deactivated! Any tolerance window entered in p0413 has no effect.

Note
For the following events, the non-volatile, saved position values are automatically reset:
- When an encoder replacement has been identified.
- When changing the configuration of the Encoder Data Set (EDS).

p0412[0...n] Measuring gearbox absolute encoder rotary revolutions virtual / Abs rot rev

Data type: Unsigned32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Encoder evaluation	
Not relevant for motor type:	-	
Dyn. index [0...n]:	EDS n defined by: p0140	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	4194303	0

Description: Sets the number of rotations that can be resolved for a rotary encoder with activated position tracking of the measuring gearbox.

Dependency: This parameter is only of significance for an absolute encoder (p0404.1 = 1) with activated position tracking (p0411.0 = 1) and for an incremental encoder with activated position tracking (p0411.3 = 1).

Note

The resolution that is set must be able to be represented using r0483.

For rotary axes/modulo axes, the following applies:

p0411.0 = 1:

This parameter is preset with p0421 and can be changed.

p0411.3 = 1:

The parameter value is preset to the highest possible value. The highest possible value depends on the pulse number (p0408) and the fine resolution (p0419).

For linear axes, the following applies:

p0411.0 = 1:

This parameter is pre-assigned with p0421, expanded by 6 bits for multiturn information (maximum number of overflows) and cannot be changed.

p0411.3 = 1:

The parameter value is preset to the highest possible value. The highest possible value depends on the pulse number (p0408) and the fine resolution (p0419).

p0413[0...n] Measuring gearbox position tracking tolerance window / Pos track window

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Encoder evaluation	
Not relevant for motor type:	-	
Dyn. index [0...n]:	EDS n defined by: p0140	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00	4.2949673e+09	0.00

Description: Sets a tolerance window for position tracking.

After the system is switched on, the difference between the saved position and the actual position is determined, and depending on this, the following is initiated:

Difference within the tolerance window --> The position is reproduced as a result of the encoder actual value.

Difference outside the tolerance window --> An appropriate message is output.

Dependency: See also: F31501, F32501

⚠ CAUTION
Rotation, for example through a complete encoder range is not detected.

Note
The value is entered in complete encoder pulses.
For p0411.0 = 1, the value is automatically pre-assigned quarter of the encoder range.
Example:
Quarter of the encoder range = (p0408 * p0421) / 4
It is possible that the tolerance window may not be able to be precisely set due to the data type (floating point number with 23 bit mantissa).

p0419[0...n] Fine resolution absolute value Gx_XIST2 (in bits) / Enc fine Gx_XIST2

Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Encoder evaluation	
Not relevant for motor type:	-	
Dyn. index [0...n]:	EDS n defined by: p0140	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	18	9

Description: Sets the fine resolution in bits of the absolute position actual values.

Note
This parameter applies to process data Gx_XIST2 when reading the absolute value.

p0421[0...n] Absolute encoder rotary multiturn resolution / Enc abs multiturn

Data type: Unsigned32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Encoder evaluation	
Not relevant for motor type:	-	
Dyn. index [0...n]:	EDS n defined by: p0140	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	4294967295	4096

Description: Sets the number of revolutions that can be resolved for a rotary absolute encoder.

NOTICE
This parameter is automatically preassigned for encoders from the encoder list and for identify encoder (p0400).
When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.

p0423[0...n] Absolute encoder rotary singleturn resolution / Enc abs singleturn

Data type: Unsigned32	**Visible in:** Standard display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications
Can be changed in the operating state:	Commissioning
Parameter group:	Encoder evaluation
Not relevant for motor type:	-

Dyn. index [0...n]:	EDS n defined by: p0140	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	1073741823	8192

Description: Sets the number of measuring steps per revolution for a rotary absolute encoder.
The resolution refers to the absolute position.

NOTICE
This parameter is automatically preset for encoders from the encoder list and for "Encoder type selection" (p0400).
When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.

p0425[0...n] Encoder rotary zero mark distance / Enc rot dist ZM

Data type: Unsigned32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Encoder evaluation	
Not relevant for motor type:	-	
Dyn. index [0...n]:	EDS n defined by: p0140	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	16777215	2048

Description: Sets the distance in pulses between two zero marks for a rotary encoder.
This information is used for zero mark monitoring.

NOTICE
This parameter is automatically preassigned for encoders from the encoder list and for identify encoder (p0400).
When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.

Note
For distance-coded zero marks this parameter signifies the basic distance.

p0426[0...n] Encoder zero mark differential distance / Enc ZM Dif_dist

Data type: Unsigned16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Encoder evaluation	
Not relevant for motor type:	-	
Dyn. index [0...n]:	EDS n defined by: p0140	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
1	65535	1

Description: Sets the differential pitch for distance-coded zero marks (signal periods).
The value corresponds to jump displacement of "zero mark with interference".

Dependency: This function can only be used when a Sensor Module property is available (r0459.9 = 1).

NOTICE
This parameter is automatically preassigned for encoders from the encoder list and for identify encoder (p0400).
When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.

p0427[0...n] Encoder SSI baud rate / Enc SSI baud rate

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Encoder evaluation	
Not relevant for motor type:	-	
Dyn. index [0...n]:	EDS n defined by: p0140	**Calculated:** -
Unit: kHz	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [kHz]	65535 [kHz]	100 [kHz]

Description: Sets the baud rate for an SSI encoder.

NOTICE
This parameter is automatically preassigned for encoders from the encoder list and for identify encoder (p0400).
When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.

Note
SSI: Synchronous Serial Interface

p0428[0...n] Encoder SSI monoflop time / Enc SSI t_monoflop

Data type: Unsigned16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Encoder evaluation	
Not relevant for motor type:	-	
Dyn. index [0...n]:	EDS n defined by: p0140	**Calculated:** -
Unit: µs	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [µs]	65535 [µs]	30 [µs]

Description: Sets the minimum wait time between two data transfers of the absolute value for an SSI encoder.

NOTICE
This parameter is automatically preassigned for encoders from the encoder list and for identify encoder (p0400).
When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.

p0429[0...n].0...6 Encoder SSI configuration / Enc SSI config

Data type: Unsigned16	**Visible in:** Standard display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications
Can be changed in the operating state:	Commissioning

Parameter group: Encoder evaluation
Not relevant for motor type: -
Dyn. index [0...n]: EDS n defined by: p0140 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
-	-	0000 0000 bin

Description: Sets the configuration for an SSI encoder.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Transfer code	Binary code	Gray code
02	Transfer absolute value twice	Yes	No
06	Data line during the monoflop time	High level	Low level

NOTICE
This parameter is automatically preassigned for encoders from the encoder list and for identify encoder (p0400). When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.

Note
For bit 06:
The quiescent signal level of the data line corresponds to the inverted, set level.

p0430[0...n].19...27 Sensor Module configuration / SM config

Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Commissioning
Parameter group: Encoder evaluation
Not relevant for motor type: -
Dyn. index [0...n]: EDS n defined by: p0140 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
-	-	1110 0000 0000 1000 0000 0000 0000 0000 bin

Description: Sets the configuration of the Sensor Module.

Bit array:

Bit	Signal name	1 signal	0 signal
19	Safety position actual value sensing	Yes	No
20	Speed calculation mode (only SMC30)	Incremental diff	Edge time meas
21	Zero mark tolerance	Yes	No
22	Rotor position adaptation	Yes	No
23	Deselect commutation with zero mark	Yes	No
24	Commutation with selected zero mark	Yes	No
25	Switch off encoder voltage supply during parking	Yes	No
27	Extrapolate position values	Yes	No

NOTICE
A bit-wise configuration is only possible if the corresponding property is also present in r0458.

Note
For bit 19 (Safety position actual value sensing):
- If bit = 1, the Safety position actual value is transferred in the cyclic telegram.
For bit 20 (speed calculation mode):
- If bit = 1, the speed is calculated via incremental difference without extrapolation.
- If bit = 0, the speed is calculated via edge time measurement with extrapolation. p0453 is effective in this mode.
For bit 21 (zero mark tolerance):
- If bit = 1, a one-off zero mark distance error is tolerated. In the event of a defect, the fault F3x100/F3x101 does not appear, but alarm A3x400/A3x401 does.
For bit 22 (rotor position adaptation):
- If bit = 1, the rotor position is corrected automatically. The correction speed is +/-1/4 encoder pulse per zero mark distance.
For bit 23 (deselect commutation with zero mark):
- The bit should only be set for encoders that have not been adjusted.
For bit 24 (commutation with selected zero mark):
- If bit = 1, the commutation position is corrected via a selected zero mark.
For bit 25 (disconnect the encoder power supply on parking):
- If bit = 1, the encoder power supply is switched off on parking (0 V).
- If bit = 0, the encoder power supply is not switched off on parking, it is reduced from 24 V to 5 V.
For bit 27 (extrapolate position values):
- If bit = 1, the extrapolation of the position values is activated.

p0431[0...n] Angular commutation offset / Ang_com offset

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Encoder evaluation, Pole position identification/encoder calibration	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	EDS n defined by: p0140	**Calculated:** -
Unit: °	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-180.00 [°]	180.00 [°]	0.00 [°]

Description: Sets the angular commutation offset.

Dependency: The value is taken into account in r0094.
See also: r0094, r1778

NOTICE
When the firmware is upgraded from V2.3 to V2.4 or higher, the value must be reduced by 60° if all the following conditions are fulfilled:
- The motor is a synchronous motor (p0300 = 2, 2xx, 4, 4xx).
- The encoder is a resolver (p0404.23 = 1).
- The speed actual value is inverted (p0410.0 = 1).
The angular commutation offset cannot be generally taken from other drive systems. As a minimum - The sign of the offset determined for SIMODRIVE 611 digital and SIMODRIVE 611 universal must be reversed for SINAMICS (p0431 (SINAMICS) = -p1016 (SIMODRIVE)).

Note
Angular commutation offset, angular difference between electrical position of encoder and flux position.
For p0404.5 = 1 (track C/D) the following applies:
The angular offset in p0431 acts on track A/B, the zero mark on track C/D.
For p0404.6 = 1 (Hall sensor) the following applies:
The angular offset in p0431 acts on track A/B and the zero mark.

p0432[0...n] Gearbox factor encoder revolutions / Grbx_fact enc_rev

Data type: Integer32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Encoder evaluation	
Not relevant for motor type:	-	
Dyn. index [0...n]:	EDS n defined by: p0140	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
1	1048576	1

Description: Sets the encoder revolutions for the gearbox factor of the encoder evaluation.

The gearbox factor specifies the ratio between the encoder shaft and motor shaft (for motor encoders) or between the encoder shaft and the load.

Dependency: This parameter can only be set for p0402 = 9999.

See also: p0402, p0410, p0433

Note

Negative gearbox ratios should be implemented with p0410.

For synchronous motors, the quotient of the pole pair number divided by the ratio of the measuring gearbox must be an integer number: (p0314 * p0433) / p0432

p0433[0...n] Gearbox factor motor/load revolutions / Grbx_fact mot/load

Data type: Integer32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Encoder evaluation	
Not relevant for motor type:	-	
Dyn. index [0...n]:	EDS n defined by: p0140	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
1	1048576	1

Description: Sets the motor and load revolutions for the gearbox factor of the encoder evaluation.

The gearbox factor specifies the ratio between the encoder shaft and motor shaft (for motor encoders) or between the encoder shaft and the load.

Dependency: This parameter can only be set for p0402 = 9999.

See also: p0402, p0410, p0432

Note

Negative gearbox ratios should be implemented with p0410.

For synchronous motors, the quotient of the pole pair number divided by the ratio of the measuring gearbox must be an integer number:
(p0314 * p0433) / p0432

p0434[0...n] Encoder SSI error bit / Enc SSI error bit

Data type: Unsigned16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	

Can be changed in the operating state:	Commissioning	
Parameter group:	Encoder evaluation	
Not relevant for motor type:	-	
Dyn. index [0...n]:	EDS n defined by: p0140	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	65535	0

Description: Sets the position and level of the error bit in the SSI protocol.

NOTICE
The bit may only be positioned before (p0446) or after (p0448) the absolute value in the SSI protocol.

Note
Value = dcba
ba: Position of the error bit in the protocol (0 ... 63).
c: Level (0: Low level, 1: High level).
d: Status of the evaluation (0: Off, 1: On with 1 error bit, 2: On with 2 error bits ... 9: On with 9 error bits).
For several error bits, the following applies:
- The position specified under ba and the additional bits are assigned increasing consecutively.
- The level set under c applies to all error bits.
Example:
p0434 = 1013
--> The evaluation is switched in and the error bit is at position 13 with a low level.
p0434 = 1113
--> The evaluation is switched in and the error bit is at position 13 with a high level.

p0435[0...n] Encoder SSI alarm bit / Enc SSI alarm bit

Data type: Unsigned16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Encoder evaluation	
Not relevant for motor type:	-	
Dyn. index [0...n]:	EDS n defined by: p0140	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	65535	0

Description: Sets the position and level of the alarm bit in the SSI protocol.

NOTICE
The bit may only be positioned before (p0446) or after (p0448) the absolute value in the SSI protocol.

Note
Value = dcba
ba: Position of the alarm bit in protocol (0 ... 63).
c: Level (0: Low level, 1: High level).
d: Status of the evaluation (0: Off, 1: On with 1 alarm bit, 2: On with 2 alarm bits ... 9: On with 9 alarm bits).
The following applies for several alarm bits:
- The position specified under ba and the additional bits are assigned increasing consecutively.
- The level set under c applies to all error bits.
Example:
p0435 = 1014
--> The evaluation is switched in and the alarm bit is at position 14 with a low level.
p0435 = 1114
--> The evaluation is switched in and the alarm bit is at position 14 with a high level.

p0436[0...n] Encoder SSI parity bit / Enc SSI parity bit

Data type: Unsigned16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Encoder evaluation	
Not relevant for motor type:	-	
Dyn. index [0...n]:	EDS n defined by: p0140	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	65535	0

Description: Sets the position and parity of the parity bit in the SSI protocol.

NOTICE
The bit may only be positioned before (p0446) or after (p0448) the absolute value in the SSI protocol.

Note
Value = dcba
ba: Position of the parity bit in the protocol (0 ... 63).
c: Parity (0: even, 1: uneven).
d: State of the evaluation (0: Off, 1: On).
Example:
p0436 = 1015
--> The evaluation is switched in and the parity bit is at position 15 with even parity.
p0436 = 1115
--> The evaluation is switched in and the parity bit is at position 15 with uneven parity.

p0437[0...n].1...26 Sensor Module configuration extended / SM config ext

Data type: Unsigned32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Encoder evaluation	
Not relevant for motor type:	-	
Dyn. index [0...n]:	EDS n defined by: p0140	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Min:	Max:	Factory setting:
-	-	0011 0000 0000 0000 0000 1000 0000 0000 bin

Description: Sets the extended configuration of the Sensor Module.

Bit array:

Bit	Signal name	1 signal	0 signal
01	Zero mark edge detection	Yes	No
02	Correction position actual value XIST1	Yes	No
04	Edge evaluation bit 0	Yes	No
05	Edge evaluation bit 1	Yes	No
06	Freeze the speed actual value for dn/dt errors	Yes	No
07	Do not accumulate the number of incorrect pulses	Yes	No
12	Activate additional messages	Yes	No
13	Support absolute position for incremental encoder	Yes	No
22	Resolution absolute position as factor	Yes	No
25	Deselect monitoring multiturn representation in Gx_XIST2	Yes	No
26	Deselect track monitoring	Yes	No

Dependency: See also: p0430, r0459

Note

A value of zero is displayed if an encoder is not present.

For bit 01:

If bit = 0, the zero mark is evaluated by ANDing tracks A and B and the zero mark.

For bit = 1, the zero mark is evaluated depending on the direction of rotation detected. For a positive direction of rotation, the positive edge of the zero mark is considered and for a negative direction of rotation, the negative edge of the zero mark.

For bit 02:

When the bit is set, for a deviation less than the tolerance window for the zero mark (p4681, p4682), the pulse number is corrected. If the bit is not set, encoder fault F3x131 is triggered.

For bits 05, 04:

The actual hardware only supports 1x or 4x signal evaluation.

Bit 5/4 = 0/0: Signal evaluation per period, 4x.

Bit 5/4 = 1/0: signal evaluation per period, 4x with speed calculation over the complete pulse.

Bit 5/4 = 0/1: Signal evaluation per period, 1x.

Bit 5/4 = 1/1: Illegal setting.

For bit 06:

If the function is active, when dn/dt monitoring responds, the speed actual value is internally frozen for a time equivalent to two current controller sampling times. The rotor position continues to be integrated. The actual value is then re-enabled after this time has expired.

For bit 07:

When the bit is not set, the incorrect pulses that have occurred up until now are accumulated in p4688.

When the bit is not set, p4688 indicates the incorrect pulses that have still not been corrected.

For bit 12:

Additional fault messages can be activated for extended fault diagnostics.

For bit 13:

When the bit is set, for an incremental encoder with zero mark, the absolute value in Gn_XIST2 can be requested via Gn_STW.13. The absolute value is only valid after passing the zero mark.

For bit 26:

Track monitoring is deactivated for the square-wave encoders when the bit is set, even if the monitoring function is selected in p0405.2.

p0438[0...n] Square-wave encoder filter time / Enc t_filt

Data type: FloatingPoint32 **Visible in:** Extended display

Read permission: Read drive data or acknowledge messages

Write permission: Edit device configuration or drive applications

Can be changed in the operating state:	Commissioning	
Parameter group:	Encoder evaluation	
Not relevant for motor type:	-	
Dyn. index [0...n]:	EDS n defined by: p0140	**Calculated:** -
Unit: µs	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [µs]	100.00 [µs]	0.64 [µs]

Description: Sets the filter time for a square-wave encoder.
The hardware of the square-wave encoder only supports the following values:
0: No filtering
0.04 µs
0.64 µs
2.56 µs
10.24 µs
20.48 µs

Dependency: See also: r0452

NOTICE
If the filter time is too long, the track signals A/B/R may be suppressed and the appropriate messages output.

Note
The most suitable filter time depends on the number of pulses and maximum speed of the square-wave encoder.
The filter time is automatically corrected to the next value when entering a non-specified value. In this case, no message is output.
The effective filter time is displayed in r0452.

p0439[0...n] Encoder ramp-up time / Enc ramp-up time

Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Encoder evaluation	
Not relevant for motor type:	-	
Dyn. index [0...n]:	EDS n defined by: p0140	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [ms]	65535 [ms]	0 [ms]

Description: Sets the ramp-up time for the encoder.
The encoder supplies stable track signals once this time has elapsed.

Dependency: This function can only be used when a Sensor Module property is available (r0459.9 = 1).

NOTICE
This parameter is automatically preset for encoders from the encoder list (p0400).

p0441[0...n] Encoder commissioning serial number / Enc com ser_no

Data type: Unsigned32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	

Parameter group:	Encoder evaluation	
Not relevant for motor type:	-	
Dyn. index [0...n]:	EDS n defined by: p0140	**Calculated:** automatic
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0000 hex	FFFF FFFF hex	0000 hex

Description: Serial number of the encoder for commissioning.

Dependency: See also: r0460

Note
A value of zero is displayed if an encoder is not present.

p0446[0...n] Encoder SSI number of bits before the absolute value / Enc SSI bit before

Data type: Unsigned16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Encoder evaluation	
Not relevant for motor type:	-	
Dyn. index [0...n]:	EDS n defined by: p0140	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	65535	0

Description: Sets the number of bits before the absolute value in the SSI protocol.

NOTICE
This parameter is automatically preassigned for encoders from the encoder list and for identify encoder (p0400). When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.

Note
For example, error bit, alarm bit or parity bit can be positioned at these bits.

p0447[0...n] Encoder SSI number of bits absolute value / Enc SSI bit val

Data type: Unsigned16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Encoder evaluation	
Not relevant for motor type:	-	
Dyn. index [0...n]:	EDS n defined by: p0140	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	65535	25

Description: Sets the number of bits for the absolute value in the SSI protocol.

NOTICE
This parameter is automatically preassigned for encoders from the encoder list and for identify encoder (p0400). When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.

p0448[0...n] Encoder SSI number of bits after the absolute value / Enc SSI bit after

Data type: Unsigned16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Encoder evaluation	
Not relevant for motor type:	-	
Dyn. index [0...n]:	EDS n defined by: p0140	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	65535	0

Description: Sets the number of bits after the absolute value in the SSI protocol.

NOTICE

This parameter is automatically preassigned for encoders from the encoder list and for identify encoder (p0400).
When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.

Note

For example, error bit, alarm bit or parity bit can be positioned at these bits.

p0449[0...n] Encoder SSI number of bits filler bits / Enc SSI fill bits

Data type: Unsigned16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Encoder evaluation	
Not relevant for motor type:	-	
Dyn. index [0...n]:	EDS n defined by: p0140	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	65535	1

Description: Sets the number of filler bits for double absolute value transfer in the SSI protocol.

Dependency: See also: p0429

NOTICE

This parameter is automatically preassigned for encoders from the encoder list and for identify encoder (p0400).
When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.

Note

This parameter is only of significance for p0429.2 = 1.

r0452[0...2] Square-wave encoder filter time display / Enc t_filt disp

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Encoder evaluation	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: µs	**Unit group:** -	**Unit selection:** -

Description: Displays the effective filter time for a square-wave encoder.
The filter time is set using p0438.
Index: [0] = Motor encoder
[1] = Encoder 2
[2] = Reserved
Dependency: See also: p0438

Note
A value of zero is displayed if an encoder is not present.

p0453[0...n] Pulse encoder evaluation zero speed measuring time / Enc_ev n_0 t_meas

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Encoder evaluation	
Not relevant for motor type:	-	
Dyn. index [0...n]:	EDS n defined by: p0140	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.10 [ms]	10000.00 [ms]	1000.00 [ms]

Description: Sets the measuring time for evaluating zero speed.
If no pulses are detected from track A/B during this time, a speed actual value of zero is output.
Dependency: See also: r0452

Note
This function is required for slow-running motors so that actual speeds close to zero can be output correctly.

p0454[0...n].4 Sensor Module configuration extended Part 2 / SM config ext 2

Data type: Unsigned32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Encoder evaluation	
Not relevant for motor type:	-	
Dyn. index [0...n]:	EDS n defined by: p0140	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-	-	0000 0000 bin

Description: Sets the extended configuration Part 2 of the Sensor Module.
Bit array:

Bit	Signal name	1 signal	0 signal
04	Extended cyclic DRIVE-CLiQ telegram	Yes	No

Dependency: See also: r0457

Note
For bit 04:
The extended cyclic DRIVE-CLiQ telegram of the encoder should be used.
A power on is required after changing this setting.

r0455[0...2].0...23 Encoder configuration recognized / Enc_config recog

Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Encoder evaluation
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the detected encoder configuration.
In this case, the encoder must automatically support the function (e.g. encoder with EnDat interface).

Index: [0] = Motor encoder
[1] = Encoder 2
[2] = Reserved

Bit array:

Bit	Signal name	1 signal	0 signal
00	Linear encoder	Yes	No
01	Absolute encoder	Yes	No
02	Multiturn encoder	Yes	No
03	Track A/B square-wave	Yes	No
04	Track A/B sine	Yes	No
05	Track C/D	Yes	No
06	Hall sensor	Yes	No
08	EnDat encoder	Yes	No
09	SSI encoder	Yes	No
10	DRIVE-CLiQ encoder	Yes	No
11	Digital encoder	Yes	No
12	Equidistant zero mark	Yes	No
13	Irregular zero mark	Yes	No
14	Distance-coded zero mark	Yes	No
16	Acceleration	Yes	No
17	Track A/B analog	Yes	No
20	Voltage level 5 V	Yes	No
21	Voltage level 24 V	Yes	No
22	Remote sense	Yes	No
23	Resolver excitation	Yes	No

Dependency: See also: p0404

Note
ZM: Zero mark
This parameter is only used for diagnostics.
A value of zero is displayed if an encoder is not present.
For bit 20, 21 (voltage level 5 V, voltage level 24 V):
The voltage level cannot be detected. Therefore, these bits are always set to 0.

r0456[0...2].0...23 Encoder configuration supported / Enc_config sup

Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Encoder evaluation
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the encoder configuration supported by the Sensor Module.

Index: [0] = Motor encoder
[1] = Encoder 2
[2] = Reserved

Bit array:

Bit	Signal name	1 signal	0 signal
00	Linear encoder	Yes	No
01	Absolute encoder	Yes	No
02	Multiturn encoder	Yes	No
03	Track A/B square-wave	Yes	No
04	Track A/B sine	Yes	No
05	Track C/D	Yes	No
06	Hall sensor	Yes	No
08	EnDat encoder	Yes	No
09	SSI encoder	Yes	No
10	DRIVE-CLiQ encoder	Yes	No
11	Digital encoder	Yes	No
12	Equidistant zero mark	Yes	No
13	Irregular zero mark	Yes	No
14	Distance-coded zero mark	Yes	No
16	Acceleration	Yes	No
17	Track A/B analog	Yes	No
20	Voltage level 5 V	Yes	No
21	Voltage level 24 V	Yes	No
22	Remote sense	Yes	No
23	Resolver excitation	Yes	No

Dependency: See also: p0404

Note
ZM: Zero mark
This parameter is only used for diagnostics.
A value of zero is displayed if an encoder is not present.

r0457[0...2].0...4 Sensor Module properties extended Part 2 / SM prop ext 2

Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Encoder evaluation
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the extended properties part 2, supported by the Sensor Module.

Index: [0] = Motor encoder
[1] = Encoder 2
[2] = Reserved

Bit array:

Bit	Signal name	1 signal	0 signal
00	Safety Integrity Level SIL 3 supported	Yes	No
02	Shift factor XIST2 supported	Yes	No
03	Acceleration sensors supported	Yes	No
04	Extended cyclic DRIVE-CLiQ telegram supported	Yes	No

Dependency: See also: p0454

Note
A value of zero is displayed if an encoder is not present.

r0458[0...2].0...27 Sensor Module properties / SM properties

Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Encoder evaluation
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Sets the Sensor Module configuration.

Index: [0] = Motor encoder
[1] = Encoder 2
[2] = Reserved

Bit array:

Bit	Signal name	1 signal	0 signal
00	Encoder data available	Yes	No
01	Motor data available	Yes	No
02	Temperature sensor connection available	Yes	No
03	Connection for PTC for motor with DRIVE-CLiQ also available	Yes	No
04	Module temperature available	Yes	No
07	Hall sensor can be combined with actual value inversion	Yes	No
08	Evaluation through several temperature channels possible	Yes	No
10	Speed diagnostics in the Sensor Module	Yes	No
15	Evaluation function reserve	Yes	No
16	Pole position identification	Yes	No
19	Safety position actual value sensing	Yes	No
20	Extended speed calculation being used (only SMC30)	Yes	No
21	Zero mark tolerance	Yes	No
22	Rotor position adaptation	Yes	No
23	Commutation with zero mark can be deselected	Yes	No
24	Commutation with selected zero mark	Yes	No
25	Disconnection of encoder power supply on parking supported	Yes	No
26	Parking with temperature evaluation	Yes	No
27	SSI position value extrapolation	Yes	No

Dependency: See also: p0437, p0600, p0601

Note
A value of zero is displayed if an encoder is not present.
For bit 23:
When the property is set, commutation with zero mark can be deselected using p0430.23.
For bit 24:
If the property is set, commutation to the selected zero mark can be carried out.

r0459[0...2].1...26 Sensor Module properties extended / SM prop ext

Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Encoder evaluation
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the extended properties supported by the Sensor Module.

Index: [0] = Motor encoder
[1] = Encoder 2
[2] = Reserved

Bit array:

Bit	Signal name	1 signal	0 signal
01	Zero mark edge detection	Yes	No
02	Correction position actual value XIST1	Yes	No
04	Edge evaluation bit 0	Yes	No
05	Edge evaluation bit 1	Yes	No
06	Freeze the speed actual value for dn/dt errors	Yes	No
07	Accumulate uncorrected encoder pulses	Yes	No
12	Activate additional messages	Yes	No
13	Absolute position for incremental encoder supported	Yes	No
14	Spindle functionality	Yes	No
15	Additional temperature sensor available	Yes	No
16	Internal encoder temperature available	Yes	No
18	Pt1000 temperature sensor evaluation	Yes	No
22	Resolution absolute position as factor	Yes	No
24	Multiturn via battery	Yes	No
25	Deselect monitoring multiturn representation in Gx_XIST2	Yes	No
26	Track monitoring deselection	Yes	No

Dependency: See also: p0437

Note
A value of zero is displayed if an encoder is not present.

r0460[0...2] Encoder serial number / Enc ser_no

Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Encoder evaluation
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the actual serial number of the corresponding encoder.

Index: [0] = Motor encoder
[1] = Encoder 2
[2] = Reserved

Dependency: See also: p0441

r0477[0...2] Measuring gearbox position difference / Meas gear pos diff

Data type: Integer32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Encoder evaluation
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** -

Description: Displays the position difference before the measuring gearbox between switching off and switching on.

Index: [0] = Motor encoder
[1] = Encoder 2
[2] = Reserved

Dependency: See also: F31501, F32501

Note
The increments are displayed in the format the same as r0483. The position difference should be read in encoder increments.

r0479[0...2] Diagnostics encoder position actual value Gn_XIST1 / Diag Gn_XIST1

Data type: Integer32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Encoder evaluation
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** -

Description: Displays the encoder actual position value Gn_XIST1 according to PROFIdrive for diagnostics.
In contrast to r0482, the value is updated in the DRIVE-CLiQ basic clock cycle and displayed with sign.

Index: [0] = Motor encoder
[1] = Encoder 2
[2] = Reserved

⚠ CAUTION
After running up or after a data set switchover, the new value is present at the numerical signal sinks, which are interconnected to numerical signal sources r0479 - and under certain circumstances are only available after several 100 ms.
Reason:
These interconnections are updated in the background, contrary to interconnections to other numerical signal sources (e.g. r0482).
The value is immediately available when non-cyclically reading r0479.

c0480[0...2] Encoder control word Gn_STW / Enc Gn_STW

Data type: Unsigned16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Encoder evaluation
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink numeric **Scaling:** -
Factory interconnection: Fixed value: 0

Description: Signal for the encoder control word Gn_STW according to PROFIdrive.

Index: [0] = Motor encoder
[1] = Encoder 2
[2] = Reserved

r0481[0...2].0...15 Encoder status word Gn_ZSW / Enc Gn_ZSW

Data type: Unsigned16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Encoder evaluation
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** -

Description: Displays the encoder status word Gn_ZSW according to PROFIdrive.

Index: [0] = Motor encoder
[1] = Encoder 2
[2] = Reserved

Bit array:

Bit	Signal name	1 signal	0 signal
00	Function 1 active	Yes	No
01	Function 2 active	Yes	No
02	Function 3 active	Yes	No
03	Function 4 active	Yes	No
04	Value 1	Displayed in r0483	Not present
05	Value 2	Displayed in r0483	Not present
06	Value 3	Displayed in r0483	Not present
07	Value 4	Displayed in r0483	Not present
08	Measuring probe 1 deflected	Yes	No
09	Measuring probe 2 deflected	Yes	No
11	Encoder fault acknowledge active	Yes	No
13	Absolute value cyclically	Displayed in r0483	No
14	Parking encoder active	Yes	No
15	Encoder fault	Displayed in r0483	None

Note
More information about Gn_STW/Gn_ZSW is provided in the product documentation via parameter r0481.

For bit 14:
Displays the acknowledgment for "activate parking encoder" (Gn_STW.14 = 1) or encoder position actual value (Gn_XIST1) invalid.
For bit 14, 15:
r0481.14 = 1 and r0481.15 = 0 can have one of the following causes:
- The encoder is parked.
- The encoder is deactivated.
- The encoder is being commissioned.
- No parameterized encoder available.
- Encoder data set is being changed over.

r0481.14 = 1 and r0481.15 = 1 has the following significance:
An encoder error has occurred and the encoder position actual value (Gn_XIST1) is invalid.

r0482[0...2] Encoder position actual value Gn_XIST1 / Enc Gn_XIST1

Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Encoder evaluation
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** -

Description: Displays the encoder position actual value Gn_XIST1 according to PROFIdrive.

Index: [0] = Motor encoder
[1] = Encoder 2
[2] = Reserved

Note
- This value is reset if necessary when the "parking encoder" (r0481.14) function is deselected.
- In this value, the measuring gearbox (p0432, p0433) is only taken into account when the position tracking is activated (p0411.0 = 1).
- The update time in isochronous operation corresponds to the bus cycle time.
- The update time in non-isochronous operation is approximately 1 ms.

r0483[0...2] Encoder position actual value Gn_XIST2 / Enc Gn_XIST2

Data type: Unsigned32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Encoder evaluation	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** -

Description: Displays the encoder position actual value Gn_XIST2 according to PROFIdrive.

Index: [0] = Motor encoder
[1] = Encoder 2
[2] = Reserved

NOTICE
The encoder position actual value must be requested using the encoder control word Gn_STW.13.

Note
- In this value, the measuring gearbox (p0432, p0433) is only taken into account when the position tracking is activated (p0411.0 = 1).
- If GxZSW.15 = 1 (r0481), then an error code with the following significance is located in Gx_XIST2 (r0483):
1: Encoder fault.
2: Possible position shift in Gx_XIST1.
3: Encoder parking not possible.
4: Cancellation, homing mark search (e.g. zero mark not available or input terminal for external zero mark not set). Zero mark is requested, however according to p0404.12/13/14 there is no zero mark (alarm A07565).
5: Cancellation, fetch reference value (e.g. illegal change from homing mark search to flying measurement).
6: Cancellation, flying measurement (e.g. input terminal for probe not set).
7: Cancellation, fetch measured value (e.g. illegal change from flying measurement to homing mark search).
8: Abort, absolute value transfer.
3841: Function not supported.
4097: Abort, homing mark search due to an initialization error. Possible cause: defective converter.
4098: Abort, flying measurement due to an initialization error. Possible cause: defective converter.
4099: Abort, homing mark search due to a measuring error. Possible cause: too many measuring pulses have occurred.
4100: Abort, flying measurement due to a measuring error. Possible cause: too many measuring pulses have occurred.

r0485[0...2] Measuring gearbox encoder raw value incremental / Enc raw val incr

Data type: Unsigned32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Encoder evaluation	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** -

Description: Displays the raw value of the incremental encoder actual value before the measuring gearbox.
Index: [0] = Motor encoder
[1] = Encoder 2
[2] = Reserved

r0486[0...2] Measuring gearbox encoder raw value absolute / Enc raw val abs

Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Encoder evaluation
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** -

Description: Displays the raw value of the absolute encoder actual value before the measuring gearbox.
Index: [0] = Motor encoder
[1] = Encoder 2
[2] = Reserved

r0487[0...2].0...15 Diagnostic encoder control word Gn_STW / Enc Gn_STW

Data type: Unsigned16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Encoder evaluation
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the encoder control word Gn_STW according to PROFIdrive for diagnostics.
Index: [0] = Motor encoder
[1] = Encoder 2
[2] = Reserved

Bit array:

Bit	Signal name	1 signal	0 signal
00	Request function 1	Yes	No
01	Request function 2	Yes	No
02	Request function 3	Yes	No
03	Request function 4	Yes	No
04	Request command bit 0	Yes	No
05	Request command bit 1	Yes	No
06	Request command bit 2	Yes	No
07	Flying measurement mode/homing mark search	Flying measurement	Homing marks
13	Request absolute value cyclic	Yes	No
14	Request parking encoder	Yes	No
15	Request acknowledge encoder fault	Yes	No

Note
More information is available from the corresponding product documentation in Section "Encoder control and status words".
The encoder control word is interconnected via numerical signal sink c0480.

p0488[0...2] Measuring probe 1 input terminal / Meas probe 1 inp

Data type: Integer16 **Visible in:** Standard display

Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Measuring probe, Traversing blocks	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	215	0

Description: Sets the input terminal to connect probe 1.

Value:
0: No measuring probe
215: DI 5 (X131.9)

Index:
[0] = Motor encoder
[1] = Encoder 2
[2] = Reserved

Dependency: See also: p0489, p0490

⚠ CAUTION

In order to prevent incorrect measurement values, these parameters may not be written during an active measurement.

Note

DI: Digital Input
Refer to the encoder interface for PROFIdrive.
If the parameterization is rejected, check whether the terminal is already being used in p0580.

p0489[0...2] Measuring probe 2 input terminal / Meas probe 2 input

Data type: Integer16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Measuring probe, Traversing blocks	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	215	0

Description: Sets the input terminal to connect probe 2.

Value:
0: No measuring probe
215: DI 5 (X131.9)

Index:
[0] = Motor encoder
[1] = Encoder 2
[2] = Reserved

Dependency: See also: p0488, p0490

⚠ CAUTION

In order to prevent incorrect measurement values, these parameters may not be written during an active measurement.

Note

DI: Digital Input
Refer to the encoder interface for PROFIdrive.
If the parameterization is rejected, check whether the terminal is already being used in p0580.

p0490.5 Invert measuring probe or equivalent zero mark / MT or ZM_equiv inv

Data type: Unsigned32	**Visible in:** Standard display		
Read permission:	Read drive data or acknowledge messages		
Write permission:	Edit device configuration or drive applications		
Can be changed in the operating state:	Operation		
Parameter group:	Measuring probe		
Not relevant for motor type:	-		
Dyn. index [0...n]:	-	**Calculated:** -	
Unit: -	**Unit group:** -	**Unit selection:** -	
Min:	**Max:**	**Factory setting:**	
-	-	0000 0000 bin	

Description: Setting to invert the digital input signals to connect a measuring probe or an equivalent zero mark.

Bit array:

Bit	Signal name	1 signal	0 signal
05	DI 5 (X131.9)	Inverted	Not inverted

Dependency: See also: p0488, p0489

Note
When the measuring probe or the equivalent zero mark is inverted, this has no effect on the status displays of the digital inputs (r0722, r0723).
DI: Digital Input

p0491 Motor encoder fault response ENCODER / Fault resp ENCODER

Data type: Integer16	**Visible in:** Extended display		
Read permission:	Read drive data or acknowledge messages		
Write permission:	Edit device configuration or drive applications		
Can be changed in the operating state:	Ready for operation		
Parameter group:	Encoder evaluation, DC braking		
Not relevant for motor type:	-		
Dyn. index [0...n]:	-	**Calculated:** -	
Unit: -	**Unit group:** -	**Unit selection:** -	
Min:	**Max:**	**Factory setting:**	
0	6	0	

Description: Sets the behavior for the ENCODER fault response (motor encoder).
This means, for example, if an encoder fault occurs, encoderless operation can be automatically selected with a shutdown behavior that can be selected.

Value:

0:	Encoder fault results in OFF2
1:	Enc fault results in encoderless oper. and oper. continues
2:	Encoder fault results in encoderless operation and OFF1
3:	Encoder fault results in encoderless operation and OFF3
4:	Encoder fault results in DC braking/armature short-cct internal
5:	Enc fault results in encoderless op, operation continues, alarm
6:	An encoder fault results in encoderless operation, alarm

Dependency: The following parameters are relevant for encoderless operation.
See also: p0341, p0342, p1470, p1472, p1517, p1755
See also: F07575

⚠ CAUTION
For a value = 1, 2, 3, 5, 6 the following applies: - Encoderless operation must have been started. For a value = 1, 5, 6, the following applies: - The motor continues to operate in spite of the incorrect motor encoder function.

Note

For a value = 1, 2, 3, 5, 6 the following applies:

- See status signal "Encoderless operation due to a fault" (r1407.13).
- If, with r1407.13 = 1, a different drive data set is selected (e.g. interconnection from c0820), then the open-loop/closed-loop control operating mode p1300 of this data set must match that of the original data set (e.g. p1300 = 21). Encoderless closed-loop controlled operation is kept when changing over.

For a value = 4, the following applies:

- The value can only be set for all motor data sets when p1231 = 3, 4.
- For permanent magnet synchronous motors, an armature short circuit is initiated when an encoder develops a fault.
- For induction motors, DC braking is initiated on an encoder fault. DC braking must be commissioned (p1232, p1233, p1234).

For a value = 5, the following applies:

Same function as for value = 1.

However, in operation, encoder malfunctions that occur are only output as alarm and the message bit "Fault active" (r2139.3) is not set. Fault F7575 is set after the drive axis has been shut down.

The active malfunction of the encoder must be acknowledged via the encoder interface before the system can be switched on again.

For a value = 6, the following applies:

Same function as for value = 1.

Encoder malfunctions that occur are only output as alarm and the message bit "Fault active" (r2139.3) is not set. After shutting down the drive axis, in spite of an active encoder malfunction, the drive can restart without switching over to encoderless operation (except if an active topology error is involved).

The active encoder malfunction must be acknowledged via the encoder interface before operation can be resumed for operation with the encoder.

p0492 Maximum speed difference per sampling cycle / n_dif max/samp_cyc

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Encoder evaluation, Messages / Monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** automatic
Unit: rpm	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [rpm]	210000.00 [rpm]	0.00 [rpm]

Description: Sets the maximum permissible speed difference within the current controller sampling time.

Dependency: See also: r1408

See also: F07902, F31118, A31418, F32118, A32418

Note

For a value of 0.0, the speed change monitoring is disabled.

The following applies for square-wave encoders:

If the speed difference exceeds the threshold value p0492, depending on p0491, either encoderless closed-loop speed/torque control is selected or the drive is switched off with fault F3x118.

The following applies for other speed encoders:

If the speed difference exceeds threshold value p0492, in order to avoid subsequent faults, the old speed actual value is kept and after time p2178 shut down with fault F07902 (motor stalled).

p0494[0...n] Equivalent zero mark input terminal / ZM_equiv inp_term

Data type: Integer16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Encoder evaluation, Homing	
Not relevant for motor type:	-	
Dyn. index [0...n]:	EDS n defined by: p0140	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	215	0

Description: Selects the input terminal for connecting an equivalent zero mark (external encoder zero mark).

Value:
0: No equivalent zero mark (evaluation of the encoder zero mark)
215: DI 5 (X131.9)

Dependency: See also: p0490

⚠ CAUTION

In order to prevent incorrect measurement values, these parameters may not be written during an active measurement.

Note

Refer to the encoder interface for PROFIdrive.
The terminal must be set as input.

p0496[0...2] Encoder diagnostic signal selection / Enc diag select

Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Encoder evaluation	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	86	0

Description: Selects the trace signal to be output in r0497, r0498 and r0499 for encoder diagnostics.

Value:
0: Inactive
1: r0497: Mechanical revolution
7: r0498: oversampling channel A with fault trigger
8: r0498: oversampling channel A with fault trigger
9: r0497: sum of the squares AB in 0.1 mV
10: r0498: Raw value track A, r0499: Raw value track B
11: r0498: Fine position X (-A/2), r0499: Fine position Y (-B/2)
12: r0498: Fine position Phi, r0499: -
13: r0498: Offset correction X, r0499: Offset correction Y
14: r0498: Phase correction X, r0499: Amplitude correction Y
15: r0498: Cubic correction X, r0499: Fine position X
16: r0498: oversampling channel A, r0499: oversampling channel B
17: r0498: fan-out amount, r0499: fan-out number
18: r0498: Oversampling angle, r0499: Oversampling amount

19: r0498: Fault counter AB, r0499: raw value track A
20: r0498: Raw value track C, r0499: Raw value track D
21: r0498: CD position X (-D/2), r0499: CD position Y (C/2)
22: r0498: CD position Phi, r0499: CD pos. Phi - Mech. revolution
23: r0497: Zero mark status
24: r0498: Raw value track R, r0499: Zero mark status
25: r0498: Raw value track A, r0499: Raw value track R
26: r0498: Sum of squares AB, r0499: sector number
30: r0497: Absolute position serial
31: r0497: Absolute position incremental
32: r0497: Zero mark position
33: r0497: Correction absolute position difference
40: r0498: Raw temperature, r0499: Temperature in 0.1 °C
41: r0498: Resistance in 0.1 Ohm, r0499: Temperature in 0.1 °C
42: r0497: Resistance 2500 Ohm
51: r0497: Absolute speed difference (dn/dt)
52: r0497: Xact1 corrected quadrants
60: Analog sensor: r0498: raw val chann. A, r0499: raw val chann. B
61: Analog sensor: r0498: fine pos chann. A,r0499: fine pos chann. B
62: Analog sensor: r0498: Fine pos before characteristic, r0499: -
70: Resolver: r0498: Transformation ratio, r0499: phase
80: Spindle: r0498: Sensor S1 (raw), r0499: Sensor S4 (raw)
81: Spindle: r0498: Sensor S5 (raw), r0499: -
85: Spindle: r0498: Sensor S1 (cal), r0499: Sensor S4 (cal)
86: Spindle: r0498: Sensor S5 (cal), r0499: -

Index: [0] = Motor encoder
[1] = Encoder 2
[2] = Reserved

Dependency: See also: r0497, r0498, r0499

NOTICE
The setting option depends on the following properties: Sensor Module type, hardware version, firmware version (Sensor Module and converter), Article number (last digit). Not all combinations are supported.

Note
For p0496 = 1: 360 ° <--> 2^32
For p0496 = 7, 8: input voltage in mV
For p0496 = 10 (resolver): 2900 mV <--> 26214 dec
For p0496 = 10, 20 (sin/cos 1 Vpp, EnDat): 500 mV <--> 21299 dec
For p0496 = 11 (resolver): 2900 mV <--> 13107 dec, internal processor offset is corrected
For p0496 = 11, 21 (sin/cos 1 Vpp, EnDat): 500 mV <--> 10650 dec, internal processor offset is corrected
For p0496 = 12: 180 ° fine position <--> 32768 dec
For p0496 = 13 (resolver): 2900 mV <--> 13107 dec
For p0496 = 13 (sin/cos 1 Vpp, EnDat): 500 mV <--> 10650 dec
For p0496 = 14: 1 ° <--> 286 dec, 100 % <--> 16384 dec
For p0496 = 15: 100 % <--> 16384 dec
For p0496 = 16 (resolver): channel A: 2900 mV <--> 26214 dec, channel B: 2900 mV <--> 26214 dec, channel A and channel B can be shifted by one sample (in time)
For p0496 = 16: (sin/cos 1 Vpp, EnDat) channel A: 500 mV <--> 21299 dec, channel B: 500 mV <--> 21299 dec, channel A and channel B can be shifted by one sample (in time)
For p0496 = 17 (resolver): absolute value: 2900 mV <--> 13107 dec, number: 1 ... 8
For p0496 = 17 (sin/cos 1 Vpp, EnDat): absolute value 500 mV <--> 10650 dec, number: 1 ... 8
For p0496 = 18 (resolver): angle: signal period <--> 2^16, absolute value: 2900 mV <--> 13107 dec
For p0496 = 18 (sin/cos 1 Vpp, EnDat): angle: signal period <--> 2^16, absolute value: 500 mV <--> 10650 dec
For p0496 = 19 (resolver): counter: dec, channel A: 2900 mV <--> 26214 dec
For p0496 = 19 (sin/cos 1 Vpp, EnDat): counter: dec, channel A: 500 mV <--> 21299 dec
For p0496 = 22: 180 ° <--> 32768 dec
For p0496 = 23, 24: r0497.31 (r0499.15) set for at least 1 current controller sampling time when encoder zero mark detected
For p0496 = 24, 25: 500 mV <--> 21299 dec
For p0496 = 30: Rotary: 1 singleturn measuring step <--> 1 dec, linear: 1 measuring step <--> 1 dec
For p0496 = 31: Absolute position, incremental in 1/4 encoder pulses
For p0496 = 32: Zero mark position in 1/4 encoder pulses
For p0496 = 33: counter offset absolute value in 1/4 encoder pulses
For p0496 = 40: r0498 <--> (R_KTY/1 kOhm - 0.9) * 32768
For p0496 = 42: 2500 Ohm <--> 2^32
For p0496 = 51: 1 rpm <--> 1000 dec
For p0496 = 52: In 1/4 encoder pulses
For p0496 = 60: voltage, channel A in mV, voltage, channel B in mV
For p0496 = 61: Channel A: encoder periods <--> 2^16, channel B: encoder periods <--> 2^16
For p0496 = 62: encoder periods <--> 2^16
For p0496 = 70: r: 100% <--> 10000 dec, phase: 180 ° <--> 18000 dec
For p0496 = 80, 81, 85, 86: 1V <--> 1000 inc

r0497[0...2] Encoder diagnostic signal double word / Enc diag DW

Data type: Unsigned32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Encoder evaluation	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** -

Description: Displays the trace signal for encoder diagnostics (double word).
The signal to be output is selected in p0496.

Index: [0] = Motor encoder
[1] = Encoder 2
[2] = Reserved

Dependency: See also: p0496, r0498, r0499

r0498[0...2] Encoder diagnostic signal low word / Enc diag low word

Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Encoder evaluation	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** -

Description: Displays the trace signal for encoder diagnostics (low component).
The signal to be output is selected in p0496.

Index: [0] = Motor encoder
[1] = Encoder 2
[2] = Reserved

Dependency: See also: p0496, r0497, r0499

r0499[0...2] Encoder diagnostic signal high word / Enc diag high word

Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Encoder evaluation	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** -

Description: Displays the trace signal for encoder diagnostics (high component).
The signal to be output is selected in p0496.

Index: [0] = Motor encoder
[1] = Encoder 2
[2] = Reserved

Dependency: See also: p0496, r0497, r0498

p0500[0...n] Technological application / Tec application

Data type: Integer16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Operating mode	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	6	0

Description: Sets the technological application.
The parameter influences the calculation of open-loop and closed-loop control parameters.

Value:
0: Standard drive
1: Pumps and fans
2: Sensorless closed-loop control down to f = 0 (passive loads)
3: Pumps and fans, efficiency optimization
5: Starting with a high break loose torque

6: High load moment of inertia

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

NOTICE
For p0500 = 5: If the current increase in p1310 and p1610 is not adequate for heavy-duty starting, then the parameters should be manually increased. It must be carefully ensured that the motor does not continually operate in the low speed range to avoid thermal overload.

Note

Calculating parameters dependent on the technological application can be called up as follows:
- When exiting quick commissioning if r3925.0 = 0

For p0500 = 0 and when the calculation is initiated, the following parameters are set:
- p1401.14 = 0
- p1574 = 10 V
- p1750.2 = 0
- p1802 = 0 (SVM/FTM with overcontrol)
- p1803 = 106 %

For p0500 = 1 and when the calculation is initiated, the following parameters are set:
- p1401.14 = 0
- p1574 = 2 V
- p1750.2 = 0
- p1802 = 0 (SVM/FTM with overcontrol)
- p1803 = 106 %

For p0500 = 2 and when the calculation is initiated, the following parameters are set:
- p1401.14 = 0
- p1574 = 2 V
- p1750.2 = 1
- p1802 = 0 (SVM/FTM with overcontrol)
- p1803 = 106 %

For p0500 = 3 and when the calculation is initiated, the following parameters are set:
- p1401.14 = 1 (efficiency optimization for induction motors)
- p1574 = 2 V
- p1750.2 = 1
- p1802 = 0 (SVM/FTM with overcontrol)
- p1803 = 106 %

For p0500 = 5 and when the calculation is initiated, the following parameters are set:
- p1574,
- p1750.2,
- p1802,
- p1803 = 106 % (the same as for p0500 = 0)
- p1610 = 80 %
- p1611 = 80 % (average up to a higher starting torque)
- p1310 = 80 %,
- p1311 = 30 %

For p0500 = 6: (for high moments of inertia with/without gearbox coupling)
- p1574,
- p1750.2,
- p1802,
- p1803,
- p1610,
- p1611,
- p1310,
- p1311
- p1401.14 = 0 (the same as for p0500 = 0)
- p1574 = 10 V (the same as for p0500 = 0)
- p1750.2 = 0 (the same as for p0500 = 0)
- p1802 = 0 (SVM/FTM with overcontrol) (the same as for p0500 = 0)
- p1803 = 106 % (the same as for p0500 = 0)

After changing motor data and exiting commissioning, the following settings are again reset.
- p0342 = 10 (motor moment of inertia factor, if previously p0342 = 1)

The real factor can be specified in the commissioning tool.
- p1400.20 = 1 (acceleration model)
- p1441, p1442, p1452 calculated

- p1496 = 100 %
- p1959.12 = 1 (shorter rotating measurement)
- p1959.14 = 1 (speed actual value smoothing is calculated)
- p1967 = 80 %

The following settings are only reset again using the factory setting.
- p1115 = 1
- p1130, p1131 ramp-function generator rounding calculated from p1120, p1121 and r0345.

The moment of inertia estimator (p1400.18, p5310) can be activated, depending on the specific application, to adaptively determine the load moment of inertia in operation.

For p1750:
The setting of p1750 is only relevant for induction motors.
p1750.2 = 1: Encoderless control of the induction motor is effective down to zero frequency.
This operating mode is possible for passive loads. These include applications where the load does not generate regenerative torque when breaking away and the motor comes to a standstill (zero speed) itself when the pulses are inhibited.

For p1802/p1803:
p1802 and p1803 are only changed, in all cases, if a sine-wave output filter (p0230 = 3, 4) has not been selected.

p0501[0...n] Technological application (Standard Drive Control) / Tec appl SDC

Data type: Integer16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Operating mode	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	1	0

Description: Sets the technological application.
The parameter influences the calculation of open-loop and closed-loop control parameters.

Value:
0: Constant load (linear characteristic)
1: Speed-dependent load (parabolic characteristic)

Dependency: Not visible in operating mode: "Dynamic Drive Control" (DDC, p0504 = 2)

Note
The open-loop control and closed-loop control parameters are calculated when exiting quick commissioning if r3925.0 = 0
The following parameters are set:
- p1401.30 = 0, 1 (p0501 = 1)
- p1802 = 0
- p1803 = 106 %
- p3855.0 = 1 (DC quantity control on)

For p1802/p1803:
These parameters are only changed, in all cases, if a sine-wave output filter (p0230 = 3, 4) has not been selected.

p0502[0...n] Technological application (Dynamic Drive Control) / Techn appl DDC

Data type: Integer16	**Visible in:** Standard display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications

Can be changed in the operating state:	Commissioning		
Parameter group:	Operating mode		
Not relevant for motor type:	Synchronous or reluctance motor with starting cage		
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -	
Unit: -	**Unit group:** -	**Unit selection:** -	
Min:	**Max:**	**Factory setting:**	
0	6	1	

Description: Sets the technological application for dynamic applications (p0504 = 2).
The parameter influences the calculation of open-loop and closed-loop control parameters.

Value:
0: Standard drive (e.g. pumps, fans)
1: Dynamic starting or reversing
2: Sensorless closed-loop control down to f = 0 (passive loads)
5: Starting with a high break loose torque
6: High load moment of inertia

Dependency: For induction motors, the parameter is pre-assigned with p0502 = 1; for all other motors, with p0502 = 0.
Calculating parameters dependent on the technological application can be called up as follows:
- When exiting quick commissioning if r3925.0 = 0
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p1610, p1750

⚠ DANGER

For p0502 = 1:
For loads that block the motor, i.e. that can brake the motor down to a standstill at the torque limit and then reverse it, p0502 should be set = 0, and p1610 should be increased so that the maximum load can be held in the open-loop speed controlled speed range (see p1755, p1756).

Note
When entering p0502 and initiating the calculation, the following parameters are set:
p0502 = 0:
- p1750.0/1/7 = 1 (start and reverse in open-loop control with rugged switchover limits)
- p1750.6 = 1 (closed-loop speed controlled when blocked)
- p1610 = 50 % (low up to average starting torque)
- p1611 = 30 % (low up to average starting torque)

p0502 = 1:
- p1750.0/1/7 = 0 (start and reverse in closed-loop control with shorter acceleration times)
- p1750.6 = 1 (closed-loop speed controlled when blocked)
- p1610 = 50 % (only active if the drive is switched-on at a speed setpoint of zero)
- p1611 = 30 % (only active if the drive is switched-on at a speed setpoint of zero)

p0502 = 2:
- p1750.2 = 1 (always closed-loop speed controlled (for passive loads))

p0502 = 5:
- p1750.0/1/7 = 1 (start and reverse in open-loop control with rugged switchover limits)
- p1750.6 = 1 (closed-loop speed controlled when blocked)
- p1610 = 80 %, p1611 = 80 % (average up to higher starting torque)
- p1574 "Dynamic voltage reserve" is preassigned.

For p0502 = 6: (for high moments of inertia with/without gearbox coupling)
- p1574 (the same as for p0502 = 0)
- p1750.2 (the same as for p0502 = 0)
- p1802 (the same as for p0502 = 0)
- p1803 (the same as for p0502 = 0)
- p1610 (the same as for p0502 = 0)
- p1611 (the same as for p0502 = 0)

They are only reset again using the automatic calculation.
- p0342 = 10 (motor moment of inertia factor, if previously p0342 = 1)

The real factor can be specified in the commissioning tool.
- p1400.20 = 1 (acceleration model)
- p1441, p1442, p1452 calculated
- p1496 = 100 %
- p1959.12 = 1 (shorter rotating measurement)
- p1959.14 = 1 (speed actual value smoothing is calculated)
- p1967 = 80 %

The following settings are only reset again using the factory setting.
- p1115 = 1
- p1130, p1131 ramp-function generator rounding calculated from p1120, p1121 and r0345.

The moment of inertia estimator (p1400.18, p5310) can be activated, depending on the specific application, to adaptively determine the load moment of inertia in operation.

p0504[0...n] Operating mode / Operating mode

Data type: Integer16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Operating mode	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Min:	Max:	Factory setting:
0	2	1

Description: Sets the operating mode.
Standard Drive Control: closed-loop control/open-loop control without speed controller
Dynamic Drive Control: closed-loop control with speed controller
When "Other control mode" is selected, all open-loop and closed-loop control modes are separately available for all data sets in p1300.

Value:
0: Selecting other closed-loop control modes
1: Standard Drive Control (SDC)
2: Dynamic Drive Control (DDC)

Dependency: For synchronous/reluctance motors with starting cage, it is only possible to select p0504 = 0.
Depending on the setting, the ability to see control parameters is restricted.
For p0504 > 0, the following applies: The motor data identification is preset (p1900 = 2).
The following vector control functions are only available for p0504 = 0:
- Closed-loop torque control
- Droop feedback
- Reference model
- Integrator controls of the speed controller
- Additional Kp-/Tn adaptation of the speed controller

See also: p1300

⚠ CAUTION
For Dynamic Drive Control and induction motors without speed encoder, p1750.6 should be taken into consideration (restricted operation for pulling loads for p1750.6 = 1).

Note
For Dynamic Drive Control and if a speed encoder is being used (p0400 > 0), the closed-loop control mode can be switched over to encoderless operation in p1300 (e.g. for encoder diagnostics).
Depending on the setting, after quick commissioning and/or automatic calculation, the following is adapted.
- Procedure for the motor data identification
- Parameterizing the closed-loop control

After first commissioning has been completed:
When changing from p0504 = 1, 2 to p0504 = 0, the automatic calculation is performed when commissioning is exited. This can be prevented if, before changing p0504, the diagnostic mode is activated in p1400.30.

p0505 Selecting the system of units / Unit sys select

Data type: Integer16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Units	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
1	4	1

Description: Sets the actual system of units.

Value:
1: SI system of units
2: System of units referred/SI
3: US system of units
4: System of units referred/US

Dependency: The parameter can only be changed in an offline project using the commissioning tool.

⚠ CAUTION

If a per unit representation is selected and if the reference parameters (e.g. p2000) are subsequently changed, then the physical significance of several control parameters is also adapted at the same time. As a consequence, the control behavior can change (see p1744, p1752, p1755).

Note

Reference parameter for the unit system % are, for example, p2000 ... p2004. Depending on what has been selected, these are displayed using either SI or US units.

p0530[0...n] Bearing version selection / Bearing vers sel

Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Motor bearing data, Quick commissioning	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	104	0

Description: Sets the bearing version.

Corresponding to the bearing version entered, its code number (p0531) is automatically set.

0 = No data

1 = Manual entry

101 = STANDARD

102 = PERFORMANCE

103 = HIGH PERFORMANCE

104 = ADVANCED LIFETIME

Dependency: See also: p0301, p0531, p0532, p1082

NOTICE

For p0530 = 101, 102, 103, 104, the maximum bearing speed (p0532) is write protected. Write protection is withdrawn with p0530 = 1.

If p0530 is changed during quick commissioning, the maximum speed p1082, which is also associated with quick commissioning, is preassigned accordingly. The maximum speed of the bearing is factored into the limit for the maximum speed p1082.

Note

For a motor with DRIVE-CLiQ, p0530 can only be set to 1.

p0531[0...n] Bearing code number selection / Bearing codeNo sel

Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Motor bearing data	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Min:	Max:	Factory setting:
0	65535	0

Description: Display and setting the code number of the bearing.

When setting p0301 and p0530 the code number is automatically pre-assigned and is write protected. The information in p0530 should be observed when removing write protection.

Dependency: See also: p0301, p0530, p0532, p1082

NOTICE

If p0531 is changed during quick commissioning, the maximum speed p1082, which is also associated with quick commissioning, is preassigned accordingly. The maximum speed of the bearing is factored into the limit for the maximum speed p1082.

Note

p0531 cannot be changed on a motor with DRIVE-CLiQ.

p0532[0...n] Bearing maximum speed / Bearing n_max

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Motor bearing data, Quick commissioning	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: rpm	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [rpm]	210000.0 [rpm]	0.0 [rpm]

Description: Sets the maximum speed of the bearing.

The following applies when calculating the maximum speed (p1082):

- For p0324 = 0 or p0532 = 0, p0322 is used.
- For p0324 > 0 and p0532 > 0, the minimum value from the two parameters is used.

Dependency: See also: p0301, p0322, p0324, p0530, p1082

NOTICE

This parameter is pre-assigned in the case of motors from the motor list (p0301) if a bearing version (p0530) is selected.

When selecting a catalog motor, this parameter cannot be changed (write protection). The information in p0530 should be observed when removing write protection.

If p0532 is changed during quick commissioning, the maximum speed p1082, which is also associated with quick commissioning, is preassigned accordingly.

p0541[0...n] Load gearbox code number / Load grbx code no

Data type: Unsigned32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Motor gearbox, Quick commissioning	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	4294967295	1

Description: Display and setting the code number for the load gearbox.
0 = No data
1 = Manual entry
> 1 = valid code number
For value = 0:
- Parameters listed under Dependent are set to a value of zero and are write protected.
For value = 1:
- Write protection for the parameters listed under Dependent is withdrawn.
For value > 1:
- Parameters listed under Dependent are automatically pre-assigned and are write protected.

Dependency: See also: p0542, p0543, p0544, p0545, p0546, p0547

Note
A code number that does not exist cannot be set.

p0542[0...n] Load gearbox maximum speed / Load grbx n_max

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Motor gearbox, Quick commissioning	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: rpm	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [rpm]	210000.0 [rpm]	0.0 [rpm]

Description: Sets the maximum permissible input speed at the load gearbox.
When calculating the maximum speed (p1082) in quick commissioning, the following applies:
- For p0542 = 0, this parameter has no effect. The maximum speed from p0322 is used.
- For p0542 > 0, the maximum speed (p0322) is limited by p0542.

NOTICE
After entering a corresponding code number (p0541), this parameter is automatically pre-assigned and write protected. The information in p0541 should be observed when removing write protection.

p0543[0...n] Load gearbox maximum torque / Load grbx M_max

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Motor gearbox, Quick commissioning	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: Nm	**Unit group:** 7_4	**Unit selection:** p0100
Min:	**Max:**	**Factory setting:**
0.00 [Nm]	1000000.00 [Nm]	0.00 [Nm]

Description: Sets the maximum permissible input torque at the load gearbox.

When calculating the torque limit upper/motoring (p1520) and the torque limit lower/regenerative (p1521) in quick commissioning, then the following applies:

- For p0543 = 0, the values in p1520/p1521 remain unchanged.
- For p0543 > 0, the torque limits (r1538, r1539) are limited by p0543.

NOTICE
After entering a corresponding code number (p0541), this parameter is automatically pre-assigned and write protected. The information in p0541 should be observed when removing write protection.

p0544[0...n] Load gearbox overall ratio numerator / Load grbx ratio N

Data type: Integer32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Motor gearbox, Quick commissioning	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	2147483647	0

Description: Sets the numerator for the overall ratio (absolute value) of the load gearbox.

NOTICE
After entering a corresponding code number (p0541), this parameter is automatically pre-assigned and write protected. The information in p0541 should be observed when removing write protection.

p0545[0...n] Load gearbox overall ratio denominator / Load grbx ratio D

Data type: Integer32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Motor gearbox, Quick commissioning	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	2147483647	0

Description: Sets the denominator for the overall ratio (absolute value) of the load gearbox.

NOTICE
After entering a corresponding code number (p0541), this parameter is automatically pre-assigned and write protected. The information in p0541 should be observed when removing write protection.

p0546[0...n] Load gearbox direction of rotation inversion / Load grbx dir inv

Data type: Integer32	**Visible in:** Extended display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications
Can be changed in the operating state:	Commissioning

Parameter group:	Motor gearbox, Quick commissioning	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	2147483647	0

Description: Setting to invert the direction of rotation of the load gearbox.
Value = 0: no inversion
Value = 1: inversion

NOTICE
After entering a corresponding code number (p0541), this parameter is automatically pre-assigned and write protected. The information in p0541 should be observed when removing write protection.

p0547[0...n] Load gearbox moment of inertia / Load grbx m_inert

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Motor gearbox, Quick commissioning	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: kgm^2	**Unit group:** 25_1	**Unit selection:** p0100
Min:	**Max:**	**Factory setting:**
0.000000 [kgm^2]	100000.000000 [kgm^2]	0.000000 [kgm^2]

Description: Sets the load gearbox moment of inertia.

NOTICE
After entering a corresponding code number (p0541), this parameter is automatically pre-assigned and write protected. The information in p0541 should be observed when removing write protection.

Note
For a manual input (p0541 = 1), the value to be set is rejected if this entry were to lead to a ratio between the total moment of inertia and the motor of less than 1 (p0342 < 1). In this case, the gearbox data should be reset using p0541 = 0, and re-entered (p0541 = 0 results in p0342 = 1).

p0550[0...n] Brake version / Brake version

Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Motor holding brake, Quick commissioning	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	1	0

Description: Sets the brake version.

Value:
0: No data
1: Holding brake

NOTICE
After entering a corresponding code number (p0551), this parameter is automatically pre-assigned and write protected. The information in p0551 should be observed when removing write protection.

p0551[0...n] Brake code number / Brake code no

Data type: Unsigned32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Motor holding brake, Quick commissioning	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	4294967295	1

Description: Setting the code number for the brake.
0 = No data
1 = Manual entry
> 1 = valid code number
For value = 0:
- Parameters listed under Dependent are set to a value of zero and are write protected.
- Parameters p1216, p1217 are set to a value of zero.
For value = 1:
- Write protection for the parameters listed under Dependent is withdrawn.
For value > 1:
- Parameters listed under Dependent are automatically pre-assigned and are write protected.
- Parameters p1216, p1217 are automatically appropriately pre-assigned.

Dependency: See also: p0550, p0552, p0553

Note
Only code numbers can be set that are permitted for the selected motor code (p0301).

p0552[0...n] Maximum brake speed / Brake n_max

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Motor holding brake, Quick commissioning	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: rpm	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [rpm]	210000.0 [rpm]	0.0 [rpm]

Description: Sets the maximum permissible brake speed.
When calculating the maximum speed (p1082) in quick commissioning, the following applies:
- For p0552 = 0, this parameter has no effect. The maximum speed from p0322 is used.
- For p0552 > 0, the maximum speed (p0322) is limited by p0552.

NOTICE
After entering a corresponding code number (p0551), this parameter is automatically pre-assigned and write protected. The information in p0551 should be observed when removing write protection.

p0553[0...n] Brake holding torque / Brake M_hold

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Motor holding brake, Quick commissioning	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: Nm	**Unit group:** 7_4	**Unit selection:** p0100
Min:	**Max:**	**Factory setting:**
0.00 [Nm]	1000000.00 [Nm]	0.00 [Nm]

Description: Sets the brake holding torque.

NOTICE
After entering a corresponding code number (p0551), this parameter is automatically pre-assigned and write protected. The information in p0551 should be observed when removing write protection.

p0554[0...n] Brake moment of inertia / Brake m_inert

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Motor holding brake, Quick commissioning	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: kgm^2	**Unit group:** 25_1	**Unit selection:** p0100
Min:	**Max:**	**Factory setting:**
0.000000 [kgm^2]	100000.000000 [kgm^2]	0.000000 [kgm^2]

Description: Sets the brake moment of inertia.

NOTICE
After entering a corresponding code number (p0551), this parameter is automatically pre-assigned and write protected. The information in p0551 should be observed when removing write protection.

Note

For a manual input (p0551 = 1), the value to be set is rejected if this entry were to lead to a ratio between the total moment of inertia and the motor of less than 1 (p0342 < 1). In this case, the brake data should be reset using p0551 = 0, and re-entered (p0551 = 0 results in p0342 = 1).

p0580 Measuring probe input terminal / MT input terminal

Data type: Integer16	**Visible in:** Standard display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications
Can be changed in the operating state:	Operation
Parameter group:	Measuring probe

Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	215	0

Description: Sets the input terminal for the measuring probe for speed actual value measurement.

Value:
0: No measuring probe
215: DI 5 (X131.9)

Dependency: See also: p0581
See also: A07498

⚠ CAUTION

In order to prevent incorrect measurement values, these parameters may not be written during an active measurement.

Note

If a parameter change is rejected, then it should be checked whether the input terminal is not already being used in p0488 or p0489.
DI: Digital Input

p0581 Measuring probe edge / MT edge

Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Measuring probe	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	1	0

Description: Sets the edge to evaluate the measuring probe signal for speed actual value measurement.
0: 0/1 edge
1: 1/0 edge

Dependency: See also: p0580

p0582 Measuring probe pulses per revolution / MT pulses per rev

Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Measuring probe	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
1	12	1

Description: Sets the number of pulses per revolution (e.g. for perforated disks).

p0583 Measuring probe maximum measuring time / MT t_meas max

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Measuring probe	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.040 [s]	10.000 [s]	10.000 [s]

Description: Sets the maximum measuring time for the measuring probe.

If a new pulse is not received before the maximum measuring time has expired, then the speed actual value in r0586 is set to zero. This timer is re-started with the next pulse.

Dependency: See also: r0586

r0586 Measuring probe speed actual value / MT n_act

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Measuring probe	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000

Description: Displays the speed actual value measured using the BERO.

Dependency: See also: p0580, p0583

Note
For p0580 = 0 (no measuring probe), a value of zero is displayed here.

r0587 Measuring probe measuring time measured / MT t_meas measured

Data type: Unsigned32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Measuring probe	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** -

Description: Displays the time between the last two BERO pulses.

The measuring time is specified as 32-bit value with a resolution of 1/48 µs.

If a new pulse is not received before the maximum measured time in p0583 expires, then r0587 is set to the maximum measuring time.

Dependency: See also: p0580

Note
For p0580 = 0 (no measuring probe), a value of zero is displayed here.

r0588 Measuring probe pulse counter / MT pulse counter

Data type: Unsigned32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	

Parameter group: Measuring probe
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** -

Description: Displays the number of measuring pulses that have occurred (been received) up until now.

Dependency: See also: p0580

Note
After reaching 4294967295 (2^32 - 1), the counter starts again at 0.

r0589 Measuring probe wait time / MT t_delay

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Measuring probe
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the time since the last measuring pulse was detected.
The wait time is specified as 32-bit value with a resolution of 1/48 µs.
When a measuring pulse occurs (is received) the wait time is reset and is limited to the maximum measuring time in p0583.

Dependency: See also: p0580

Note
For p0580 = 0 (no measuring probe), a value of zero is displayed here.

p0595 Technological unit selection / Tec unit sel

Variant: G220, G220 Clean Power
Available when function is active: PID controller
Data type: Integer16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Commissioning
Parameter group: Technology setpoint/actual values, Motorized potentiometer, Fixed setpoints, Units
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
1	32	1

Description: Selects the units for the parameters of the technology controller.
For p0595 = 1, 2, the reference variable set in p0596 is not active.

Value:
1: %
2: 1 referred no dimensions
3: bar
4: °C
5: Pa
6: ltr/s
7: m^3/s

8: ltr/min
9: m^3/min
10: ltr/h
11: m^3/h
12: kg/s
13: kg/min
14: kg/h
15: t/min
16: t/h
17: N
18: kN
19: Nm
20: psi
21: °F
22: gallon/s
23: $inch^3$/s
24: gallon/min
25: $inch^3$/min
26: gallon/h
27: $inch^3$/h
28: lb/s
29: lb/min
30: lb/h
31: lbf
32: lbf ft

Dependency: Only the unit of the technology controller parameters are switched over (unit group 9_1).
See also: p0596

Note
When switching over from % into another unit, the following sequence applies:
- Set p0596
- Set p0595 to the required unit

p0596 Technological unit reference quantity / Tec unit ref qty

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Technology setpoint/actual values, Motorized potentiometer, Fixed setpoints, Units	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.01	3.4028235e+38	1.00

Description: Sets the reference variable for the technological units.
When changing over using changeover parameter p0595 to absolute units, all of the parameters involved refer to the reference quantity.

Dependency: See also: p0595

NOTICE
When changing over from one technological unit into another, or when changing the reference parameter, a changeover is not made.

p0600[0...n] Motor temperature sensor for monitoring / Mot temp_sensor

Data type: Integer16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor temperature	
Not relevant for motor type:	-	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** automatic
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	11	11

Description: Sets the sensor to monitor the motor temperature.
The sensor type used is set in p0601.

Value:
0: No sensor
1: Temperature sensor via motor encoder
2: Temperature sensor via encoder 2
10: Temperature sensor via signal interconnection
11: Temperature sensor via terminals

Dependency: See also: r0458, p0601, c0603

⚠ CAUTION
If, for a selected temperature sensor (p0600 > 0), the motor temperature sensor is not connected but another sensor, then the temperature adaptation of the motor resistances must be switched out. Otherwise, in controlled-loop operation, torque errors will occur that will mean that the drive will not be able to be stopped.

NOTICE
The parameter is calculated using the automatic calculation in the drive.

Note
For value = 0:
For induction motors, the motor temperature is calculated using the motor temperature model (see also p0612.1).
For value = 1, 2:
Bimetallic switch (p0601 = 4) and Pt100 temperature sensor (p0601 = 5) are not supported.
For value = 10:
The signal interconnection should be realized via the numerical signal sink c0603.

p0601[0...n] Motor temperature sensor type / Mot_temp_sens type

Data type: Integer16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor temperature	
Not relevant for motor type:	-	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Min:	Max:	Factory setting:
0	10	0

Description: Sets the sensor type for the motor temperature monitoring.

Value:

0: No sensor
1: PTC alarm & timer
2: KTY84
3: KTY84 and PTC (only for motors with DRIVE-CLiQ):
4: Bimetallic NC contact alarm & timer
5: Pt100
6: Pt1000
7: Pt1000 and PTC (only for motors with DRIVE-CLiQ)
10: Evaluation via several temperature channels

Dependency: A thermal motor model is calculated corresponding to p0612.

⚠ CAUTION

For p0601 = 2, 5, 6:
If the motor temperature sensor is not connected but another encoder, then the temperature adaptation of the motor resistances must be switched out (p0620 = 0). Otherwise, in controlled-loop operation, torque errors will occur that will mean that the motor will not be able to be stopped.

Note

For p0601 = 1:
Tripping resistance = 1650 Ohm. Wire breakage and short-circuit monitoring.

c0603[0...3] Motor temperature / Mot temp

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Motor temperature	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °C	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** p2006
Factory interconnection:	Fixed value: -200.00 [°C]	

Description: Signal to evaluate the motor temperature.

Index:

[0] = Motor temperature channel 1
[1] = Motor temperature channel 2
[2] = Motor temperature channel 3
[3] = Motor temperature channel 4

Dependency: See also: p0600

Note

Temperature sensor KTY/Pt1000/Pt100: Valid temperature range -48 °C ... 248 °C.
Temperature sensor PTC/bimetallic temperature switch with NC contact:
For a value of -50 °C, the following applies: Motor temperature < nominal response temperature of the PTC/bimetal contact closed.
For a value of 250 °C, the following applies: Motor temperature >= nominal response temperature of the PTC/bimetal contact open.

p0604[0...n] Mot_temp_mod 2/sensor: alarm threshold / Mod 2: sens A_thr

Data type: FloatingPoint32	**Visible in:** Extended display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications

Can be changed in the operating state:	Operation	
Parameter group:	Motor temperature	
Not relevant for motor type:	-	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: °C	**Unit group:** 21_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.0 [°C]	240.0 [°C]	130.0 [°C]

Description: Sets the alarm threshold for monitoring the motor temperature for motor temperature model 2 or KTY/Pt1000/Pt100.
After the alarm threshold is exceeded, alarm A07910 is output and timer (p0606) is started.
If the delay time has expired and the alarm threshold has, in the meantime, not been fallen below, then fault F07011 is output.

Dependency: See also: p0606, p0612
See also: F07011, A07910

NOTICE
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write-protected. Information in p0300 should be carefully observed when removing write protection.

Note
The hysteresis is 2 K.
After entering the motor parameters, when quick commissioning is exited, then the parameter is reset if a catalog motor has not been selected (p0300).

p0605[0...n] Mot_temp_mod 1/2 sensor threshold and temperature value / Mod 1/2 sens thr_T

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor temperature	
Not relevant for motor type:	-	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: °C	**Unit group:** 21_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.0 [°C]	240.0 [°C]	145.0 [°C]

Description: Sets the threshold and temperature value to monitor the motor temperature.
Temperature model 1 (I2t, p0612.0 = 1):
- p5390: when commissioning a catalog motor for the first time, p0605 is copied to p5390.
- p5390: p5390 is of significance when evaluating the alarm threshold.
- p5390: the stator winding temperature (r0632) is used to initiate the signal.
- p0627: when a catalog motor is commissioned for the first time, p0605 - 40 °C is copied to p0627.
- p0627: p0627 is of significance for the rated temperature.

Motor temperature model 2 (p0612.1 = 1) or measurement:
- Sets the fault threshold. If the temperature (r0035) exceeds the fault threshold, then fault F07011 is output.

Dependency: See also: r0034, p0606, p0611, p0612
See also: F07011, A07012

NOTICE
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write-protected. Information in p0300 should be carefully observed when removing write protection.

Note
The hysteresis is 2 K.
After entering the motor parameters, when quick commissioning is exited, then the parameter is reset if a catalog motor has not been selected (p0300).

p0606[0...n] Mot_temp_mod 2: sensor timer / Mod 2:sens timer

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor temperature	
Not relevant for motor type:	-	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000 [s]	600.000 [s]	0.000 [s]

Description: Sets the timer for monitoring the motor temperature for motor temperature model 2 or KTY/Pt1000/Pt100.
This timer is started when the temperature alarm threshold (p0604) is exceeded.
If the timer has expired and the alarm threshold has, in the meantime, not been fallen below, then fault F07011 is output.
If the temperature fault threshold (p0605) is prematurely exceeded before the timer has expired, then fault F07011 is immediately output.

Dependency: See also: p0604, p0605
See also: F07011, A07910

Note
With p0606 = 0 s, the timer is deactivated and only the fault threshold is effective.
KTY/Pt1000/Pt100: When setting the minimum value, the timer is disabled and a fault is not output until p0605 is exceeded.
PTC, bimetallic NC contact: The timer minimum value has no special significance.

p0607[0...n] Temperature sensor fault timer / Sensor fault time

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor temperature	
Not relevant for motor type:	-	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000 [s]	600.000 [s]	0.100 [s]

Description: Sets the timer between the output of alarm and fault for a temperature sensor fault.
If there is a sensor fault, this timer is started.
If the sensor fault is still present after the timer has expired, a corresponding fault is output.

NOTICE
The parameterized time is internally rounded-off to an integer multiple of 48 ms.

Note
If the motor is an induction motor, the timer is switched off when setting the minimum value and no alarm is output. Temperature monitoring is then based on the thermal model.

p0610[0...n] Motor overtemperature response / Mot temp response

Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Motor temperature	
Not relevant for motor type:	-	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	12	12

Description: Sets the system response when the motor temperature reaches the alarm threshold.

Value:
0: No response only alarm no reduction of I_max
1: Messages, reduction of I_max
2: Messages, no reduction of I_max
12: Messages, no reduction of I_max, temperature storage

Dependency: See also: p0601, p0604, p0605, p0606, p5390, p5391
See also: F07011, A07012, A07910

Note
The relevant alarm threshold (p0604, p0605, p5390) depends on the setting in p0600, p0601 and p0612. If the temperature measurement and temperature model are simultaneously active, then the temperature provided by the temperature model is used.
For value = 0:
An alarm is output and I_max is not reduced.
For value = 1:
The current reduction can be set in p5398.
An alarm is output and a timer is started. A fault is output if the alarm is still active after this timer has expired.
The I_max reduction can result in a lower output frequency.
- For KTY/Pt1000/Pt100 the following applies: reduction of I_max.
- For PTC (p0601 = 1) or bimetallic NC contact (p0601 = 4) the following applies: I_max is not reduced.
For value = 2:
An alarm is output and a timer is started. A fault is output if the alarm is still active after this timer has expired.
For value = 12:
Behavior is always the same as for value 2.
For motor temperature monitoring without temperature sensor, when switching off, the model temperature is saved in a non-volatile fashion. When switching on, the same value (reduced by p0614) is taken into account in the model calculation. As a consequence, the UL508C specification is fulfilled.

p0611[0...n] I2t motor model thermal time constant / I2t MotMod Tc

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor data, Motor temperature	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -

Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [s]	20000 [s]	0 [s]

Description: Sets the winding time constant.

The time constant specifies the time that it takes for the temperature of a cold stator winding that conducts the prospective locked rotor current (rated motor current, if the prospective locked rotor current is not parameterized) to reach 63 % of the continuously permissible winding temperature.

Dependency: The parameter is only used for synchronous motors (p0300 = 2xx, 4) and synchronous reluctance motors (p0300 = 6xx).

See also: r0034, p0612, p5390, p5391

See also: F07011, A07012, A07910

NOTICE

This parameter is automatically preset from the motor database for motors from the motor list (p0301).
When selecting a catalog motor, this parameter cannot be changed (write protection). Information in p0300 should be carefully observed when removing write protection.
When exiting commissioning, p0612 is checked, and where relevant, is pre-assigned to a value that matches the motor size, if a temperature sensor was not parameterized (see p0601).

Note

When parameter p0611 is reset to 0, then this switches out the thermal I2t motor model (refer to p0612).
If no temperature sensor is parameterized, then the ambient temperature for the thermal motor model is referred to p0613.

p0612[0...n].0...2 Motor temperature model activation / Mot_temp_mod act

Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor temperature	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** automatic
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-	-	0010 bin

Description: Setting to activate the motor temperature model.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Activate mot_temp_mod 1 (I2t)	Yes	No
01	Activate mot_temp_mod 2	Yes	No
02	Activate mot_temp_mod 3	Yes	No

Dependency: For synchronous motors and synchronous reluctance motors, when exiting commissioning, temperature model 1 is automatically activated if a time constant has been entered in p0611. The temperature model is initialized with 100 °C.

See also: r0034, p0604, p0605, p0606, p0611, p0613, p0617, p0618, p0619, p0625, p0626, p0627, p0628, r0630, r0631, r0632, r0633, p5385, r5386, r5389, p5390, p5391, r5392, r5393, r5395

See also: F07011, A07012, F07013, A07014, A07910

NOTICE

For bit 00:
It is only possible to activate this motor temperature model (I2t) for a time constant greater than zero (p0611 > 0).

Note
Only one motor temperature model can be activated simultaneously.
For bit 00:
This bit is used to activate/deactivate the motor temperature model for permanent-magnet synchronous motors and synchronous reluctance motors.
For bit 01:
This bit is used to activate/deactivate the motor temperature model for induction motors.
For bit 02:
This bit is used to activate/deactivate the motor temperature model for selected permanent-magnet synchronous motors.

p0613[0...n] Mot_temp_mod 1/3 ambient temperature / Mod 1/3 amb_temp

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor temperature	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** automatic
Unit: °C	**Unit group:** 21_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
-40 [°C]	100 [°C]	20 [°C]

Description: Sets the motor ambient temperature.
Based on this value, the motor temperature model calculates the thermal motor utilization (r0034).

Dependency: See also: p0612
See also: F07011, A07012

Note
If the thermal motor model is activated for permanent-magnet synchronous motors, then the parameter is incorporated in the model calculation if a temperature sensor is not being used.
For thermal motor model 1 (p0612 = 1), the factory setting is based on an ambient temperature of with 40 °C.

p0614[0...n] Thermal resistance adaptation reduction factor / Therm R_adapt red

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor temperature	
Not relevant for motor type:	-	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [%]	100 [%]	30 [%]

Description: Sets the reduction factor for the overtemperature of the thermal adaptation of the stator/rotor resistance.
The value is a starting value when switching on. Internally, after switch-on, the reduction factor has no effect corresponding to the thermal time constant.

Dependency: See also: p0610

Note
The reduction factor is only effective for p0610 = 12, and refers to the overtemperature.

p0616[0...n] Motor temperature alarm threshold 1 / Mot temp alarm 1

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor temperature	
Not relevant for motor type:	-	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** automatic
Unit: °C	**Unit group:** 21_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.0 [°C]	200.0 [°C]	130.0 [°C]

Description: Sets the alarm threshold 1 for monitoring the motor temperature.

Note
The alarm threshold is not, as for p0604, coupled to the timer p0606. The hysteresis for canceling the fault is 2 K.

p0617[0...n] Stator thermally relevant iron component / Stator therm iron

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor data, Motor temperature	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** automatic
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [%]	100.0 [%]	40.0 [%]

Description: Thermally relevant iron component of the stator as a percentage of p0344.

Dependency: See also: p0344

Note
The sum of p0617, p0618 and p0619 can be more or less than 100 %.

p0618[0...n] Stator thermally relevant copper component / Stat therm copper

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor data, Motor temperature	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** automatic
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [%]	100.0 [%]	15.0 [%]

Description: Thermally relevant copper component of the stator as a percentage of p0344.

Dependency: See also: p0344

Note
The sum of p0617, p0618 and p0619 can be more or less than 100 %.

p0619[0...n] Rotor thermally relevant weight / Rotor therm weight

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor data, Motor temperature	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** automatic
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [%]	100.0 [%]	20.0 [%]

Description: Thermally relevant weight of the rotor as a percentage of p0344.

Dependency: See also: p0344

Note
The sum of p0617, p0618 and p0619 can be more or less than 100 %.

p0620[0...n] Thermal adaptation, stator and rotor resistance / Mot therm_adapt R

Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor temperature	
Not relevant for motor type:	-	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** automatic
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	2	1

Description: Sets the thermal adaptation of the stator/primary section resistance and rotor/secondary section resistance according to r0395 and r0396.

Value:
0: No thermal adaptation of stator and rotor resistances
1: Resistances adapted to the temperatures of the thermal model
2: Resistances adapted to the measured stator winding temperature

Note
For p0620 = 1, the following applies:
The stator resistance is adapted using the temperature in r0035 and the rotor resistance together with the model temperature in r0633.
For p0620 = 2, the following applies:
The stator resistance is adapted using the temperature in r0035. If applicable, the rotor temperature for adapting the rotor resistance is calculated from the stator temperature (r0035) as follows:
theta_R = (p0628 + p0625) / (p0627 + p0625) * r0035

p0621[0...n] Identification stator resistance after restart / ID rst restart

Data type: Integer16	**Visible in:** Extended display
Read permission:	Read drive data or acknowledge messages

Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Motor data identification routine	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	3	0

Description: Selects the identification of the stator resistance after the converter runs up (not for U/f control modes).

The identification (p0621 = 1, 2) is used to measure the actual stator resistance and from the ratio of the result of motor data identification (p0350) to the matching ambient temperature (p0625) the actual mean temperature of the stator winding is calculated. The result is used to initialize the thermal motor model.

p0621 = 1:

Identification of the stator resistance only when the drive is switched on for the first time (pulse enable) after the converter runs up.

p0621 = 2:

Identification of the stator resistance every time the drive is switched on (pulse enable).

p0621 = 3:

One-time identification of the cable resistance p0352 without any change in the thermal motor model.

Value:

0: No Rs identification

1: Rs identification after switching-on again

2: Rs identification after switching-on each time

3: Rcable identification once only

Dependency: Prerequisites for the measurement are:

- Motor is connected.

p0621 = 1, 2 (only for induction motors):

- Motor data identification (see p1910) was performed with the motor cold after feeder cable resistance p0352 was parameterized.
- Ambient temperature at the time of motor data identification is entered in p0625.

p0621 = 3: (induction and synchronous motors)

- Stator resistance was entered in p0350. This is automatically the case for motor data from a list (p0301 > 0).
- Switch-on with the motor cold.

See also: p0622, r0623

NOTICE

For p0621 = 1, 2:

The determined stator temperature of the induction motor can only be conditionally compared with the measured value of a temperature sensor (KTY/Pt1000), as the sensor is usually the warmest point of the stator winding, whereas the measured value of the identification reflects the average value of the stator winding.

Furthermore, this is a short-time measurement with limited accuracy that is performed during the magnetizing phase of the induction motor.

Note
For p0621 = 1, 2:
The measurement is performed in the following cases:
- An induction motor is being used.
- Vector control is active (see p1300).
- Temperature sensor (KTY/Pt1000/Pt100) is not connected.
- When switching on, the motor remains at standstill.

When a flying restart is performed on a rotating motor, the temperatures of the thermal motor model are set to a third of the overtemperatures. However, this only occurs once after the converter runs up (e.g. after a power failure).
If identification is activated, the magnetizing time is determined via p0622 and not via p0346. Quick magnetizing (p1401.6) is de-energized internally and alarm A07416 is displayed. The speed is enabled after completion of the measurement.
For p0621 = 3:
The measurement is performed in the following cases:
- Induction motor or synchronous motor (permanent magnet) is being used.
- Vector control (see p1300) or standard drive control (see p0504) is active.
- When switching on, the motor remains at standstill.

When identification is activated, the ramp-up time of the current setpoint is defined by p0622 (limited to p0346). The speed is enabled after the measurement has been completed. After the measurement, p0621 is reset and the result is saved in p0352.

p0622[0...n] Motor excitation time for Rs_ident after switching on again / t_excit Rs_id

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor data identification routine	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** automatic
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000 [s]	20.000 [s]	0.000 [s]

Description: Sets the excitation time of the motor for the stator resistance identification after switching on again (restart).

Dependency: See also: p0621, r0623

Note
For p0622 < p0346 the following applies:
If identification is activated, the magnetizing time is influenced by p0622. The speed is enabled after measurement is complete, but not before the time in p0346 has elapsed (see r0056 bit 4). The time taken for measurement also depends on the settling time of the measured current.
For p0622 >= p0346 the following applies:
Parameter p0622 is internally limited to the magnetizing time p0346, so that p0346 represents the maximum possible magnetizing time during identification. The entire measurement period (magnetizing plus measurement settling time plus measuring time) will always be greater than p0346.

r0623 Rs identification stator resistance after switch on again / Rs-id Rs aft sw-on

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Motor data identification routine	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	-	**Calculated:** -

Unit: ohm | **Unit group:** - | **Unit selection:** -

Description: Displays the stator resistance determined using the Rs identification after switching on again.

Dependency: See also: p0621, p0622

p0624[0...n] Motor temperature offset Pt100 / Mot T_offset Pt100

Data type: FloatingPoint32 | **Visible in:** Extended display

Read permission: Read drive data or acknowledge messages

Write permission: Edit device configuration or drive applications

Can be changed in the operating state: Operation

Parameter group: Motor temperature

Not relevant for motor type: -

Dyn. index [0...n]: MDS n defined by: p0130 | **Calculated:** -

Unit: K | **Unit group:** 21_2 | **Unit selection:** p0505

Min:	Max:	Factory setting:
-100.0 [K]	100.0 [K]	0.0 [K]

Description: Sets the temperature offset for the Pt100 measured value.

If there is a difference between the motor temperature displayed in r0035 and the actual motor temperature, then this offset can be entered into this parameter. thereby compensating for the difference.

Dependency: See also: p0600, p0601

Note

The parameter only has an influence with the following settings:

- Temperature sensor signal is sensed via terminal (p0600 = 11).
- Sensor type Pt100 selected (p0601 = 5).

If the resistance in series with the Pt100 (e.g. the cable resistance of the feeder cable) is known, the following conversion formula must be used:

Offset in p0624 = Measured resistance in ohms x 2.5 K/Ohm

Example:

Measured cable resistance = 2 Ohm

--> 2 Ohm x 2.5 K / Ohm = 5.0 K

p0625[0...n] Motor ambient temperature during commissioning / Mot amb_temp com

Data type: FloatingPoint32 | **Visible in:** Standard display

Read permission: Read drive data or acknowledge messages

Write permission: Edit device configuration or drive applications

Can be changed in the operating state: Operation

Parameter group: Motor data, Motor temperature

Not relevant for motor type: -

Dyn. index [0...n]: MDS n defined by: p0130 | **Calculated:** automatic

Unit: °C | **Unit group:** 21_1 | **Unit selection:** p0505

Min:	Max:	Factory setting:
-40 [°C]	80 [°C]	20 [°C]

Description: Defines the ambient temperature of the motor for calculating the motor temperature model.

Dependency: See also: p0350, p0354

Note

The parameters for stator and rotor resistance (p0350, p0354) refer to this temperature.

p0626[0...n] Motor overtemperature, stator core / Mot T_over core

Data type: FloatingPoint32 | **Visible in:** Extended display

Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Motor data, Motor temperature
Not relevant for motor type: Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor

Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** automatic
Unit: K	**Unit group:** 21_2	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
10 [K]	200 [K]	50 [K]

Description: Sets the temperature difference between the temperature of the stator iron at the rated operating point and the ambient temperature for the motor temperature model 2 (p0612.1 = 1).

Dependency: For 1LA7 motors (p0300), the parameter is preset as a function of p0307 and p0311.
See also: p0625

NOTICE
When selecting a standard induction motor listed in the catalog (p0300 > 100, p0301 > 10000), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note
After entering the motor parameters, when quick commissioning is exited, then the parameter is reset if a catalog motor has not been selected (p0300).

p0627[0...n] Motor overtemperature, stator winding / Mot T_over StWind

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Motor data, Motor temperature
Not relevant for motor type: Synchronous or reluctance motor with starting cage

Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** automatic
Unit: K	**Unit group:** 21_2	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
15 [K]	200 [K]	80 [K]

Description: Sets the temperature difference between the temperature of the stator winding at the rated operating point and the ambient temperature.

Dependency: For 1LA7 motors (p0300), the parameter is preset as a function of p0307 and p0311.
See also: p0625

NOTICE
When selecting a standard induction motor listed in the catalog (p0300 > 100, p0301 > 10000), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note
After entering the motor parameters, when quick commissioning is exited, then the parameter is reset if a catalog motor has not been selected (p0300).

p0628[0...n] Motor overtemperature rotor / Mot T_over rotor

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages

Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor data, Motor temperature	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** automatic
Unit: K	**Unit group:** 21_2	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
20 [K]	200 [K]	100 [K]

Description: Sets the temperature difference between the temperature of the rotor at the rated operating point and the ambient temperature for the motor temperature model 2 (p0612.1 = 1).

Dependency: For 1LA7 motors (p0300), the parameter is preset as a function of p0307 and p0311.
See also: p0625

NOTICE
When selecting a standard induction motor listed in the catalog (p0300 > 100, p0301 > 10000), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note
After entering the motor parameters, when quick commissioning is exited, then the parameter is reset if a catalog motor has not been selected (p0300).

r0630[0...n] Mot_temp_mod ambient temperature / Mod T_ambient

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Motor temperature	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: °C	**Unit group:** 21_1	**Unit selection:** p0505

Description: Displays the ambient temperature of the motor temperature model.

r0631[0...n] Mot_temp_mod stator iron temperature / Mod T_stator

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Motor temperature	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: °C	**Unit group:** 21_1	**Unit selection:** p0505

Description: Displays the stator iron temperature of the motor temperature model (models 2 and 3).

Note
For motor temperature model 1 (p0612.0 = 1), this parameter is not valid:

r0632[0...n] Mot_temp_mod stator winding temperature / Mod T_winding

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Motor temperature	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: °C	**Unit group:** 21_1	**Unit selection:** p0505

Description: Displays the stator winding temperature of the motor temperature model.
Dependency: See also: F07011, A07012, A07910

r0633[0...n] Mot_temp_mod rotor temperature / Mod rotor temp

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Motor temperature
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: MDS n defined by: p0130 **Calculated:** -
Unit: °C **Unit group:** 21_1 **Unit selection:** p0505

Description: Displays the rotor temperature of the motor temperature model (models 2 and 3).

Note
For motor temperature model 1 (p0612.0 = 1), this parameter is not valid:

p0640[0...n] Motor current limit / Motor current lim

Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: U/f control, Torque limiting, Limits
Not relevant for motor type: -
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** automatic
Unit: Arms **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0.00 [Arms]	10000.00 [Arms]	0.00 [Arms]

Description: Sets the current limit.
Dependency: See also: r0209, p0323

Note
p0640 is preassigned when the converter runs up for the first time and when restoring the factory settings.
As the parameter is part of the quick commissioning, it is adapted when changing the rated motor current.
Current limit p0640 is limited to the power unit current limit (r0209).
The resulting current limit is displayed in r0067 and if required, r0067 is reduced by the thermal model of the power unit.
p0640 is set during commissioning, which is why p0640 is not calculated using the automatic parameterization when exiting quick commissioning.
When exiting the quick commissioning, the torque and power limits (p1520, p1521, p1530, p1531) matching the current limit are calculated using the automatic parameterization.

c0641[0...n] Current limit scaling / I_limit scal

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: U/f control, Torque limiting
Not relevant for motor type: -
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink numeric **Scaling:** PERCENT
Factory interconnection: Fixed value: 100.00 [%]

Description: Signal for scaling the current limit (p0640).

p0644[0...n] Current limit excitation induction motor / Imax excit ASM

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Flux setpoint	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
50.0 [%]	300.0 [%]	300.0 [%]

Description: Maximum excitation current of the induction motor referred to the permissible rated current of the power unit (r0207[0]).

Dependency: Only effective for vector control.
See also: p1401, p1573

Note
The parameter is pre-assigned in the automatic calculation for chassis power units.

p0650[0...n] Actual motor operating hours / Motor op hours

Data type: Unsigned32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Motor	
Not relevant for motor type:	-	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: h	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [h]	4294967295 [h]	0 [h]

Description: Displays the operating hours for the corresponding motor.
The motor operating time counter continues to run when the pulses are enabled. When the pulse enable is withdrawn, the counter is held and the value saved.

Dependency: See also: p0651
See also: A01590

Note
For p0651 = 0, the operating hours counter is deactivated.
The operating hours counter in p0650 can only be reset to 0.
The operating hours counter only runs with drive data set 0 and 1 (DDS).

p0651[0...n] Motor operating hours maintenance interval / Mot t_op maint

Data type: Unsigned32	**Visible in:** Standard display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications
Can be changed in the operating state:	Ready for operation
Parameter group:	Motor
Not relevant for motor type:	-

	Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
	Unit: h	**Unit group:** -	**Unit selection:** -
	Min:	**Max:**	**Factory setting:**
	0 [h]	150000 [h]	0 [h]

Description: Sets the service/maintenance intervals in hours for the appropriate motor.
An appropriate message is output when the operating hours set here are reached.

Dependency: See also: p0650
See also: A01590

Note
For p0651 = 0, the operating hours counter is deactivated.
When setting p0651 to 0, then p0650 is automatically set to 0.
The operating hours counter only runs with drive data set 0 and 1 (DDS).

r0722.0...22 Digital inputs status / DI status

	Data type: Unsigned32	**Visible in:** Standard display	
	Read permission:	Read drive data or acknowledge messages	
	Parameter group:	Digital inputs	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	**Calculated:** -
	Unit: -	**Unit group:** -	**Unit selection:** -
	Type of signal interconnection:	Source binary/numeric	**Scaling:** -

Description: Displays for the status of the digital inputs.

Bit array:

Bit	Signal name	1 signal	0 signal
00	DI 0 (X131.1)	High	Low
01	DI 1 (X131.2)	High	Low
02	DI 2 (X131.5)	High	Low
03	DI 3 (X131.6)	High	Low
04	DI 4 (X131.8)	High	Low
05	DI 5 (X131.9)	High	Low
11	DI 11 (X132.1/2) AI 0	High	Low
12	DI 12 (X132.5/6) AI 1	High	Low
21	DI 21 (X130.2/3)	High	Low
22	DI 22 (X130.6/7)	High	Low

Dependency: See also: r0723

Note
AI: Analog Input
DI: Digital Input

r0723.0...22 Digital inputs status inverted / DI status inv

	Data type: Unsigned32	**Visible in:** Standard display	
	Read permission:	Read drive data or acknowledge messages	
	Parameter group:	Digital inputs	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	**Calculated:** -
	Unit: -	**Unit group:** -	**Unit selection:** -
	Type of signal interconnection:	Source binary/numeric	**Scaling:** -

Description: Displays the inverted status of the digital inputs.

Bit array:

Bit	Signal name	1 signal	0 signal
00	DI 0 (X131.1)	High	Low

	01	DI 1 (X131.2)	High	Low
	02	DI 2 (X131.5)	High	Low
	03	DI 3 (X131.6)	High	Low
	04	DI 4 (X131.8)	High	Low
	05	DI 5 (X131.9)	High	Low
	11	DI 11 (X132.1/2) AI 0	High	Low
	12	DI 12 (X132.5/6) AI 1	High	Low
	21	DI 21 (X130.2/3)	High	Low
	22	DI 22 (X130.6/7)	High	Low

Dependency: See also: r0722

Note
AI: Analog Input
DI: Digital Input

p0724 Digital inputs debounce time / DI t_debounce

Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Digital inputs
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: ms **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0.000 [ms]	20.000 [ms]	4.000 [ms]

Description: Sets the debounce time for digital inputs.

Note
The digital inputs are read in cyclically every 2 ms (DI 11, DI 12 every 4 ms).
To debounce the signals, the set debounce time is converted into integer multiple debounce clock cycles Tp (Tp = p0724 / 2 ms).
DI: Digital Input

r0729.0...2 Digital outputs access authority / DO acc_authority

Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Programmable digital inputs/outputs
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the access authority at the digital outputs.
Bit = 1 signal:
The control has access authority to the digital output via PROFINET or via direct access.
Bit = 0 signal:
The drive has access authority to the digital output or the digital input/output is not set as digital output or is not available.

Bit array:

Bit	Signal name	1 signal	0 signal
00	DO 0 (X133.1)	High	Low
01	DO 1 (NO: X133.4 / NC: X133.3)	High	Low
02	DO 2 (NO: X133.7 / NC: X133.6)	High	Low

Dependency: See also: r0747, p0748

c0730 Signal for terminal DO 0 / Signal DO 0

Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Digital outputs
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Parameter: 52.3

Description: Signal for terminal DO 0.

NOTICE
It is possible that the interconnection is locked as a result of a set PROFIdrive telegram.

Note
DO: Digital Output

c0731 Signal for terminal DO 1 / Signal DO 1

Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Digital outputs
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Parameter: 52.7

Description: Signal for terminal DO 1.

NOTICE
It is possible that the interconnection is locked as a result of a set PROFIdrive telegram.

Note
DO: Digital Output

c0732 Signal for terminal DO 2 / Signal DO 2

Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Digital outputs
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal for terminal DO 2.

NOTICE
It is possible that the interconnection is locked as a result of a set PROFIdrive telegram.

Note
DO: Digital Output

r0747.0...2 Digital outputs status / DO status

Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Digital outputs
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** -

Description: Displays the status of digital outputs.

Bit array:

Bit	Signal name	1 signal	0 signal
00	DO 0 (X133.1)	High	Low
01	DO 1 (NO: X133.4 / NC: X133.3)	High	Low
02	DO 2 (NO: X133.7 / NC: X133.6)	High	Low

Note
Inversion using p0748 has been taken into account.

p0748.0...2 Invert digital outputs / Invert DO

Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Digital outputs
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
-	-	0000 bin

Description: Setting to invert the signals at the digital outputs.

Bit array:

Bit	Signal name	1 signal	0 signal
00	DO 0 (X133.1)	Inverted	Not inverted
01	DO 1 (NO: X133.4 / NC: X133.3)	Inverted	Not inverted
02	DO 2 (NO: T. 24 / NC: T. 23)	Inverted	Not inverted

r0751.0...9 Analog inputs status word / AI status word

Data type: Unsigned16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Analog inputs
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary **Scaling:** -

Description: Displays for the status of the analog inputs.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Analog input AI 0 wire breakage	Yes	No

01	Analog input AI 1 wire breakage	Yes	No
08	Analog input AI 0 No wire breakage	Yes	No
09	Analog input AI 1 No wire breakage	Yes	No

Note
AI: Analog Input

r0752[0...1] Analog inputs actual input voltage/current / Analog inputs

Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Analog inputs
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** -

Description: Displays the actual input voltage in V when set as voltage input.
Displays the actual input current in mA when set as current input and with the load resistor switched in.

Index: [0] = AI 0 (X132.1 / 2)
[1] = AI 1 (X132.5 / 6)

Dependency: The type of analog input AIx (voltage or current input) is set using p0756.
See also: p0756

Note
AI: Analog Input

p0753[0...1] Analog inputs smoothing time constant / AI T_smoothing

Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Analog inputs
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: ms **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0.0 [ms]	1000.0 [ms]	0.0 [ms]

Description: Sets the smoothing time constant of the 1st order lowpass filter for the analog inputs.

Index: [0] = AI 0 (X132.1 / 2)
[1] = AI 1 (X132.5 / 6)

Note
AI: Analog Input

r0755[0...1] Analog inputs, actual value in percent / Analog inputs %

Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Analog inputs
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -

Type of signal interconnection: Source numeric **Scaling:** PERCENT

Description: Displays the currently referred input value of the analog inputs.
When interconnected, the signals are referred to the reference quantities p200x and p205x.

Index: [0] = AI 0 (X132.1 / 2)
[1] = AI 1 (X132.5 / 6)

Note
AI: Analog Input

p0756[0...1] Analog inputs type / AI type

Data type: Integer16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Analog inputs
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0	4	[0] 4
		[1] 4

Description: Sets the type of analog inputs.
p0756[0...1] = 0, 1, 4 corresponds to a voltage input (r0752, p0757, p0759 are displayed in V).
p0756[0...1] = 2, 3 corresponds to a current input (r0752, p0757, p0759 are displayed in mA).

Value:
0: Unipolar voltage input (0 V ... +10 V)
1: Unipolar voltage input monitored (+2 V ... +10 V)
2: Unipolar current input (0 mA ... +20 mA)
3: Unipolar current input monitored (+4 mA ... +20 mA)
4: Bipolar voltage input (-10 V ... +10 V)

Index: [0] = AI 0 (X132.1 / 2)
[1] = AI 1 (X132.5 / 6)

⚠ WARNING
The maximum voltage difference between analog input terminals AI+, AI-, and the ground must not exceed 35 V.
For current measurement (p0756[0...1] = 2, 3), the voltage between differential inputs AI+ and AI- must not exceed 10 V or the impressed current must not exceed 80 mA, as otherwise the input will be damaged.

Note
When changing p0756, the parameters of the scaling characteristic (p0757, p0758, p0759, p0760) are overwritten with the following default values:
For p0756 = 0, 4, p0757 is set to 0.0 V, p0758 = 0.0 %, p0759 = 10.0 V and p0760 = 100.0 %.
For p0756 = 2, p0757 is set to 0.0 mA, p0758 = 0.0 %, p0759 = 20.0 mA and p0760 = 100.0 %.
For p0756 = 3, p0757 is set to 4.0 mA, p0758 = 0.0 %, p0759 = 20.0 mA and p0760 = 100.0 %.

p0757[0...1] Analog inputs characteristic value x1 / AI char x1

Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Analog inputs
Not relevant for motor type: -

Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-50.000	160.000	0.000

Description: Sets the scaling characteristic for the analog inputs.
The scaling characteristic for the analog inputs is defined using 2 points.
This parameter specifies the x coordinate (input voltage in V, mA) of the 1st value pair of the characteristic.

Index: [0] = AI 0 (X132.1 / 2)
[1] = AI 1 (X132.5 / 6)

Note
The parameters for the characteristic do not have a limiting effect.

p0758[0...1] Analog inputs characteristic value y1 / AI char y1

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Analog inputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-1000.00 [%]	1000.00 [%]	0.00 [%]

Description: Sets the scaling characteristic for the analog inputs.
The scaling characteristic for the analog inputs is defined using 2 points.
This parameter specifies the y coordinate (percentage) of the 1st value pair of the characteristic.

Index: [0] = AI 0 (X132.1 / 2)
[1] = AI 1 (X132.5 / 6)

Note
The parameters for the characteristic do not have a limiting effect.

p0759[0...1] Analog inputs characteristic value x2 / AI char x2

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Analog inputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-50.000	160.000	10.000

Description: Sets the scaling characteristic for the analog inputs.
The scaling characteristic for the analog inputs is defined using 2 points.
This parameter specifies the x coordinate (input voltage in V, mA) of the 2nd value pair of the characteristic.

Index: [0] = AI 0 (X132.1 / 2)
[1] = AI 1 (X132.5 / 6)

Note
The parameters for the characteristic do not have a limiting effect.

p0760[0...1] Analog inputs characteristic value y2 / AI char y2

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Analog inputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-1000.00 [%]	1000.00 [%]	100.00 [%]

Description: Sets the scaling characteristic for the analog inputs.
The scaling characteristic for the analog inputs is defined using 2 points.
This parameter specifies the y coordinate (percentage) of the 2nd value pair of the characteristic.

Index: [0] = AI 0 (X132.1 / 2)
[1] = AI 1 (X132.5 / 6)

Note
The parameters for the characteristic do not have a limiting effect.

p0761[0...1] Analog inputs wire break monitoring, response threshold / Wire brk thr

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Analog inputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00	20.00	2.00

Description: Sets the response threshold for the wire breakage monitoring of the analog inputs.
The unit for the parameter value depends on the set analog input type.

Index: [0] = AI 0 (X132.1 / 2)
[1] = AI 1 (X132.5 / 6)

Dependency: For the following analog input type, the wire breakage monitoring is active:
p0756[0...1] = 1 (unipolar voltage input monitored (+2 V ... +10 V)), unit [V]
p0756[0...1] = 3 (unipolar current input monitored (+4 mA ... +20 mA)), unit [mA]
See also: p0756

Note
AI: Analog Input

p0762[0...1] Analog inputs wire-break monitoring delay time / Wire brk t_del

Data type: Unsigned16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	

Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Analog inputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [ms]	1000 [ms]	100 [ms]

Description: Sets the delay time for the wire breakage monitoring of the analog inputs.

Index: [0] = AI 0 (X132.1 / 2)
[1] = AI 1 (X132.5 / 6)

Note
AI: Analog Input

p0763[0...1] Analog inputs offset / AI offset

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Analog inputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-20.000	20.000	0.000

Description: Sets the offset for the analog inputs.
The offset is added to the input signal before the scaling characteristic.

Index: [0] = AI 0 (X132.1 / 2)
[1] = AI 1 (X132.5 / 6)

Note
AI: Analog Input

p0764[0...1] Analog inputs deadband / AI deadband

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Analog inputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000	20.000	0.000

Description: Sets the width of the deadband at the analog input.
Analog input type unipolar (e.g. 0 ... +10 V):
The dead zone starts with the characteristic value x1/y1 (p0757/p0758).
Analog input type bipolar (e.g. -10 V ... +10 V):
The dead zone is located at the symmetrical center between characteristic value x1/y1 (p0757/p0758) and x2/y2 (p0759/p0760). The set value doubles the deadband.

Index: [0] = AI 0 (X132.1 / 2)
[1] = AI 1 (X132.5 / 6)

Note
AI: Analog Input

p0766[0...1] Analog inputs activate absolute value generation / AI AbsV act

Data type: Integer16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Analog inputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	1	0

Description: Activates the absolute value generation of the analog input signals.

Value:
0: No absolute value generation
1: Absolute value generation switched in

Index: [0] = AI 0 (X132.1 / 2)
[1] = AI 1 (X132.5 / 6)

Note
AI: Analog Input

c0767[0...1] Analog inputs inversion / AI inv

Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Analog inputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal to invert the analog input signals.

Index: [0] = AI 0 (X132.1 / 2)
[1] = AI 1 (X132.5 / 6)

Note
AI: Analog Input

p0768[0...1] Analog inputs noise suppression window / AI window

Data type: FloatingPoint32 **Visible in:** Standard display

Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Analog inputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [%]	20.00 [%]	0.00 [%]

Description: Sets the window for noise suppression of the analog inputs.
Changes less than the window are suppressed.

Index: [0] = AI 0 (X132.1 / 2)
[1] = AI 1 (X132.5 / 6)

Note
AI: Analog Input

c0769[0...1] Analog inputs enable / AI enable

Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Analog inputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 1	

Description: Signal to enable the analog inputs.

Index: [0] = AI 0 (X132.1 / 2)
[1] = AI 1 (X132.5 / 6)

Note
AI: Analog Input

c0771[0] Analog output signal / AO signal

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Analog outputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** PERCENT
Factory interconnection:	Parameter: 21	

Description: Signal for the analog output.

Index: [0] = AO 0 (X132.10/11)

Note
AO: Analog Output

r0772[0] Analog output actual output value referred / AO outp act ref

Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Analog outputs
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -

Description: Displays the actual referred output value of the analog output.
Index: [0] = AO 0 (X132.10/11)

Note
AO: Analog Output

p0773[0] Analog output smoothing time constant / AO T_smoothing

Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Analog outputs
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: ms **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0.0 [ms]	1000.0 [ms]	0.0 [ms]

Description: Sets the smoothing time constant of the 1st order lowpass filter for the analog output.
Index: [0] = AO 0 (X132.10/11)

Note
AO: Analog Output

r0774[0] Analog output actual output voltage/current / AO U/I_outp

Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Analog outputs
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the actual output voltage or output current at the analog output.
Index: [0] = AO 0 (X132.10/11)
Dependency: See also: p0776

Note
AO: Analog Output

p0775[0] Analog output, activate absolute value generation / AO AbsV act

Data type: Integer16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Ready for operation

	Parameter group:	Analog outputs	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	**Calculated:** -
	Unit: -	**Unit group:** -	**Unit selection:** -
	Min:	**Max:**	**Factory setting:**
	0	1	0

Description: Activates the absolute value generation for the analog output.

Value:
0: No absolute value generation
1: Absolute value generation switched in

Index: [0] = AO 0 (X132.10/11)

Note
AO: Analog Output

p0776[0] Analog output type / AO type

Data type: Integer16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Analog outputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	2	0

Description: Sets the analog output type.
p0776[x] = 1 corresponds to a voltage output (r0774, p0778, p0780 are displayed in V).
p0776[x] = 0, 2 corresponds to a current output (r0774, p0778, p0780 are displayed in mA).

Value:
0: Current output (0 mA ... +20 mA)
1: Voltage output (0 V ... +10 V)
2: Current output (+4 mA ... +20 mA)

Index: [0] = AO 0 (X132.10/11)

Note
When changing p0776, the parameters of the scaling characteristic (p0777, p0778, p0779, p0780) are overwritten with the following default values:
For p0776 = 0, p0777 is set to 0.0 %, p0778 = 0.0 mA, p0779 = 100.0 % and p0780 to 20.0 mA.
For p0776 = 1, p0777 is set to 0.0 %, p0778 = 0.0 V, p0779 = 100.0 % and p0780 to 10.0 V.
For p0776 = 2, p0777 is set to 0.0 %, p0778 = 4.0 mA, p0779 = 100.0 % and p0780 to 20.0 mA.
AO: Analog Output

p0777[0] Analog output characteristic value x1 / AO char x1

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Analog outputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -

Min:	Max:	Factory setting:
-1000.00 [%]	1000.00 [%]	0.00 [%]

Description: Sets the scaling characteristic for the analog output.
The scaling characteristic for the analog output is defined using 2 points.
This parameter specifies the x coordinate (percentage) of the 1st value pair of the characteristic.

Index: [0] = AO 0 (X132.10/11)

Dependency: See also: p0776

NOTICE
This parameter is automatically overwritten when changing p0776 (analog output type).

Note
The parameters for the characteristic do not have a limiting effect.

p0778[0] Analog output characteristic value y1 / AO char y1

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Analog outputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000	20.000	0.000

Description: Sets the scaling characteristic for the analog output.
The scaling characteristic for the analog output is defined using 2 points.
This parameter specifies the y coordinate (output voltage in V or output current in mA) of the 1st value pair of the characteristic.

Index: [0] = AO 0 (X132.10/11)

Dependency: The unit of this parameter (V or mA) depends on the analog output type.
See also: p0776

NOTICE
This parameter is automatically overwritten when changing p0776 (analog output type).

Note
The parameters for the characteristic do not have a limiting effect.

p0779[0] Analog output characteristic value x2 / AO char x2

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Analog outputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-1000.00 [%]	1000.00 [%]	100.00 [%]

Description: Sets the scaling characteristic for the analog output.
The scaling characteristic for the analog output is defined using 2 points.
This parameter specifies the x coordinate (percentage) of the 2nd value pair of the characteristic.

Index: [0] = AO 0 (X132.10/11)

Dependency: See also: p0776

NOTICE
This parameter is automatically overwritten when changing p0776 (analog output type).

Note
The parameters for the characteristic do not have a limiting effect.

p0780[0] Analog output characteristic value y2 / AO char y2

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Analog outputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000	20.000	20.000

Description: Sets the scaling characteristic for the analog output.
The scaling characteristic for the analog output is defined using 2 points.
This parameter specifies the y coordinate (output voltage in V or output current in mA) of the 2nd value pair of the characteristic.

Index: [0] = AO 0 (X132.10/11)

Dependency: The unit of this parameter (V or mA) depends on the analog output type.
See also: p0776

NOTICE
This parameter is automatically overwritten when changing p0776 (analog output type).

Note
The parameters for the characteristic do not have a limiting effect.

c0782[0] Analog output inversion / AO inversion

Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Analog outputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal to invert the analog output signal.

Index: [0] = AO 0 (X132.10/11)

Note
AO: Analog Output

p0783[0] Analog output offset / AO offset

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Analog outputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-20.000	20.000	0.000

Description: Sets the offset for the analog output.
The offset is added to the output signal after the scaling characteristic.

Index: [0] = AO 0 (X132.10/11)

Dependency: The unit of this parameter (V or mA) depends on the analog input type.
See also: p0776

Note
This means, for example, the offset of a downstream isolating amplifier can be compensated.

p0795.0...22 Digital inputs simulation mode / DI simulation

Data type: Unsigned32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Digital inputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin

Description: Sets the simulation mode for digital inputs.

Bit array:

Bit	Signal name	1 signal	0 signal
00	DI 0 (X131.1)	Simulation	Terminal eval
01	DI 1 (X131.2)	Simulation	Terminal eval
02	DI 2 (X131.5)	Simulation	Terminal eval
03	DI 3 (X131.6)	Simulation	Terminal eval
04	DI 4 (X131.8)	Simulation	Terminal eval
05	DI 5 (X131.9)	Simulation	Terminal eval
11	DI 11 (X132.1/2) AI 0	Simulation	Terminal eval
12	DI 12 (X132.5/6) AI 1	Simulation	Terminal eval
21	DI 21 (X130.5/6)	Simulation	Terminal eval
22	DI 22 (X130.7/8)	Simulation	Terminal eval

Dependency: The setpoint for the input signals is specified using p0796.
See also: p0796

NOTICE
As soon as the F-DIs are enabled (p10000), the corresponding digital input cannot be switched into the simulation mode.

Note
This parameter is not saved when backing up data (p0977).
AI: Analog Input
DI: Digital Input

p0796.0...22 Digital inputs simulation mode setpoint / DI sim setpoint

Data type: Unsigned32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Digital inputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin

Description: Sets the setpoint for the input signals in the digital input simulation mode.

Bit array:

Bit	Signal name	1 signal	0 signal
00	DI 0 (X131.1)	High	Low
01	DI 1 (X131.2)	High	Low
02	DI 2 (X131.5)	High	Low
03	DI 3 (X131.6)	High	Low
04	DI 4 (X131.8)	High	Low
05	DI 5 (X131.9)	High	Low
11	DI 11 (X132.1/2) AI 0	High	Low
12	DI 12 (X132.5/6) AI 1	High	Low
21	DI 21 (X130.2/3)	High	Low
22	DI 22 (X130.6/7)	High	Low

Dependency: The simulation of a digital input is selected using p0795.
See also: p0795

Note
This parameter is not saved when backing up data (p0977).
AI: Analog Input
DI: Digital Input

p0797[0...1] Analog inputs simulation mode / AI simulation mode

Data type: Integer16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Analog inputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -

	Unit: -	**Unit group:** -	**Unit selection:** -
	Min:	**Max:**	**Factory setting:**
	0	1	0
Description:	Sets the simulation mode for the analog inputs.		
Value:	0: Terminal evaluation for analog input x		
	1: Simulation for analog input x		
Index:	[0] = AI 0 (X132.1 / 2)		
	[1] = AI 1 (X132.5 / 6)		
Dependency:	The setpoint for the input voltage is specified via p0798.		
	See also: p0798		

Note
This parameter is not saved when backing up data (p0977).
AI: Analog Input

p0798[0...1] Analog inputs simulation mode setpoint / AI sim setpoint

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Analog inputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-20.000	20.000	0.000

Description: Sets the setpoint for the input value in the simulation mode of the analog inputs.

Index: [0] = AI 0 (X132.1 / 2)
[1] = AI 1 (X132.5 / 6)

Dependency: The simulation of an analog input is selected using p0797.
If AI x is parameterized as a voltage input (p0756), the setpoint is a voltage in V.
If AI x is parameterized as a current input (p0756), the setpoint is a current in mA.
See also: p0756, p0797

Note
This parameter is not saved when backing up data (p0977).
AI: Analog Input

p0799[0...2] Inputs/outputs sampling time / I/O t_samp

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Inputs/outputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: µs	**Unit group:** -	**Unit selection:** -

Min:	Max:	Factory setting:
0.00 [µs]	5000.00 [µs]	[0] 2000.00 [µs] [1] 4000.00 [µs] [2] 4000.00 [µs]

Description: Sets the sampling time for the inputs and outputs of the converter

Index: [0] = Digital inputs/outputs (DI/DO)
[1] = Analog inputs (AI)
[2] = Analog outputs (AO)

Dependency: The parameter can only be changed during commissioning.

Note
The changed sampling time is effective after commissioning has been completed.

r0807.0 Master control active / PcCtrl active

Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Commissioning interface
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary **Scaling:** -

Description: Displays what has the master control.
The drive can be controlled via the signal interconnection or from external (e.g. using the commissioning tool).

Bit array:

Bit	Signal name	1 signal	0 signal
00	Master control active	Yes	No

NOTICE
The master control only influences control word 1 and speed setpoint 1. Other control word/setpoints can be transferred from another automation device.

Note
Bit 0 = 0: signal interconnection active
Bit 0 = 1: The operating unit has master control
The commissioning tool (drive control panel) uses the master control, for example.

c0810 Command data set selection CDS bit 0 / CDS sel, bit 0

Data type: Unsigned8 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Command data sets CDS
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Parameter: 722.3

Description: Signal to select the Command Data Set bit 0 (CDS bit 0).

Dependency: See also: r0050, c0811, r0836

NOTICE
It is possible that the interconnection is locked as a result of a set PROFIdrive telegram.

Note
The command data set selected using the binary signal sinks is displayed in r0836.
The currently effective command data set is displayed in r0050.

c0811 Command data set selection CDS bit 1 / CDS sel, bit 1

Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Command data sets CDS	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal to select command data set bit 1 (CDS bit 1).
Dependency: See also: r0050, c0810, r0836

Note
The command data set selected using the binary signal sinks is displayed in r0836.
The currently effective command data set is displayed in r0050.

c0820[0...n] Drive Data Set selection DDS bit 0 / DDS sel, bit 0

Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Drive data sets DDS	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal to select drive data set, bit 0 (DDS, bit 0).
Dependency: See also: r0051, r0837

NOTICE
It is possible that the interconnection is locked as a result of a set PROFIdrive telegram.

c0821[0...n] Drive Data Set selection DDS bit 1 / DDS sel, bit 1

Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Drive data sets DDS	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal to select drive data set, bit 1 (DDS, bit 1).
Dependency: See also: r0051, r0837

NOTICE
It is possible that the interconnection is locked as a result of a set PROFIdrive telegram.

c0822[0...n] Drive Data Set selection DDS bit 2 / DDS sel, bit 2

Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Drive data sets DDS	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal to select drive data set, bit 2 (DDS, bit 2).

Dependency: See also: r0051, r0837

NOTICE
It is possible that the interconnection is locked as a result of a set PROFIdrive telegram.

c0823[0...n] Drive Data Set selection DDS bit 3 / DDS sel, bit 3

Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Drive data sets DDS	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal to select drive data set, bit 3 (DDS, bit 3).

Dependency: See also: r0051, r0837

NOTICE
It is possible that the interconnection is locked as a result of a set PROFIdrive telegram.

p0826[0...n] Motor changeover motor number / Mot_chgov mot no

Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Data sets	
Not relevant for motor type:	-	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	15	0

Description: Sets the freely assignable motor number for the motor changeover.

NOTICE
When changing over motor data sets with the same motor number (e.g. star-delta changeover) and for a motor with brake, the motor brake remains open during the changeover.

Note

When the motor data sets are changed over, the following applies:
The same motor number signifies the same thermal model.
For the same motor number, the correction values of the Rs, Lh or kT adaptation are applied for the data set changeover (refer to r1787, r1797).

c0828[0...n] Motor changeover feedback signal / Mot_chgov fdbk sig

Data type: Unsigned8 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Data sets
Not relevant for motor type: -
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal for the feedback signal when switching over the motor.

NOTICE
It is possible that the interconnection is locked as a result of a set PROFIdrive telegram.

r0835.0...10 Data set changeover status word / Data set sw ZSW

Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Control/status words, Data sets
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Displays the status word of the data set switchover.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Motor changeover active	Yes	No
01	Encoder changeover active	Yes	No
02	Internal parameter calculation active	Yes	No
04	Armature short circuit active	Yes	No
05	Identification running	Yes	No
06	Friction characteristic plot running	Yes	No
07	Rotating measurement running	Yes	No
08	Motor data identification running	Yes	No
10	Wait for pulse cancellation	Yes	No

Note
This parameter is only supplied with up-to-date values if data set changeover has been selected or is running.
For bit 00:
The signal is only influenced when a motor changeover is set via p0826.
For bit 01:
The signal is only influenced when an encoder changeover is set via p0187 or p0188.
For bit 02:
A data set changeover is delayed by the time required for the internal parameter calculation.
For bit 04:
A data set changeover is only carried out when the armature short circuit is not activated.
For bit 05:
A data set changeover is only carried out when pole position identification is not running.
For bit 06:
A data set switchover is only carried out when the friction characteristic is not being plotted.
For bit 07:
A data set changeover is only carried out when rotating measurement is not running.
For bit 08:
A data set changeover is only carried out when motor data identification is not running.
For bit 10:
A motor switchover can only be carried out when the application cancels the pulses.

r0836.0...3 Command Data Set CDS selected / CDS selected

Data type: Unsigned8 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Command data sets CDS
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Displays the command data set (CDS) selected via the binary signal sink.

Bit array:

Bit	Signal name	1 signal	0 signal
00	CDS selection bit 0	On	Off
01	CDS selection bit 1	On	Off
02	CDS selection bit 2	On	Off
03	CDS selection bit 3	On	Off

Dependency: See also: r0050, c0810, c0811

Note
Command data sets are selected via binary signal sink c0810 and the following.
The currently effective command data set is displayed in r0050.

r0837.0...4 Drive Data Set DDS selected / DDS selected

Data type: Unsigned8 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Drive data sets DDS
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Displays the drive data set (DDS) selected via the binary signal sink.

Bit array:

Bit	Signal name	1 signal	0 signal
00	DDS selection bit 0	On	Off

01	DDS selection bit 1	On	Off
02	DDS selection bit 2	On	Off
03	DDS selection bit 3	On	Off
04	DDS selection bit 4	On	Off

Dependency: See also: r0051, c0820, c0821, c0822, c0823

Note
Drive data sets are selected via binary signal sink c0820 and the following.
The currently effective drive data set is displayed in r0051.
If there is only one data set, then a value of 0 is displayed in this parameter and not the selection via the binary signal sink.

c0840[0...n] ON / OFF (OFF1) / ON / OFF (OFF1)

Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Enable logic, Drive enable signals
Not relevant for motor type: -
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal for command "ON/OFF (OFF1)".
For the PROFIdrive profile, this command corresponds to control word 1 bit 0 (STW1.0).

Dependency: See also: c1055, c1056

⚠ CAUTION
When "master control from PC" is activated, then this binary signal sink is ineffective.

NOTICE
The drive goes into the switching on inhibited state when the OFF1 source is interconnected with a signal that is 1. The OFF1 enable can only be issued if the signal changes from 0 to 1 after the interconnection.
for value = 0 signal:
- The motor can be moved by jogging via the binary signal sink c1055 or c1056.
- The switching on inhibited is acknowledged.
The command "ON/OFF (OFF1)" can be issued via the binary signal sinks c0840 or c1055/c1056.
Only the signal source that originally switched on can also switch off again.
It is possible that the interconnection is locked as a result of a set PROFIdrive telegram.

Note
For drives with closed-loop speed control (p1300 = 20, 21), the following applies:
- For 0 signal: OFF1 (braking with the ramp-function generator, then pulse cancellation)
For drives with closed-loop torque control (p1300 = 22, 23), the following applies:
- For 0 signal: immediate pulse cancellation
For drives with closed-loop torque control (activated using c1501), the following applies:
- For 0 signal: No dedicated braking response, but pulse cancellation when standstill is detected (p1226, p1227)
For drives with closed-loop speed/torque control, the following applies:
- For 0/1 signal edge: ON (pulses can be enabled)
r0863.1 of a drive can also be selected as signal source.

c0844[0...n] No coast-down / coast-down (OFF2) signal 1 / OFF2 signal 1

Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications

Parameter group: Enable logic, Drive enable signals
Not relevant for motor type: -
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 1

Description: First signal for command "No coast-down / coast-down (OFF2)"
The following signals are AND'ed:
- c0844 "No coast-down / coast-down (OFF2) signal source 1"
- c0845 "No coast-down / coast-down (OFF2) signal source 2"
For the PROFIdrive profile, the result of the AND logic operation corresponds to control word 1 bit 1 (STW1.1).
c0844 = 0 signal or c0845 = 0 signal
- OFF2 (immediate pulse cancellation and switching on inhibited)
c0844 = 1 signal or c0845 = 1 signal
- No OFF2 (enable is possible)

⚠ CAUTION
When "master control from PC" is activated, then this binary signal sink is ineffective.

NOTICE
It is possible that the interconnection is locked as a result of a set PROFIdrive telegram.

c0845[0...n] No coast-down / coast-down (OFF2) signal 2 / OFF2 signal 2

Data type: Unsigned8 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Enable logic, Drive enable signals
Not relevant for motor type: -
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 1

Description: Second signal for command "No coast-down / coast-down (OFF2)"
The following signals are AND'ed:
- c0844 "No coast-down / coast-down (OFF2) signal source 1"
- c0845 "No coast-down / coast-down (OFF2) signal source 2"
For the PROFIdrive profile, the result of the AND logic operation corresponds to control word 1 bit 1 (STW1.1).
c0844 = 0 signal or c0845 = 0 signal
- OFF2 (immediate pulse cancellation and switching on inhibited)
c0844 = 1 signal or c0845 = 1 signal
- No OFF2 (enable is possible)

⚠ CAUTION
This signal also remains active when "master control from PC" is activated.

c0848[0...n] No Quick Stop / Quick Stop (OFF3) signal 1 / OFF3 signal 1

Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Enable logic, Drive enable signals
Not relevant for motor type: -
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -

Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 1

Description: First signal for command "No Quick Stop / Quick Stop (OFF3)"
The following signals are AND'ed:
- c0848 "Quick Stop / Quick Stop (OFF3) signal 1"
- c0849 "No Quick Stop / Quick Stop (OFF3) signal 2"

For the PROFIdrive profile, the result of the AND logic operation corresponds to control word 1 bit 2 (STW1.2).
c0848 = 0 signal or c0849 = 0 signal
- OFF3 (braking along the OFF3 ramp (p1135), then pulse cancellation and switching on inhibited)
c0848 = 1 signal or c0849 = 1 signal
- No OFF3 (enable possible)

⚠ CAUTION
When "master control from PC" is activated, then this binary signal sink is ineffective.

NOTICE
It is possible that the interconnection is locked as a result of a set PROFIdrive telegram.

Note
After switching over to closed-loop torque control via c1501 = 1 signal, Quick Stop (OFF3) does not have a dedicated braking response; however, pulses are canceled when standstill is detected (p1226, p1227).

c0849[0...n] No Quick Stop / Quick Stop (OFF3) signal 2 / OFF3 signal 2

Data type: Unsigned8 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Enable logic, Drive enable signals
Not relevant for motor type: -
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 1

Description: Second signal for command "No Quick Stop / Quick Stop (OFF3)"
The following signals are AND'ed:
- c0848 "No Quick Stop / Quick Stop (OFF3) signal 1"
- c0849 "No Quick Stop / Quick Stop (OFF3) signal 2"

For the PROFIdrive profile, the result of the AND logic operation corresponds to control word 1 bit 2 (STW1.2).
c0848 = 0 signal or c0849 = 0 signal
- OFF3 (braking along the OFF3 ramp (p1135), then pulse cancellation and switching on inhibited)
c0848 = 1 signal or c0849 = 1 signal
- No OFF3 (enable possible)

⚠ CAUTION
This signal also remains active when "master control from PC" is activated.

Note
After switching over to closed-loop torque control via c1501 = 1 signal, Quick Stop (OFF3) does not have a dedicated braking response; however, pulses are canceled when standstill is detected (p1226, p1227).

c0852[0...n] Enable operation/inhibit operation / Enable operation

Data type: Unsigned8 **Visible in:** Standard display

Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Enable logic, Drive enable signals
Not relevant for motor type: -
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 1

Description: Signal for command "Enable operation/inhibit operation".
For the PROFIdrive profile, this command corresponds to control word 1 bit 3 (STW1.3).
0 signal: Inhibits operation (cancel pulses).
1 signal: Enables operation (pulses can be enabled).

⚠ CAUTION
When "master control from PC" is activated, then this binary signal sink is ineffective.

NOTICE
It is possible that the interconnection is locked as a result of a set PROFIdrive telegram.

c0854[0...n] Control by PLC/no control by PLC / Control by PLC

Data type: Unsigned8 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Enable logic, Drive enable signals, Configuration
Not relevant for motor type: -
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 1

Description: Signal for command "Control by PLC/no control by PLC".
For the PROFIdrive profile, this command corresponds to control word 1 bit 10 (STW1.10).
0 signal: No control by PLC.
1 signal: Control by PLC.

⚠ CAUTION
When "master control from PC" is activated, then this binary signal sink is ineffective.

NOTICE
It is possible that the interconnection is locked as a result of a set PROFIdrive telegram.

Note
This bit is used to initiate a response for the drives when the control fails (F07220). If no control is available, this binary signal sink 1 signal should be set.
If a control is available, then STW1.10 must be set to 1 (PZD1) so that the received data is updated. This applies regardless of the setting in c0854 and also in the case of free telegram configuration (r0922 = 999).

c0855[0...n] Unconditionally release holding brake / Uncond open brake

Data type: Unsigned8 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Motor holding brake
Not relevant for motor type: -
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -

Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal for command "Unconditionally release holding brake".

Dependency: See also: c0858

NOTICE
It is possible that the interconnection is locked as a result of a set PROFIdrive telegram.

Note
The signal via binary sink c0858 "Unconditionally close holding brake" has a higher priority than via binary sink c0855 "Unconditionally release holding brake".

c0856[0...n] Enable speed controller / n_ctrl enable

Data type: Unsigned8 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Motor holding brake, Drive enable signals
Not relevant for motor type: -
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 1

Description: Signal for command "Enable speed controller" (r0898.12).
0 signal: Set the I component and speed controller output to zero.
1 signal: Enable speed controller.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: r0898

Note
When the signal is withdrawn, then if present, a brake is closed.
The pulses are not canceled when the signal is withdrawn.

p0857 Power unit monitoring time / PU t_mon

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Ready for operation
Parameter group: Drive enable signals
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: ms **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
100.0 [ms]	60000.0 [ms]	10000.0 [ms]

Description: Sets the monitoring time for the power unit.
The monitoring time is started after a positive signal edge of the ON/OFF1 command. If the power unit does not return a ready signal within the monitoring time, then fault F07802 is output.

Dependency: See also: F06000, F07802, F30027

NOTICE

The maximum time to precharge the DC link is monitored in the power unit and cannot be changed.

The monitoring time for precharging is started after the ON command (positive edge at c0840). Fault F30027 is output when the maximum precharging duration is exceeded.

Note

The factory setting of the parameter depends on the power unit.

The monitoring time for the ready signal of the power unit includes the time to precharge the DC link and, if relevant, the de-bounce time of the contactors.

If an excessively low value is entered for the parameter, then after enable, this results in a corresponding fault.

c0858[0...n] Unconditionally close holding brake / Uncond close brake

Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Motor holding brake	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal for command "Unconditionally close holding brake".

Dependency: See also: c0855

Note

The signal via binary sink c0858 "Unconditionally close holding brake" has a higher priority than via binary sink c0855 "Unconditionally release holding brake".

1 signal:

Command "Unconditionally close holding brake" is executed and internally a zero setpoint is specified.

c0860 Line contactor feedback signal / Line contact fdbk

Variant:	G220	
Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Line contactor control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Parameter: 863.1	

Description: Signal for the feedback signal from the line contactor.

Recommendation: When the monitoring is activated (c0860 not equal to r0863.1), to control the line contactor, signal r0863.1 of its own drive object should be used.

Dependency: See also: p0861, r0863

See also: F07300

NOTICE

The line contactor monitoring is deactivated if the control signal of the particular drive object is set as the signal source for the feedback signal of the line contactor (c0860 = r0863.1).

Note
The state of the line contactor is monitored depending on signal r0863.1.
When monitoring is activated (c0860 not equal to r0863.1), fault F07300 is also output if the contactor is closed before it is controlled by r0863.1.

c0860 Line contactor feedback signal / Line contact fdbk

Variant:	G220 Clean Power	
Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Line contactor control, Line contactor control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Parameter: 13863.1	

Description: Signal for the feedback signal from the line contactor.

Recommendation: When monitoring is activated (c0860 not equal to r13863.1), then signal r13863.1 should be used to control the line contactor.

Dependency: See also: p0861, r13863
See also: F07300

NOTICE
The line contactor monitoring is deactivated if the control signal is set as signal source for the line contactor feedback signal (interconnect c0860 with r13863.1).

Note
The status of the line contactor is monitored depending on signal r13863.1.
When monitoring is activated (c0860 not equal to r13863.1), fault F07300 is also output if the contactor is closed before it is controlled by r13863.1.

p0861 Line contactor monitoring time / Line cont t_mon

Variant:	G220	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Line contactor control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [ms]	5000 [ms]	100 [ms]

Description: Sets the monitoring time of the line contactor.
This time starts each time that the line contactor switches (r0863.1). Fault F07300 is output if a feedback signal is not received from the line contactor within the time.

Dependency: See also: c0860, r0863
See also: F07300

Note
Monitoring is deactivated if the factory setting of c0860 is used.

p0861 Line contactor monitoring time / Line cont t_mon

Variant: G220 Clean Power
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Ready for operation
Parameter group: Line contactor control, Line contactor control
Not relevant for motor type: -

Dyn. index [0...n]:	-	Calculated: -
Unit: ms	Unit group: -	Unit selection: -
Min:	Max:	Factory setting:
0 [ms]	5000 [ms]	100 [ms]

Description: Sets the monitoring time of the line contactor.
The time starts each time the line contactor switches (r13863.1). If a feedback signal is not received from the line contactor within the time, then a message is output (F07300).

Dependency: See also: c0860, r13863
See also: F07300

Note
Monitoring is deactivated if the factory setting of c0860 is used.

r0863.0...1 Drive coupling status word/control word / CoupleZSW/STW

Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Line contactor control
Not relevant for motor type: -

Dyn. index [0...n]:	-	Calculated: -
Unit: -	Unit group: -	Unit selection: -
Type of signal interconnection:	Source binary/numeric	Scaling: -

Description: Displays the status and control words of the drive coupling.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Precharging completed	Yes	No
01	Energize contactor	Yes	No

Dependency: See also: c0864

Note
For bit 00:
Bit 0 signals that precharging has been completed.
For bit 01:
Bit 1 is used to control an external line contactor.

c0864 Infeed operation / INF operation

Variant: G220 Clean Power
Data type: Unsigned8 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Enable logic, Drive enable signals
Not relevant for motor type: -

Dyn. index [0...n]:	-	Calculated: -
Unit: -	Unit group: -	Unit selection: -

Type of signal interconnection: Sink binary
Factory interconnection: Parameter: 13863.0

Description: Signal for the operating message of the infeed (e.g. r13863.0).

Dependency: See also: r13863

Note
The sequence control of a vector drive requires this signal.

p0867 Power unit main contactor holding time after OFF1 / PU t_MC after OFF1

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Ready for operation
Parameter group:
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: ms **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0.0 [ms]	5000.0 [ms]	50.0 [ms]

Description: Sets the main contactor holding time after OFF1
After withdrawing the OFF1 enable (signal sink c0840), the main contactor is only opened after the main contactor holding time has elapsed.

Recommendation: When operating a drive connected to SINUMERIK, which only closes the main contactor with the OFF1 command (blocksize, chassis), p0867 should be set as a minimum to 50 ms.

c0870 Close main contactor / Close main cont

Data type: Unsigned8 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group:
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal to close the main contactor.

Note
The main contactor is also closed when the converter is switched on after issuing the necessary enable signals.
1 signal:
This signal prevents the main contactor from being opened again when enable signals are withdrawn.

r0898.0...14 Control word sequence control / STW seq_ctrl

Data type: Unsigned16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Control/status words
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Display for the control word of the sequence control.

Bit array:

Bit	Signal name	1 signal	0 signal
00	ON/OFF1	ON	OFF
01	No coast-down / coast-down (OFF2)	No OFF2	OFF2
02	No Quick Stop / Quick Stop (OFF3)	No OFF3	OFF3
03	Enable operation	Yes	No
04	Enable ramp-function generator	Yes	No
05	Continue ramp-function generator	Yes	No
06	Enable speed setpoint	Yes	No
07	Command open brake	Yes	No
08	Jog 1 ON/jog 1 OFF	ON	OFF
09	Jog 2 ON/jog 2 OFF	ON	OFF
10	Control by PLC	Yes	No
12	Enable speed controller	Yes	No
14	Command close brake	Yes	No

Note
For bit 10:
This bit is only relevant for telegram types that cyclically send the associated bit in the control word. Otherwise, r0898.10 is always "Yes".

r0899.0...13 Status word sequence control / ZSW seq_ctrl

Data type: Unsigned16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Control/status words
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Display for the status word of the sequence control.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Ready for switching on	Yes	No
01	Ready	Yes	No
02	Operation enabled	Yes	No
03	Jog active	Yes	No
04	No coasting active	OFF2 inactive	OFF2 active
05	No Quick Stop active	OFF3 inactive	OFF3 active
06	Switching on inhibited active	Yes	No
07	Drive ready	Yes	No
08	Controller enable	Yes	No
09	Control requested	Yes	No
11	Pulses enabled	Yes	No
12	Open holding brake	Yes	No
13	Command close holding brake	Yes	No

Note
For bits 00, 01, 02, 04, 05, 06, 09:
For PROFIdrive, these signals are used for status word 1.
For bit 13:
When function "SBC (Safe Brake Control)" is activated and selected, the brake is no longer controlled using this signal.

r0918 PROFIBUS address / PB address

Variant: G220, G220 Clean Power
Available for module: PROFIBUS Communication Module
Data type: Unsigned16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Configuration
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the PROFIBUS address for the PROFIBUS interface on the Control Unit.
The address can be set using the commissioning tool.

r0922 PROFIdrive PZD telegram / PZD telegr

Data type: Unsigned16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Quick commissioning, Configuration
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the PROFIdrive telegram.

Value:

1:	Standard telegram 1, PZD-2/2
2:	Standard telegram 2, PZD-4/4
3:	Standard telegram 3, PZD-5/9
4:	Standard telegram 4, PZD-6/14
20:	Standard telegram 20, PZD-2/6
102:	SIEMENS telegram 102, PZD-6/10
103:	SIEMENS telegram 103, PZD-7/15
350:	SIEMENS telegram 350, PZD-4/4
352:	SIEMENS telegram 352, PZD-6/6
999:	Free telegram configuration via signal interconnection
32766:	No telegram

Note
The telegram is set in the commissioning tool or by the control.
If a value is not equal to 999 or 32766, then a telegram is set and interconnections set in the telegram are inhibited.
If a value = 32766 "No telegram" is set, all telegram interconnections are deleted and inhibited.
When reading the parameter via PROFIdrive, value 65534 is applicable for "No telegram".

r0922 PROFIdrive PZD telegram / PZD telegr

Variant: G220, G220 Clean Power
Values for: Basic positioner
Data type: Unsigned16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Quick commissioning, Configuration
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the PROFIdrive telegram.

Value:

7:	Standard telegram 7, PZD-2/2
9:	Standard telegram 9, PZD-10/5

111: SIEMENS telegram 111, PZD-12/12
112: SIEMENS telegram 112, PZD-17/12
113: SIEMENS telegram 113, PZD-21/14
999: Free telegram configuration via signal interconnection
32766: No telegram

Note
The telegram is set in the commissioning tool or by the control.
If a value is not equal to 999 or 32766, then a telegram is set and interconnections set in the telegram are inhibited.
If a value = 32766 "No telegram" is set, all telegram interconnections are deleted and inhibited.
When reading the parameter via PROFIdrive, value 65534 is applicable for "No telegram".

r0924[0...1] ZSW bit pulses enabled / ZSW pulse enab

Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Configuration
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the position of the "Pulses enabled" status signal in the PROFIdrive telegram.
Index: [0] = Signal number
[1] = Bit position

p0925 PROFIdrive clock synchronous sign-of-life tolerance / PD SoL_tol

Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Configuration
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0	65535	1

Description: Sets the number of tolerated consecutive sign-of-life errors of the isochronous controller.
The sign-of-life signal is normally received in PZD4 (control word 2) from the controller.
Dependency: See also: c2045
See also: F01912

Note
The sign-of-life monitoring is disabled for p0925 = 65535.

r0930 PROFIdrive operating mode / PD operating mode

Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Configuration
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the operating mode.
1: Closed-loop speed controlled operation with ramp-function generator
2: Closed-loop position controlled operation
3: Closed-loop speed controlled operation without ramp-function generator

r0944 Counter for fault buffer changes / Fault buff change

Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Faults / alarms	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** -

Description: Display and numerical signal source for the counter for changes of the fault buffer.
This counter is incremented every time the fault buffer changes.
Recommendation: Used to check whether the fault buffer has been read out consistently.
Dependency: See also: r0945, r0947, r0948, r0949, r2109

r0945[0...63] Fault code / Fault code

Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Faults / alarms	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Description: Displays the codes of faults that have occurred.
Dependency: See also: r0947, r0948, r0949, r2109, r2130, r2133, r2136, r3120, r3122

NOTICE
The properties of the fault buffer should be taken from the corresponding product documentation.

Note
The buffer parameters are cyclically updated (states are indicated in r2139).
Fault buffer structure (general principle):
r0945[0], r0949[0] or r2133[0], r2130[0], r0948[0], r2136[0], r2109[0]
--> Fault 1 (oldest active fault) of the active incident
. . .
r0945[7], r0949[7] or r2133[7], r2130[7], r0948[7], r2136[7], r2109[7]
--> fault 8 (oldest active fault) of the active incident

For more than 8 active faults, only the entries are overwritten at the eighth position (index 7).

History of acknowledged faults:
If a fault incident is acknowledged, then all alarms of the 1st fault incident are transferred into the 2nd fault incident, this becomes the 1st acknowledged fault incident.
The 2nd incident is transferred into the 3rd, the 3rd into the 4th etc. The last incident is rejected.

r0945[8], r0949[8] or r2133[8], r2130[0], r0948[8], r2136[8], r2109[8]
--> fault 1 of the 1st acknowledged incident
. . .
r0945[16], r0949[16] or r2133[16], r2130[16], r0948[16], r2136[16], r2109[16]
--> fault 1 of the 2nd acknowledged incident
. . .
r0945[56], r0949[56] or r2133[56], r2130[56], r0948[56], r2136[56], r2109[56]
--> fault 1 of the 7th acknowledged incident
. . .
r0945[63], r0949[63] or r2133[63], r2130[63], r0948[63], r2136[63], r2109[63]
--> fault 8 (oldest fault that has gone) of the 7th acknowledged incident

r0947[0...63] Fault number / Fault number

Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Faults / alarms	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Description: Displays the numbers of faults that have occurred.

Dependency: See also: r0945

NOTICE
The properties of the fault buffer should be taken from the corresponding product documentation.

Note
The buffer parameters are cyclically updated (states are indicated in r2139).
Fault buffer structure (general principle):
r0945[0], r0949[0] or r2133[0], r2130[0], r0948[0], r2136[0], r2109[0] --> fault 1 (oldest active fault) of the active incident
. . .
r0945[7], r0949[7] or r2133[7], r2130[7], r0948[7], r2136[7], r2109[7] --> fault 8 (latest active fault) of the active incident
For more than 8 active faults, only the entries are overwritten at the eighth position (index 7).

History of acknowledged faults:
If a fault incident is acknowledged, then all alarms of the 1st fault incident are transferred into the 2nd fault incident, this becomes the 1st acknowledged fault incident.
The 2nd incident is transferred into the 3rd, the 3rd into the 4th etc. The last incident is rejected.

r0945[8], r0949[8] or r2133[8], r2130[0], r0948[8], r2136[8], r2109[8] --> fault 1 of the 1st acknowledged incident
. . .
r0945[16], r0949[16] or r2133[16], r2130[16], r0948[16], r2136[16], r2109[16] --> fault 1 of the 2nd acknowledged incident
. . .
r0945[56], r0949[56] or r2133[56], r2130[56], r0948[56], r2136[56], r2109[56] --> fault 1 of the 7th acknowledged incident
. . .
r0945[63], r0949[63] or r2133[63], r2130[63], r0948[63], r2136[63], r2109[63] --> fault 8 (oldest fault that has gone) of the 7th acknowledged incident

r0948[0...63] Fault time received in milliseconds / t_fault recv ms

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Faults / alarms
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: ms **Unit group:** - **Unit selection:** -

Description: Displays the system runtime in milliseconds when the fault occurred.
Dependency: See also: r0945, r0947, r0949, r2109, r2114, r2130, r2133, r2136, r3120, r3122

NOTICE
The time comprises r2130 (days) and r0948 (milliseconds).

Note
The buffer parameters are cyclically updated in the background (refer to status signal in r2139).
The structure of the fault buffer and the assignment of the indices is shown in r0945.
When the parameter is read via PROFIdrive, the TimeDifference data type applies.

r0949[0...63] Fault value / Fault value

Data type: Integer32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Faults / alarms
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays additional information about the fault that occurred (as integer number).
Dependency: See also: r0945, r0947, r0948, r2109, r2130, r2133, r2136, r3120, r3122

Note
The buffer parameters are cyclically updated in the background (refer to status signal in r2139).
The structure of the fault buffer and the assignment of the indices is shown in r0945.

p0952 Fault cases counter / Fault cases qty

Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Faults / alarms	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	65535	0

Description: Number of fault situations that have occurred since the last reset.

Dependency: The fault buffer is deleted (cleared) by setting p0952 to 0.
In order that faults with "POWER ON" acknowledgment can also be cleared from the fault buffer, POWER ON must first be carried out.
See also: r0945, r0947, r0948, r0949, r2109, r2130, r2133, r2136

r0963 PROFIBUS baud rate / PB baud rate

Variant:	G220, G220 Clean Power	
Available for module:	PROFIBUS Communication Module	
Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Configuration	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Description: Displays the corresponding value for the PROFIBUS baud rate.

Value:

0:	9.6 kbit/s
1:	19.2 kbit/s
2:	93.75 kbit/s
3:	187.5 kbit/s
4:	500 kbit/s
6:	1.5 Mbit/s
7:	3 Mbit/s
8:	6 Mbit/s
9:	12 Mbit/s
10:	31.25 kbit/s
11:	45.45 kbit/s
255:	Unknown

r0964[0...6] Device identification / Device ID

Data type: Unsigned16	**Visible in:** Standard display
Read permission:	Read drive data or acknowledge messages
Parameter group:	System identification

Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the device identification.

Index:
[0] = Company (Siemens = 42)
[1] = Device type
[2] = Firmware version
[3] = Firmware date (year)
[4] = Firmware date (day/month)
[5] = Reserved
[6] = Firmware patch/hot fix

Note
Example:
r0964[0] = 42 --> SIEMENS
r0964[1] = device type, see below
r0964[2] = 602 --> first part firmware version V06.02 (second part, refer to index 6)
r0964[3] = 2023 --> year 2023
r0964[4] = 1706 --> June 17
r0964[5] = 1 --> 1 (fixed value)
r0964[6] = 0 --> second part firmware version (complete version: V06.02.00.00)
Device type:
r0964[1] = 10000 --> SINAMICS G220
r0964[1] = 10010 --> SINAMICS G220 Clean Power

r0965 PROFIdrive profile number profile version / PD profile nr vers

Data type: Unsigned16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Configuration
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the PROFIdrive profile number and profile version.
Constant value = 032A hex.
Byte 1: Profile number = 03 hex = PROFIdrive profile
Byte 2: profile version = 2A hex = 42 dec = version 4.2

Note
When the parameter is read via PROFIdrive, the Octet String 2 data type applies.

p0972 Drive reset / Drive reset

Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Ready for operation
Parameter group: Save & reset
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0	3	0

Description: Sets the required procedure to execute a hardware reset for the drive.

Value:
0: Inactive
1: Hardware-Reset immediate
2: Hardware reset preparation
3: Hardware reset after cyclic communication has failed

⚠ DANGER

It must be absolutely ensured that the system is in a safe condition.
The memory card/device memory of the converter must not be accessed.

Note

For value = 1:
Reset is immediately executed and communications interrupted.
After communications have been established, check the reset operation (refer below).
This value cannot be set in operation.
For value = 2:
Help to check the reset operation.
Firstly, set p0972 = 2 and then read back. Secondly, set p0972 = 1 (it is possible that this request is possibly no longer acknowledged). The communication is then interrupted.
After communications have been established, check the reset operation (refer below).
For value = 3:
The reset is executed after interrupting cyclic communication. This setting is used to implement a synchronized reset by a control for several drives.
If cyclic communication is not active, then the reset is immediately executed.
After communications have been established, check the reset operation (refer below).
To check the reset operation:
After the drive has been restarted and communications have been established, read p0972 and check the following:
p0972 = 0 --> the reset was successfully executed.
p0972 > 0 --> the reset was not executed.

r0975[0...10] Converter identification / Converter ident

Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: System identification
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the identification of the converter. The drive internally comprises components, device and converter. Both components require their own identification parameters according to PROFIdrive.

Index:
[0] = Company (Siemens = 42)
[1] = Converter type
[2] = Firmware version
[3] = Firmware date (year)
[4] = Firmware date (day/month)
[5] = PROFIdrive converter type class
[6] = PROFIdrive converter subtype class
[7] = Converter number
[8] = Reserved
[9] = Reserved
[10] = Firmware patch/hot fix

Dependency: See also: r0964

Note
Example:
r0975[0] = 42 --> SIEMENS
r0975[1] = 312 --> VECTOR converter type
r0975[2] = 602 --> first part firmware version V06.02 (second part refer to index 10)
r0975[3] = 2023 --> year 2023
r0975[4] = 1706 --> 17th of June
r0975[5] = 1 --> PROFIdrive type class = 1 (axis)
r0975[6] = 9 --> PROFIdrive subtype class = 1 and 4 (application classes)
r0975[7] = 1 --> 1 (fixed value)
r0975[8] = 0 (reserved)
r0975[9] = 0 (reserved)
r0975[10] = 0 --> second part firmware version (complete version: V06.02.00.00)

p0976 Reset all parameters / Reset all par

Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Save & reset	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	1	0

Description: Resets all drive system parameters to the factory settings.

Value:
0: Inactive
1: Start to reset all parameters

NOTICE
Writing to parameters is inhibited during the reset operation.

p0977 Save all parameters / Save all par

Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Save & reset	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	1	0

Description: Retentively saves all parameters of the drive system to the non-volatile memory.
When saving, only the adjustable parameters intended to be saved are taken into account.

Value:
0: Inactive
1: Save in non-volatile memory - Loaded at POWER ON

Dependency: See also: p0976, p1960, p3845

NOTICE
The converter supply voltage may only be switched off after saving has been completed (i.e. after saving has started, wait until the parameter again has a value of 0). Writing to parameters is inhibited while saving.

r0979[0...30] PROFIdrive encoder format / PD encoder format

Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: System identification, Configuration
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the actual position encoder used according to PROFIdrive.

Index:
[0] = Header
[1] = Motor encoder type
[2] = Motor encoder resolution
[3] = Shift factor G1_XIST1
[4] = Shift factor G1_XIST2
[5] = Distinguishable revolutions motor encoder
[6...10] = Reserved
[11] = Type encoder 2
[12] = Resolution encoder 2
[13] = Shift factor G2_XIST1
[14] = Shift factor G2_XIST2
[15] = Distinguishable revolutions encoder 2
[16...30] = Reserved

Note
Information about the individual indices can be taken from the following literature:
PROFIdrive Profile Drive Technology

r0980[0...299] List of existing parameters 1 / List avail par 1

Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: System identification
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the parameters that exist for this drive.

Note
Modified parameters are displayed in indices 0 to 298. If an index contains the value 0, then the list ends here. In a long list, index 299 contains the parameter number at which position the list continues.
This list consists solely of the following parameters:
r0980[0...299], r0981[0...299] ... r0989[0...299]
The parameters in this list are not displayed in the parameter lists of the commissioning tool. However, they can be read from a higher-level control system.

p1001[0...n] Fixed speed setpoint 1 / n_set_fix 1

Variant: G220, G220 Clean Power
Available when function is active: Extended setpoint channel

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Fixed setpoints	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: rpm	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** p2000
Min:	**Max:**	**Factory setting:**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets fixed speed setpoint 1.

Dependency: See also: c1020, c1021, c1022, c1023, r1024, r1197

NOTICE
A signal interconnection to a parameter, which belongs to a drive data set, always acts on the active data set.

p1002[0...n] Fixed speed setpoint 2 / n_set_fix 2

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Fixed setpoints	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: rpm	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** p2000
Min:	**Max:**	**Factory setting:**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets fixed speed setpoint 2.

Dependency: See also: c1020, c1021, c1022, c1023, r1024, r1197

NOTICE
A signal interconnection to a parameter, which belongs to a drive data set, always acts on the active data set.

p1003[0...n] Fixed speed setpoint 3 / n_set_fix 3

Variant:	G220, G220 Clean Power
Available when function is active:	Extended setpoint channel
Data type: FloatingPoint32	**Visible in:** Standard display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications
Can be changed in the operating state:	Operation
Parameter group:	Fixed setpoints
Not relevant for motor type:	-

Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000
Min:	**Max:**	**Factory setting:**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets fixed speed setpoint 3.

Dependency: See also: c1020, c1021, c1022, c1023, r1024, r1197

NOTICE
A signal interconnection to a parameter, which belongs to a drive data set, always acts on the active data set.

p1004[0...n] Fixed speed setpoint 4 / n_set_fix 4

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Fixed setpoints	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000
Min:	**Max:**	**Factory setting:**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets fixed speed setpoint 4.

Dependency: See also: c1020, c1021, c1022, c1023, r1024, r1197

NOTICE
A signal interconnection to a parameter, which belongs to a drive data set, always acts on the active data set.

p1005[0...n] Fixed speed setpoint 5 / n_set_fix 5

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Fixed setpoints	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000
Min:	**Max:**	**Factory setting:**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets fixed speed setpoint 5.

Dependency: See also: c1020, c1021, c1022, c1023, r1024, r1197

NOTICE
A signal interconnection to a parameter, which belongs to a drive data set, always acts on the active data set.

p1006[0...n] Fixed speed setpoint 6 / n_set_fix 6

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Fixed setpoints	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000
Min:	**Max:**	**Factory setting:**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets fixed speed setpoint 6.

Dependency: See also: c1020, c1021, c1022, c1023, r1024, r1197

NOTICE
A signal interconnection to a parameter, which belongs to a drive data set, always acts on the active data set.

p1007[0...n] Fixed speed setpoint 7 / n_set_fix 7

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Fixed setpoints	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000
Min:	**Max:**	**Factory setting:**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets fixed speed setpoint 7.

Dependency: See also: c1020, c1021, c1022, c1023, r1024, r1197

NOTICE
A signal interconnection to a parameter, which belongs to a drive data set, always acts on the active data set.

p1008[0...n] Fixed speed setpoint 8 / n_set_fix 8

Variant:	G220, G220 Clean Power
Available when function is active:	Extended setpoint channel

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Fixed setpoints	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000
Min:	**Max:**	**Factory setting:**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets fixed speed setpoint 8.

Dependency: See also: c1020, c1021, c1022, c1023, r1024, r1197

NOTICE
A signal interconnection to a parameter, which belongs to a drive data set, always acts on the active data set.

p1009[0...n] Fixed speed setpoint 9 / n_set_fix 9

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Fixed setpoints	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000
Min:	**Max:**	**Factory setting:**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets fixed speed setpoint 9.

Dependency: See also: c1020, c1021, c1022, c1023, r1024, r1197

NOTICE
A signal interconnection to a parameter, which belongs to a drive data set, always acts on the active data set.

p1010[0...n] Fixed speed setpoint 10 / n_set_fix 10

Variant:	G220, G220 Clean Power
Available when function is active:	Extended setpoint channel
Data type: FloatingPoint32	**Visible in:** Standard display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications
Can be changed in the operating state:	Operation
Parameter group:	Fixed setpoints
Not relevant for motor type:	-

Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000
Min:	**Max:**	**Factory setting:**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets fixed speed setpoint 10.

Dependency: See also: c1020, c1021, c1022, c1023, r1024, r1197

NOTICE
A signal interconnection to a parameter, which belongs to a drive data set, always acts on the active data set.

p1011[0...n] Fixed speed setpoint 11 / n_set_fix 11

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Fixed setpoints	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000
Min:	**Max:**	**Factory setting:**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets fixed speed setpoint 11.

Dependency: See also: c1020, c1021, c1022, c1023, r1024, r1197

NOTICE
A signal interconnection to a parameter, which belongs to a drive data set, always acts on the active data set.

p1012[0...n] Fixed speed setpoint 12 / n_set_fix 12

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Fixed setpoints	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000
Min:	**Max:**	**Factory setting:**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets fixed speed setpoint 12.

Dependency: See also: c1020, c1021, c1022, c1023, r1024, r1197

NOTICE
A signal interconnection to a parameter, which belongs to a drive data set, always acts on the active data set.

p1013[0...n] Fixed speed setpoint 13 / n_set_fix 13

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Fixed setpoints	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000
Min:	**Max:**	**Factory setting:**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets fixed speed setpoint 13.

Dependency: See also: c1020, c1021, c1022, c1023, r1024, r1197

NOTICE
A signal interconnection to a parameter, which belongs to a drive data set, always acts on the active data set.

p1014[0...n] Fixed speed setpoint 14 / n_set_fix 14

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Fixed setpoints	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000
Min:	**Max:**	**Factory setting:**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets fixed speed setpoint 14.

Dependency: See also: c1020, c1021, c1022, c1023, r1024, r1197

NOTICE
A signal interconnection to a parameter, which belongs to a drive data set, always acts on the active data set.

p1015[0...n] Fixed speed setpoint 15 / n_set_fix 15

Variant:	G220, G220 Clean Power
Available when function is active:	Extended setpoint channel

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Fixed setpoints	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000
Min:	**Max:**	**Factory setting:**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets fixed speed setpoint 15.

Dependency: See also: c1020, c1021, c1022, c1023, r1024, r1197

NOTICE
A signal interconnection to a parameter, which belongs to a drive data set, always acts on the active data set.

p1016 Fixed speed setpoint select mode / n_set_fix select

Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Fixed setpoints	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
1	2	1

Description: Sets the mode to select the fixed speed setpoint.

Value:
1: Direct
2: Binary

Note
For p1016 = 1:
In this mode, the setpoint is specified via the fixed speed setpoints p1001 ... p1004.
Up to 16 different setpoints are obtained by adding the individual fixed speed setpoints.
For p1016 = 2:
In this mode, the setpoint is specified via the fixed speed setpoints p1001 ... p1015.

c1020[0...n] Fixed speed setpoint selection bit 0 / n_set_fixed bit 0

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Fixed setpoints	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -

Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal to select the fixed speed setpoint.

Dependency: Selects the required fixed speed setpoint using c1020 ... c1023.
Displays the number of the actual fixed speed setpoint in r1197.
Sets the values for the fixed speed setpoints 1 ... 15 using p1001 ... p1015.
See also: c1021, c1022, c1023, r1197

Note
If a fixed speed setpoint has not been selected (c1020 ... c1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0).

c1021[0...n] Fixed speed setpoint selection bit 1 / n_set_fixed bit 1

Variant: G220, G220 Clean Power
Available when function is active: Extended setpoint channel
Data type: Unsigned8 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Fixed setpoints
Not relevant for motor type: -
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal to select the fixed speed setpoint.

Dependency: Selects the required fixed speed setpoint using c1020 ... c1023.
Displays the number of the actual fixed speed setpoint in r1197.
Sets the values for the fixed speed setpoints 1 ... 15 using p1001 ... p1015.
See also: c1020, c1022, c1023, r1197

Note
If a fixed speed setpoint has not been selected (c1020 ... c1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0).

c1022[0...n] Fixed speed setpoint selection bit 2 / n_set_fixed bit 2

Variant: G220, G220 Clean Power
Available when function is active: Extended setpoint channel
Data type: Unsigned8 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Fixed setpoints
Not relevant for motor type: -
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal to select the fixed speed setpoint.

Dependency: Selects the required fixed speed setpoint using c1020 ... c1023.
Displays the number of the actual fixed speed setpoint in r1197.
Sets the values for the fixed speed setpoints 1 ... 15 using p1001 ... p1015.
See also: c1020, c1021, c1023, r1197

Note
If a fixed speed setpoint has not been selected (c1020 ... c1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0).

c1023[0...n] Fixed speed setpoint selection bit 3 / n_set_fixed bit 3

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Fixed setpoints	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal to select the fixed speed setpoint.

Dependency: Selects the required fixed speed setpoint using c1020 ... c1023.
Displays the number of the actual fixed speed setpoint in r1197.
Sets the values for the fixed speed setpoints 1 ... 15 using p1001 ... p1015.
See also: c1020, c1021, c1022, r1197

Note
If a fixed speed setpoint has not been selected (c1020 ... c1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0).

r1024 Fixed speed setpoint effective / Fixed speed setp

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Fixed setpoints	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000

Description: Display for the selected and active fixed speed setpoint.
This setpoint is the output value for the fixed speed setpoints and must be appropriately interconnected (e.g. with the main setpoint).

Recommendation: Interconnect the signal with the main setpoint (c1070).

Dependency: Selects the required fixed speed setpoint using c1020 ... c1023.
Displays the number of the actual fixed speed setpoint in r1197.
Sets the values for the fixed speed setpoints 1 ... 15 using p1001 ... p1015.
See also: c1070, r1197

Note
If a fixed speed setpoint has not been selected (c1020 ... c1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0).

r1025.0 Fixed speed setpoint status / n_setp_fix status

Data type: Unsigned8 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Fixed setpoints
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary **Scaling:** -

Description: Displays the status when selecting the fixed speed setpoints.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Fixed speed setpoint selected	Yes	No

Dependency: See also: p1016

Note
For bit 00:
When the fixed speed setpoints are directly selected (p1016 = 1), this bit is set if at least 1 fixed speed setpoint is selected.

p1030[0...n].0...4 Motorized potentiometer configuration / MoP configuration

Variant: G220, G220 Clean Power
Available when function is active: Extended setpoint channel
Data type: Unsigned16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Motorized potentiometer
Not relevant for motor type: -
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
-	-	0000 0110 bin

Description: Sets the configuration for the motorized potentiometer.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Data save active	Yes	No
01	Automatic mode ramp-function generator active	Yes	No
02	Initial rounding-off active	Yes	No
03	Non-volatile saving active	Yes	No
04	Ramp-function generator always active	Yes	No

Note

For bit 00:

0: The setpoint for the motorized potentiometer is not saved and after ON is specified using p1040.

1: The setpoint for the motorized potentiometer is saved after OFF and after ON set to the saved value. In order to save in a non-volatile fashion, bit 03 should be set to 1.

For bit 01:

0: Without ramp-function generator in the automatic mode (ramp-up/ramp-down time = 0).

1: With ramp-function generator in the automatic mode.

The ramp-function generator is always active in manual operation (0 signal via c1041).

For bit 02:

0: Without initial rounding-off

1: With initial rounding-off. The selected ramp-up/down time is correspondingly exceeded. The initial rounding-off is a sensitive way of specifying small changes (progressive reaction when keys are pressed).

The jerk for the initial rounding-off is independent of the ramp-up time and only depends on the selected maximum speed (p1082). It is calculated as follows:

r = 0.01 % * p1082 [1/s] / 0.13^2 [s^2]

The jerk acts up until the maximum acceleration is reached (a_max = p1082 [1/s] / p1047 [s]), and then the drive continues to run linearly with a constant rate of acceleration. The higher the maximum acceleration (the lower that p1047 is), the longer the ramp-up time increases with respect to the set ramp-up time.

For bit 03:

0: Non-volatile data save deactivated.

1: The setpoint for the motorized potentiometer is saved in a non-volatile fashion (for bit 00 = 1).

For bit 04:

When the bit is set, the ramp-function generator is computed independent of the pulse enable. The actual output value of the motorized potentiometer is always in r1050.

c1035[0...n] Motorized potentiometer raise setpoint / MoP raise

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Motorized potentiometer	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal to continually increase the setpoint for the motorized potentiometer.

The setpoint change (r1050) depends on the set ramp-up time (p1047) and the duration of the signal that is present (c1035).

Dependency: See also: c1036

NOTICE
It is possible that the interconnection is locked as a result of a set PROFIdrive telegram.

c1036[0...n] Motorized potentiometer lower setpoint / MoP lower

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	

Parameter group: Motorized potentiometer
Not relevant for motor type: -
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal to continuously reduce the setpoint for the motorized potentiometer.
The setpoint change (r1050) depends on the set ramp-down time (p1048) and the duration of the signal that is present (c1036).

Dependency: See also: c1035

NOTICE
It is possible that the interconnection is locked as a result of a set PROFIdrive telegram.

p1037[0...n] Motorized potentiometer maximum speed / MoP n_max

Variant: G220, G220 Clean Power
Available when function is active: Extended setpoint channel
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Motorized potentiometer
Not relevant for motor type: -
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** automatic
Unit: rpm **Unit group:** 3_1 **Unit selection:** p0505

Min:	Max:	Factory setting:
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets the maximum speed/velocity for the motorized potentiometer.

Note
This parameter is automatically pre-assigned in the commissioning phase.
The setpoint output from the motorized potentiometer is limited to this value.

p1038[0...n] Motorized potentiometer minimum speed / MoP n_min

Variant: G220, G220 Clean Power
Available when function is active: Extended setpoint channel
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Motorized potentiometer
Not relevant for motor type: -
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** automatic
Unit: rpm **Unit group:** 3_1 **Unit selection:** p0505

Min:	Max:	Factory setting:
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets the minimum speed/velocity for the motorized potentiometer.

Note
This parameter is automatically pre-assigned in the commissioning phase.
The setpoint output from the motorized potentiometer is limited to this value.

c1039[0...n] Motorized potentiometer inversion / MoP inv

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Motorized potentiometer	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal to invert the minimum speed/velocity or the maximum speed/velocity for the motorized potentiometer.

Dependency: See also: p1037, p1038

Note
The inversion is only active during "motorized potentiometer raise" or "motorized potentiometer lower".

p1040[0...n] Motorized potentiometer starting value / MoP start value

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motorized potentiometer	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets the starting value for the motorized potentiometer. This starting value becomes effective after the drive has been switched on.

Dependency: Only effective if p1030.0 = 0.
See also: p1030

c1041[0...n] Motorized potentiometer manual/automatic / MoP manual/auto

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	

Parameter group: Motorized potentiometer
Not relevant for motor type: -
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal to switch over from manual to automatic when using a motorized potentiometer.
The setpoint is manually raised and lowered using two signals. In the automatic mode, the setpoint must be interconnected via a numerical signal sink.

Dependency: See also: p1030, c1035, c1036, c1042

Note
The effectiveness of the internal ramp-function generator can be set in automatic mode.

c1042[0...n] Motorized potentiometer automatic setpoint / MoP auto setpoint

Variant: G220, G220 Clean Power
Available when function is active: Extended setpoint channel
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Motorized potentiometer
Not relevant for motor type: -
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -
Unit: rpm **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink numeric **Scaling:** p2000
Factory interconnection: Fixed value: 0.00 [rpm]

Description: Signal for the setpoint of the motorized potentiometer in the automatic mode.

Dependency: See also: c1041

c1043[0...n] Motorized potentiometer accept setting value / MoP acc set val

Variant: G220, G220 Clean Power
Available when function is active: Extended setpoint channel
Data type: Unsigned8 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Motorized potentiometer
Not relevant for motor type: -
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal to accept the setting value for the motorized potentiometer.

Dependency: See also: c1044

Note
The setting value (c1044) becomes active for a 0/1 edge of the setting command (c1043).

c1044[0...n] Motorized potentiometer setting value / MoP set val

Variant: G220, G220 Clean Power

Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Motorized potentiometer	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: rpm	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** p2000
Factory interconnection:	Fixed value: 0.00 [rpm]	

Description: Signal for the setting value for the motorized potentiometer.

Dependency: See also: c1043

Note
The setting value becomes active for a 0/1 edge of the setting command (c1043).

r1045 Mot potentiometer speed setpoint in front of ramp-function gen / MoP n_set bef RFG

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Motorized potentiometer	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000

Description: Displays the effective setpoint in front of the internal motorized potentiometer ramp-function generator.

p1047[0...n] Motorized potentiometer ramp-up time / MoP ramp-up time

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motorized potentiometer	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000 [s]	1000.000 [s]	10.000 [s]

Description: Sets the ramp-up time for the internal ramp-function generator for the motorized potentiometer.
The setpoint is changed from zero up to the speed/velocity limit (p1082) within this time (if no initial rounding-off has been activated).

Dependency: See also: p1030, p1048, p1082

Note
When the initial rounding-off is activated (p1030.2) the ramp-up time is correspondingly extended.

p1048[0...n] Motorized potentiometer ramp-down time / MoP ramp-down time

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motorized potentiometer	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000 [s]	1000.000 [s]	10.000 [s]

Description: Sets the ramp-down time for the internal ramp-function generator for the motorized potentiometer.
The setpoint is changed from the speed/velocity limit (p1082) to zero within this time (if no initial rounding-off has been activated).

Dependency: See also: p1030, p1047, p1082

Note
The deceleration time is extended corresponding to the activated initial rounding-off (p1030.2).

r1050 Motorized potentiometer setpoint after ramp-function generator / Motor pot setpoint

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Motorized potentiometer	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000

Description: Displays the effective setpoint after the internal motorized potentiometer ramp-function generator.
This setpoint is the output value of the motorized potentiometer and must be appropriately interconnected onwards (e.g. with the main setpoint).

Recommendation: Interconnect the signal with the main setpoint (c1070).

Dependency: See also: c1070

Note
For operation "With ramp-function generator", after an OFF1, OFF2, OFF3 or for a 0 signal via c0852 (inhibit operation, cancel pulses) the ramp-function generator output (r1050) is set to the starting value (configured using p1030.0).

c1051[0...n] Speed limit RFG positive direction of rotation / n_limit RFG pos

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Extended display	

Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Speed limiting	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: rpm	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** p2000
Factory interconnection:	Parameter: 1083[0]	

Description: Signal for the speed limit of the positive direction at the ramp-function generator input.

Note
The OFF3 ramp-down time (p1135) is effective when the limit is reduced.

c1052[0...n] Speed limit RFG negative direction of rotation / n_limit RFG neg

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Speed limiting	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: rpm	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** p2000
Factory interconnection:	Parameter: 1086[0]	

Description: Signal for the speed limit of the negative direction at the ramp-function generator input.

Note
The OFF3 ramp-down time (p1135) is effective when the limit is reduced.

c1055[0...n] Jog 1 signal / Jog 1 signal

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Speed setpoint, Jog	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	[0] Fixed value: 0 [1] Parameter: 1:722.0 [2] Fixed value: 0 [3] Fixed value: 0	

Description: Signal for jog 1.

Recommendation: Switching-on is only realized using an appropriate signal change of the source, and not by changing the setting of the binary sink.

Dependency: See also: c0840, p1058

NOTICE
The drive is enabled for jogging using c1055 or c1056. Command "ON/OFF1" can be issued via c0840 or via c1055/c1056. Only the signal source that was used to switch on can also be used to switch off again.

c1056[0...n] Jog 2 signal / Jog 2 signal

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Speed setpoint, Jog	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	[0] Fixed value: 0 [1] Parameter: 1:722.1 [2] Fixed value: 0 [3] Fixed value: 0	

Description: Signal for jog 2.

Recommendation: Switching-on is only realized using an appropriate signal change of the source, and not by changing the setting of the binary sink.

Dependency: See also: c0840, p1059

NOTICE
The drive is enabled for jogging using c1055 or c1056. Command "ON/OFF1" can be issued via c0840 or via c1055/c1056. Only the signal source that was used to switch on can also be used to switch off again.

p1058[0...n] Jog 1 speed setpoint / Jog 1 n_set

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Speed setpoint, Jog	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
-210000.000 [rpm]	210000.000 [rpm]	150.000 [rpm]

Description: Sets the speed for jog 1.
Jogging (JOG) is level-triggered, and allows the motor to be incrementally traversed.

Dependency: See also: c1055, c1056

p1059[0...n] Jog 2 speed setpoint / Jog 2 n_set

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Speed setpoint, Jog	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
-210000.000 [rpm]	210000.000 [rpm]	-150.000 [rpm]

Description: Sets the speed for jog 2.
Jogging (JOG) is level-triggered, and allows the motor to be incrementally traversed.

Dependency: See also: c1055, c1056

c1060[0...n] Universal setpoint / n_set

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Speed setpoint, Setpoint addition	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: rpm	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** p2000
Factory interconnection:	Parameter: 1024	

Description: Signal to select a universal setpoint.

NOTICE
It is possible that the interconnection is locked as a result of a set PROFIdrive telegram.

r1061 Universal setpoint output / Universal setpoint

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Speed setpoint	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000

Description: Displays the universal setpoint.

Dependency: See also: c1060

p1063[0...n] Setpoint channel speed limit / Set_chan n_lim

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Standard display	

Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed setpoint	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.000 [rpm]	210000.000 [rpm]	40000.000 [rpm]

Description: Sets the speed limit effective in the setpoint channel.

Dependency: See also: p1082, p1083, c1085, p1086, c1088

c1070[0...n] Main setpoint / Main setpoint

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Speed setpoint	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: rpm	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** p2000
Factory interconnection:	Parameter: 1061	

Description: Signal for the main setpoint.
Examples:
r1024: Fixed speed setpoint effective
r1050: Motorized potentiometer setpoint after ramp-function generator

Dependency: See also: c1071, r1073, r1078

c1071[0...n] Main setpoint scaling / Main set scal

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Speed setpoint	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** PERCENT
Factory interconnection:	Fixed value: 100.00 [%]	

Description: Signal for scaling the main setpoint.

r1073 Main setpoint effective / Main setpoint eff

Variant:	G220, G220 Clean Power	

Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Speed setpoint	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** p2000

Description: Displays the effective main setpoint.
The value shown is the main setpoint after scaling.

c1075[0...n] Supplementary setp / Suppl set

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Speed setpoint	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: rpm	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** p2000
Factory interconnection:	Fixed value: 0.00 [rpm]	

Description: Signal for the supplementary setpoint.
Dependency: See also: c1076, r1077, r1078

c1076[0...n] Supplementary setpoint scaling / Suppl set scal

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Speed setpoint	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** PERCENT
Factory interconnection:	Fixed value: 100.00 [%]	

Description: Signal for scaling the supplementary setpoint.

r1077 Supplementary setpoint effective / Suppl setpoint eff

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	

Parameter group:	Speed setpoint	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000

Description: Displays the effective supplementary setpoint. The value shown is the supplementary setpoint after scaling.

r1078 Total setpoint effective / Total setpoint eff

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Speed setpoint	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000

Description: Displays the total effective setpoint.
The value indicates the sum of the effective main setpoint and supplementary setpoint.

p1079 Interpolator clock cycle for speed setpoints / Interp_cyc n_set

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed setpoint	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** automatic
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [ms]	127.00 [ms]	0.00 [ms]

Description: Sets the time with which new speed setpoints are interpolated.
With interpolation, the higher-level control adapts the speed setpoint steps to the time grid of the setpoint channel.

Recommendation: For non-synchronous operation, a setting to the maximum time difference between two setpoints is recommended.
For sensorless vector control, interpolation should always be activated if the ramp-up and ramp-down times of the ramp-function generator are very short. The drive must be able to follow the external speed setpoint (the drive does not ramp up at the torque limit).

Note

For acceleration precontrol of the speed controller, interpolation prevents torque peaks from occurring if the ramp-up or ramp-down times in the setpoint channel are zero.

When exiting commissioning, the parameter is preset using the automatic calculation if, as setpoint source for the main or supplementary setpoint, a PZD receive word is already set and the ramp-up time is zero.

Interpolation is limited to 127 cycles of the setpoint channel.

p1079 = 0 ms:

Interpolation is deactivated.

p1079 = 0.01 ms:

The interpolation time is automatically determined the first time that the speed setpoint is changed. After this, no other changes are made if the send times of the external control increase. Writing to p1079 again initiates the automatic adaptation of the interpolation time.

p1079 > 0.01 ms:

Interpolation is performed corresponding to the ratio to the computation clock cycle.

For a value of 0, for synchronized setpoint input, the currently valid application clock cycle is loaded.

p1080[0...n] Minimum speed / n_min

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Speed limiting, Motor holding brake, Limits	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.000 [rpm]	19500.000 [rpm]	0.000 [rpm]

Description: Sets the lowest possible motor speed.

This value is not fallen below in operation.

Dependency: See also: c1106

NOTICE
The active minimum speed is formed from p1080 and c1106.

Note

The parameter value applies for both motor directions.

In exceptional cases, the motor can operate below this value (e.g. when reversing).

In order that a stationary motor – after all of the enable signals have been switched on, can operate at the minimum speed/minimum velocity once all of the enable signals are available, the direction must be specified using one of the following options:

- Direction input via small setpoint.
- Direction input by inhibiting the negative or positive direction (c1110, c1111).

p1081 Maximum speed scaling / n_max scal

Data type: FloatingPoint32	**Visible in:** Extended display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications
Can be changed in the operating state:	Operation
Parameter group:	Speed setpoint

Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
100.00 [%]	105.00 [%]	100.00 [%]

Description: Sets the scaling for the maximum speed (p1082).

For a higher-level speed control, this scaling allows the maximum speed to be briefly exceeded.

Dependency: See also: p1082

NOTICE
Continuous operation above a scaling of 100 % is not permitted.

p1082[0...n] Maximum speed / n_max

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Motorized potentiometer, Speed limiting, Speed setpoint filter, Quick commissioning	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.000 [rpm]	210000.000 [rpm]	1500.000 [rpm]

Description: Sets the highest possible speed.

Dependency: For vector control (p1300 = 20 ... 23), the maximum speed is limited to 60.0 * 480 Hz. This can be identified by a reduction in r1084. p1082 is not changed in this process due to the fact that the operating mode p1300 can be changed over.

If a sine-wave filter (p0230 = 3) is parameterized as output filter, then the maximum speed is limited corresponding to the maximum permissible filter output frequency (refer to the filter data sheet). When using sine-wave filters (p0230 = 3, 4), the maximum speed r1084 is limited to 70% of the resonant frequency of the filter capacitance and the motor leakage inductance.

For reactors and dv/dt filters, it is limited to 150 Hz * 60 / r0313 (for chassis power units) or 120 Hz x 60 / r0313 (for booksize power units).

See also: p0230, r0313, p0322, p0324, r0336, p0532

Note
The parameter applies for both motor directions.
The parameter has a limiting effect and is the reference variable for all ramp-up and ramp-down times (e.g. down ramps, ramp-function generator, motor potentiometer).
Since the parameter is part of quick commissioning, it is preassigned accordingly when p0310, p0311, p0322, p0324, p0530, p0531 and p0532 are changed.
p1082 <= min(p0324, p0532) if p0324 > 0 and p0532 > 0
p1082 <= p0322, if p0324 = 0 or p0532 = 0 and p0322 > 0
p1082 <= 60 x minimum (15 x p0310, 550 Hz) / r0313
p1082 <= 60 x Maximum power unit pulse frequency / (k x r0313)
k = 12 for vector control, k = 6.5 for U/f control

The value of the parameter is preassigned by the automatic calculation:
- With the maximum motor speed (p0322)
- If p0322 = 0, with the rated motor speed (p0311).
- For induction motors that are not catalog motors (p0301 = 0), with the synchronous no-load speed (p0310 x 60 / r0313)
For synchronous motors, the following additionally applies:
The maximum speed p1082 is restricted to speeds (r1084) where the EMF does not exceed the DC link voltage.
The effective assignment of the motor data set parameter (e.g. p0311) to the drive data set parameter p1082 when pre-assigning should be taken from p0186.
p1082 is also available in quick commissioning; this means that when exiting and for automatic calculation, the value is not changed.

p1083[0...n] Speed limit in positive direction of rotation / n_limit pos

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed limiting, Speed setpoint filter, Limits	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000
Min:	**Max:**	**Factory setting:**
0.000 [rpm]	210000.000 [rpm]	40000.000 [rpm]

Description: Sets the maximum speed for the positive direction.

NOTICE
A signal interconnection to a parameter, which belongs to a drive data set, always acts on the active data set.

r1084 Positive speed limit effective / n_limit pos eff

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Speed limiting, Speed messages, Speed setpoint filter	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000

Description: Displays the active positive speed limit.
Dependency: See also: p1082, p1083, c1085

Note
The following applies for vector control as well as standard and Dynamic Drive Control:
r1084 <= 480 Hz
For permanent magnet synchronous motors, the speed limit can be restricted if there is no overvoltage protection.

c1085[0...n] Speed limit in positive direction of rotation / n_limit pos

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Speed limiting, Speed setpoint filter	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: rpm	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** p2000
Factory interconnection:	Parameter: 1083[0]	

Description: Signal for the speed limit of the positive direction.

p1086[0...n] Speed limit in negative direction of rotation / n_limit neg

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed limiting, Speed setpoint filter, Limits	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000
Min:	**Max:**	**Factory setting:**
-210000.000 [rpm]	0.000 [rpm]	-40000.000 [rpm]

Description: Sets the speed limit for the negative direction.

NOTICE
A signal interconnection to a parameter, which belongs to a drive data set, always acts on the active data set.

r1087 Negative speed limit effective / n_limit neg eff

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Speed limiting, Speed messages, Speed setpoint filter	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000

Description: Displays the active negative speed limit.
Dependency: See also: p1082, p1086, c1088

c1088[0...n] Speed limit in negative direction of rotation / n_limit neg

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Speed limiting, Speed setpoint filter	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: rpm	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** p2000
Factory interconnection:	Parameter: 1086[0]	

Description: Signal for the speed/velocity limit of the negative direction.

p1091[0...n] Skip speed 1 / n_skip 1

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed limiting	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets skip speed 1.

Dependency: See also: p1092, p1093, p1094, p1101

NOTICE
Skip bandwidths can also become ineffective as a result of the downstream limits in the setpoint channel.

Note
The skip (suppression) speeds can be used to prevent the effects of mechanical resonance.

p1092[0...n] Skip speed 2 / n_skip 2

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed limiting	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -

Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets skip speed 2.

Dependency: See also: p1091, p1093, p1094, p1101

NOTICE
Skip bandwidths can also become ineffective as a result of the downstream limits in the setpoint channel.

p1093[0...n] Skip speed 3 / n_skip 3

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed limiting	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets skip speed 3.

Dependency: See also: p1091, p1092, p1094, p1101

NOTICE
Skip bandwidths can also become ineffective as a result of the downstream limits in the setpoint channel.

p1094[0...n] Skip speed 4 / n_skip 4

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed limiting	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets skip speed 4.

Dependency: See also: p1091, p1092, p1093, p1101

NOTICE
Skip bandwidths can also become ineffective as a result of the downstream limits in the setpoint channel.

c1098[0...n] Skip speed scaling / n_skip scal

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Speed limiting	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** PERCENT
Factory interconnection:	Fixed value: 100.00 [%]	

Description: Signal for scaling the skip speeds.

Dependency: See also: p1091, p1092, p1093, p1094

r1099.0 Skip band status word / Skip band ZSW

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: Unsigned32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Speed limiting	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source binary/numeric	**Scaling:** -

Description: Displays the skip frequency bands.

Bit array:

Bit	Signal name	1 signal	0 signal
00	r1170 within the skip band	Yes	No

Dependency: See also: r1170

Note

For bit 00:
With the bit set, the setpoint speed is within the skip band after the ramp-function generator (r1170).
The signal can be used to switch over the drive data set (DDS).

p1101[0...n] Skip speed bandwidth / n_skip bandwidth

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed limiting	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505

Min:	Max:	Factory setting:
0.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets the bandwidth for the skip speeds/velocities 1 to 4.

Dependency: See also: p1091, p1092, p1093, p1094

Note

The setpoint (reference) speeds are skipped (suppressed) in the range of the skip speed +/-p1101.
Steady-state operation is not possible in the skipped (suppressed) speed range. The skip (suppression) range is skipped.
Example:
p1091 = 600 and p1101 = 20
--> setpoint speeds between 580 and 620 [rpm] are skipped.
For the skip bandwidths, the following hysteresis behavior applies:
For a setpoint speed coming from below, the following applies:
r1170 < 580 [rpm] and 580 [rpm] <= r1114 <= 620 [rpm] --> r1119 = 580 [rpm]
For a setpoint speed coming from above, the following applies:
r1170 > 620 [rpm] and 580 [rpm] <= r1114 <= 620 [rpm] --> r1119 = 620 [rpm]

c1106[0...n] Minimum speed / n_min

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Speed limiting	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: rpm	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** p2000
Factory interconnection:	Fixed value: 0.00 [rpm]	

Description: Signal for the lowest possible motor speed.

Dependency: See also: p1080

NOTICE

The active minimum speed is formed from p1080 and c1106.

c1110[0...n] Inhibit negative direction / Inhib neg dir

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Speed setpoint	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal to inhibit the negative direction.

Dependency: See also: c1111

c1111[0...n] Inhibit positive direction / Inhib pos dir

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Speed setpoint	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal to inhibit the positive direction.

Dependency: See also: c1110

r1112 Speed setpoint after minimum limiting / n_set aft min_lim

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Speed setpoint	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000

Description: Displays the speed setpoint after the minimum limiting.

Dependency: See also: p1091, p1092, p1093, p1094, p1101

c1113[0...n] Setpoint inversion / Set inv

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Speed setpoint	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal to invert the setpoint.

Dependency: See also: r1198

⚠ CAUTION

If the technology controller is used as the speed main setpoint (p2251 = 0), do not invert the setpoint using c1113 when the technology controller is enabled because this can cause the speed to change suddenly and lead to positive coupling effects in the control loop.

NOTICE
It is possible that the interconnection is locked as a result of a set PROFIdrive telegram.

r1114 Setpoint after the direction limiting / Set after limit

Variant: G220, G220 Clean Power
Available when function is active: Extended setpoint channel
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Speed setpoint, Speed limiting
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: rpm **Unit group:** 3_1 **Unit selection:** p0505
Type of signal interconnection: Source numeric **Scaling:** p2000

Description: Displays the speed/velocity setpoint after the changeover and limiting the direction.

p1115 Ramp-function generator selection / RFG selection

Variant: G220, G220 Clean Power
Available when function is active: Extended setpoint channel
Data type: Integer16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Ready for operation
Parameter group: Ramp-function generator
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0	1	1

Description: Sets the ramp-function generator type.

Value:
0: Basic ramp-function generator
1: Extended ramp-function generator

Note
Another ramp-function generator type can only be selected when the motor is at a standstill.

r1119 Ramp-function generator setpoint at the input / RFG set at inp

Variant: G220, G220 Clean Power
Available when function is active: Extended setpoint channel
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Ramp-function generator
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: rpm **Unit group:** 3_1 **Unit selection:** p0505
Type of signal interconnection: Source numeric **Scaling:** p2000

Description: Displays the setpoint at the input of the ramp-function generator.

NOTICE
It is possible that the interconnection is locked as a result of a set PROFIdrive telegram.

Note
The setpoint is influenced by other functions, e.g. skip (suppressed) speeds, minimum and maximum limits.

p1120[0...n] Ramp-function generator ramp-up time / RFG ramp-up time

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Ramp-function generator, Limits	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000 [s]	999999.000 [s]	10.000 [s]

Description: The ramp-function generator ramps-up the speed setpoint from standstill (setpoint = 0) up to the maximum speed (p1082) in this time.

Dependency: See also: p1082, c1138

Note
The ramp-up time can be scaled via the numerical signal sink c1138.
The parameter is adapted during the rotating measurement (p1960 > 0). This is the reason that during the rotating measurement, the motor can accelerate faster than was originally parameterized.
For U/f control and sensorless vector control (see p1300), a ramp-up time of 0 s does not make sense. The setting should be based on the startup times (r0345) of the motor.

p1121[0...n] Ramp-function generator ramp-down time / RFG ramp-down time

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Ramp-function generator, Quick commissioning	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000 [s]	999999.000 [s]	10.000 [s]

Description: Sets the ramp-down time for the ramp-function generator.
The ramp-function generator ramps-down the speed setpoint from the maximum speed (p1082) down to standstill (setpoint = 0) in this time.
Further, the ramp-down time is always effective for OFF1.

Dependency: See also: p1082, c1139

Note
For U/f control and sensorless vector control (see p1300), a ramp-down time of 0 s does not make sense. The setting should be based on the startup times (r0345) of the motor.

p1123[0...n] Ramp-function generator minimum ramp-up time / RFG t_RU min

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Ramp-function generator	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000 [s]	999999.000 [s]	0.000 [s]

Description: Sets the minimum ramp-up time.
The ramp-up time (p1120) is limited internally to this minimum value.

Dependency: See also: p1082

Note
The setting should be based on the startup times (r0345) of the motor.
If the maximum speed p1082 changes, p1123 is re-calculated.

p1127[0...n] Ramp-function generator minimum ramp-down time / RFG t_RD min

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Ramp-function generator	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000 [s]	999999.000 [s]	0.000 [s]

Description: Sets the minimum ramp-down time.
The ramp-down time (p1121) is limited internally to this minimum value.
The parameter cannot be set shorter than the minimum ramp-up time p1123.

Dependency: See also: p1082

Note
For U/f control and sensorless vector control (see p1300), a ramp-down time of 0 s does not make sense. The setting should be based on the startup times (r0345) of the motor.
If the maximum speed p1082 changes, p1127 is re-calculated.
If a braking resistor is connected to the DC link (p0219 > 0), then the minimum ramp-down time is automatically adapted using p1127.

p1130[0...n] Ramp-function generator initial rounding-off time / RFG t_start_round

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	

Can be changed in the operating state:	Operation	
Parameter group:	Ramp-function generator	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000 [s]	30.000 [s]	0.000 [s]

Description: Sets the initial rounding-off time for the extended ramp-function generator.
The value applies to ramp-up and ramp-down.

Note
Rounding-off times avoid an abrupt response and prevent damage to the mechanical system.

p1131[0...n] Ramp-function generator final rounding-off time / RFG t_end_delay

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Ramp-function generator	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000 [s]	30.000 [s]	0.000 [s]

Description: Sets the final rounding-off time for the extended ramp generator.
The value applies to ramp-up and ramp-down.

Note
Rounding-off times avoid an abrupt response and prevent damage to the mechanical system.

p1135[0...n] OFF3 ramp-down time / OFF3 t_RD

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Ramp-function generator, Enable logic, Quick commissioning	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000 [s]	5400.000 [s]	1.000 [s]

Description: Sets the ramp-down time from the maximum speed down to zero speed for the OFF3 command.

Note
This time can be exceeded if the DC link voltage reaches its maximum value.

p1136[0...n] OFF3 initial rounding-off time / RFGOFF3 t_strt_rnd

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Ramp-function generator	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000 [s]	30.000 [s]	0.010 [s]

Description: Sets the initial rounding-off time for OFF3 for the extended ramp generator.

p1137[0...n] OFF3 final rounding-off time / RFG OFF3 t_end_del

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Ramp-function generator	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000 [s]	30.000 [s]	0.000 [s]

Description: Sets the final rounding-off time for OFF3 for the extended ramp-function generator.

c1138[0...n] Ramp-function generator ramp-up time scaling / RFG t_RU scal

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Ramp-function generator	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** PERCENT
Factory interconnection:	Fixed value: 100.00 [%]	

Description: Signal to scale the ramp-up time of the ramp-function generator.

Dependency: See also: p1120

Note
The ramp-up time is set in p1120.

c1139[0...n] Ramp-function generator ramp-down time scaling / RFG t_RD scal

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Ramp-function generator	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** PERCENT
Factory interconnection:	Fixed value: 100.00 [%]	

Description: Signal to scale the ramp-down time of the ramp-function generator.

Dependency: See also: p1121

Note
The ramp-down time is set in p1121.

c1140[0...n] Enable ramp-function generator/inhibit ramp-function generator / Enable RFG

Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Ramp-function generator	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 1	

Description: Signal for command "Enable ramp-function generator/inhibit ramp-function generator".
For the PROFIdrive profile, this command corresponds to control word 1 bit 4 (STW1.4).
0 signal: Inhibits the ramp-function generator (the ramp-function generator output is set to zero).
1 signal: Enables the ramp-function generator.

Dependency: See also: r0054, c1141, c1142

⚠ CAUTION
When "master control from PC" is activated, then this binary signal sink is ineffective.

NOTICE
It is possible that the interconnection is locked as a result of a set PROFIdrive telegram.

c1141[0...n] Continue ramp-function generator/ freeze ramp-function generator / Continue RFG

Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Ramp-function generator	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -

Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 1

Description: Signal for command "Continue ramp-function generator / freeze ramp-function generator".
For the PROFIdrive profile, this command corresponds to control word 1 bit 5 (STW1.5).
0 signal: Freezes the ramp-function generator.
1 signal: Continues the ramp-function generator.

Dependency: See also: r0054, c1140, c1142

⚠ CAUTION
When "master control from PC" is activated, then this binary signal sink is ineffective.

NOTICE
The ramp-function generator is, independent of the state of the signal source, active in the following cases:
- OFF1/OFF3.
- Ramp-function generator output within the suppression bandwidth.
- Ramp-function generator output below the minimum speed.

c1142[0...n] Enable setpoint/inhibit setpoint / Setpoint enable

Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Ramp-function generator
Not relevant for motor type: -
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 1

Description: Signal for command "Enable setpoint/inhibit setpoint".
For the PROFIdrive profile, this command corresponds to control word 1 bit 6 (STW1.6).
0 signal: Inhibits the setpoint (the ramp-function generator output is set to zero)
1 signal: Enables the setpoint

Dependency: See also: c1140, c1141

⚠ CAUTION
When "master control from PC" is activated, then this binary signal sink is ineffective.

NOTICE
It is possible that the interconnection is locked as a result of a set PROFIdrive telegram.

Note
When function "Position control" is activated, as default setting the binary signal sink is interconnected as follows:
c1142 = 0 signal

c1143[0...n] Ramp-function generator, accept setting value / RFG accept set val

Variant: G220, G220 Clean Power
Available when function is active: Extended setpoint channel
Data type: Unsigned8 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Ramp-function generator
Not relevant for motor type: -

Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal to accept the setting value of the ramp-function generator.

Dependency: The signal source for the ramp-function generator setting value is set using parameters.
See also: c1144

Note
0/1 signal:
The ramp-function generator output is immediately (without delay) set to the setting value of the ramp-function generator.
1 signal:
The setting value of the ramp-function generator is effective.
1/0 signal:
The input value of the ramp-function generator is effective. The ramp-function generator output is adapted to the input value using the ramp-up time or the ramp-down time.
0 signal:
The input value of the ramp-function generator is effective.

c1144[0...n] Ramp-function generator setting value / RFG setting value

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Ramp-function generator	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: rpm	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** p2000
Factory interconnection:	Fixed value: 0.00 [rpm]	

Description: Signal for the setting value for the ramp-function generator.

Dependency: The signal source for accepting the setting value is set using parameters.
See also: c1143

p1145[0...n] Ramp-function generator tracking intensity / RFG track intens

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Ramp-function generator	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0	50.0	0.0

Description: Sets the ramp-function generator tracking.

The output value of the ramp-function generator is tracked (corrected) corresponding to the maximum possible drive acceleration.

The reference value is the deviation at the speed controller input that is necessary to ensure that the motor accelerates at the torque limit.

Recommendation: When at least one speed setpoint filter is activated (p1416), then the ramp-function generator tracking should be deactivated. When the speed setpoint filter is activated, the output value of the ramp-function generator can no longer be tracked (corrected) corresponding to the maximum possible drive acceleration.

For p1145 = 0.0:

This value deactivates the ramp-function generator tracking.

For p1145 = 0.0 ... 1.0:

Generally, these values are not practical. They cause the motor to accelerate below its torque limit. The lower the selected value, the greater the margin between the controller and torque limit when accelerating.

For p1145 > 1.0:

The higher the value, the higher the permissible deviation between the speed setpoint and speed actual value.

NOTICE
If ramp-function generator tracking is activated and the ramp time is set too short, this can cause unsteady acceleration. Remedy: - Deactivate ramp-function generator tracking (p1145 = 0.0). - Increase the ramp-up/ramp-down time (p1120, p1121).

Note

In the U/f mode, ramp-function generator tracking is not active.

The speed difference is reduced if the integral component of the speed controller is not maintained when the torque limit is reached (p1400.16 = 1).

p1148[0...n] Ramp-function gen. tolerance for ramp-up and ramp-down active / RFG tol HL/RL act

Variant:	G220, G220 Clean Power	
Available when function is active:	Extended setpoint channel	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Ramp-function generator	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.000 [rpm]	1000.000 [rpm]	19.800 [rpm]

Description: Sets the tolerance value for the status of the ramp-function generator (ramp-up active, ramp-down active).

If the input of the ramp-function generator does not change in comparison to the output by more than the entered tolerance time, then the status bits "ramp-up active" and "ramp-down active" are not influenced.

Dependency: See also: r1199

r1149 Ramp-function generator acceleration / RFG acceleration

Variant:	G220, G220 Clean Power
Available when function is active:	Extended setpoint channel
Data type: FloatingPoint32	**Visible in:** Extended display
Read permission:	Read drive data or acknowledge messages

	Parameter group:	Ramp-function generator	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	**Calculated:** -
	Unit: rev/s²	**Unit group:** 39_1	**Unit selection:** p0505
	Type of signal interconnection:	Source numeric	**Scaling:** p2007
Description:	Displays the acceleration of the ramp-function generator.		
Dependency:	See also: p1145		

r1150 Ramp-function generator speed setpoint at the output / RFG n_set at outp

	Variant:	G220, G220 Clean Power	
	Available when function is active:	Extended setpoint channel	
	Data type: FloatingPoint32	**Visible in:** Standard display	
	Read permission:	Read drive data or acknowledge messages	
	Parameter group:	Ramp-function generator, Setpoint addition	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	**Calculated:** -
	Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
	Type of signal interconnection:	Source numeric	**Scaling:** p2000
Description:	Displays the setpoint at the output of the ramp-function generator.		

p1151[0...n].0...2 Ramp-function generator configuration / RFG config

	Variant:	G220, G220 Clean Power	
	Available when function is active:	Extended setpoint channel	
	Data type: Unsigned16	**Visible in:** Extended display	
	Read permission:	Read drive data or acknowledge messages	
	Write permission:	Edit device configuration or drive applications	
	Can be changed in the operating state:	Operation	
	Parameter group:	Ramp-function generator	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
	Unit: -	**Unit group:** -	**Unit selection:** -
	Min:	**Max:**	**Factory setting:**
	-	-	0000 bin

Description: Sets the configuration for the extended ramp-function generator.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Deactivate rounding-off at the zero cross-over	Yes	No
01	Ramp-function generator tracking without polarity change	Yes	No
02	Ramp-function generator tracking with polarity change	Yes	No

Dependency: For bit 01, 02 = 1:
These bits are only effective when ramp-function generator tracking is activated (p1145 > 0).
When both bits are activated, ramp-function generator tracking with polarity change is active.
For bit 01 = 0, bit 02 = 0:
When ramp-function generator tracking is active, the setpoint can only change in the direction of the target setpoint – or be frozen.

NOTICE
For bit 00 = 1: If the ramp-up time is longer than the ramp-down time (p1120 > p1121), then there is an acceleration step at the zero crossover. This can have a negative impact on the mechanical system.

Note

For bit 00 = 1:
When the direction change is changed there is no rounding-off before and after the zero crossover.
For bit 01 = 1:
For load surges, the ramp-function generator output tracks the actual value. The tracking (correction) ends at a setpoint of zero.
For bit 02 = 1:
For load surges, the ramp-function generator output tracks the actual value. For a polarity change, the tracking (correction) is continued.

c1155[0...n] Speed controller speed setpoint 1 / n_ctrl n_set 1

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Speed setpoint, Ramp-function generator, Setpoint addition	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: rpm	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** p2000
Factory interconnection:	Fixed value: 0.00 [rpm]	

Description: Signal for speed setpoint 1 of the speed controller.

Dependency: The effectiveness of this setpoint depends on, e.g. STW1.4 and STW1.6.
See also: r0002, c0840, c0844, c0848, c0852, c0854, r0898, c1140, c1142, c1160, r1170, p1189

NOTICE
It is possible that the interconnection is locked as a result of a set PROFIdrive telegram.

c1160[0...n] Speed controller speed setpoint 2 / n_ctrl n_set 2

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Speed setpoint, Ramp-function generator, Setpoint addition	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: rpm	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** p2000
Factory interconnection:	Fixed value: 0.00 [rpm]	

Description: Signal for speed setpoint 2 of the speed controller.

Dependency: When the technology controller enable is parameterized (c2200 > 0), signal interconnection c1160 is automatically preassigned depending on the technology controller mode (p2251):
- p2251 = 0, 2: The actual signal interconnection or a possibly parameterized fixed value is reset to 0.
- p2251 = 1: The signal is interconnected with the output of the technology controller (r2294).
See also: c1155, r1170

NOTICE
If the technology controller is activated, then it is not permissible to withdraw the parameter interconnection.

Note
For OFF1/OFF3, the ramp-function generator ramp is active. The ramp-function generator is set and the drive is brought to a standstill according to the ramp-down time (p1121 or p1135). While stopping via the ramp-function generator, STW1.4 is active (enable ramp-function generator).

r1169 Speed controller speed setpoints 1 and 2 / n_ctrl n_set 1/2

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Ramp-function generator, Setpoint addition
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: rpm **Unit group:** 3_1 **Unit selection:** p0505
Type of signal interconnection: Source numeric **Scaling:** p2000

Description: Displays the speed setpoint after adding speed setpoint 1 (c1155) and speed setpoint 2 (c1160).

Dependency: See also: c1155, c1160

Note
The value is only correctly displayed at r0899.2 = 1 (operation enabled).

r1170 Speed controller setpoint sum / Speed setpoint sum

Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Setpoint addition
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: rpm **Unit group:** 3_1 **Unit selection:** p0505
Type of signal interconnection: Source numeric **Scaling:** p2000

Description: Displays the speed setpoint after selecting the ramp-function generator.
The value is the sum of speed setpoint 1 (c1155) and speed setpoint 2 (c1160).

Dependency: See also: r1150, c1155, c1160

p1189[0...n].0...1 Speed setpoint configuration / n_ctrl config

Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Speed setpoint, Setpoint addition
Not relevant for motor type: -
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
-	-	0011 bin

Description: Sets the configuration for the speed setpoint.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Reserved		
01	Interpol. op-loop ctrl /speed controller active	Yes	No

Note
For bit 01:
The interpolator is only effective in following cases:
- Isochronous fieldbus operation with a sign-of-life received from the master (STW2.12 ... STW2.15).

r1197 Fixed speed setpoint number actual / n_set_fixed no act

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Speed setpoint
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the number of the selected fixed speed/velocity setpoint.

Dependency: See also: c1020, c1021, c1022, c1023

Note
If a fixed speed setpoint has not been selected (c1020 ... c1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0).

r1198.0...15 Control word setpoint channel / STW set chan

Variant: G220, G220 Clean Power
Available when function is active: Extended setpoint channel
Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Speed setpoint, Ramp-function generator, Control/status words
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Displays the control word of the setpoint channel.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Fixed setpoint bit 0	Yes	No
01	Fixed setpoint bit 1	Yes	No
02	Fixed setpoint bit 2	Yes	No
03	Fixed setpoint bit 3	Yes	No
05	Inhibit negative direction	Yes	No
06	Inhibit positive direction	Yes	No
11	Setpoint inversion	Yes	No
13	Motorized potentiometer raise	Yes	No
14	Motorized potentiometer lower	Yes	No
15	Bypassing the ramp-function generator	Yes	No

r1199.0...8 Ramp-function generator status word / RFG ZSW

Variant: G220, G220 Clean Power
Available when function is active: Extended setpoint channel
Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Ramp-function generator, Control/status words
Not relevant for motor type: -

	Dyn. index [0...n]:	-	**Calculated:** -
	Unit: -	**Unit group:** -	**Unit selection:** -
	Type of signal interconnection:	Source binary/numeric	**Scaling:** -

Description: Displays the status word for the ramp-function generator (RFG).

Bit array:

Bit	Signal name	1 signal	0 signal
00	Ramp-up active	Yes	No
01	Ramp-down active	Yes	No
02	Ramp-function generator active	Yes	No
03	Ramp-function generator set	Yes	No
04	Ramp-function generator held	Yes	No
05	Ramp-function generator tracking active	Yes	No
06	Maximum limit active	Yes	No
07	Ramp-function generator acceleration positive	Yes	No
08	Ramp-function generator acceleration negative	Yes	No

Note
For bit 02:
The bit is the result of the OR logic operation - bit 00 and bit 01.

p1200[0...n] Flying restart operating mode / FlyRest op_mode

Data type: Integer16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Flying restart	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	4	0

Description: Sets the operating mode for flying restart.

The flying restart allows the drive converter to be switched on while the motor is still rotating. After the speed has been determined, the motor then accelerates up to the setpoint with the ramp-function generator setting.

Value:

0: Flying restart inactive
1: Flying restart always active (start in setpoint direction)
4: Flying restart always active (start only in setpoint direction)

Dependency: The ground fault test is only possible when the motor is stationary, and is therefore only realized when flying restart is deactivated (p1200 = 0).

For induction motors, the following applies:

A differentiation is made between flying restart for U/f control and for vector control (p1300).

Flying restart, U/f control: p1202, p1203, r1204

Flying restart, vector control: p1202, p1203, r1205

See also: c1201

See also: F07330

NOTICE
The "flying restart" function must be used in cases where the motor may still be running (e.g. after a brief line supply interruption) or is being driven by the load. The system might otherwise shut down as a result of overcurrent. If switched-in with the shaft stationary, then it is possible that the shaft slightly aligns itself.

Note
For p1200 = 1, the following applies:
Flying restart is active after faults, OFF1, OFF2, OFF3.
When a search is activated (p1270.2) this is realized in both directions of rotation.
For p1200 = 4, the following applies:
For induction motors, the following applies:
Flying restart is active after faults, OFF1, OFF2, OFF3.
When fast flying restart (p1270.0) is deactivated and search is activated (p1270.2), then this is only realized in the setpoint direction.
Otherwise, the setting is not possible.
For synchronous-reluctance motor/permanent magnet synchronous motor the following applies:
This setting is not possible.

Below approximately 10% of the rated motor speed it is possible that the speed cannot be determined. For motors with a rated power below 75 kW, the speed is determined by briefly impressing current (p1270.3).
If problems occur when connecting to the motor in this range, then a supportive search technique can be activated using p1270.2.
Setting p1270.3 = 0 prevents current from being impressed. It is then assumed that the motor is stationary.

If p1200 is changed during the commissioning phase, then it is possible that the old value will no longer be able to be set. The reason for this is that the dynamic limits of p1200 have been changed by parameters, which were set when commissioning (e.g. p0300).
The following applies for synchronous reluctance motors:
A motor identification must be carried out at standstill (see r3925 bit 18).

c1201[0...n] Flying restart enable / Fly restart enab

Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Flying restart	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 1	

Description: Signal to enable function "flying restart".
Dependency: See also: p1200

Note
Withdrawing the enable signal has the same effect as setting p1200 = 0.

p1202[0...n] Flying restart search current / FlyRest I_srch

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Flying restart	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: %	**Unit group:** -	**Unit selection:** -

Min:	Max:	Factory setting:
10 [%]	400 [%]	100 [%]

Description: Sets the search current for the "flying restart" function.
The value is referred to the motor magnetizing current.
For U/f control, it may be necessary to increase the search current (e.g. 120 %) to ensure reliable flying restart.
Fast flying restart for induction motors with voltage model (see p1780.11):
Sets the initial setpoint for the field-generating current component.

Dependency: See also: r0331

⚠ CAUTION
An unfavorable parameter value can result in the motor behaving in an uncontrollable fashion.

Note
In U/f control mode, the parameter serves as a threshold value for establishing the current at the beginning of the flying restart function. When the threshold value is reached, the actual search current is set as a function of the frequency based on the voltage setpoints.
Reducing the search current can also improve flying restart performance (if the system moment of inertia is not very high, for example).
The following applies for a synchronous reluctance motor:
- A parameter change only becomes effective after carrying out the motor data identification.
- The minimum search current is limited (p1202 >= 50 %).
- The search algorithm is optimized for 100%, and the current reached is internally limited. It is possible that a set value (p1202 != 100%) may not be able to be reached.
- If the ratio between motor power and converter power is greater than 1, then it may be advantageous to increase the search current.

p1203[0...n] Flying restart search rate factor / FlyRes v_srch fact

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Flying restart	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
10 [%]	4000 [%]	100 [%]

Description: Sets the factor for the search speed for flying restart.
The value influences the flying restart search speed. A higher value results in a longer search time.

Recommendation: For sensorless vector control and motor cables longer than 200 m - As well as for du/dt filters (p0230) - The following applies:
p1203 >= 300 %

⚠ CAUTION
An unfavorable parameter value can result in the motor behaving in an uncontrollable fashion.
For vector control, a value that is too low or too high can cause flying restart to become unstable.

Note
The parameter factory setting is selected so that standard induction motors that are rotating can be found and restarted as quickly as possible (fast flying restart).
With this presetting, if the motor is not found (e.g. for motors that are accelerated as a result of active loads or with U/f control and low speeds), we recommend that the search rate is reduced (by increasing p1203).
For a fast flying restart with voltage model in the U/f control mode (p1300 < 20) the search duration can be modified using this parameter.
The following applies for a synchronous reluctance motor:
- The minimum search speed is limited (p1203 >= 50 %).

r1204.0...15 Flying restart U/f control status / FlyRest Uf st

Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Flying restart
Not relevant for motor type: Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Displays the status for checking and monitoring flying restart states in the U/f control mode.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Current impressed	Yes	No
01	No current flow	Yes	No
02	Voltage input	Yes	No
03	Voltage reduced	Yes	No
04	Start ramp-function generator	Yes	No
05	Wait for execution	Yes	No
06	Slope filter active	Yes	No
07	Positive gradient	Yes	No
08	Current < threshold	Yes	No
09	Current minimum	Yes	No
10	Search in the positive direction	Yes	No
11	Stop after positive direction	Yes	No
12	Stop after negative direction	Yes	No
13	No result	Yes	No
14	Fast flying restart w/ voltage model for induction motor activ.	Yes	No
15	Flying restart with VSM active	Yes	No

r1205.0...25 Flying restart vector control status / FlyRest vector st

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Flying restart
Not relevant for motor type: Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Displays the status for checking and monitoring flying restart states in the vector control mode.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Speed adaptation circuit record angle	Yes	No

01	Speed adaptation circuit set gain to 0	Yes	No
02	Isd channel enable	Yes	No
03	Speed control switched out	Yes	No
04	Quadrature arm switched in	Yes	No
05	Special transformation active	Yes	No
06	Speed adaptation circuit set I component to 0	Yes	No
07	Current control on	Yes	No
08	Isd_set = 0 A	Yes	No
09	Frequency held	Yes	No
10	Search in the positive direction	Yes	No
11	Search Started	Yes	No
12	Current impressed	Yes	No
13	Search interrupted	Yes	No
14	Speed adaptation circuit deviation = 0	Yes	No
15	Speed control activated	Yes	No
16	Fast flying restart w/ voltage model for induction motor activ.	Yes	No
17	Fast flying restart w/ voltage model for induction motor exited	Yes	No
18	Apply VSM voltage to the monitor	Yes	No
19	Preassign flux ramp	Yes	No
20	Adaptation current controller and speed adapt. controller gain	Yes	No
21	Voltage pulse active	Yes	No
22	Voltage PLL active	Yes	No
23	Voltage PLL stopped, start with 0 Hz	Yes	No
24	Current impression for voltage PLL active	Yes	No
25	Flying restart with PLL completed	Yes	No

Note
For bit 00 ... 09:
Used to control internal sequences during the flying restart.
Depending on the motor type (p0300), the number of active bits differs.
For bits 10 ... 24:
Used to monitor the flying restart sequence.

p1206[0...9] Automatic restart faults not active / AR fault not act

Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Automatic restart	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	65535	0

Description: Sets faults for which automatic restart should not be active.

Dependency: The setting is only active for p1210 = 1, 6, 16, 26.
See also: p1210

Note
After a power failure and the converter has run up, generally faults are no longer active so that the system is automatically switched-on.

p1210 Automatic restart mode / AR mode

Data type: Integer16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Automatic restart	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	26	0

Description: Sets the automatic restart mode (AR).

The parameters must be saved in the non-volatile memory in order that the setting becomes effective.

Value:

0: Inhibit automatic restart
1: Acknowledge all faults without restarting
4: Restart after line supply failure w/o additional start attempts
6: Restart after fault with additional start attempts
14: Restart after line supply failure following man. acknowledgment
16: Restart after fault following manual acknowledgment
26: Acknowledge all faults and reclose for an ON command

Recommendation: For brief line supply failures, the motor shaft may still be rotating when restarting. The "flying restart" function (p1200) might need to be activated to restart while the motor shaft is still rotating.

Dependency: The automatic restart requires an active ON command (e.g., via a digital input). If, for p1210 > 1, there is no active ON command, then the automatic restart is interrupted.

When using an Operator Panel in the LOCAL mode, then there is no automatic start.

For p1210 = 14, 16, a manual acknowledgment is required for an automatic restart.

See also: c0840, p0857, p1267

See also: F30003

⚠ DANGER

When the automatic restart is activated (p1210 > 1), if there is an ON command (refer to c0840), then the drive is switched on and accelerated as soon as any fault messages that are active can be acknowledged. This also occurs after the line supply returns or the converter runs up if the DC link voltage is again present. This automatic switching-on operation can only be interrupted by withdrawing the ON command.

NOTICE

A change is only accepted and made in the state "initialization" (r1214.0) and "wait for alarm" (r1214.1). When faults are present, therefore, the parameter cannot be changed.

For p1210 > 1, the motor is automatically started.

Note

For p1210 = 1:

Faults that are present are automatically acknowledged. If new faults occur after a successful fault acknowledgment, then these are also automatically acknowledged again. p1211 has no influence on the number of acknowledgment attempts.

For p1210 = 4:

An automatic restart is only performed if fault F30003 has occurred on the power unit. If additional faults are present, then these faults are also acknowledged and when successful, starting continues. If, for external 24 V power supplies of the converter, additional faults subsequently occur, these are no longer interpreted as line faults and are therefore also not acknowledged.

For p1210 = 6:

An automatic restart is carried out if any fault has occurred.

For p1210 = 14:

as for p1210 = 4. However, active faults must be manually acknowledged. After a power failure and the converter has run up, generally faults are no longer active so that acknowledgment is not necessary.

For p1210 = 16:

as for p1210 = 6. However, active faults must be manually acknowledged.

For p1210 = 26:

as for p1210 = 6. For this mode, the switch-on command can be specified with a delay. The restart is interrupted with either OFF2 or OFF3. Alarm A07321 is only displayed if the cause of the fault has been removed and the drive is restarted by setting the switch-on command.

p1211 Automatic restart start attempts / AR start attempts

Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Automatic restart	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	10	3

Description: Sets the start attempts of the automatic restart function for p1210 = 4, 6, 14, 16, 26.

Dependency: A change is only accepted and made in the state "initialization" (r1214.0) and "wait for alarm" (r1214.1).

See also: p1210, r1214

See also: F07320

NOTICE

After fault F07320 occurs, the switch-on command must be withdrawn and all of the faults acknowledged so that the automatic restart function is re-activated.

After a complete power failure, the start counter always starts with the counter value that applied before the power failure, and immediately decrements this value by 1 when a start attempt is made. If a further attempt to acknowledge is started by the automatic restart function briefly prior to power failure, e.g. when the converter remains active on power failure longer than the time p1212 / 2, then the start counter will already have been decremented once. In this case, the start counter is thus decreased by the value 2.

Note

A start attempt commences immediately when a fault occurs. The start attempt is considered to have been completed if the motor was magnetized (r0056.4 = 1) and an additional wait time of 1 s has expired.

As long as a fault is present, an acknowledge command is generated in the time intervals of p1212 / 2. When successfully acknowledged, the start counter is decremented. If, after this, a fault re-occurs before a restart has been completed, then acknowledgment starts again from the beginning.

Fault F07320 is output if, after several faults occur, the number of parameterized start attempts has been reached. After a successful start attempt, i.e. a fault/error has no longer occurred up to the end of the magnetizing phase, the start counter is again reset to the parameter value after 1 s. If a fault re-occurs, the parameterized number of start attempts is again available.

At least one start attempt is always carried out.

After a line supply failure, acknowledgment is immediate and when the line supply returns, the system is switched on. If, between successfully acknowledging the line fault and the line supply returning, another fault occurs, then its acknowledgment also causes the start counter to be decremented.

For p1210 = 26:

The start counter is decremented if after a successful fault acknowledgment, the on command is present.

p1212 Automatic restart wait time, acknowledgment and start attempt / AR t_wait start

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Automatic restart	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.1 [s]	1000.0 [s]	1.0 [s]

Description: Sets the wait time up to restart.

Dependency: This parameter setting is active for p1210 = 4, 6, 26.

For p1210 = 1, the following applies:

Faults are only automatically acknowledged in half of the waiting time, no restart.

See also: p1210, r1214

NOTICE
A change is only accepted and made in the state "initialization" (r1214.0) and "wait for alarm" (r1214.1).

Note

The faults are automatically acknowledged after half of the delay time has expired and the full wait time.

If the cause of a fault is not removed in the first half of the wait time, then it is no longer possible to acknowledge in the wait time.

p1213[0...1] Automatic restart monitoring time / AR t_mon

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Automatic restart	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -

Min:	Max:	Factory setting:
0.0 [s]	10000.0 [s]	[0] 60.0 [s] [1] 0.0 [s]

Description: Sets the monitoring time of the automatic restart (AR).

Index: [0] = Restart
[1] = Reset start counter

Dependency: See also: p1210, r1214

NOTICE
A change is only accepted and made in the state "initialization" (r1214.0) and "wait for alarm" (r1214.1). After fault F07320 occurs, the switch-on command must be withdrawn and all of the faults acknowledged so that the automatic restart function is re-activated.

Note

For index [0]:

The monitoring time starts when the faults are detected. If the automatic acknowledgments are not successful, the monitoring time runs again. If, after the monitoring time has expired, the drive has still not successfully started again (flying restart and magnetizing of the motor must have been completed: r0056.4 = 1), then fault F07320 is output.

The monitoring is deactivated with p1213[0] = 0. If p1213[0] is set lower than the sum of p1212, the magnetizing time p0346 and the additional delay time due to the flying restart, then fault F07320 is generated at each restart. If, for p1210 = 1, the time in p1213[0] is set lower than in p1212, then fault F07320 is also generated at each restart.

The monitoring time must be extended if the faults that occur cannot be immediately and successfully acknowledged (e.g. for faults that are permanently present).

In the case of p1210 = 14, 16, the faults which are present must be acknowledged manually within the time in p1213[0]. Otherwise, fault F07320 is generated after the set time.

For index [1]:

The start counter (refer to r1214) is only set back to the starting value p1211 if, after successful restart, the time in p1213[1] has expired. The wait time is not effective for fault acknowledgment without automatic restart (p1210 = 1). After a power failure, the wait time only starts after the line supply returns and the converter runs up. The start counter is set to p1211, if F07320 occurred, the switch-on command is withdrawn and the fault is acknowledged.

The start counter is immediately updated if the starting value p1211 or the mode p1210 is changed.

For p1210 = 26, the monitoring time p1213[0] only elapses if there is an active switch-on command.

r1214.0...15 Automatic restart status / AR status

Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Automatic restart	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source binary/numeric	**Scaling:** -

Description: Displays the status of the automatic restart (AR).

Bit array:

Bit	Signal name	1 signal	0 signal
00	Initialization	Yes	No
01	Wait for alarm	Yes	No
02	Automatic restart active	Yes	No
03	Setting the acknowledgment command	Yes	No
04	Acknowledge alarms	Yes	No
05	Restart	Yes	No
06	Wait time running after automatic switch-on	Yes	No
07	Fault	Yes	No
10	Effective fault	Yes	No
12	Start counter bit 0	On	Off

13	Start counter bit 1	On	Off
14	Start counter bit 2	On	Off
15	Start counter bit 3	On	Off

Note

For bit 00:
State to display the single initialization after POWER ON.
For bit 01:
State in which the automatic restart function waits for faults (initial state).
For bit 02:
General display that a fault has been identified and that the restart or acknowledgment has been initiated.
For bit 03:
Displays the acknowledge command within the "acknowledge alarms" state (bit 4 = 1). For bit 5 = 1 or bit 6 = 1, the acknowledge command is continually displayed.
For bit 04:
State in which the faults that are present are acknowledged. The state is exited again after successful acknowledgment. A change is only made into the next state if it is signaled that a fault is no longer present after an acknowledgment command (bit 3 = 1).
For bit 05:
State in which the drive is automatically switched on (only for p1210 = 4, 6).
For bit 06:
State in which the system waits after having been switched on, to the end of the start attempt (to the end of the magnetizing process).
For p1210 = 1, this signal is directly set after the faults have been successfully acknowledged.
For bit 07:
State which is assumed after a fault occurs within the automatic restart function. This is only reset after acknowledging the fault and withdrawing the switch-on command.
For bit 10:
When the automatic restart function is active, r1214.7 is displayed, otherwise the active fault r2139.3.
The bit is set if the automatic restart can no longer acknowledge a fault, and cancels with fault F07320.
For bits 12 ... 15:
Actual state of the start counter (binary coded).
For bit 04 in addition:
For p1210 = 26, the system waits in this state until the switch-on command is available.

p1215[0...n] Motor holding brake configuration / Brake config

Data type: Integer16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Motor holding brake, Basic functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	3	0

Description: Sets the holding brake configuration.

Value:
0: No motor holding brake available
3: Motor holding brake like seq control, conn via interconnection

Dependency: See also: p1216, p1217, p1226, p1227, p1228

⚠ CAUTION

For the setting p1215 = 0, if a brake is used, it remains closed. If the motor moves, this will destroy the brake.

NOTICE
If p1215 was set to 3, then when the pulses are canceled, the brake is closed even if the motor is still rotating. Pulse cancellation can either be caused by a 0 signal at c0844, c0845 or c0852 or as a result of a fault with an OFF2 response. If this is not desirable (e.g. for a flying restart), then the brake can be kept open using a 1 signal at c0855.

Note

If p1215 is set = 0 (no holding brake available) when running up, then the motor holding brake is automatically identified.

If an external motor holding brake is used, then this must be interconnected via freely selectable digital outputs with coupling relays or contactor relays; p1215 should be set to 3 and r0899.12 should be interconnected as control signal.

p1216[0...n] Motor holding brake opening time / Brake t_open

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor holding brake	
Not relevant for motor type:	-	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [ms]	10000 [ms]	100 [ms]

Description: Sets the time to open the motor holding brake.

After controlling the holding brake (opens), the speed/velocity setpoint remains at zero for this time. After this, the speed/velocity setpoint is enabled.

Recommendation: This time should be set longer than the actual opening time of the brake. This ensures that the drive cannot accelerate when the brake is applied.

Dependency: See also: p1215, p1217

Note

For a motor with DRIVE-CLiQ and integrated brake, for p0300 = 10000, this time is pre-assigned the value saved in the motor.

For p1216 = 0 ms, the monitoring and the message A07931 "Brake does not open" are deactivated.

p1217[0...n] Motor holding brake closing time / Brake t_close

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor holding brake	
Not relevant for motor type:	-	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [ms]	10000 [ms]	100 [ms]

Description: Sets the time to apply the motor holding brake.

After OFF1 or OFF3 and the holding brake is controlled (the brake closes), then the drive remains closed-loop controlled for this time stationary with a speed setpoint/velocity setpoint of zero. The pulses are canceled when the time expires.

Recommendation: This time should be set longer than the actual closing time of the brake. This ensures that the pulses are only canceled after the brake has closed.

Dependency: See also: p1215, p1216

NOTICE

If the selected closing time is too short with respect to the actual closing time of the brake, then the load can sag.
If the closing time is selected to be too long with respect to the actual closing time of the brake, the control works against the brake and therefore reduces its lifetime.

Note

For a motor with DRIVE-CLiQ and integrated brake, for p0300 = 10000, this time is pre-assigned the value saved in the motor.
For p1217 = 0 ms, the monitoring and the message A07932 "Brake does not close" are deactivated.

p1226[0...n] Threshold for zero speed detection / n_standst n_thr

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor holding brake, Enable logic	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.00 [rpm]	210000.00 [rpm]	20.00 [rpm]

Description:
Sets the speed threshold for the standstill identification.
Acts on the actual value and setpoint monitoring.
When braking with OFF1 or OFF3, when the threshold is undershot, standstill is identified.
The following applies when the brake control is activated:
When the threshold is undershot, the brake control is started and the system waits for the brake closing time in p1217. The pulses are then canceled.
if the brake control is not activated, the following applies:
When the threshold is undershot, the pulses are canceled and the drive coasts down.

Dependency:
See also: p1215, p1216, p1217, p1227

⚠ CAUTION

For closed-loop speed and torque control without encoder, the following applies:
If p1226 is set to values under approx. 1 % of the rated motor speed, then the model switchover limits of the vector control must be increased in order to guarantee reliable shutdown (see p1755, p1750.7).

Note

Standstill is identified in the following cases:
- The speed actual value falls below the speed threshold in p1226 and the time started after this in p1228 has expired.
- The speed setpoint falls below the speed threshold in p1226 and the time started after this in p1227 has expired.

The actual value sensing is subject to measuring noise. For this reason, standstill cannot be detected if the speed threshold is too low.

p1227[0...n] Zero speed detection monitoring time / n_standst t_mon

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor holding brake, Enable logic	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -

Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000 [s]	300.000 [s]	4.000 [s]

Description: Sets the monitoring time for the standstill identification.

When braking with OFF1 or OFF3, standstill is identified after the time set here has expired, after the setpoint speed has fallen below the threshold p1226.

After this, the brake control is started, the system waits for the closing time in p1217 and then the pulses are canceled.

Dependency: The parameter is pre-assigned depending on the size of the power unit.

See also: p1215, p1216, p1217, p1226

NOTICE
For p1145 > 0.0 (ramp-function generator tracking) the setpoint is not equal to zero dependent on the selected value. This can therefore cause the monitoring time in p1227 to be exceeded. In this case, for a driven motor, the pulses are not canceled.

Note

Standstill is detected if at least one of the following conditions is satisfied:

- The speed actual value falls below the speed threshold in p1226 and the time started after this in p1228 has expired.
- The speed setpoint falls below the speed threshold in p1226 and the time started after this in p1227 has expired.

For value = 300.000 s, the following applies:

Monitoring is deactivated.

For value = 0.000 s, the following applies:

With OFF1 or OFF3 and a ramp-down time = 0, the pulses are immediately canceled and the motor "coasts" down.

The parameter is preassigned according to the power unit after the converter has run-up for the first time or when it is reset to the factory setting.

p1228[0...n] Pulse cancellation delay time / Pulse cancel t_del

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor holding brake, Enable logic	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000 [s]	299.000 [s]	0.000 [s]

Description: Sets the delay time for pulse cancellation.

After OFF1 or OFF3, the pulses are canceled, if at least one of the following conditions is fulfilled:

- The speed actual value falls below the threshold in p1226 and the time started after this in p1228 has expired.
- The speed setpoint falls below the threshold in p1226 and the time started after this in p1227 has expired.

Dependency: See also: p1226, p1227

NOTICE
When the motor holding brake is activated, pulse cancellation is additionally delayed by the brake closing time (p1217).

c1230[0...n] DC braking/armature short circuit activation / DCBRK/ASC act

Data type: Unsigned8	**Visible in:** Extended display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications
Parameter group:	DC braking, Armature short-circuit
Not relevant for motor type:	Synchronous reluctance motor

Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal to activate DC braking (for induction motors) or armature short-circuit braking (for permanent-magnet synchronous motors).

Dependency: See also: p1231, p1232, p1233, p1234, c1235, p1236, p1237, r1238, r1239, p1345, p1346

Note
1 signal: DC braking/armature short-circuit activated.
0 signal: DC braking/armature short-circuit deactivated.

p1231[0...n] DC braking/armature short circuit configuration / DCBRK/ASC config

Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	DC braking, Armature short-circuit	
Not relevant for motor type:	Synchronous reluctance motor	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	14	0

Description: Setting to activate the various DC braking types (for induction motors) or armature short-circuit braking (for permanent-magnet synchronous motors).

Value:
0: No function
1: External armature short-circuit with contactor feedback signal
2: Ext. armature short-circuit without contactor feedback signal
3: Internal voltage protection
4: DC braking/armature short-circuit internal
5: DC braking for OFF1/OFF3
14: DC braking below starting speed

Dependency: See also: p0300, c1230, p1232, p1233, p1234, c1235, p1236, p1237, r1238, r1239, p1345, p1346

⚠ DANGER

For p1231 = 1, 2:

- Only short-circuit-proof motors may be used, or suitable resistors must be used to short-circuit the motor.

For p1231 = 3:

- When the internal voltage protection is active, after pulse cancellation, all of the motor terminals are at half of the DC link voltage (without an internal voltage protection, the motor terminals are at zero potential)!
- It is only permissible to use motors that are short-circuit proof (p0320 < p0323).
- The converter must be able to conduct 180% short-circuit current (p0320) of the motor (r0209).
- The internal voltage protection cannot be interrupted due to a fault response. If an overcurrent condition occurs during the active, internal voltage protection, then this can destroy the converter and/or the motor.
- If the converter does not support the autonomous, internal voltage protection (r0192.10 = 0), in order to ensure safe, reliable functioning when the line supply fails, an external 24 V power supply (UPS) must be used for the components.
- If the converter does support the autonomous, internal voltage protection (r0192.10 = 1), in order to ensure safe, reliable functioning when the line supply fails, then a power supply must be used for the 24 V power supply for the components.
- If the internal voltage protection is active, it is not permissible that the motor is driven by the load for a longer period of time (e.g. as a result of loads that move the motor or another coupled motor).

For p1231 = 4 and synchronous motor:

- When armature short-circuit is active, all of the motor terminals are at half of the DC link potential.
- It is only permissible to use motors that are short-circuit proof (p0320 < p0323).
- The converter must be able to conduct 180% short-circuit current (p0320) of the motor (r0209).
- For pulling loads, it is not permissible that an armature short circuit is used by itself. The reason for this is that until this becomes effective, the motor can continue to rotate. In the case of a fault, it is only permissible to use an armature short circuit as support in conjunction with a mechanical brake.

For p1231 = 4 and induction motor:

- It is not permissible that DC braking is used for pulling loads; this is because the motor rotates during the demagnetization time (p0347). In this case, the mechanical brake would also be damaged as it acts on the rotating motor.

Note

For p1231 = 1, 2:

The external armature short circuit can only be set for synchronous motors (p0300 = 2xxx). In this case, control bit r1239.0 must be interconnected (e.g. to a digital input) to control the external contactor.

The external armature short circuit cannot be set as a fault response. It can be initiated via the binary signal sink c1230. Further, it is also activated for pulse cancellation.

When the external armature short circuit is activated, the system waits for the de-excitation time (p0347) before the short-circuit contactor is controlled. For vector control, for the de-excitation time, a value greater than zero may be required in order to avoid the overcurrent monitoring from responding.

For p1231 = 3:

The internal voltage protection (using internal armature short circuit) can only be set for synchronous motors (p0300 = 2xxx).

The internal voltage protection prevents the DC link capacitance from being charged if there is no possibility of regenerating the induced motor voltage (EMF) of a motor operated in the field-weakening mode.

The converter must support this function (r0192.9 = 1).

a) If the converter does not support the autonomous, internal armature short-circuit (r0192.10 = 0), the armature short-circuit is activated as soon as the activation criterion is fulfilled (refer below):

b) If the converter supports the autonomous internal voltage protection (r0192.10 = 1), then it decides - based on the DC link voltage - as to whether the short-circuit should be activated. The short circuit is activated if the DC link voltage exceeds 800 V. If the DC link voltage falls below 450 V, then the short-circuit is withdrawn. This therefore ensures that the required input voltage is maintained for the power supply.

For p1231 = 4:

The function is activated as soon as the activation criterion is fulfilled.

- The function can be replaced by OFF2

a) The internal amateur short-circuit is initiated for synchronous motors with (p0300 = 2xxx).

- The converter must support this function (r0192.9 = 1).

b) For induction motors (p0300 = 1xxx), DC braking is initiated.

Activation criterion (one of the following criteria is fulfilled):

- Binary signal sink c1230 = 1 signal (activates DC braking).
- The drive is not in state "S4: Operation" or in "S5x" (refer to function diagram 2610).
- The internal pulse enable is missing (r0046.19 = 0).

For p1231 = 5:

DC braking can only be set for induction motors.

DC braking is activated if an OFF1 or OFF3 command is active. Binary signal sink c1230 is not active. If the drive speed still lies above the speed threshold p1234, then initially the drive is ramped-down to this threshold, demagnetized (see p0347) and is then switched into DC braking for the time set in p1233. After this, the drive is switched-off. If, at OFF1/OFF3, the drive speed is below p1234, then it is immediately demagnetized and switched into DC braking. A change is made into normal operation if the OFF1 command is withdrawn prematurely.

DC braking as fault response still remains possible.

For p1231 = 14:

DC braking can only be set for induction motors.

DC braking is initiated if there is a 1 signal at binary signal sink c1230 in operation, and the actual speed is below the starting speed p1234 (before this, the drive must have operated above p1234 plus the hysteresis). Then, after previous de-magnetization (see p0347), the braking current p1232 is impressed for the time set in p1233. The drive then resumes normal operation. During braking the command for DC braking can be withdrawn. If the time p1233 is exceeded, then DC braking is inhibited and the drive changes into normal operation.

For OFF1 and OFF3, DC braking is only executed if the binary signal sink c1230 has a 1 signal.

DC braking as fault response still remains possible.

For operation with an encoder, the encoder signal may not exceed a ripple of 15 rpm in the range of p1234.

For p1231 = 3, 4, 5, 14:

The value can only be changed to values not equal to 3, 4, 5 or 14 if p0491 is not equal to 4 and if DC braking is not selected as fault response.

Note:
ASC: Armature Short Circuit
DCBRK: DC Braking

p1232[0...n] DC braking braking current / DCBRK I_brake

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	DC braking	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** automatic
Unit: Arms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [Arms]	10000.00 [Arms]	0.00 [Arms]

Description: Sets the braking current for DC braking.

Dependency: See also: c1230, p1231, p1233, p1234, r1239, p1345, p1346

Note
A change to the braking current becomes effective the next time that DC braking is switched on.
The value for p1232 is specified as an rms value in the 3-phase system. The magnitude of the braking current is the same as that of an identical output current at frequency zero (see r0067, r0068, p0640). The braking current is internally limited to r0067.
For the current controller, the settings of parameters p1345 and p1346 (I_max limiting controller) are used.

p1233[0...n] DC braking time / DCBRK time

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	DC braking	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [s]	3600.0 [s]	1.0 [s]

Description: Sets the DC braking time (as fault response).

Dependency: See also: c1230, p1231, p1232, p1234, r1239

Note
The time that has been set is also effective when parameterizing DC braking as fault response.
If a speed encoder is being used, DC braking is ended as soon as the speed falls below the standstill threshold (p1226).

p1234[0...n] Speed at the start of DC braking / DCBRK n_start

Data type: FloatingPoint32	**Visible in:** Extended display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications
Can be changed in the operating state:	Operation

Parameter group: DC braking
Not relevant for motor type: Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor
Dyn. index [0...n]: MDS n defined by: p0130 **Calculated:** -
Unit: rpm **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0.00 [rpm]	210000.00 [rpm]	40000.00 [rpm]

Description: Sets the starting speed for DC braking.
If the actual speed falls below this threshold, then DC braking is activated.

Dependency: See also: c1230, p1231, p1232, p1233, r1239

NOTICE
If an encoder fault occurs during closed-loop operation with an encoder, controlled deceleration of the drive down to the start speed p1234 is no longer possible. In this case, DC braking is activated immediately and injects the braking current p1232 for the braking time p1233 after de-magnetizing. The braking current and braking duration must, therefore, be dimensioned accordingly for this situation so that the drive can be decelerated to standstill.
In the case of operation with an encoder, this speed may not be set too low so as to ensure that the oscillation movement induced by the residual flux/remanence of the motor does not cause DC braking to be deactivated again.

Note
Function p1231 = 14 or 1231 = 5 is activated at 15 rpm higher than the value set in p1234. This hysteresis is required to prevent DC braking from being deactivated for speed encoder signals with ripple.

c1235[0...n] External armature short-circuit contactor feedback signal / ASC ext feedback

Data type: Unsigned8 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Armature short-circuit
Not relevant for motor type: Induction motor, Synchronous reluctance motor
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal for the contactor feedback signal for external armature short-circuit.

Dependency: See also: c1230, p1231, p1236, p1237, r1239

NOTICE
In order that the pulses are not enabled when the contactor is closed, the contactor feedback signal must lag by a sufficiently long time when opening the contactor.

Note
1 signal: The contactor is closed.
0 signal: The contactor is open.

p1236[0...n] Ext armature short-cct contactor feedback signal monit time / ASC ext t_mon

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Armature short-circuit
Not relevant for motor type: Induction motor, Synchronous reluctance motor
Dyn. index [0...n]: MDS n defined by: p0130 **Calculated:** -
Unit: ms **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0 [ms]	1000 [ms]	200 [ms]

Description: Sets the monitoring time of the contactor feedback signal for the external armature short-circuit configuration.
If the contactor feedback signal (c1235) is parameterized, then the appropriate feedback signal (r1239.1) is expected within this monitoring time after either opening or closing the contactor.

Dependency: See also: c1230, p1231, c1235, p1237, r1239
See also: F07904, F07905

p1237[0...n] External armature short-circuit wait time when opening / ASC ext t_wait

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Armature short-circuit	
Not relevant for motor type:	Induction motor, Synchronous reluctance motor	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [ms]	1000 [ms]	200 [ms]

Description: Sets the wait time when opening the contactor of the external armature short-circuit.
If a contactor feedback signal has not been set (c1235), then the system waits for this time before the pulses are switched in.

Dependency: See also: c1230, p1231, c1235, p1236, r1239

NOTICE

This delay time must be at least long enough so that the contactor contacts reliably open before the pulses are switched in. The wait time must be greater than the contactor response time. The converter can be damaged if the wait time is too short.

r1238 Armature short-circuit external state / EASC state

Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Armature short-circuit	
Not relevant for motor type:	Induction motor, Synchronous reluctance motor	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** -

Description: Displays the state for the external armature short-circuit.

Value:
0: Switched off
1: Ready
2: Active
3: Active - Feedback signal "Closed" OK
4: Active - Feedback signal "Closed" missing
5: Prompt to remove the armature short-circuit
6: Active - Feedback signal "Open" missing

Dependency: See also: c1230, p1231, c1235, p1236, p1237, r1239
See also: F07904, F07905

Note

Activation criterion (one of the following criteria is fulfilled):
- The signal at c1230 (armature short-circuit activation) is 0.
- The drive is not in state "S4: Operation" or in S5x.
- The internal pulse enable is missing (r0046.19 = 0).

For state "switched off" (value = 0):
- The external armature short-circuit can be selected with p1231 = 1.

For state "ready" (value = 1):
- As soon as the activation criterion is fulfilled, then a transition is made into state "active".

For state "active" (value = 2):
For state "active - feedback signal "Closed" OK" (value = 3):
For state "active - feedback signal "Closed" Missing" (value = 4):
- The control signal to close contactor r1239.0 is set to "1" (closed) and the pulses are canceled.
- If a contactor feedback signal is not connected (c1235 = 0 signal), then a transition is immediately made into state "active - feedback signal "closed" OK".
- If a contactor feedback signal is connected, then a transition is made into state "active - feedback signal "Closed" OK" if the feedback signal at c1235 goes to "1" (closed) within the monitoring time (p1236).
- Otherwise, a transition is made into state "active - feedback signal "Closed" missing".

For state "query to remove the armature short-circuit" (value = 5):
- The activation criterion is no longer fulfilled. An attempt is made to again remove the armature short circuit.
- The control signal to close the contactor r1239.0 is set to "0" (open) and the pulses remain canceled.
- If a contactor feedback signal is not connected (c1235 = 0 signal), the system waits for the wait time (p1237) to expire until a transition is made into state "ready".
- If a contactor feedback signal is connected, the system waits until the feedback signal at c1235 goes to "0" (open) until a transition is made into state "ready". If this does not occur within the monitoring time (p1236), then a transition is made into state "active - feedback signal "open" missing".

For state "active - feedback signal "open" missing" (value = 6):
- This error state can be exited by deselecting the external armature short-circuit (p1231 = 0).

r1239.0...13 DC braking/armature short circuit status word / DCBRK/ASC ZSW

Data type: Unsigned32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	DC braking, Control/status words, Armature short-circuit	
Not relevant for motor type:	Synchronous reluctance motor	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source binary/numeric	**Scaling:** -

Description: Displays the status word for DC braking (for induction motors) or armature short-circuit braking (for permanent-magnet synchronous motors).

Bit array:

Bit	Signal name	1 signal	0 signal
00	External armature short-circuit	Active	Inactive
01	External armature short-circuit contactor feedback signal	Closed	Open
02	External armature short-circuit ready	Yes	No
03	External armature short-circuit with contactor feedback signal	Yes	No
04	Internal armature short-circuit	Active	Inactive
05	Internal armature short circuit feedback signal from power unit	Active	Inactive
06	Internal armature short-circuit ready	Yes	No
08	DC braking active	Yes	No
09	DC current injection active	Yes	No

10	DC braking ready	Yes	No
11	DC braking/armature short-circuit selected	Yes	No
12	DC braking selection internally inhibited	Yes	No
13	DC braking for OFF1/OFF3	Yes	No

Dependency: See also: c1230, p1231, p1232, p1233, p1234, c1235, p1236, p1237

Note

External armature short-circuit (bits 00 ... 03):
For bit 00:
Using this signal, the motor is short-circuited through an external contactor circuit. To do this, r1239.0 must be interconnected with a digital output, for example.
For bit 01:
This signal indicates the state of the contactor to establish the armature short-circuit. To do this, c1235 must be interconnected with a digital input.
For bit 02:
The external armature short-circuit configuration is ready and is activated as soon as the activation criterion is fulfilled.
For bit 03:
1: A feedback signal from an external contactor was parameterized in c1235.

Internal voltage protection / internal armature short-circuit (bits 04 ... 06):
For bit 04:
a) Internal voltage protection (p1231 = 3) was selected and the converter does not support the autonomous internal voltage protection (r0192.10 = 0).
The converter issues the command to short-circuit the motor through the power semiconductors.
b) Internal voltage protection (p1231 = 3) was selected and the converter does not support the autonomous internal voltage protection (r0192.10 = 1).
The converter independently decides whether the armature short-circuit is activated. In this case, the following applies: r1239.4 = r1239.5.
c) Internal armature short-circuit (p1231 = 4) was selected.
The converter issues the command to short-circuit the motor through the power semiconductors.
For bit 05:
The converter signals that the motor is short-circuited through the power semiconductors.
For bit 06:
a) Internal voltage protection (p1231 = 3) was selected and the converter does not support the autonomous internal voltage protection (r0192.10 = 0).
The internal voltage protection is ready and is activated as soon as the activation criterion is fulfilled.
b) Internal voltage protection (p1231 = 3) was selected and the converter does not support the autonomous internal voltage protection (r0192.10 = 1).
The internal voltage protection is ready and the converter decides autonomously - based on the DC link voltage - whether the short-circuit is activated. The short-circuit is activated if the DC link voltage exceeds 800 V. If the DC link voltage falls below 450 V, then the short-circuit is withdrawn.
c) Internal armature short-circuit (p1231 = 4) was selected.
The internal armature short-circuit is ready and is activated as soon as the activation criterion is fulfilled.
Activation criterion (one of the following criteria is fulfilled):
- The signal at c1230 (armature short-circuit activation) is 1.
- The drive is not in state "S4: Operation" or in S5x.
- The internal pulse enable is missing (r0046.19 = 0).

For bits 12, 13:
Only effective for p1231 = 14.

p1240[0...n] Vdc controller or Vdc monitoring configuration / Vdc ctrl config

Data type: Integer16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications

Can be changed in the operating state:	Operation		
Parameter group:	Vdc-min/max controller		
Not relevant for motor type:	Synchronous or reluctance motor with starting cage		
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -	
Unit: -	**Unit group:** -	**Unit selection:** -	
Min:	**Max:**	**Factory setting:**	
0	6	1	

Description: Sets the controller configuration of the DC link voltage (Vdc controller) in the closed-loop control mode.

Value:

0: Inhibit Vdc ctrl
1: Enable Vdc_max controller
2: Enable Vdc_min controller (kinetic buffering)
3: Enable Vdc_min controller and Vdc_max controller
4: Activate Vdc_max monitoring
5: Activate Vdc_min monitoring
6: Activate Vdc_min monitoring and Vdc_max monitoring

Recommendation: For Standard Drive Control (p0504 = 1), for an optimized Vdc_max controller, a complete motor data identification is recommended (p1909 bit 15 = 0).

Dependency: See also: p1245
See also: A07400, A07401, A07402, F07403, F07404, F07405, F07406

⚠ WARNING

When the Vdc_max controller is active, the motor can be accelerated (e.g. by driving loads or as a result of high DC link voltages). This can be caused by other drives that are operating on a common DC link busbar.

⚠ CAUTION

If several drives are connected to the same DC link busbar, then it is recommended that the Vdc control is only activated for the drives with high moments of inertia. If the Vdc control is simultaneously active at various drives, then they can mutually influence one another. In this case, the controller dynamic performance should be reduced or the Vdc control of individual drives should be deactivated.
Drives with Vdc control must be able to brake and accelerate independently of one another.

NOTICE

An excessively high value in p1245 can possibly negatively influence the normal operation of the drive.

Note

p1240 = 1, 3:
When the DC link voltage limit specified for the converter is reached, the following applies:
- The Vdc_max controller limits the regenerative energy in order that the DC link voltage is kept below the maximum DC link voltage when braking.
- The ramp-down times are automatically increased.

p1240 = 2, 3:
When the switch-in threshold of the Vdc_min controller is reached (p1245), the following applies:
- The Vdc_min controller limits the energy taken from the DC link in order to keep the DC link voltage above the minimum DC link voltage when accelerating.
- The motor is braked in order to use its kinetic energy to buffer the DC link.

p1240 = 4, 5, 6:
When the threshold in r1242 or r1246 is reached, the DC link voltage monitoring initiates a fault (F07403 or F07404) with a response and therefore reduces additional negative effects on the DC link voltage.
If a braking resistor is connected to the DC link, then the Vdc_max control should be disabled (also see p1531).

p1241[0...n] Vdc_max controller factor switch-on level / Vdc_max on_factor

Variant:	G220
Data type: FloatingPoint32	**Visible in:** Extended display
Read permission:	Read drive data or acknowledge messages

Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Vdc-min/max controller
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
108 [%]	140 [%]	115 [%]

Description: Sets the switch-in level for the Vdc_max controller.
r1242 = p1241 * sqrt(2) * V_line = 1.15 * sqrt(2) * p0210 (supply voltage)

Dependency: The parameter only has influence for 1254 = 0 (automatic sensing of the switch-on level deactivated).
See also: p0210, r1242

⚠ WARNING
The higher the factor for the switch-on level of the Vdc_max controller, the higher the stress on the motor winding insulation.
The controller can no longer switch off if the switch-on level is set too low. The DC link voltage must return to values below 95 % of the switch-on level (hysteresis 5 %).
If the parameter is changed in operation, then this is rejected if the actual DC link voltage (r0026) is higher than 95 % of the switch-on level.

p1241[0...n] Vdc_max controller factor switch-on level / Vdc_max on_factor

Variant: G220 Clean Power
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Vdc-min/max controller
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
108 [%]	140 [%]	115 [%]

Description: Sets the switch-in level for the Vdc_max controller.
r1242 = p1241 * 1.5 * V_line = 1.15 * 1.5 * p0210 (supply voltage)

Dependency: The parameter only has influence for 1254 = 0 (automatic sensing of the switch-on level deactivated).
See also: p0210, r1242

⚠ WARNING
The higher the factor for the switch-on level of the Vdc_max controller, the higher the stress on the motor winding insulation.
The controller can no longer switch off if the switch-on level is set too low. The DC link voltage must return to values below 95 % of the switch-on level (hysteresis 5 %).
If the parameter is changed in operation, then this is rejected if the actual DC link voltage (r0026) is higher than 95 % of the switch-on level.

r1242 Vdc_max controller switch-in level / Vdc_max on_level

Variant: G220
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Vdc-min/max controller

Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: - **Calculated:** -
Unit: V **Unit group:** - **Unit selection:** -

Description: Displays the switch-on level for the Vdc_max controller.
If p1254 = 0 (automatic sensing of the switch-in level = off), then the following applies:
r1242 = p1241 * sqrt(2) * p0210
If p1254 = 1 (automatic sensing of the switch-in level = on), then the following applies:
r1242 = Vdc_max - 50.0 V (Vdc_max: Overvoltage threshold of the power unit)
r1242 = Vdc_max - 25.0 V (for 230 V power units)

NOTICE
If the switch-on level of the Vdc_max controller is already exceeded in the deactivated state (pulse inhibit) by the DC link voltage, then the controller can be automatically deactivated (see A07401), so that the drive is not accelerated the next time that it is switched-on.

Note
The Vdc_max controller is not switched back off until the DC link voltage falls below the threshold 0.95 * r1242 and the controller output is zero.

r1242 Vdc_max controller switch-in level / Vdc_max on_level

Variant: G220 Clean Power
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Vdc-min/max controller
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: - **Calculated:** -
Unit: V **Unit group:** - **Unit selection:** -

Description: Displays the switch-on level for the Vdc_max controller.
If p1254 = 0 (automatic sensing of the switch-in level = off), then the following applies:
r1242 = p1241 * 1.5 * p0210
If p1254 = 1 (automatic sensing of the switch-in level = on), then the following applies:
r1242 = Vdc_max - 50.0 V (Vdc_max: Overvoltage threshold of the power unit)

NOTICE
If the switch-on level of the Vdc_max controller is already exceeded in the deactivated state (pulse inhibit) by the DC link voltage, then the controller can be automatically deactivated (see A07401), so that the drive is not accelerated the next time that it is switched-on.

Note
The Vdc_max controller is not switched back off until the DC link voltage falls below the threshold 0.95 * r1242 and the controller output is zero.

p1243[0...n] Vdc_max controller dynamic factor / Vdc_max dyn_factor

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Vdc-min/max controller
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** automatic
Unit: % **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
1 [%]	10000 [%]	100 [%]

Description: Sets the dynamic factor for the DC link voltage controller (Vdc_max controller).
100% means that p1250, p1251, and p1252 (gain, integral time, and rate time) are used corresponding to their basic settings and based on a theoretical controller optimization.
If subsequent optimization is required, this can be carried out using the dynamic factor. In this case p1250, p1251, p1252 are weighted with the dynamic factor p1243.

p1244[0...n] Vdc_max controller factor switch-on level (U/f) / Vdc_max on_factor

Variant:	G220	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Vdc-min/max controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
108 [%]	140 [%]	115 [%]

Description: Sets the switch-in level for the Vdc_max controller.
r1282 = p1244 * sqrt(2) * V_line = 1.15 * sqrt(2) * p0210 (supply voltage)

Dependency: The parameter only has influence for p1294 = 0 (automatic sensing of the switch-on level deactivated).
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: p1280, r1282

⚠ WARNING
The higher the factor for the switch-on level of the Vdc_max controller, the higher the stress on the motor winding insulation.
The controller can no longer switch off if the switch-on level is set too low. The DC link voltage must return to values below 95 % of the switch-on level (hysteresis 5 %).
If the parameter is changed in operation, then this is rejected if the actual DC link voltage (r0026) is higher than 95 % of the switch-on level.

p1244[0...n] Vdc_max controller factor switch-on level (U/f) / Vdc_max on_factor

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Vdc-min/max controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
108 [%]	140 [%]	115 [%]

Description: Sets the switch-in level for the Vdc_max controller.
r1282 = p1244 *1,5 * V_line = 1.15 * 1.5 * p0210 (supply voltage)

Dependency: The parameter only has influence for p1294 = 0 (automatic sensing of the switch-on level deactivated).
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: p1280, r1282

⚠ WARNING

The higher the factor for the switch-on level of the Vdc_max controller, the higher the stress on the motor winding insulation.

The controller can no longer switch off if the switch-on level is set too low. The DC link voltage must return to values below 95 % of the switch-on level (hysteresis 5 %).

If the parameter is changed in operation, then this is rejected if the actual DC link voltage (r0026) is higher than 95 % of the switch-on level.

p1245[0...n] Vdc_min controller switch-in level (kinetic buffering) / Vdc_min on_level

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Vdc-min/max controller	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
65 [%]	150 [%]	72 [%]

Description: Sets the switch-in level for the Vdc-min controller (kinetic buffering).

The value is obtained as follows:

r1246[V] = p1245[%] * sqrt(2) * p0210

Dependency: See also: p0210

⚠ WARNING

It is possible that an excessively high value can negatively impact normal converter operation, and can mean that after the line supply returns, the Vdc_min control can no longer be exited.

r1246 Vdc_min controller switch-in level (kinetic buffering) / Vdc_min on_level

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Vdc-min/max controller	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: V	**Unit group:** -	**Unit selection:** -

Description: Displays the switch-in level for the Vdc_min controller (kinetic buffering).

Note

The Vdc_min controller is not deactivated again until the DC link voltage rises above the threshold 1.05 * r1246 and the controller output is zero.

p1247[0...n] Vdc_min controller dynamic factor (kinetic buffering) / Vdc_min dyn_factor

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Vdc-min/max controller	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: %	**Unit group:** -	**Unit selection:** -

Min:	Max:	Factory setting:
1 [%]	10000 [%]	100 [%]

Description: Sets the dynamic factor for the Vdc_min controller (kinetic buffering).

100% means that p1250, p1251, and p1252 (gain, integral time, and rate time) are used corresponding to their basic settings and based on a theoretical controller optimization.

If subsequent optimization is required, this can be carried out using the dynamic factor. In this case p1250, p1251, p1252 are weighted with the dynamic factor p1247.

p1250[0...n] Vdc_max controller proportional gain / Vdc_max_ctrl Kp

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Vdc-min/max controller	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00	100.00	1.00

Description: Sets the proportional gain for the controller of the maximum DC link voltage (Vdc_max controller).

Dependency: The effective proportional gain is obtained taking into account p1243 (Vdc_max controller dynamic factor).

Note

The gain factor is proportional to the capacitance of the DC link. The parameter is preset to a value that is optimally adapted to the capacitance of the converter. The capacitances of the other power units, which are connected to the DC link, can be taken into account using the dynamic factor (p1247 or p1243).

p1251[0...n] Vdc_max controller integral time / Vdc_max_ctrl Tn

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Vdc-min/max controller	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [ms]	10000 [ms]	0 [ms]

Description: Sets the integral time for the controller of the maximum DC link voltage (Vdc_max controller).

Dependency: The effective integral time is obtained taking into account p1243 (Vdc_max controller dynamic factor).

Note

p1251 = 0: The integral component is deactivated.

p1252[0...n] Vdc_max ctrl rate time / Vdc_max_ctr t_rate

Data type: FloatingPoint32	**Visible in:** Extended display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications
Can be changed in the operating state:	Operation

Parameter group:	Vdc-min/max controller	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [ms]	1000 [ms]	0 [ms]

Description: Sets the rate time constant for the controller of the maximum DC link voltage (Vdc_max controller).

Dependency: The effective rate time is obtained taking into account p1243 (Vdc_max controller dynamic factor).

p1254 Vdc_max controller automatic sensing of the switch-on level / Vdc_max SenseOnLev

Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Vdc-min/max controller	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	1	0

Description: Activates/deactivates the automatic sensing of the switch-on level for the Vdc_max controller.

Value:
0: Deactivated
1: Activated

p1255[0...n] Vdc_min controller time threshold / Vdc_min t_thr

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Vdc-min/max controller	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000 [s]	1800.000 [s]	0.000 [s]

Description: Sets the time threshold for the Vdc_min controller (kinetic buffering).
If this value is exceeded a fault is output; the required response can be parameterized.
Prerequisite: p1256 = 1

Dependency: See also: F07406

NOTICE

If a time threshold has been parameterized, the Vdc_max controller should also be activated (p1240 = 3) so that the drive does not shut down with overvoltage when Vdc_min control is exited (due to the time violation) and in the event of fault response OFF3. It is also possible to increase the OFF3 ramp-down time p1135.

p1256[0...n] Vdc_min controller response (kinetic buffering) / Vdc_min response

Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	

Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Vdc-min/max controller	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	1	0

Description: Sets the response for the Vdc_min controller (kinetic buffering).

Value:
0: Buffer Vdc until undervoltage, n<p1257 -> F07405
1: Buff. Vdc until undervolt., n<p1257 -> F07405, t>p1255 -> F07406

Dependency: See also: F07405, F07406

p1257[0...n] Vdc_min controller speed threshold / Vdc_min n_thr

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Vdc-min/max controller	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.00 [rpm]	210000.00 [rpm]	50.00 [rpm]

Description: Sets the speed threshold for the Vdc-min controller (kinetic buffering).
If this value is exceeded a fault is output; the required response can be parameterized .
Kinetic buffering is not started below the speed threshold.

Note
Exiting the Vdc_min control before reaching motor standstill prevents the regenerative braking current from increasing significantly at low speeds, and after a pulse inhibit, means that the motor coasts down.
However, the maximum braking torque can be set via the appropriate torque limiting.

r1258 Vdc controller output / Vdc_ctrl output

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Vdc-min/max controller	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Arms	**Unit group:** 6_2	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2002

Description: Displays the actual output of the Vdc controller (DC link voltage controller)

Note
The regenerative power limit p1531 is used for vector control to precontrol the Vdc_max controller. The lower the power limit is set, the lower the correction signals of the controller when the voltage limit is reached.

p1259[0...n].3 Vdc controller configuration / Vdc ctrl config

Data type: Unsigned32	**Visible in:** Extended display

Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Vdc-min/max controller
Not relevant for motor type: -
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** automatic
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
-	-	1000 bin

Description: Sets the configuration for the DC link voltage controller.

Bit array:

Bit	Signal name	1 signal	0 signal
03	Vdc_min phase failure detection	Yes	No

Dependency: See also: A07408

Note
For bit 03:
Activates phase failure detection of the Vdc_min control.
If the Vdc_min controller is too frequently activated and deactivated in a short time, then a phase could have failed. If this is detected, then the Vdc_min controller is temporarily deactivated and alarm A07408 displayed. The Vdc_min controller is only enabled again once the DC link voltage is permanently above the switch-on threshold (r1246).
For a pulse inhibit, the Vdc_min controller is re-enabled if it was temporarily deactivated.

p1260 Bypass configuration / Bypass config

Variant: G220, G220 Clean Power
Available when function is active: Bypass with synchronization
Data type: Integer16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Bypass
Not relevant for motor type: Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0	3	0

Description: Sets the configuration for the bypass function.

Value:

0: Bypass deactivated
1: Bypass with synchronization and overlap
2: Bypass with synchronization without overlap
3: Bypass without synchronization

Note
If the bypass function is selected (p1260 > 0), then when the power unit restarts after POWER OFF, the state of the bypass switch is evaluated. This means that after the run-up, it is possible to directly change into the standby mode. This is only possible for p1267 = 1 (bypass using the control signal) and if the control command after the system has run-up is still available (c1266). This function has a higher priority than the automatic restart function (p1210).
The "bypass" function can only be switched off again (p1260 = 0) if the bypass is not active or the bypass function has a fault.

r1261.0...15 Bypass control/status word / Bypass STW / ZSW

Variant: G220, G220 Clean Power
Available when function is active: Bypass with synchronization
Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Bypass
Not relevant for motor type: Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Display for the control/status word of the bypass switch.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Command switch motor - Power unit	Close	Open
01	Command switch motor - Line supply	Close	Open
02	Synchronization requested	Yes	No
05	Feedback signal switch motor - Power unit	Closed	Opened
06	Feedback signal switch motor - Line supply	Closed	Opened
07	Bypass command (from p1266)	Yes	No
08	Feedback signal synchronization completed (from p1268)	Yes	No
10	Bypass in process sequence	Yes	No
11	Bypass enabled	Yes	No
12	DC link voltage monitoring activated	Yes	No
13	Bypass control is ready	Yes	No
14	Debypass without flying restart selected	Yes	No
15	Recalculation required	Yes	No

Dependency: The "Bypass" function is only available for induction motors.
See also: p1200

Note
Control bits 0 and 1 should be interconnected to the signal outputs via which the switches in the motor feeder cables should be controlled. These should be selected/dimensioned for switching under load.

p1262[0...n] Bypass dead time / Bypass t_dead

Variant: G220, G220 Clean Power
Available when function is active: Bypass with synchronization
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Bypass
Not relevant for motor type: Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** automatic
Unit: s **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0.000 [s]	20.000 [s]	1.000 [s]

Description: Sets the dead time for non-synchronized bypass.

Dependency: The "Bypass" function is only available for induction motors.

Note
This parameter is used to define the changeover time of the contactors. It should not be shorter than the de-magnetizing time of the motor (p0347).
The total time for switching over to line operation or returning back to converter operation is obtained from the monitoring time of the relevant switch (p1274[x]).

p1263 Debypass delay time / Debypass t_del

Variant:	G220, G220 Clean Power	
Available when function is active:	Bypass with synchronization	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Bypass	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000 [s]	300.000 [s]	1.000 [s]

Description: Sets the delay time for switching back to converter operation for a non-synchronized bypass (time between reset of the bypass command and "Command switch motor - Line supply" r1261.1).

Dependency: The "Bypass" function is only available for induction motors.

p1264 Bypass delay time / Bypass t_del

Variant:	G220, G220 Clean Power	
Available when function is active:	Bypass with synchronization	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Bypass	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000 [s]	300.000 [s]	1.000 [s]

Description: Sets the delay time for switching over to line operation for a non-synchronized bypass (time between setting the bypass command and "Command switch motor - Power unit" r1261.0).

Dependency: The "Bypass" function is only available for induction motors.

p1265 Bypass speed threshold / Bypass n_thr

Variant:	G220, G220 Clean Power
Available when function is active:	Bypass with synchronization

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Bypass	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.00 [rpm]	210000.00 [rpm]	1480.00 [rpm]

Description: Sets the speed threshold to activate the bypass.

Dependency: The "Bypass" function is only available for induction motors.

The configuration bit p1030.4 should be set if the drive speed setpoint is specified via a motorized potentiometer. This ensures function "Bypass via speed threshold"

Note

When selecting p1260 = 3 and p1267.1 = 1, the bypass is automatically activated when this speed is reached.

The bypass speed threshold is only effective for positive directions of rotation. If the drive connected to the line supply requires negative speeds, then this can be achieved using p1820 (direction of rotation reversal).

c1266 Bypass control command / Bypass command

Variant:	G220, G220 Clean Power	
Available when function is active:	Bypass with synchronization	
Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Bypass	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal for the control command to the bypass.

Dependency: The "Bypass" function is only available for induction motors.

p1267.0...1 Bypass changeover source configuration / Chgov_src config

Variant:	G220, G220 Clean Power	
Available when function is active:	Bypass with synchronization	
Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Bypass	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	-	**Calculated:** -

	Unit: -	**Unit group:** -	**Unit selection:** -
	Min:	**Max:**	**Factory setting:**
	-	-	0000 bin

Description: Sets the cause that should initiate the bypass.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Bypass via signal (r1266)	Yes	No
01	Bypass via reaching the speed threshold	Yes	No

Dependency: The "Bypass" function is only available for induction motors.

Note

The parameter only has an effect for a non-synchronized bypass.

p1267.0 = 1:

The bypass is initiated by setting a binary signal. When the command is reset, after the debypass delay time (p1263) has expired, operation at the power unit is re-selected.

p1267.1 = 1:

When the speed threshold entered in p1265 is reached, the bypass is switched in. The system only switches back when the speed setpoint again falls below the threshold value.

c1268 Bypass feedback synchronization completed / FS sync compl

Variant:	G220, G220 Clean Power	
Available when function is active:	Bypass with synchronization	
Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Bypass	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Parameter: 3819.2	

Description: Signal for feedback signal "Synchronization completed" for the bypass function.

Dependency: The "Bypass" function is only available for induction motors.

See also: r3819

c1269[0...1] Bypass switch feedback signal / Bypass FS

Variant:	G220, G220 Clean Power	
Available when function is active:	Bypass with synchronization	
Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Bypass	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	[0] Parameter: 1261.0 [1] Parameter: 1261.1	

Description: Signal for the feedback signal of the bypass switch.

Index: [0] = Switch motor/drive
[1] = Switch motor/line supply

Dependency: The "Bypass" function is only available for induction motors.

Note
In the case of switches without a feedback signal, interconnect the corresponding control bit as the signal source:
r1269[0] according to r1261.0
r1269[1] according to r1261.1
When entering c1269 = 0, this interconnection is automatically set for switches without feedback signal.

p1270[0...n].0...5 Flying restart configuration / FlyRest config

Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Flying restart	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-	-	0010 1001 bin

Description: Sets the configuration for the "flying restart function" function.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Fast flying restart with voltage model for induction motor	Yes	No
01	PLL expansion for fast flying restart w/ voltage model for ASM	Yes	No
02	Activate search with model	Yes	No
03	Activate current impression for low speeds	Yes	No
05	Activate flying restart with voltage measurement	Yes	No

⚠ CAUTION
For bit 00 = 1:
When using a dv/dt filter, it is not permissible that a flying restart with voltage model is activated.

NOTICE
For bit 00:
When selecting - also for U/f characteristic operation - A standstill measurement to identify the motor data must have been performed to set the necessary current controller for a fast flying restart.

Note
ASM: Induction motor
PMSM: Permanent-magnet synchronous motor
For bit 00:
This bit is equivalent to p1780 bit 11.
For bit 01:
This bit should only be set when required for large drives.
For bit 02:
This bit should be set if problems are encountered with a flying restart at low speeds. The bit is preassigned when commissioning an induction motor with U/f control.
For bit 05:
If the bit is changed in one data set, then this is accepted in all data sets that are available.

p1271[0...n] Flying restart maximum frequency for the inhibited direction / FlyRest f_max dir

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Flying restart	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: Hz	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [Hz]	650 [Hz]	0 [Hz]

Description: Sets the maximum search frequency for a flying restart in an inhibited setpoint direction (c1110, c1111).

Note
The parameter has no effect for an operating mode, which only searches in the setpoint direction (p1200 > 3).

p1274[0...1] Bypass switch monitoring time / Switch t_mon

Variant:	G220, G220 Clean Power	
Available when function is active:	Bypass with synchronization	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Bypass	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [ms]	5000 [ms]	1000 [ms]

Description: Sets the monitoring time for the bypass switch.

Index: [0] = Switch motor/drive
[1] = Switch motor/line supply

Dependency: The "Bypass" function is only available for induction motors.
See also: p1260

Note
The monitoring is deactivated with p1274 = 0 ms.
For non-synchronized bypass (p1260 = 3), the following applies:
The changeover time for the bypass (p1262) is extended by the value in this parameter.

p1280[0...n] Vdc controller or Vdc monitoring configuration (U/f) / Vdc_ctr config U/f

Data type: Integer16	**Visible in:** Standard display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications
Can be changed in the operating state:	Operation
Parameter group:	Vdc-min/max controller
Not relevant for motor type:	-

	Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
	Unit: -	**Unit group:** -	**Unit selection:** -
	Min:	**Max:**	**Factory setting:**
	0	6	1

Description: Sets the configuration of the controller for the DC link voltage (Vdc controller) in the U/f operating mode.

Value:

0: Inhibit Vdc ctrl
1: Enable Vdc_max controller
2: Enable Vdc_min controller (kinetic buffering)
3: Enable Vdc_min controller and Vdc_max controller
4: Activate Vdc_max monitoring
5: Activate Vdc_min monitoring
6: Activate Vdc_min monitoring and Vdc_max monitoring

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

⚠ WARNING

When the Vdc_max controller is active, the motor can be accelerated (e.g. by driving loads or as a result of high DC link voltages). This can be caused by other drives that are operating on a common DC link busbar.

⚠ CAUTION

If several drives are operated from the same DC link busbar, then it is recommended that the Udc control is only activated for the drives with relatively high moments of inertia.
If the Vdc control is simultaneously active at various drives, then they can mutually influence one another. In this case, the controller dynamic performance should be reduced or the Vdc control of individual drives should be deactivated.
Drives with Vdc control must be able to brake and accelerate independently of one another.

Note

For p1280 = 4, 5, 6:
When the threshold in r1282 or r1286 is reached, the DC link voltage monitoring initiates a fault (F07403 or F07404) with a response and therefore reduces additional negative effects on the DC link voltage.
If a braking resistor is connected to the DC link, then the Vdc_max control should be disabled.
For p1280 = 1, 3:
Only U/f control: When the Vdc max controller is active, fault F07404 is initiated if the speed setpoint ramp is stopped (held) longer than the time set in p1284.

For high input voltages (p0210), the following settings can improve the degree of ruggedness of the Vdc_max controller:
- Set the input voltage as low as possible, and in so doing, avoid A07401 (p0210).
- Set the rounding times (p1130, p1136).
- Increase the ramp-down times (p1121).
- Reduce the integral time of the controller (p1291), factor 0.5.
- Activate the Vdc correction in the current controller (p1810.1 = 1) or reduce the derivative action time of the controller (p1292, factor 0.5).

In this case, we generally recommend to use vector control (p1300 = 20) (Vdc controller, see p1240).
The following measures are suitable to improve the Vdc_min controller:
- Optimize the Vdc_min controller (see p1287).
- Activate the Vdc correction in the current controller (p1810.1 = 1).

If a braking resistor is connected to the DC link (p0219 > 0), then the Vdc_max control is automatically deactivated.

p1281[0...n].0...2 Vdc controller configuration / Vdc ctrl config

	Data type: Unsigned16	**Visible in:** Extended display	
	Read permission:	Read drive data or acknowledge messages	
	Write permission:	Edit device configuration or drive applications	
	Can be changed in the operating state:	Operation	
	Parameter group:	Vdc-min/max controller	
	Not relevant for motor type:	-	

Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic	
Unit: -	**Unit group:** -	**Unit selection:** -	
Min:	**Max:**	**Factory setting:**	
-	-	0000 bin	

Description: Sets the configuration for the DC link voltage controller.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Vdc min control (U/f) without up ramp	Yes	No
02	Vdc min shorter wait time when the line returns	Yes	No

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: A07408

Note
ASM: Induction motor (induction motor)
PMSM: permanent-magnet synchronous motor
For bit 00:
This bit is equivalent to p1780 bit 1.
For bit 01:
This bit should only be set when required for large drives.

r1282 Vdc_max controller switch-in level (U/f) / Vdc_max on_level

Variant:	G220	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Vdc-min/max controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: V	**Unit group:** -	**Unit selection:** -

Description: Displays the switch-on level for the Vdc_max controller.
If p1294 = 0 (automatic sensing of the switch-in level = off), then the following applies:
r1282 = p1244 * sqrt(2) * p0210
If p1294 = 1 (automatic sensing of the switch-in level = on), then the following applies:
r1282 = Vdc_max - 50.0 V (Vdc_max: Overvoltage threshold of the power unit)
r1282 = Vdc_max - 25.0 V (for 230 V power units)

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

NOTICE
If the switch-on level of the Vdc_max controller is already exceeded in the deactivated state (pulse inhibit) by the DC link voltage, then the controller can be automatically deactivated (see A07401), so that the drive is not accelerated the next time that it is switched-on.

Note
The Vdc_max controller is not switched back off until the DC link voltage falls below the threshold 0.95 * r1282 and the controller output is zero.

r1282 Vdc_max controller switch-in level (U/f) / Vdc_max on_level

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Vdc-min/max controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: V	**Unit group:** -	**Unit selection:** -

Description: Displays the switch-on level for the Vdc_max controller.
If p1294 = 0 (automatic sensing of the switch-in level = off), then the following applies:
r1282 = p1244 * 1.5 * p0210
If p1294 = 1 (automatic sensing of the switch-in level = on), then the following applies:
r1282 = Vdc_max - 50.0 V (Vdc_max: Overvoltage threshold of the power unit)

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

NOTICE
If the switch-on level of the Vdc_max controller is already exceeded in the deactivated state (pulse inhibit) by the DC link voltage, then the controller can be automatically deactivated (see A07401), so that the drive is not accelerated the next time that it is switched-on.

Note
The Vdc_max controller is not switched back off until the DC link voltage falls below the threshold 0.95 * r1282 and the controller output is zero.

p1283[0...n] Vdc_max controller dynamic factor (U/f) / Vdc_max dyn_factor

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Vdc-min/max controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
1 [%]	10000 [%]	100 [%]

Description: Sets the dynamic factor for the DC link voltage controller (Vdc_max controller).
100% means that p1290, p1291, and p1292 (gain, integral time, and rate time) are used in accordance with their basic settings and on the basis of a theoretical controller optimization.
If subsequent optimization is required, this can be carried out using the dynamic factor. In this case, p1290, p1291, and p1292 are weighted with the dynamic factor p1283.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

p1284[0...n] Vdc_max controller time threshold (U/f) / Vdc_max t_thr

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Vdc-min/max controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000 [s]	300.000 [s]	4.000 [s]

Description: Sets the monitoring time for the Vdc_max controller.
If the down ramp of the speed setpoint is held for longer than the time set in p1284, then fault F07404 is output.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

p1285[0...n] Vdc_min controller switch-in level (kinetic buffering) (U/f) / Vdc_min on_level

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Vdc-min/max controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
65 [%]	150 [%]	72 [%]

Description: Sets the switch-in level for the Vdc-min controller (kinetic buffering).

The value is obtained as follows:

r1286[V] = p1285[%] * sqrt(2) * p0210

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

⚠ WARNING

An excessively high value may adversely affect normal drive operation.

r1286 Vdc_min controller switch-in level (kinetic buffering) (U/f) / Vdc_min on_level

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Vdc-min/max controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: V	**Unit group:** -	**Unit selection:** -

Description: Displays the switch-in level for the Vdc_min controller (kinetic buffering).

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

Note

The Vdc_min controller is not switched back off until the DC link voltage rises above the threshold 1.05 * r1286 and the controller output is zero.

p1287[0...n] Vdc_min controller dynamic factor (kinetic buffering) (U/f) / Vdc_min dyn_factor

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Vdc-min/max controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
1 [%]	10000 [%]	100 [%]

Description: Sets the dynamic factor for the Vdc_min controller (kinetic buffering).

100% means that p1290, p1291, and p1292 (gain, integral time, and rate time) are used corresponding to their basic settings and based on a theoretical controller optimization.

If subsequent optimization is required, this can be carried out using the dynamic factor. In this case, p1290, p1291, and p1292 are weighted with the dynamic factor p1287.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

p1290[0...n] Vdc_max controller proportional gain (U/f) / Vdc_max_ctrl Kp

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Vdc-min/max controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00	100.00	1.00

Description: Sets the proportional gain for the Vdc_max controller (controller for the maximum DC link voltage).

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

Note
The gain factor is proportional to the capacitance of the DC link. The parameter is preset to a value, which optimally fits the capacitance of the individual inverter. The capacitances of the remaining inverters, which are connected to the DC link, can be taken into account using the dynamic factor (p1287 or p1283).

p1291[0...n] Vdc_max controller integral time (U/f) / Vdc_max_ctrl Tn

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Vdc-min/max controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [ms]	10000 [ms]	40 [ms]

Description: Sets the integral time for the Vdc_max controller (controller for the maximum DC link voltage).

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

p1292[0...n] Vdc_max controller rate time (U/f) / Vdc_max_ctr t_rate

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Vdc-min/max controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [ms]	1000 [ms]	10 [ms]

Description: Sets the rate time constant for the Vdc_max controller (controller for the maximum DC link voltage).

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

p1294 Vdc_max controller automatic sensing of switch-on level (U/f) / Vdc_max SenseOnLev

Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Vdc-min/max controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	1	0

Description: Activates/deactivates the automatic sensing of the switch-on level for the Vdc_max controller. When the sensing function is deactivated, the activation threshold r1282 for the Vdc_max controller is determined from the parameterized supply voltage p0210.

Value:
0: Deactivated
1: Activated

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

p1295[0...n] Vdc_min controller time threshold (U/f) / Vdc_min t_thr

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Vdc-min/max controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000 [s]	10000.000 [s]	0.000 [s]

Description: Sets the time threshold for the Vdc_min controller (kinetic buffering).
If this value is exceeded a fault is output; the required response can be parameterized.
Prerequisite: p1296 = 1

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

NOTICE
If a time threshold has been parameterized, the Vdc_max controller should also be activated (p1280 = 3) so that the drive does not shut down with overvoltage when Vdc_min control is exited (due to the time violation) and in the event of fault response OFF3. It is also possible to increase the OFF3 ramp-down time p1135.

p1296[0...n] Vdc_min controller response (kinetic buffering) (U/f) / Vdc_min response

Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Vdc-min/max controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Min:	Max:	Factory setting:
0	1	0

Description: Sets the response for the Vdc_min controller (kinetic buffering).

Value:
0: Buffer Vdc until undervoltage, n<p1297 -> F07405
1: Buff. Vdc until undervolt., n<p1297 -> F07405, t>p1295 -> F07406

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

Note
For p1296 = 1:
The quick stop ramp entered in p1135 must not be equal to zero, to prevent overcurrent shutdown if F07406 is triggered.

p1297[0...n] Vdc_min controller speed threshold (U/f) / Vdc_min n_thr

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Vdc-min/max controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.00 [rpm]	210000.00 [rpm]	50.00 [rpm]

Description: Sets the speed threshold for the Vdc-min controller (kinetic buffering).
If this value is exceeded a fault is output; the required response can be parameterized .

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

Note
Exiting the Vdc_min control before reaching motor standstill prevents the regenerative braking current from increasing significantly at low speeds, and after a pulse inhibit, means that the motor coasts down.

r1298 Vdc controller output (U/f) / Vdc_ctrl output

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	U/f control, Vdc-min/max controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000

Description: Displays the actual output of the Vdc controller (DC link voltage controller)

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

p1300[0...n] Open-loop/closed-loop control mode / Op/cl-lp ctrl type

Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	U/f control, Speed controller, Operating mode	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -

Unit: -	Unit group: -	Unit selection: -
Min:	**Max:**	**Factory setting:**
0	23	20

Description: Sets the open and closed-loop control mode of a drive for operating mode p0504 = 0 (all closed-loop control modes), 2 (Dynamic Drive Control).

Closed-loop speed and torque control always includes vector control.

Value:

0: U/f control with linear characteristic
1: U/f control with linear characteristic and FCC
2: U/f control with parabolic characteristic
3: U/f control with parameterizable characteristic
4: U/f control with linear characteristic and ECO
5: U/f control for drives requiring a precise freq. (e.g. textiles)
6: U/f control for drives requiring a precise frequency and FCC
7: U/f control for a parabolic characteristic and ECO
19: U/f control with independent voltage setpoint
20: Speed control (encoderless)
21: Speed control (with encoder)
22: Torque control (encoderless)
23: Torque control (with encoder)

Recommendation: For synchronous motors, it is recommended that vector control modes are used.

Dependency: p1300 is not available for Standard Drive Control (p0504 = 1).

Closed-loop speed or torque control (with encoder) cannot be selected if the encoder type is not entered (p0400).

Closed-loop torque control is not available for Dynamic Drive Control (p0504 = 1).

Only operation with U/f characteristic is possible (for p0504 = 0) if the rated motor speed is not entered (p0311).

A synchronous/reluctance motor (p0300 = 8) can only be operated in U/f control modes p1300 = 3, 5 and 6, a synchronous reluctance motor (p0300 = 6, 6xx, 6xxx) only in closed-loop speed/torque control.

Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

See also: p0212, p0300, p0311, p0400, c1501

NOTICE

Active slip compensation is required in U/f open-loop control types with ECO mode (p1300 = 4, 7). Slip compensation scaling (p1335) must be set so that the slip is completely compensated (or generally, 100 %). The speed accuracy is improved if the complete motor data identification is executed (p1909 bit 15 = 0).

The ECO mode is only active in steady-state operation and when the ramp-function generator is not bypassed. In the case of analog setpoints, if required the tolerance for ramp-up and ramp-down should be actively increased for the ramp-function generator using p1148 in order to reliably signal a steady-state condition.

Note

For p0504 = 0, the following applies:

In operation, a switch can only be made to closed-loop torque control (c1501) by selecting closed-loop speed control (p1300 = 20, 21). The setting of p1300 does not change when switching over.

The actual state is displayed in r1407.2 and r1407.3.

For the open-loop control modes p1300 = 5 and 6 (textile sector), slip compensation p1335, resonance damping p1338, and the Imax frequency controller are switched off internally so that the output frequency can be set precisely. The Imax voltage controller remains active.

For the open-loop control modes p1300 = 4 and 7 (Eco mode), the efficiency can be optimized by varying the voltage (when the operating point is constant).

During operation (pulses enabled) the open-loop/closed-loop control operating mode cannot be changed by changing over drive data sets.

p1300 is preassigned depending on p0187.

p1302[0...n].0...9 U/f control configuration / U/f config

Data type: Unsigned16	**Visible in:** Extended display
Read permission:	Read drive data or acknowledge messages

Write permission:	Edit device configuration or drive applications		
Can be changed in the operating state:	Ready for operation		
Parameter group:	U/f control		
Not relevant for motor type:	-		
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -	
Unit: -	**Unit group:** -	**Unit selection:** -	
Min:	**Max:**	**Factory setting:**	
-	-	0000 0000 0000 0000 bin	

Description: Sets the configuration for the U/f control.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Output voltage starting angle zero	Yes	No
01	Take into account the setpoint voltage sign	Yes	No
02	Output voltage angle setpoint input	Yes	No
03	Motor holding brake with constant stop frequency	Yes	No
04	Field orientation	Yes	No
05	Starting current when accelerating without flux boost	Yes	No
06	Immediate setpoint transfer for pulse inhibit	Yes	No
07	Inhibit Iq_max controller I component	Yes	No
08	Saturation characteristic for the starting current	Yes	No
09	Current boost for fast magnetization	Yes	No

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

NOTICE
For bit 05 (only for field orientation p1302.4 = 1): This setting is only selected for very fast acceleration.

Note

For bit 00:

If the bit is set the device will always start up with setpoint angle zero on pulse enable. This also affects the setpoint angle for DC braking (p1231).

For bit 01:

If the bit is set, in the case of U/f control with independent voltage setpoint (p1300 = 19) and negative setpoint voltages at the input of c1330, the setpoint angle is rotated through 180 degrees, thereby achieving a negative output voltage. The voltage boost is in this case not active (p1310, p1311).

For bit 02:

When the bit is set, for U/f control with independent voltage setpoint (p1300 = 19), the setpoint angle should be directly specified at numerical signal sink c1356.

For bit 03:

When the bit is set, when the drive stops, the starting frequency of the motor holding brake is also not fallen below when the actual slip frequency is less than the starting frequency.

For bit 04:

U/f control with field orientation (only for experts).

The following bits 05 ... 09 are only relevant for p1302 bit 04 = 1:

For bit 05:

The starting current when accelerating (p1311) generally results in an increase in the absolute current and flux. With p1302.5 = 1 the current is only increased in the direction of the load. p1302.5 - In conjunction with p1310 and p1311 - are decisive when it comes to defining the quality of the starting response.

For bit 06:

For field orientation, the starting current when the motor accelerates (p1311, p1312) is normally only added in the direction of the load-dependent voltage component. When selecting the bit, p1311 and p1312 also lead to an increase in the field-generating voltage components.

For bit 07:

For field orientation, an Iq_max controller supports the current limiting controller (see p1341). Inhibiting the integral component can prevent the drive from stalling under overload conditions.

For bit 08:

Taking into account the saturation characteristic can be activated to improve faster starting operations for high-rating motors.

For bit 09:

For field orientation, while the induction motor is being magnetized, the current is automatically increased if the magnetization time p0346 is shortened.

p1310[0...n] Starting current (voltage boost) permanent / I_start (Ua) perm

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	U/f control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [%]	250.0 [%]	50.0 [%]

Description: Defines the voltage boost as a [%] referred to the rated motor current (p0305).
The magnitude of the permanent voltage boost is reduced with increasing frequency so that at the rated motor frequency, the rated motor voltage is present.
The magnitude of the boost in Volt at a frequency of zero is defined as follows:
Voltage boost [V] = 1.732 x p0305 (rated motor current [A]) x r0395 (stator/primary section resistance [ohm]) x p1310 (permanent voltage boost [%]) / 100 %
At low output frequencies, there is only a low output voltage in order to maintain the motor flux. However, the output voltage can be too low in order to achieve the following:
- Magnetize the induction motor.
- Hold the load.
- Compensate for losses in the system.
This is the reason that the output voltage can be increased using p1310.
The voltage boost can be used for both linear as well as square-law U/f characteristics.

Dependency: The starting current (voltage boost) is limited by the current limit p0640.
The accuracy of the starting current depends on the setting of the stator and feeder cable resistance (p0350, p0352).
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: p1300, p1311, p1312

NOTICE
The starting current (voltage boost) increases the motor temperature (particularly at zero speed).

Note
The starting current as a result of the voltage boost is only effective for U/f control (p1300).
The boost values are combined with one another if the permanent voltage boost (p1310) is used in conjunction with other boost parameters (acceleration boost (p1311), voltage boost for starting (p1312)).
However, these parameters are assigned the following priorities: p1310 > p1311, p1312

p1311[0...n] Starting current (voltage boost) when accelerating / I_start accel

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	U/f control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [%]	250.0 [%]	0.0 [%]

Description: p1311 only results in a voltage boost when accelerating and generates a supplementary torque to accelerate the load.
The voltage boost becomes effective for a positive setpoint increase, and is withdrawn once the setpoint has been reached.
The build-up and withdrawal of the voltage boost are smoothed.
The magnitude of the boost in Volt at a frequency of zero is defined as follows:
Voltage boost [V] = 1.732 * p0305 (rated motor current [A]) x r0395 (stator/primary section resistance [ohm]) x p1311 (voltage boost when accelerating [%]) / 100 %

Dependency: The current limit p0640 limits the boost.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: p1300, p1310, p1312

NOTICE
The voltage boost results in a higher motor temperature increase.

Note
The voltage boost when accelerating can improve the response to small, positive setpoint changes.
Assigning priorities for the voltage boosts: refer to p1310

p1312[0...n] Starting current (voltage boost) when starting / I_start start

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	U/f control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [%]	250.0 [%]	0.0 [%]

Description: Setting for an additional voltage boost when powering-up (only for the first acceleration phase).
The voltage boost becomes effective for a positive setpoint increase, and is withdrawn once the setpoint has been reached.
The build-up and withdrawal of the voltage boost are smoothed.

Dependency: The current limit p0640 limits the boost.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: p1300, p1310, p1311

NOTICE
The voltage boost results in a higher motor temperature increase.

Note
The voltage boost when accelerating can improve the response to small, positive setpoint changes.
Assigning priorities for the voltage boosts: refer to p1310

p1320[0...n] U/f control programmable characteristic frequency 1 / Uf char f1

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	U/f control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: Hz	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [Hz]	3000.00 [Hz]	0.00 [Hz]

Description: The programmable characteristic for the U/f control is defined using 4 points and 0 Hz/p1310.
This parameter specifies the voltage of the first point along the characteristic.

Dependency: Selects the freely programmable characteristic using p1300 = 3.
The following applies to the frequency values: p1320 <= p1322 <= p1324 <= p1326. Otherwise, a standard characteristic is used that contains the rated motor operating point.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: p1300, p1310, p1311, p1321, p1322, p1323, p1324, p1325, p1326, p1327

Note
Linear interpolation is carried out between the points 0 Hz/p1310, p1320/p1321 ... p1326/p1327.
The voltage boost when accelerating (p1311) is also applied to the freely programmable U/f characteristic.

p1321[0...n] U/f control programmable characteristic voltage 1 / Uf char U1

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	U/f control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: Vrms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [Vrms]	10000.0 [Vrms]	0.0 [Vrms]

Description: The programmable characteristic for the U/f control is defined using 4 points and 0 Hz/p1310.
This parameter specifies the voltage of the first point along the characteristic.

Dependency: Selects the freely programmable characteristic using p1300 = 3.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: p1310, p1311, p1320, p1322, p1323, p1324, p1325, p1326, p1327

Note
Linear interpolation is carried out between the points 0 Hz/p1310, p1320/p1321 ... p1326/p1327.
The voltage boost when accelerating (p1311) is also applied to the freely programmable U/f characteristic.

p1322[0...n] U/f control programmable characteristic frequency 2 / Uf char f2

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	U/f control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: Hz	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [Hz]	3000.00 [Hz]	0.00 [Hz]

Description: The programmable characteristic for the U/f control is defined using 4 points and 0 Hz/p1310.
This parameter specifies the voltage of the second point along the characteristic.

Dependency: The following applies to the frequency values: p1320 <= p1322 <= p1324 <= p1326. Otherwise, a standard characteristic is used that contains the rated motor operating point.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: p1310, p1311, p1320, p1321, p1323, p1324, p1325, p1326, p1327

p1323[0...n] U/f control programmable characteristic voltage 2 / Uf char U2

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	

Parameter group:	U/f control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: Vrms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [Vrms]	10000.0 [Vrms]	0.0 [Vrms]

Description: The programmable characteristic for the U/f control is defined using 4 points and 0 Hz/p1310.
This parameter specifies the voltage of the second point along the characteristic.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: p1310, p1311, p1320, p1321, p1322, p1324, p1325, p1326, p1327

p1324[0...n] U/f control programmable characteristic frequency 3 / Uf char f3

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	U/f control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: Hz	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [Hz]	3000.00 [Hz]	0.00 [Hz]

Description: The programmable characteristic for the U/f control is defined using 4 points and 0 Hz/p1310.
This parameter specifies the voltage of the third point along the characteristic.

Dependency: The following applies to the frequency values: p1320 <= p1322 <= p1324 <= p1326. Otherwise, a standard characteristic is used that contains the rated motor operating point.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: p1310, p1311, p1320, p1321, p1322, p1323, p1325, p1326, p1327

p1325[0...n] U/f control programmable characteristic voltage 3 / Uf char U3

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	U/f control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: Vrms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [Vrms]	10000.0 [Vrms]	0.0 [Vrms]

Description: The programmable characteristic for the U/f control is defined using 4 points and 0 Hz/p1310.
This parameter specifies the voltage of the third point along the characteristic.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: p1310, p1311, p1320, p1321, p1322, p1323, p1324, p1326, p1327

p1326[0...n] U/f control programmable characteristic frequency 4 / Uf char f4

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	

Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	U/f control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: Hz	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [Hz]	10000.00 [Hz]	0.00 [Hz]

Description: The programmable characteristic for the U/f control is defined using 4 points and 0 Hz/p1310.
This parameter specifies the frequency of the fourth point along the characteristic.

Dependency: Selects the freely programmable characteristic using p1300 = 3.
The following applies for the frequency values:
p1320 <= p1322 <= p1324 <= p1326
Otherwise, a standard characteristic is used that contains the rated motor operating point.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: p1310, p1311, p1320, p1321, p1322, p1323, p1324, p1325, p1327

Note
Linear interpolation is carried out between the points 0 Hz/p1310, p1320/p1321 ... p1326/p1327. For output frequencies above p1326, the characteristic is extrapolated with the gradient between the characteristic points p1324/p1325 and p1326/p1327.
The voltage boost when accelerating (p1311) is also applied to the freely programmable U/f characteristic.

p1327[0...n] U/f control programmable characteristic voltage 4 / Uf char U4

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	U/f control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: Vrms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [Vrms]	10000.0 [Vrms]	0.0 [Vrms]

Description: The programmable characteristic for the U/f control is defined using 4 points and 0 Hz/p1310.
This parameter specifies the voltage of the fourth point along the characteristic.

Dependency: Selects the freely programmable characteristic using p1300 = 3.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: p1310, p1311, p1320, p1321, p1322, p1323, p1324, p1325, p1326

Note
Linear interpolation is carried out between the points 0 Hz/p1310, p1320/p1321 ... p1326/p1327.
The voltage boost when accelerating (p1311) is also applied to the freely programmable U/f characteristic.

c1330[0...n] U/f control independent voltage setpoint / Uf U_set independ

Data type: FloatingPoint32	**Visible in:** Extended display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications
Parameter group:	U/f control
Not relevant for motor type:	Synchronous or reluctance motor with starting cage

Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: Vrms	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** p2001
Factory interconnection:	Fixed value: 0.00 [Vrms]	

Description: Signal for the voltage setpoint for U/f control with an independent voltage setpoint (p1300 = 19).

Dependency: Selects the U/f control with independent voltage setpoint via p1300 = 19.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: p1300

p1331[0...n] Voltage limiting / U_lim

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	U/f control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: Vrms	**Unit group:** 5_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
50.00 [Vrms]	2000.00 [Vrms]	1000.00 [Vrms]

Description: Limiting the voltage setpoint.
This means that the output voltage can be reduced with respect to the calculated maximum voltage r0071 and the start of field weakening.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

Note
The output voltage is only limited if, as a result of p1331, the maximum output voltage (r0071) is fallen below.

p1333[0...n] U/f control FCC starting frequency / U/f FCC f_start

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	U/f control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: Hz	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [Hz]	3000.00 [Hz]	0.00 [Hz]

Description: Sets the starting frequency at which FCC (Flux Current Control) is activated.

Dependency: The correct operating mode must be set (p1300 = 1, 6).
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

⚠ WARNING
An excessively low value can result in instability.

Note
For p1333 = 0 Hz, the FCC starting frequency is automatically set to 6 % of the rated motor frequency.

p1334[0...n] U/f control slip compensation starting frequency / Slip comp start

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	U/f control	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: Hz	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [Hz]	3000.00 [Hz]	0.00 [Hz]

Description: Sets the starting frequency of the slip compensation.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

Note
For p1334 = 0, the starting frequency of the slip compensation is automatically set to 6 % of the rated motor frequency.

p1335[0...n] Slip compensation scaling / Slip comp scal

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	U/f control	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [%]	600.0 [%]	0.0 [%]

Description: Sets the setpoint for slip compensation in [%] referred to r0330 (rated motor slip).
p1335 = 0.0 %: Slip compensation deactivated.
p1335 = 100.0 %: The slip is completely compensated.

Dependency: Prerequisite for a precise slip compensation for p1335 = 100 % are the precise motor parameters (p0350 ... p0360).
If the parameters are not precisely known, a precise compensation can be achieved by varying p1335.
For U/f control modes with ECO optimization (p1300 = 4, 7), slip compensation must be activated in order to guarantee correct operation.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

Note
The purpose of slip compensation is to maintain a constant motor speed regardless of the applied load. The fact that the motor speed decreases with increasing load is a typical characteristic of induction motors.
For synchronous motors, this effect does not occur and the parameter has no effect in this case.
For U/f control modes, for textile applications (p1300 = 5, 6), slip compensation is internally deactivated, allowing the output frequency to be precisely adjusted.
If p1335 is changed during the commissioning phase, then it is possible that the old value will no longer be able to be set. The reason for this is that the dynamic limits of p1335 have been changed by a parameter that was set when the drive was commissioned (e.g. p0300).

p1336[0...n] Slip compensation limit value / Slip comp lim val

Data type: FloatingPoint32 **Visible in:** Extended display

Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	U/f control	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [%]	600.00 [%]	250.00 [%]

Description: Sets the limit value for slip compensation in [%] referred to r0330 (rated motor slip).

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

r1337 Actual slip compensation / Slip comp act val

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	U/f control	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** PERCENT

Description: Displays the actual compensated slip [%] referred to r0330 (rated motor slip).

Dependency: p1335 > 0 %: Slip compensation active.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: p1335

p1338[0...n] U/f mode resonance damping gain / Uf Res_damp gain

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	U/f control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00	100.00	0.00

Description: Sets the gain for resonance damping for U/f control.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: p1300, p1339, p1349

Note
The resonance damping function dampens active current oscillations that frequency occur under no-load conditions. The resonance damping is active in a range from approximately 6 % of the rated motor frequency (p0310). The shutoff frequency is determined by p1349.
For the open-loop control modes p1300 = 5 and 6 (textile sectors), the resonance damping is internally disabled in order that the output frequency can be precisely set.

p1339[0...n] U/f mode resonance damping filter time constant / Uf Res_damp Tc

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	U/f control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
1.00 [ms]	1000.00 [ms]	20.00 [ms]

Description: Sets the filter time constant for resonance damping for U/f control.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: p1300, p1338, p1349

p1340[0...n] I_max frequency controller proportional gain / I_max_ctrl Kp

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	U/f control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000	0.500	0.000

Description: Sets the proportional gain of the I_max frequency controller.
The I_max controller reduces the drive converter output current if the maximum current (r0067) is exceeded.
In the U/f operating modes (p1300) for the I_max control, one controller is used that acts on the output frequency and one controller that acts on the output voltage. The frequency controller reduces the current by decreasing the converter output frequency. The frequency is reduced down to a minimum value (equaling twice rated slip). If the overcurrent condition cannot be successfully resolved using this measure, then the drive converter output voltage is reduced using the I_max voltage controller. Once the overcurrent condition has been resolved, the drive is accelerated along the ramp set in p1120 (ramp-up time).

Dependency: In the U/f modes (p1300) for textile applications and for external voltage setpoints, only the I_max voltage controller is used.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

NOTICE
When deactivating the I_max controller, the following must be carefully observed:
When the maximum current (r0067) is exceeded, the output current is no longer reduced. The drive is switched off when the overcurrent limits are exceeded.

Note
For p1341 = 0 the I_max frequency controller is de-activated and the I_max voltage controller is activated over the complete speed range.

p1341[0...n] I_max frequency controller integral time / I_max_ctrl Tn

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	

Can be changed in the operating state:	Operation	
Parameter group:	U/f control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000 [s]	50.000 [s]	0.300 [s]

Description: Sets the integral time for the I_max frequency controller.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: p1340

Note
When p1341 = 0, the current limiting controller influencing the frequency is deactivated and only the current limiting controller influencing the output voltage remains active (p1345, p1346).

r1343 I_max controller frequency output / I_max_ctrl f_outp

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	U/f control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000

Description: Displays the effective frequency limit.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: p1340

r1344 I_max controller voltage output / I_max_ctrl U_outp

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	U/f control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Vrms	**Unit group:** 5_1	**Unit selection:** p0505

Description: Displays the amount by which the converter output voltage is reduced.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: p1340

p1345[0...n] I_max voltage controller proportional gain / I_max_U_ctrl Kp

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	U/f control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: -	**Unit group:** -	**Unit selection:** -

Min:	Max:	Factory setting:
0.000	100000.000	0.000

Description: Sets the proportional gain for the I_max voltage controller.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: p1340

Note
The controller settings are also used in the current controller of the DC braking (refer to p1232).

p1346[0...n] I_max voltage controller integral time / I_max_U_ctrl Tn

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	U/f control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000 [s]	50.000 [s]	0.030 [s]

Description: Sets the integral time for the I_max voltage controller.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: p1340

Note
The controller settings are also used in the current controller of the DC braking (refer to p1232).
For p1346 = 0, the following applies:
The integral time of the I_max voltage controller is deactivated.

r1348 U/f control Eco factor actual value / Uf Eco fac ActV

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	U/f control	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** PERCENT

Description: Displays the economic factor determined for optimizing motor consumption.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: p1335

Note
The value is only determined for operating modes with Economic (p1300 = 4, 7).

p1349[0...n] U/f mode resonance damping maximum frequency / Uf res_damp f_max

Data type: FloatingPoint32	**Visible in:** Extended display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications
Can be changed in the operating state:	Operation
Parameter group:	U/f control

Not relevant for motor type: -

Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: Hz	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [Hz]	3000.00 [Hz]	0.00 [Hz]

Description: Sets the maximum output frequency for resonance damping for U/f control.
Resonance damping is inactive above this output frequency.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: p1338, p1339

Note
For p1349 = 0, the changeover limit is automatically set to 95 % of the rated motor frequency - however, to a maximum of 45 Hz.

p1350[0...n] U/f control soft start / U/f soft start

Data type: Integer16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	U/f control	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	1	0

Description: Sets whether the voltage is continuously increased during the magnetizing phase (p1350 = 1, On) or whether it jumps directly to the voltage boost (p1350 = 0, Off).

Value:
0: Off
1: On

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

Note
The settings for this parameter have the following advantages and disadvantages:
0 = off (jump directly to voltage boost)
Advantage: Flux is established quickly -> torque is quickly available
Disadvantage: The motor can move while it is being magnetized
1 = on (voltage is continually established)
Advantage: The motor is unlikely to rotate
Disadvantage: The flux is established slower -> torque is available later

p1351[0...n] Motor holding brake starting frequency / Brake f_start

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	U/f control, Motor holding brake	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -

Type of signal interconnection:	Source numeric	**Scaling:** PERCENT
Min:	**Max:**	**Factory setting:**
-300.00 [%]	300.00 [%]	0.00 [%]

Description: Sets the frequency setting value at the slip compensation output for starting up with motor holding brake.

Dependency: When setting p1351 > 0, then slip compensation is automatically activated (p1335 = 100 %).
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

NOTICE
A signal interconnection to a parameter, which belongs to a drive data set, always acts on the active data set.

Note
A value of 100% corresponds to the rated motor slip (r0330).

c1356[0...n] U/f control angular setpoint / Uf ang setpoint

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	U/f control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: °	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** p2005
Factory interconnection:	Fixed value: 0.00 [°]	

Description: Signal for the angular difference generation for U/f control.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

p1358[0...n] Angular difference symmetrizing actual angle / Sym act angle

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	U/f control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	1	0

Description: Sets the dead time for the symmetrizing of the actual angle value for the differential angular generation.
The multiplier set refers to the current controller clock cycle.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

r1359 Angular difference / Angular difference

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	U/f control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** p2005

Description: Displays the output of the differential angular generation.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

Note
The difference between the setpoint angle, read-in in c1356 and the actual value of the U/f control delayed with p1358 is displayed.

r1369[0] Phase current actual value filtered / I_ph ActV filt

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group:
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: A **Unit group:** 6_5 **Unit selection:** p0505
Type of signal interconnection: Source numeric **Scaling:** p2002

Description: Displays the measured actual phase currents as peak value.
This value is measured in the current controller sampling time. The display shows the averaged value in the speed controller sampling time (p0115[1]).

Index: [0] = Phase U

Dependency: The signal is only displayed in operating mode p1300 = 19 (U/f control with independent voltage setpoint) and is used to control DC currents (e.g. for excitation (field) controllers).
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

p1390[0...n] Vdc_min controller proportional gain (U/f) / Vdc_min_ctrl Kp

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Vdc-min/max controller
Not relevant for motor type: -
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** automatic
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0.00	100.00	0.00

Description: Sets the proportional gain for the Vdc_min controller (controller for the minimum DC link voltage).

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

Note
The gain factor is proportional to the capacitance of the DC link. The parameter is preset to a value, which optimally fits the capacitance of the individual inverter. The capacitances of the remaining inverters, which are connected to the DC link, can be taken into account using the dynamic factor (p1287 or p1283).

p1391[0...n] Vdc_min controller integral time (U/f) / Vdc_min_ctrl Tn

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Vdc-min/max controller
Not relevant for motor type: -
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** -

Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [ms]	10000 [ms]	0 [ms]

Description: Sets the integral time for the Vdc_min controller (controller for the minimum DC link voltage).

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

p1392[0...n] Vdc_min controller rate time (U/f) / Vdc_min_ctr t_rate

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Vdc-min/max controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [ms]	1000 [ms]	0 [ms]

Description: Sets the rate time constant for the Vdc_min controller (controller for the minimum DC link voltage).

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

p1393[0...n] Vdc_min controller proportional gain / Vdc_min_ctrl Kp

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Vdc-min/max controller	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00	100.00	1.00

Description: Sets the proportional gain for the controller of the minimum DC link voltage (Vdc_min controller).

Dependency: The effective proportional gain is obtained taking into account p1243 (Vdc_max controller dynamic factor).

Note

The gain factor is proportional to the capacitance of the DC link. The parameter is preset to a value, which optimally fits the capacitance of the individual inverter. The capacitances of the remaining inverters, which are connected to the DC link, can be taken into account using the dynamic factor (p1247 or p1243).

p1394[0...n] Vdc_min controller integral time / Vdc_min_ctrl Tn

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Vdc-min/max controller	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -

Min:	Max:	Factory setting:
0 [ms]	10000 [ms]	0 [ms]

Description: Sets the integral time for the controller of the minimum DC link voltage (Vdc_min controller).

Dependency: The effective integral time can be determined using p1243 (Vdc controller dynamic factor).

Note
An integral time is normally not required for single axis drives. For multi-axis drives on the other hand, it may be possible to compensate for interference from other axes using the integral time (integral component) .
For p1251 = 0, the integral component is deactivated.

p1395[0...n] Vdc_min controller rate time / Vdc_min_ctr t_rate

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Vdc-min/max controller	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [ms]	1000 [ms]	0 [ms]

Description: Sets the rate time constant for the controller of the minimum DC link voltage (Vdc_min controller).

Dependency: The active derivative-action time can be determined using p1243 (Vdc controller dynamic factor).

p1400[0...n].0...31 Speed control configuration / n_ctrl config

Data type: Unsigned32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Torque setpoints, Torque limiting, Speed actual value filter, Acceleration model, Speed setpoint filter	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-	-	0000 0000 0000 0000 1000 0000 0010 0001 bin

Description: Sets the configuration for the closed-loop speed control.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Automatic Kp/Tn adaptation active	Yes	No
01	Sensorless vector control freeze I comp	Yes	No
02	Acceleration precontrol signal source	External (p1495)	Internal (n_set)
03	Reference model speed setpoint I component	On	Off
05	Kp/Tn adaptation active	Yes	No
06	Free Tn adaptation active	Yes	No
07	Interpolation speed precontrol	Yes	No
10	Speed precontrol	Yes	No
14	Torque precontrol	Always active	For n_ctrl enab
15	Sensorless vector control speed precontrol	Yes	No

16	I component for limiting	Enable	Hold
18	Moment of inertia estimator active	Yes	No
20	Acceleration model	On	Off
22	Obtain moment of inertia estimator value for pulse inhibit	Yes	No
23	Acceleration model (with speed encoder)	Yes	No
24	Moment of inertia estimator fast estimation active	Yes	No
25	Accelerating torque instantaneous in the I/f mode	Yes	No
27	Load gearbox, take into account torque limit	No	Yes
30	Diagnostic mode SDC/DDC	Yes	No
31	Standard drive control	Yes	No

Note

For bit 01:
When the bit is set, the I component of the speed controller is kept when changing into the open-loop controlled mode. For encoderless vector control, c1478 must be connected with r1482, and c1477 must be set to = 0.
For bit 10:
The change to the bit is only accepted when switched off (non-operational).
For bit 16:
When the bit is set, the integral component of the speed controller is only held if it reaches the torque limit.
For bits 20, 23:
The acceleration model for the speed setpoint is only active if p1496 is not zero. When the acceleration model and the ramp-function generator (p1145) are simultaneously activated, it is recommended that p1400.16 is set (this allows the I component to run freely up to the torque limit).
For bit 24:
When the bit is set, assuming that the motor accelerates smoothly, the moment of inertia can be determined faster.
For bit 25:
When the bit is set, for high dynamic starting in the I/f mode, the acceleration precontrol torque smoothing only has a short minimum time (4 ms).
For bit 27:
When the bit is set, the torque limit of an existing load gearbox is not taken into account in the resulting torque limiting.
For bit 30 (only for induction motors):
When p0504 is set = 0, the Standard Drive Control or Dynamic Drive Control operating mode is kept if commissioning has already been completed with one of these operating modes (r3925.0 = 1).
For bit 31 (only for induction motors):
The Standard Drive Control operating mode is activated (p0504 = 1).

p1401[0...n].0...30 Flux control configuration / Flux ctrl config

Data type: Unsigned32	**Visible in:** Extended display		
Read permission:	Read drive data or acknowledge messages		
Write permission:	Edit device configuration or drive applications		
Can be changed in the operating state:	Operation		
Parameter group:	Flux setpoint, Power loss optimization		
Not relevant for motor type:	Synchronous or reluctance motor with starting cage		
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -	
Unit: -	**Unit group:** -	**Unit selection:** -	
Min:	**Max:**	**Factory setting:**	
-	-	0000 0000 0000 0000 0000 0000 0000 1110 bin	

Description: Sets the configuration for flux setpoint control

Bit array:

Bit	Signal name	1 signal	0 signal
00	Flux setpoint soft starting active	Yes	No
01	Flux setpoint differentiation active	Yes	No
02	Flux build-up control active	Yes	No

03	Flux characteristic load-dependent	Yes	No
06	Quick magnetizing	Yes	No
07	Precontrol speed limitation	Yes	No
08	Speed limiting controller	With M_limits	With I_limits
09	Dynamic load-dependent flux boost	Yes	No
10	Flux boost low speed	Yes	No
13	Precontrol characteristic (PESM)	Yes	No
14	Efficiency optimization active	Yes	No
15	Flux monitoring controlled operation (stall detection) inactive	Yes	No
16	Loss braking for OFF1/3 active (ASM)	Yes	No
30	Speed-dependent flux (parabolic characteristic)	Yes	No

Note

For bit 00 (only for induction motors):

Initially, the flux is only established with a low rate of rise when magnetizing the induction motor. The flux setpoint p1570 is reached again at the end of the magnetizing time p0346.

For bit 01 (only for induction motors):

The flux differentiation can be switched out if a significant ripple occurs in the field-generating current setpoint (r0075) when entering the field weakening range. However, this is not suitable for fast acceleration operations because then, the flux decays more slowly and the voltage limiting responds.

For bit 02 (only for induction motors):

The flux build-up control operates during the magnetizing phase p0346 of the induction motor. If it is switched out, a constant current setpoint is injected and the flux is built up corresponding to the rotor time constant. When quick magnetizing (p1401.6 = 1) is selected and when flux build-up control is de-energized alarm A07416 is displayed.

For bit 03 (for synchronous-reluctance motor (RESM)):

Activation of the load-dependent optimum flux characteristic.

For bit 06 (only for induction motors):

Magnetizing is carried out with the maximum current (0.9 * r0067 <= p0644 * r0207). Magnetization has been completed if the flux threshold value p1573 or the magnetizing time p0346 has been reached.

With active identification of the stator resistance (see p0621) quick magnetizing is internally deactivated and alarm A07416 is displayed.

During a flying restart of a rotating motor (see p1200) no quick magnetizing takes place.

For bit 07:

If the speed of the drive exceeds the effective speed limit of the speed limiting controller, the torque limit is reduced linearly to zero as the deviation becomes greater. This reduces the integral component of the speed controller and, in turn, the overshoot during load shedding (see also F07901 and p2162).

For bit 08:

The speed limiting controller controls the speed to the maximum speed by shifting the torque limits to the current limits (bit 08 = 0 signal) or taking into account the torque limits (bit 08 = 1 signal).

For bit 09 (synchronous-reluctance motor (RESM)):

Dynamic increase in the flux setpoint when torque is quickly established.

For bit 10 (synchronous-reluctance motor (RESM)):

For load-dependent optimum flux characteristic (p1401.3 = 1) the flux setpoint is increased at low speeds.

Flux boost at low speeds is not effective when using an encoder - or for encoderless operation with HF signal injection (p1750.5).

For bit 13:

PESM: Activation of the load-dependent precontrol characteristic

For bit 14 (only for induction motors):

When the function is activated, the following applies:

- The optimum flux is calculated and the power loss is specified for optimization purposes

It only makes sense to activate this function if the dynamic response requirements of the speed controller are low.

In order to avoid oscillations, if required, the speed controller parameters should be adapted (increase Tn, reduce Kp). Further, the smoothing time of the flux setpoint filter (p1582) should be increased.

For bit 16 (only for induction motors):

When the function is activated, in the case of OFF1 or OFF3, the motor losses are increased (see p1559) to speed up braking.

p1402[0...n].0...30 Closed-loop current control and motor model configuration / I_ctrl config

Data type: Unsigned32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Current controller, Motor model	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-	-	0000 0000 0000 0000 0100 0000 0000 0001 bin

Description: Sets the configuration for the closed-loop control and the motor model.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Speed-following error correction active	Yes	No
02	Current controller adaptation active	Yes	No
09	d current controller adaptation active	Yes	No
10	d-current controller adaptation model-based	Yes	No
11	Ldiq/dt precontrol model at the voltage limit	Yes	No
12	q-current controller adaptation model-based	Yes	No
13	Current controller decoupling filter	Yes	No
14	Torque display without friction characteristic	Yes	No
15	Current controller precontrol active for Vdc controller oper.	Yes	No
30	After the overload, ramp-up/ramp-down at the current limit	Yes	No

Note

For bit 00:
When the bit is set, the speed following error is compensated that is obtained as a result of the smoothing time constant in p1441.
For bit 02:
The current controller adaptation (p0391 ... p0393) is only calculated when the bit is set.
For bit 11:
Model for the dynamic voltage precontrol Ldi/dt of the q current controller when reaching the voltage limit with the I component held (see p0500 = 4).
For bit 12:
The model-based d-current controller adaptation is only active if the complete flux model is available. (r1751.22)
For bit 13 (only permanent-magnet synchronous motor):
Operation in the field weakening range is stabilized when the bit is set.
For bit 14:
When the friction characteristic is activated, the friction is subtracted from the torque display r0080, and then corresponds to the indication of the setpoint torque r0079.
For bit 15:
For DC link voltage control (see function diagram 7960) the dynamic current controller precontrol is activated (scalable using p1702, p1703).
For bit 30: only active for Standard Drive Control.

r1406.4...15 Control word speed controller / STW n_ctrl

Data type: Unsigned16	**Visible in:** Extended display
Read permission:	Read drive data or acknowledge messages
Parameter group:	Torque setpoints, Speed controller, Torque limiting, Speed actual value filter, Control/status words, Setpoint addition, Speed setpoint filter
Not relevant for motor type:	Synchronous or reluctance motor with starting cage

Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Displays the control word of the speed controller.

Bit array:

Bit	Signal name	1 signal	0 signal
04	Hold speed controller I component	Yes	No
05	Set speed controller I component	Yes	No
08	Travel to fixed stop active	Yes	No
11	Droop enable	Yes	No
12	Torque control active	Yes	No
15	Set speed adaptation controller I component	Yes	No

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

Note
For bit 12:
The signal from c1501 is displayed.

r1407.0...31 Status word speed controller / ZSW n_ctrl

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Torque setpoints, U/f control, Torque limiting, Speed actual value filter, Control/ status words, Acceleration model, Setpoint addition, Speed setpoint filter
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Displays the status word of the speed controller.

Bit array:

Bit	Signal name	1 signal	0 signal
00	U/f control active	Yes	No
01	Encoderless operation active	Yes	No
02	Torque control active	Yes	No
03	Speed control active	Yes	No
05	Speed controller I component frozen	Yes	No
06	Speed controller I component set	Yes	No
07	Torque limit reached	Yes	No
08	Upper torque limit active	Yes	No
09	Lower torque limit active	Yes	No
10	Droop enabled	Yes	No
11	Speed setpoint limited	Yes	No
12	Ramp-function generator set	Yes	No
13	Encoderless operation due to a fault	Yes	No
14	I/f control active	Yes	No
15	Torque limit reached (without precontrol)	Yes	No
16	Encoderless open-loop controlled operation not active	Yes	No
17	Speed limiting control active	Yes	No
23	Acceleration model activated	Yes	No
24	Moment of inertia estimator active	Yes	No
25	Load estimate active	Yes	No
26	Moment of inertia estimator stabilized	Yes	No
27	Moment of inertia estimator fast estimation active	Yes	No

	31	Standard Drive Control active	Yes	No

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

r1408.0...31 Status word current controller / ZSW I_ctrl

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Current controller, Motor model, Control/status words, Messages / Monitoring
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Displays the current controller status word.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Current controller active	Yes	No
01	Id control I component limiting active	Yes	No
03	Voltage limiting active	Yes	No
08	iq limiting active	Yes	No
10	Speed adaptation limiting active	Yes	No
11	Speed adaptation speed deviation	Out tolerance	In tolerance
12	Motor stalled	Yes	No
16	Current limit active	Yes	No
17	Torque limit active	Yes	No
18	Power limit active	Yes	No
19	Stall limit active	Yes	No
31	Standard Drive Control active	Yes	No

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

p1416[0...n] Speed setpoint filter 1 time constant / n_set_filt 1 Tc

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Speed setpoint filter
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** -
Unit: ms **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0.00 [ms]	5000.00 [ms]	0.00 [ms]

Description: Sets the time constant for the speed setpoint filter 1 (PT1).
Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

p1428[0...n] Speed precontrol symmetrizing dead time / n_prectrSym t_dead

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Acceleration model, Speed setpoint filter

Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0	3.0	0.0

Description: Sets the dead time to symmetrize the speed setpoint for active torque precontrol.
The set multiplier refers to the sampling time of the speed controller.

Dependency: In conjunction with p1429, this parameter can emulate the characteristics of how the torque is established (dynamic response of the closed current control loop).
The parameter is only effective if the acceleration model is supplied using external acceleration signals (p1400.2 = 1). For p1400.2 = 0, a fixed dead time is used.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p1429, c1511

p1429[0...n] Speed precontrol symmetrizing time constant / n_prectrl sym Tc

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Acceleration model, Speed setpoint filter	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [ms]	10000.00 [ms]	0.00 [ms]

Description: Sets the time constant (PT1) for symmetrizing the speed setpoint for active torque precontrol.

Dependency: In conjunction with p1428, this parameter can emulate the characteristics of how torque is established (dynamic response of the closed current control loop).
The parameter is only effective if the acceleration model is supplied using external acceleration signals (p1400.2 = 1). For p1400.2 = 0, time constant p1442 (or p1452 for sensorless vector control) is used.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p1428, c1511

c1430[0...n] Speed precontrol / n_precontrol

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Speed setpoint filter	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: rpm	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** p2000
Factory interconnection:	Fixed value: 0.00 [rpm]	

Description: Signal for the speed precontrol channel (speed precontrol or torque precontrol).

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

NOTICE
It is possible that the interconnection is locked as a result of a set PROFIdrive telegram.

Note
The precontrol signal via this numerical signal sink is only active for p1400.10 = 1.

r1432[0...1] Speed precontrol / n_prectrl

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Speed setpoint filter	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000

Description: Display for the speed precontrol.
For index [0]:
Displays the speed precontrol value after symmetrizing to establish the torque.
For index [1]:
Displays the speed precontrol value of the signal source c1430 after the interpolator (p1400.7).

Index: [0] = After symmetrization
[1] = After interpolator

Dependency: Symmetrizing can be parameterized with p1428 and/or p1429.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

p1433[0...n] Speed controller reference model natural frequency / n_ctrl RefMod fn

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed controller	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: Hz	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [Hz]	8000.00 [Hz]	0.00 [Hz]

Description: Sets the natural frequency of a PT2 element for the reference model of the speed controller.

Recommendation: The reference model is correctly set when the characteristics of r1439 (reference model output) and r1445 (speed actual value) are almost identical when the I component of the speed controller is deactivated.

Dependency: Together with p1434 and p1435, the characteristics (in the time domain) of the closed-loop speed control (P) can be emulated.
The reference model is activated with p1400.3 = 1. For sensorless vector control (p1300 = 20) the reference model is disabled in open-loop speed controlled operation (refer to p1755).
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: p1434, p1435

p1434[0...n] Speed controller reference model damping / n_ctrl RefMod D

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed controller	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Min:	Max:	Factory setting:
0.000	5.000	1.000

Description: Sets the damping of a PT2 element for the reference model of the speed controller.

Recommendation: The reference model is correctly set when the characteristics of r1439 (reference model output) and r1445 (speed actual value) are almost identical when the I component of the speed controller is deactivated.

Dependency: In conjunction with p1433 and p1435, the response of the P-controlled speed control loop can be emulated.
The reference model is activated with p1400.3 = 1.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: p1433, p1435

p1435[0...n] Speed controller reference model dead time / n_ctrRefMod t_dead

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed controller	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00	3.00	0.00

Description: Sets the "fractional" dead time for the reference model of the speed controller.
This parameter emulates the computing dead time of the proportionally controlled speed control loop.
The multiplier that has been set refers to the speed controller sampling time.

Recommendation: The reference model is correctly set when the characteristics of r1439 (reference model output) and r1445 (speed actual value) are almost identical when the I component of the speed controller is deactivated.

Dependency: In conjunction with p1433 and p1434, the response of the P-controlled speed control loop can be emulated.
The reference model is activated with p1400.3 = 1.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: p1433, p1434

r1436 Speed controller reference model speed setpoint output / RefMod n_set outp

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Speed controller	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000

Description: Displays the speed setpoint at the output of the reference model.

Dependency: The reference model is activated with p1400.3 = 1.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

c1437[0...n] Speed controller reference model I component input / n_ctrRefMod I_comp

Data type: FloatingPoint32	**Visible in:** Extended display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications
Parameter group:	Speed controller
Not relevant for motor type:	Synchronous or reluctance motor with starting cage

Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: rpm	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** p2000
Factory interconnection:	Parameter: 1436	

Description: Signal for the speed setpoint for the integral component of the speed controller.

Dependency: The reference model is activated with p1400.3 = 1.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: p1400

NOTICE
In should be ensured that a speed setpoint is selected as signal source that corresponds to the setpoint for the P component of the speed controller.

r1438 Speed controller speed setpoint / n_ctrl n_set

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Speed controller, Speed setpoint filter	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000

Description: Displays the speed setpoint after setpoint limiting for the P component of the speed controller.
For U/f operation, the value that is displayed is of no relevance.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: r0020, r1439

Note
In the standard state (the reference model is deactivated), r1438 = r1439.
The speed setpoint is available smoothed (r0020) and unsmoothed (r1438).

r1439 Speed setpoint I component / n_set I_comp

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Speed controller	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505

Description: Displays the speed setpoint for the I component of the speed controller (output of the reference model after the setpoint limiting).

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: r1438

Note
In the standard state (the reference model is deactivated), r1438 = r1439.

c1440[0...n] Speed controller speed actual value input / n_ctrl n_act

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Speed controller, Speed actual value filter	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -

Unit: rpm | **Unit group:** - | **Unit selection:** -
Type of signal interconnection: Sink numeric | **Scaling:** p2000
Factory interconnection: Parameter: 63[0]

Description: Signal for the speed actual value of the speed controller.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: r1443

⚠ DANGER

When using external speed actual values for the speed controller, for a direction of rotation change via p1821 = 1, then its polarity must also be changed (e.g. for an encoder DO via p0410). Otherwise, a positive coupling can occur in the speed control loop and the drive would then be accelerated up to the speed limit.

⚠ CAUTION

Speed control with encoder (p1300 = 21):
For the speed or position signal of the motor model there must always be a motor encoder available (evaluation via SMC/SMI, see p0400). The actual motor speed (r0061) and the position data for synchronous motors continue to come from this motor encoder, and are not affected by the setting in c1440.
Interconnecting c1440:
If this numerical signal source is interconnected with an external speed actual value, it should be observed that the speed is scaled precisely the same (p2000).

NOTICE

If the speed signal is made available via blocks which can be interconnected freely, its sampling time should not exceed that of the closed-loop speed controller and the calculation "BEFORE speed controller" should be performed. in order that for a motor speed encoder fault, a changeover can be made to encoderless operation (see p0491), the speed signal, if it is derived from its own motor speed encoder, must be used from r0063 and not from r0061.
Speed control without encoder (p1300 = 20):
Dependent upon the transmission path of the external speed signal there will be dead times which have to be taken into account when setting the speed controller parameters (p1470, p1472) and can lead to dynamic losses accordingly. It is for this reason that signal transmission times have to be kept as low as possible.
So that the speed controller can also work at standstill, set p1750.2 = 1 (closed-loop operation from zero speed for passive loads). If you do not make this setting, operation will switch to open-loop speed control in the low speed range, switching the closed-loop speed controller off and rendering the measured actual speed ineffective.

Note

Speed control with encoder (p1300 = 21):
An external speed signal should, on the average, correspond to the speed of the motor encoder (r0061).

p1441[0...n] Actual speed smoothing time / n_act t_smth

Data type: FloatingPoint32 | **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Speed controller, Speed actual value filter
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: DDS n defined by: p0180 | **Calculated:** -
Unit: ms | **Unit group:** - | **Unit selection:** -

Min:	Max:	Factory setting:
0.00 [ms]	1000.00 [ms]	0.00 [ms]

Description: Sets the smoothing time constant (PT1) for the speed actual value.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: r0063

NOTICE
Smoothing times above 20 ms are only possible if the drive is accelerated or braked with the appropriately long ramp-up/ramp-down times. Otherwise, significant torque errors can occur and there is the danger that the drive is switched off (tripped) with F07902 (motor stalled).

Note
The speed actual value should be smoothed for encoders with a low pulse number or for resolvers.
After this parameter has been changed, we recommend that the speed controller is adapted and/or the speed controller settings checked Kp (p1460) and Tn (p1462).

p1442[0...n] Speed controller speed actual value smoothing time / n_ctr n_act t_smth

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed controller, Speed actual value filter, Rotating measurement/speed controller optimization	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [ms]	32000.00 [ms]	4.00 [ms]

Description: Sets the smoothing time for the speed actual value of the speed controller for closed-loop control with encoder.
Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

Note
The smoothing must be increased if there is gear backlash. For longer smoothing times, the integral time of the speed controller must also be increased.

r1443 Speed controller speed actual value at actual value input / n_ctrl n_act inp

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Speed controller, Speed actual value filter	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000

Description: Displays the speed actual value at the actual value input c1440 of the speed controller that can be freely wired.
Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: c1440

Note
This speed signal is only used by the speed controller and not by the motor model.

r1444 Speed controller speed setpoint steady-state (static) / n_ctrl n_set stat

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Speed controller	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505

Description: Displays the sum of all speed setpoints that are present.
The following sources are available for the displayed setpoint:
- Setpoint at the ramp-function generator input (r1119).
- Speed setpoint 1 (c1155).
- Speed setpoint 2 (c1160).
- Speed setpoint for speed precontrol (c1430).
- Setpoint via PC (for master control active).

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: r1119, c1155, c1160, c1430

r1445 Speed controller actual speed smoothed / n_act smth

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Speed controller, Speed actual value filter	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000

Description: Displays the actual smoothed speed actual value of the closed-loop speed control.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

p1452[0...n] Speed controller speed actual value smoothing time (sensorless) / n_C n_ActV t_s sl

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed controller, Speed actual value filter, Rotating measurement/speed controller optimization	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [ms]	32000.00 [ms]	10.00 [ms]

Description: Sets the smoothing time for the speed actual value of the speed controller for encoderless closed-loop speed control.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

Note
The smoothing must be increased if there is gear backlash. For longer smoothing times, the integral time of the speed controller must also be increased.

r1454 Speed controller system deviation I component / n_ctrl SysDev Tn

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Speed controller	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000

Description: Displays the system deviation of the I component of the speed controller.
When the reference model is inactive (p1433 = 0 Hz), this parameter corresponds to the system deviation of the complete PI controller (r1454 = r0064).

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

c1455[0...n] Speed controller P gain adaptation signal / n_ctrl adpt_sig Kp

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Speed controller
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink numeric **Scaling:** PERCENT
Factory interconnection: Fixed value: 0.00 [%]

Description: Signal for the additional adaptation of the P gain of the speed controller.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: p1456, p1457, p1458, p1459

p1456[0...n] Speed controller P gain adaptation lower starting point / n_ctrl adpt Kp low

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Speed controller
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0.00 [%]	400.00 [%]	0.00 [%]

Description: Sets the lower starting point of the adaptation range for the additional adaptation of the P gain of the speed controller.
The values are in % and refer to the set source of the adaptation signal.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: c1455, p1457, p1458, p1459

Note
If the upper transition point p1457 of the speed controller adaptation is set to lower values than the lower transition p1456, then the controller gain below p1457 is adapted with p1459 and above p1456, with p1458.

p1457[0...n] Speed controller P gain adaptation upper starting point / n_ctrl adpt Kp up

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Speed controller
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0.00 [%]	400.00 [%]	0.00 [%]

Description: Sets the upper starting point of the adaptation range for the additional adaptation of the P gain of the speed controller.
The values are in % and refer to the set source of the adaptation signal.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: c1455, p1456, p1458, p1459

Note
If the upper transition point p1457 of the speed controller adaptation is set to lower values than the lower transition p1456, then the controller gain below p1457 is adapted with p1459 and above p1456, with p1458.

p1458[0...n] Adaptation factor lower / Adapt_factor lower

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed controller	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [%]	200000.0 [%]	100.0 [%]

Description: Sets the adaptation factor before the adaptation range (0 % ... p1456) to additionally adapt the P gain of the speed/velocity controller.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: c1455, p1456, p1457, p1459

Note
If the upper transition point p1457 of the speed controller adaptation is set to lower values than the lower transition p1456, then the controller gain below p1457 is adapted with p1459 and above p1456, with p1458.

p1459[0...n] Adaptation factor upper / Adapt_factor upper

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed controller	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [%]	200000.0 [%]	100.0 [%]

Description: Sets the adaptation factor after the adaptation range (> p1457) to additionally adapt the P gain of the speed/velocity controller.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: c1455, p1456, p1457, p1458

Note
If the upper transition point p1457 of the speed controller adaptation is set to lower values than the lower transition p1456, then the controller gain below p1457 is adapted with p1459 and above p1456, with p1458.

p1460[0...n] Speed controller P gain / n_ctrl Kp

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed controller, Rotating measurement/speed controller optimization	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00	999999.00	0.30

Description: Sets the P gain of the speed controller before the adaptation speed range (0 ... p1464).
This value corresponds to the basic setting of the P gain of the speed controller without adaptation (p1461 = 100 %).

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p1461, p1464, p1465

Note
The value is scaled to the ratio between 60 x r0333 and p0311 [Nms].
With a Kp value of 1.0, for a system deviation that corresponds to the rated motor speed (p0311), a P component corresponding to the rated motor torque (r0333) is generated.

p1461[0...n] Speed controller Kp adaptation speed upper scaling / n_ctr Kp n up scal

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed controller, Rotating measurement/speed controller optimization	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [%]	200000.0 [%]	100.0 [%]

Description: Sets the P gain of the speed controller for the upper adaptation speed range (> p1465).
The entry is made referred to the P gain for the lower adaptation speed range of the speed controller (% referred to p1460, p1470).

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p1460, p1464, p1465

Note
If the upper transition point p1465 of the speed controller adaptation is set to lower values than the lower transition p1464, then the controller gain below p1465 is adapted with p1461. This means that an adaptation can be implemented for low speeds without having to change the controller parameters.

p1462[0...n] Speed controller integral time / n_ctrl Tn

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed controller, Rotating measurement/speed controller optimization	

Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [ms]	100000.00 [ms]	20.00 [ms]

Description: Sets the integration time of the speed controller before the adaptation speed range (0 ... p1464).
This value corresponds to the basic setting of the integral time of the speed controller without adaptation (p1461 = 100 %).

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p1463, p1464, p1465

Note
The integral component is stopped if the complete controller output or the sum of controller output and torque precontrol reach the torque limit.

p1463[0...n] Speed controller Tn adaptation speed upper scaling / n_ctr Tn n up scal

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed controller, Rotating measurement/speed controller optimization	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [%]	200000.0 [%]	100.0 [%]

Description: Sets the integral time of the speed controller after the adaptation speed range (> p1465).
The entry is made referred to the integral time for the lower adaptation speed range of the speed controller (% referred to p1462, p1472).

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p1462, p1464, p1465

Note
If the upper transition point p1465 of the speed controller adaptation is set to lower values than the lower transition point p1464, then the controller integral time below p1465 is adapted with p1463. This means that an adaptation can be implemented for low speeds without having to change the controller parameters.

p1464[0...n] Speed controller adaptation speed lower / n_ctrl n lower

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed controller, Rotating measurement/speed controller optimization	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.00 [rpm]	210000.00 [rpm]	0.00 [rpm]

Description: Sets the lower adaptation speed of the speed controller.
No adaptation is effective below this speed.

Dependency: The parameter is set by the speed controller optimization. Adaptation to the application should then be subsequently made.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p1460, p1461, p1462, p1463, p1465

Note
If the upper transition point p1465 of the speed controller adaptation is set to lower values than the lower transition point p1464, then the controller below p1465 is adapted with p1461 or p1463. This means that an adaptation can be implemented for low speeds without having to change the controller parameters.

p1465[0...n] Speed controller adaptation speed upper / n_ctrl n upper

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed controller, Rotating measurement/speed controller optimization	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.00 [rpm]	210000.00 [rpm]	210000.00 [rpm]

Description: Sets the upper adaptation speed of the speed controller.
No adaptation is effective above this speed.
For the proportional gain, p1460 (p1470) x p1461 is effective.
For the integral time, p1462 (p1472) x p1463 is effective.

Dependency: The parameter is set by the speed controller optimization. Adaptation to the application should then be subsequently made.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p1460, p1461, p1462, p1463, p1464

Note
If the upper transition point p1465 of the speed controller adaptation is set to lower values than the lower transition point p1464, then the controller below p1465 is adapted with p1461 or p1463. This means that an adaptation can be implemented for low speeds without having to change the controller parameters.

c1466[0...n] Speed controller P gain scaling / n_ctrl Kp scal

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Speed controller	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** PERCENT
Factory interconnection:	Fixed value: 100.00 [%]	

Description: Signal to scale the P gain of the speed controller.
This also makes the active P gain (including adaptations) scalable.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

r1468 Speed controller P gain effective / n_ctrl Kp eff

Data type: FloatingPoint32	**Visible in:** Extended display

Read permission:	Read drive data or acknowledge messages	
Parameter group:	Speed controller	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** -

Description: Displays the effective P gain of the speed controller.

Dependency: The value of this numerical signal source is increased by a factor of 100 to improve the resolution.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

r1469 Speed controller integral time effective / n_ctrl Tn eff

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Speed controller	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -

Description: Displays the effective integral time of the speed controller.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

p1470[0...n] Speed controller encoderless operation P gain / n_ctrl SL Kp

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed controller, Rotating measurement/speed controller optimization	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00	999999.00	0.30

Description: Sets the P gain for encoderless operation for the speed controller.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

Note
Product p0341 x p0342 is taken into account when automatically calculating the speed controller.
The value is scaled to the ratio between 60 x r0333 and p0311 [Nms].
With a Kp value of 1.0, for a system deviation that corresponds to the rated motor speed (p0311), a P component corresponding to the rated motor torque (r0333) is generated.

p1472[0...n] Speed controller encoderless operation integral time / n_ctrl SL Tn

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed controller, Rotating measurement/speed controller optimization	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic

	Unit: ms	**Unit group:** -	**Unit selection:** -
	Min:	**Max:**	**Factory setting:**
	0.0 [ms]	100000.0 [ms]	20.0 [ms]
Description:	Set the integral time for encoderless operation for the speed controller.		
Dependency:	Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)		

Note
The integral component is stopped if the complete controller output or the sum of controller output and torque precontrol reach the torque limit.

c1475[0...n] Speed controller torque setting value for motor holding brake / n_ctrl M_sv MHB

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Speed controller, Motor holding brake	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: Nm	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** p2003
Factory interconnection:	Fixed value: 0.00 [Nm]	

Description: Signal for the torque setting value when starting with motor holding brake.

Recommendation: The offset for the torque limiting p1532 can be used as torque setting value.
Sensorless vector control:
To hold the actual torque when stopping the motor, you are advised to set p1400.1 = 1. As a result, the integral component of the speed controller is frozen when changing to the open-loop controlled operating range.

Dependency: Switching in the torque setting value for the motor holding brake has a higher priority than setting the integrator value using c1477 and c1478.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

Note
The setting of the integral output of the speed controller begins after magnetizing (see p0346, r0056.4) and ends at the end of the brake control opening time p1216.
A setting value of zero means that no setting procedure will take place.

c1476[0...n] Speed controller hold integrator / n_ctrl integ stop

Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Speed controller	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal to hold the integrator for the speed controller.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

c1477[0...n] Speed controller set integrator value / n_ctrl integ set

Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	

Parameter group: Speed controller
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal to set the integrator setting value (c1478).

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: c1478, c1479

NOTICE
It is possible that the interconnection is locked as a result of a set PROFIdrive telegram.

c1478[0...n] Speed controller integrator setting value / n_ctr integ_setVal

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Speed controller
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -
Unit: Nm **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink numeric **Scaling:** p2003
Factory interconnection: Fixed value: 0.00 [Nm]

Description: Signal for the integrator setting value for the speed controller.
The signal to set this integrator setting value is interconnected via c1477.
The setting value of the speed controller integrator is weighted with scaling factor c1479, and when the speed controller is enabled, acts after the magnetizing time has elapsed (p0346).

Recommendation: When setting the integrator output, to ensure that only the static torque is detected, it is recommended that the accelerating torque is completely precontrolled (e.g. p1496).

Dependency: When interconnecting c1478 with r1482, the following applies:
The integral component of the controller is set to the last value before the pulse inhibit.
- No setting command (c1477) is interconnected, or
- At the instant that the pulses are inhibited, a setting command is available, which is not deactivated up to the next time that the pulses are inhibited.
- For encoderless vector control, in addition p1400.1 should be set =1 so that when the drive is stopped, the integral component of the speed controller is not controlled down to zero.

When interconnecting c1478 to an output other than r1482, the following applies:
Integral component of the controller is set once to the setting value, even if the setting command is not interconnected (c1477 = 0).
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: c1477, c1479

NOTICE
It is possible that the interconnection is locked as a result of a set PROFIdrive telegram.

c1479[0...n] Speed controller integrator setting value scaling / n_ctrl I_val scal

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Speed controller
Not relevant for motor type: Synchronous or reluctance motor with starting cage

Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** PERCENT
Factory interconnection:	Fixed value: 100.00 [%]	

Description: Signal for scaling the integrator setting value (c1478) of the speed controller.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: c1477, c1478

r1480 Speed controller PI torque output / n_ctrl PI-M_outp

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Torque setpoints, Speed controller	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Nm	**Unit group:** 7_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2003

Description: Display for the torque setpoint at the output of the PI speed controller.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

Note
For encoderless vector control, the speed controller already operates in the open-loop speed controlled operating range.

r1481 Speed controller P torque output / n_ctrl P-M_outp

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Speed controller	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Nm	**Unit group:** 7_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2003

Description: Display for the torque setpoint at the output of the P speed controller.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

r1482 Speed controller I torque output / n_ctrl I-M_outp

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Speed controller	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Nm	**Unit group:** 7_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2003

Description: Displays the torque setpoint at the output of the I speed controller.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

c1486[0...n] Droop compensation torque / Droop M_comp

Data type: FloatingPoint32	**Visible in:** Extended display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications
Parameter group:	Setpoint addition

Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -
Unit: Nm **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink numeric **Scaling:** p2003
Factory interconnection: Fixed value: 0.00 [Nm]

Description: Signal for the compensation torque within the droop calculation.
This parameter should be interconnected with the torque setpoint of the drive (corresponding to the selection p1488), with which load equalization should be performed.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

p1487[0...n] Droop compensation torque scaling / Droop M_comp scal

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Setpoint addition
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
-2000.0 [%]	2000.0 [%]	100.0 [%]

Description: Sets the scaling for the compensation torque within the droop calculation.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

p1488[0...n] Droop input selection / Droop input

Data type: Integer16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Setpoint addition
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0	3	0

Description: Selection of the input signal of the droop feedback.
With increasing torque, the speed setpoint is reduced (enabled using c1492), so that for mechanically coupled drives a load equalization (load compensation) is set.
Load difference compensation is also possible if c1486 is interconnected with the torque setpoint of the other drive.

Value:
0: Droop feedback not connected
1: Droop from torque setpoint
2: Droop from speed controller output
3: Droop from integral output speed controller

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: c1486, p1487, p1489, r1490, c1492

⚠ CAUTION

For value = 1:

For active acceleration precontrol of the speed controller (see p1496), it is not recommended that "Droop from torque setpoint" is selected, as this could result in positive coupling effects. Instead of this, the output signal of the speed controller (p1488 = 2 or p1488 = 3) should be used as input signal for the droop feedback, which generally sets the load torque.

p1489[0...n] Droop feedback scaling / Droop scal

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Setpoint addition	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000	0.500	0.050

Description: Sets the scaling for the droop feedback

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: c1486, p1487, p1488, r1490, c1492

Note

Example:
A value of 0.05 means that for a torque equal to the rated motor torque, the rated motor speed is reduced by 5 %.

r1490 Droop feedback speed reduction / Droop n_reduction

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Setpoint addition	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000

Description: Displays the output signal of the droop calculation. When activated (c1492), the droop feedback result is subtracted from the speed setpoint.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: c1486, p1487, p1488, p1489, c1492

c1492[0...n] Droop feedback enable / Droop enable

Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Setpoint addition	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal to enable the droop to be applied to the speed/velocity setpoint.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: c1486, p1487, p1488, p1489, r1490

Note
Even when not enabled, the droop speed is calculated but not subtracted from the setpoint speed. This makes it possible to subtract the result of this calculation from the speed of another drive.

r1493 Moment of inertia total, scaled / M_inert tot scal

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Acceleration model
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: - **Calculated:** -
Unit: kgm^2 **Unit group:** 25_1 **Unit selection:** p0100
Type of signal interconnection: Source numeric **Scaling:** -

Description: Display for the parameterized total moment of inertia.
The value is calculated as follows: (p0341 * p0342) * p1496 * p0306.
Scaling using c1497 is not taken into account.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

c1495[0...n] Acceleration precontrol / a_prectrl

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Acceleration model
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -
Unit: rev/s^2 **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink numeric **Scaling:** p2007
Factory interconnection: Fixed value: 0.00 [rev/s^2]

Description: Signal for the acceleration precontrol.

Dependency: The signal source for the acceleration is activated with p1400.2 = 1.
For p1400.2 = 0, the acceleration precontrol is calculated from the speed setpoint change from r0062.
For p1400.2 = 0 and activate reference model (p1400.3 = 1) the acceleration precontrol is switched out.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p1400, p1496

Note
If the acceleration is specified as external signal, then the accelerating torque is calculated as follows (r1518):
r1518 = acceleration (% of p2007) / 100 % * (p2007 * 60 s) / p0311 * r0345 / 1 s * r0333
or
r1518 = acceleration (1/s*s) * 2 * Pi * r1493

p1496[0...n] Acceleration precontrol scaling / a_prectrl scal

Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Acceleration model, Rotating measurement/speed controller optimization
Not relevant for motor type: Synchronous or reluctance motor with starting cage

Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [%]	10000.0 [%]	0.0 [%]

Description: Sets the scaling for the acceleration precontrol of the speed/velocity controller.

Dependency: When the reference model is activated (p1400.3 = 1) and for an internal acceleration precontrol (p1400.2 = 0), the acceleration precontrol is switched out (disabled). The reference model (p1400.3 = 1) and external acceleration precontrol (p1400.2 = 1) can be operated together.
See also: p0341, p0342

⚠ WARNING

The acceleration precontrol r1518 is kept at the old value if the ramp-function generator tracking (r1199.5) is active or the ramp-function generator output is set (r1199.3). This is used to avoid torque peaks. Depending on the application, it may therefore be necessary to disable the ramp-function generator tracking (p1145 = 0) or the acceleration precontrol (p1496 = 0).
The acceleration precontrol is set to zero, if the Vdc control is active (r0056.14/15).

Note

The parameter is set to 100% by the rotating measurement (refer to p1960).
The acceleration precontrol may not be used if the speed setpoint manifests significant ripple (e.g. analog setpoint) and the rounding-off in the speed ramp-function generator is disabled.
We also recommend that the precontrol mode is not used if there is gearbox backlash.

c1497[0...n] Moment of inertia scaling / M_mom inert scal

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Acceleration model	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** PERCENT
Factory interconnection:	Fixed value: 100.00 [%]	

Description: Signal to scale the motor moment of inertia.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

p1498[0...n] Load moment of inertia / Load m_inert

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Acceleration model	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: kgm²	**Unit group:** 25_1	**Unit selection:** p0100
Min:	**Max:**	**Factory setting:**
0.000000 [kgm²]	100000.000000 [kgm²]	0.000000 [kgm²]

Description: Sets the load moment of inertia.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

Note

(p0341 * p0342) + p1498 influence the speed/torque precontrol (active in encoderless operation or for p1402.4 = 1).

p1499[0...n] Accelerating for torque control scaling / a for M_ctrl scal

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Acceleration model	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [%]	400.0 [%]	100.0 [%]

Description: Sets the scaling for the acceleration integrator at low speeds (only for encoderless torque control).

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: p0341, p0342

c1501[0...n] Change over between closed-loop speed/torque control / Chgov n/M_ctrl

Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Torque setpoints	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal to toggle between speed and torque control.
0 signal: Closed-loop speed control
1 signal: Closed-loop torque control

Dependency: The numerical signal sources to enter the torque are c1511, c1512 and c1513.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: p1300

NOTICE

If a switchover is made to closed-loop torque control in c1501 when closed-loop torque control is not activated (p1300), then OFF1 (c0840) does not have its own braking response; however, the pulses are canceled when standstill is detected (p1226, p1227).

Note
It is possible that the interconnection is locked as a result of a set PROFIdrive telegram.

c1502[0...n] Freeze moment of inertia estimator / J_estimator freeze

Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Acceleration model	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal to freeze the estimated moment of inertia.
0 signal: Moment of inertia estimator active.
1 signal: Determined moment of inertia frozen

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p1300

Note
Only active when function "Moment of inertia estimator" is active and p1400.18 = 1 signal.
For operation with encoder, p1400.23 must also be set = 1 signal.

c1503[0...n] Torque setpoint / M_set

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Torque setpoints	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: Nm	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** p2003
Factory interconnection:	Fixed value: 0.00 [Nm]	

Description: Signal for the torque setpoint of the torque control.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

Note
A change is made to closed-loop torque control if, in p1300, closed-loop torque control was selected or if the selection was made using switchover c1501.
It is also possible to switch over using c1501 while in operation.

r1508 Torque setpoint before supplementary torque / M_set bef M_suppl

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Torque setpoints	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Nm	**Unit group:** 7_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2003

Description: Displays the torque setpoint before entering the supplementary torque.
For closed-loop speed control, r1508 corresponds to the speed controller output; for closed-loop torque control, r1508 corresponds to the torque setpoint of the signal source assigned in c1503.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

c1511[0...n] Supplementary torque 1 / M_suppl 1

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Torque setpoints	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: Nm	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** p2003
Factory interconnection:	Fixed value: 0.00 [Nm]	

Description: Signal for supplementary torque 1.
Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

c1512[0...n] Supplementary torque 1 scaling / M_suppl 1 scal

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Torque setpoints
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink numeric **Scaling:** PERCENT
Factory interconnection: Fixed value: 0.00 [%]

Description: Signal for scaling supplementary torque 1.
Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

c1513[0...n] Supplementary torque 2 / M_suppl 2

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Torque setpoints
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -
Unit: Nm **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink numeric **Scaling:** p2003
Factory interconnection: Fixed value: 0.00 [Nm]

Description: Signal for supplementary torque 2.
Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

p1514[0...n] Supplementary torque 2 scaling / M_suppl 2 scal

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Torque setpoints
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
-2000.0 [%]	2000.0 [%]	100.0 [%]

Description: Sets the scaling for supplementary torque 2.
Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

r1515 Supplementary torque total / M_suppl total

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Torque setpoints
Not relevant for motor type: Synchronous or reluctance motor with starting cage

	Dyn. index [0...n]:	-	**Calculated:** -
	Unit: Nm	**Unit group:** 7_1	**Unit selection:** p0505
Description:	Displays the total supplementary torque.		
	The displayed value is the total of supplementary torque values 1 and 2 (c1511, c1512, c1513, p1514).		
Dependency:	Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)		

p1517[0...n] Accelerating torque smoothing time constant / M_a Tc_smth

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Torque setpoints, Speed controller	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [ms]	100.00 [ms]	4.00 [ms]

Description: Sets the smoothing time constant of the accelerating torque.

Note
The acceleration precontrol is inhibited if the smoothing is set to the maximum value.

r1518[0...1] Accelerating torque / M_accel

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Torque setpoints, Speed controller	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Nm	**Unit group:** 7_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2003

Description: Displays the accelerating torque for precontrol of the speed controller.

Index: [0] = Unsmoothed
[1] = Smoothed

Dependency: See also: p0341, p0342, p1496

p1520[0...n] Torque limit upper / M_max upper

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Torque limiting	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: Nm	**Unit group:** 7_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2003
Min:	**Max:**	**Factory setting:**
-1000000.00 [Nm]	2e+07 [Nm]	0.00 [Nm]

Description: Sets the fixed, upper torque limit.

Dependency: See also: p1521, c1522, c1523, r1538, r1539

⚠ DANGER

Negative values when setting the upper torque limit (p1520 < 0) can result in the motor accelerating in an uncontrollable fashion.

NOTICE

A signal interconnection to a parameter, which belongs to a drive data set, always acts on the active data set.

Note

The torque limit is limited to 400% of the rated motor torque. When automatically calculating the motor/closed-loop control parameters, the torque limit is set to match the current limit (p0640).

p1521[0...n] Torque limit lower / M_max lower

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Torque limiting	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: Nm	**Unit group:** 7_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2003
Min:	**Max:**	**Factory setting:**
-2e+07 [Nm]	1000000.00 [Nm]	0.00 [Nm]

Description: Sets the fixed, lower torque limit.

Dependency: See also: p1520, c1522, c1523, p1532

⚠ DANGER

Positive values when setting the lower torque limit (p1521 > 0) can result in the motor accelerating in an uncontrollable fashion.

NOTICE

A signal interconnection to a parameter, which belongs to a drive data set, always acts on the active data set.

Note

The torque limit is limited to 400% of the rated motor torque. When automatically calculating the motor/closed-loop control parameters, the torque limit is set to match the current limit (p0640).

c1522[0...n] Torque limit upper / M_max upper

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Torque limiting	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: Nm	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** p2003
Factory interconnection:	Parameter: 1520[0]	

Description: Signal for the upper torque limit.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p1520, p1521, c1523

⚠ DANGER

Negative values resulting from the signal source and scaling can cause the motor to accelerate in an uncontrolled manner.

c1523[0...n] Torque limit lower / M_max lower

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Torque limiting	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: Nm	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** p2003
Factory interconnection:	Parameter: 1521[0]	

Description: Signal for the lower torque limit.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p1520, p1521, c1522

⚠ DANGER

Positive values resulting from the signal source and scaling can cause the motor to accelerate in an uncontrolled manner.

p1524[0...n] Torque limit upper scaling / M_max upper scal

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Torque limiting	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** PERCENT
Min:	**Max:**	**Factory setting:**
-2000.0 [%]	2000.0 [%]	100.0 [%]

Description: Sets the scaling for the upper torque limit.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

NOTICE

A signal interconnection to a parameter, which belongs to a drive data set, always acts on the active data set.

Note

This parameter can be freely interconnected.
The value has the meaning stated above if it is interconnected from numerical signal source c1528.

p1525[0...n] Torque limit lower scaling / M_max lower scal

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	

Parameter group: Torque limiting
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** PERCENT

Min:	Max:	Factory setting:
-2000.0 [%]	2000.0 [%]	100.0 [%]

Description: Sets the scaling for the lower torque limit.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

NOTICE
A signal interconnection to a parameter, which belongs to a drive data set, always acts on the active data set.

Note
This parameter can be freely interconnected.
The value has the meaning stated above if it is interconnected from numerical signal source c1528.

r1526 Total upper torque limit / M_max upper total

Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Torque limiting
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: - **Calculated:** -
Unit: Nm **Unit group:** 7_1 **Unit selection:** p0505
Type of signal interconnection: Source numeric **Scaling:** p2003

Description: Displays the upper torque limit of all torque limits.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p1520, p1521, c1522, c1523, c1528, c1529

r1527 Total lower torque limit / M_max lower total

Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Torque limiting
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: - **Calculated:** -
Unit: Nm **Unit group:** 7_1 **Unit selection:** p0505
Type of signal interconnection: Source numeric **Scaling:** p2003

Description: Displays the lower torque limit of all torque limits.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p1520, p1521, c1522, c1523, c1528, c1529

c1528[0...n] Torque limit upper scaling / M_max upper scal

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Torque limiting
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -

Type of signal interconnection: Sink numeric **Scaling:** PERCENT
Factory interconnection: Parameter: 1524[0]

Description: Signal for scaling the upper torque limit in c1522.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

⚠ DANGER

For p1400.4 = 0 (torque limiting, upper/lower) the following applies:
Negative values resulting from the signal source and scaling can cause the motor to accelerate in an uncontrolled manner.

NOTICE

It is possible that the interconnection is locked as a result of a set PROFIdrive telegram.

c1529[0...n] Torque limit lower scaling / M_max lower scal

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Torque limiting
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink numeric **Scaling:** PERCENT
Factory interconnection: Parameter: 1525[0]

Description: Signal for scaling the lower torque limit in c1523.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

⚠ DANGER

For p1400.4 = 0 (torque limiting, upper/lower) the following applies:
Positive values resulting from the signal source and scaling can cause the motor to accelerate in an uncontrolled manner.

NOTICE

It is possible that the interconnection is locked as a result of a set PROFIdrive telegram.

p1530[0...n] Power limit motoring / P_max mot

Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Torque limiting
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** automatic
Unit: kW **Unit group:** 14_5 **Unit selection:** p0505

Min:	Max:	Factory setting:
0.00 [kW]	100000.00 [kW]	0.00 [kW]

Description: Sets the power limit when motoring.

Dependency: See also: p0500, p1531

Note

The power limit is limited to 300% of the rated motor power.

p1531[0...n] Power limit regenerative / P_max reg

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Torque limiting	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: kW	**Unit group:** 14_5	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
-100000.00 [kW]	-0.01 [kW]	-0.01 [kW]

Description: Sets the regenerative power limit.

Dependency: See also: p0500, p1530

Note

The power limit is limited to 300% of the rated motor power.

For power units without regenerative feedback into the line supply, the regenerative power limit is preset to 30% of the motoring power limit p1530 and in the ratio rated drive converter power to rated motor power. If a braking resistor is connected to the DC link, then the power limit can be correspondingly increased.

p1532[0...n] Torque limit offset / M_max offset

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Torque limiting	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: Nm	**Unit group:** 7_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2003
Min:	**Max:**	**Factory setting:**
-100000.00 [Nm]	100000.00 [Nm]	0.00 [Nm]

Description: Sets the torque offset for the torque limit.

The setting allows electronic weight equalization to be used for vertical axes.

Recommendation: The torque offset can also be used for torque precontrol or as integrator setting value for the speed controller.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

See also: p1520, p1521, c1522, c1523, c1528, c1529

⚠ DANGER

If the offset is set higher/lower than the lower/upper torque limit, then the unloaded drive can accelerate up to the maximum speed.

NOTICE

A signal interconnection to a parameter, which belongs to a drive data set, always acts on the active data set.

r1533 Current limit torque-generating total / Iq_max total

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Torque limiting	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	

	Dyn. index [0...n]:	-	**Calculated:** -
	Unit: Arms	**Unit group:** 6_2	**Unit selection:** p0505
Description:	Displays the maximum torque/force generating current as a result if all current limits.		

r1534 Total upper torque limit / M_max upper total

	Data type: FloatingPoint32	**Visible in:** Extended display	
	Read permission:	Read drive data or acknowledge messages	
	Parameter group:	Torque limiting	
	Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
	Dyn. index [0...n]:	-	**Calculated:** -
	Unit: Nm	**Unit group:** 7_1	**Unit selection:** p0505
	Type of signal interconnection:	Source numeric	**Scaling:** p2003
Description:	Displays the upper torque limit of all torque limits.		
Dependency:	See also: p1520, p1521, c1522, c1523, c1528, c1529, p1532		

r1535 Total lower torque limit / M_max lower total

	Data type: FloatingPoint32	**Visible in:** Extended display	
	Read permission:	Read drive data or acknowledge messages	
	Parameter group:	Torque limiting	
	Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
	Dyn. index [0...n]:	-	**Calculated:** -
	Unit: Nm	**Unit group:** 7_1	**Unit selection:** p0505
	Type of signal interconnection:	Source numeric	**Scaling:** p2003
Description:	Displays the lower torque limit of all torque limits.		
Dependency:	See also: p1520, p1521, c1522, c1523, c1528, c1529, p1532		

r1536[0...1] Torque-generating current maximum limit / Isq_max

	Data type: FloatingPoint32	**Visible in:** Extended display	
	Read permission:	Read drive data or acknowledge messages	
	Parameter group:	Torque limiting	
	Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
	Dyn. index [0...n]:	-	**Calculated:** -
	Unit: Arms	**Unit group:** 6_2	**Unit selection:** p0505
Description:	Displays the maximum limit for the torque-generating current component. For index [0]: The signal limited by the Vdc controller is displayed here.		
Index:	[0] = Limited [1] = Unlimited		

r1537[0...1] Torque-generating current minimum limit / Isq_min

	Data type: FloatingPoint32	**Visible in:** Extended display	
	Read permission:	Read drive data or acknowledge messages	
	Parameter group:	Torque limiting	
	Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
	Dyn. index [0...n]:	-	**Calculated:** -
	Unit: Arms	**Unit group:** 6_2	**Unit selection:** p0505
Description:	Displays the minimum limit for the torque-generating current component. For index [0]: The signal limited by the Vdc controller is displayed here.		

Index: [0] = Limited
[1] = Unlimited

r1538 Upper effective torque limit / M_max upper eff

Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Torque limiting
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: - **Calculated:** -
Unit: Nm **Unit group:** 7_1 **Unit selection:** p0505
Type of signal interconnection: Source numeric **Scaling:** p2003

Description: Displays the currently effective upper torque limit. This results from the minimum of the converted current and power limit r1536, as well as the upper torque limit r1534.

Note
The effective upper torque limit is reduced with respect to the selected upper torque limit p1520, if the current limit p0640 is reduced or the rated magnetizing current of the induction motor p0320 is increased.
This may be the case for rotating measurements (see p1960).

r1539 Lower effective torque limit / M_max lower eff

Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Torque limiting
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: - **Calculated:** -
Unit: Nm **Unit group:** 7_1 **Unit selection:** p0505
Type of signal interconnection: Source numeric **Scaling:** p2003

Description: Displays the currently effective lower torque limit. This results from the maximum of the converted current and power limit r1537, as well as the upper torque limit r1535.

Note
The effective lower torque limit is reduced with respect to the selected lower torque limit p1521, if the current limit p0640 is reduced or the rated magnetizing current of the induction motor p0320 is increased.
This may be the case for rotating measurements (see p1960).

c1542[0...n] Travel to fixed stop torque reduction / TfS M_red

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Torque limiting
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink numeric **Scaling:** PERCENT
Factory interconnection: Fixed value: 0.00 [%]

Description: Signal for reducing torque when traversing to a fixed stop.
This value is converted into a factor and is interconnected to the scaling of the torque limits.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: c1528, c1529, r1543, p1544, c1545

NOTICE
The parameter may be protected as a result of a standard telegram and cannot be changed.

r1543 Travel to fixed stop torque scaling / TfS M scal

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Torque limiting	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** PERCENT

Description: Displays the internally converted factor to interconnect to the scaling of the torque/force limits.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: c1528, c1529, c1542, p1544, c1545

p1544 Travel to fixed stop evaluation torque reduction / TfS M_red eval

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Torque limiting	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [%]	65535 [%]	100 [%]

Description: Sets the evaluation for the torque/force reduction when traversing to a fixed stop.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: c1528, c1529, c1542, r1543, c1545

Note
4000 hex (16384 dec) in the MOMRED control word corresponds to a reduction by the percentage specified in this parameter.

c1545[0...n] Activates travel to a fixed stop / TfS activation

Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Torque limiting	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal to activate/deactivate function "travel to fixed stop".
1 signal: Travel to fixed stop is active
0 signal: Travel to fixed stop is inactive

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

NOTICE
It is possible that the interconnection is locked as a result of a set PROFIdrive telegram.

Note
When traveling to fixed stop, the fault F07900 "motor blocked" is suppressed.

r1547[0...1] Torque limit for speed controller output / M_max outp n_ctrl

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Torque setpoints, Torque limiting	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Nm	**Unit group:** 7_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2003

Description: Displays the torque limit to limit the speed controller output.

Index: [0] = Upper limit
[1] = Lower limit

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

r1548[0...1] Stall current limit torque-generating maximum / Isq_max stall

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Torque limiting	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Arms	**Unit group:** 6_2	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2002

Description: Displays the limit for the torque-generating current component using the stall calculation, the current limit of the power unit as well as the parameterization in p0640.

Index: [0] = Upper limit
[1] = Lower limit

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

c1551[0...n] Torque limit variable/fixed / M_limit var/fixed

Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Torque limiting	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 1	

Description: Signal to change over the torque limits between variable and fixed torque limit.
1 signal: The variable torque limit applies (fixed torque limit + scaling).
0 signal: Fixed torque limit.
Example:
In order that for a quick stop (OFF3) the fixed torque limit is effective, the binary signal source must be interconnected from r0899.5 to c1551.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

c1552[0...n] Torque limit upper scaling without offset / M_max up w/o offs

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Torque limiting	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** PERCENT
Factory interconnection:	Fixed value: 100.00 [%]	

Description: Signal to scale the upper torque limit to limit the speed controller output, without taking into account the current and power limits.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

NOTICE

If the limits are used at the speed controller output (c1552, c1554) and a torque precontrol value is specified that exceeds these limits, then the drive can No longer be braked using OFF1 or OFF3.
To prevent this, OFF1 or OFF3 should be interconnected with c1551 to deactivate these limits for OFF1 or OFF3 (see r0899).

p1553[0...n] Stall limit scaling / Stall limit scal

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Torque limiting	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
80.0 [%]	130.0 [%]	100.0 [%]

Description: Sets the scaling of the stall limit for the start of field weakening.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

⚠ DANGER

If the stall current limit is increased, then the q current setpoint can exceed the stall limit; as a consequence, a hysteresis effect can occur when loading and unloading.

c1554[0...n] Torque limit lower scaling without offset / M_max low w/o offs

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Torque limiting	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** PERCENT
Factory interconnection:	Fixed value: 100.00 [%]	

Description: Signal to scale the lower torque limit to limit the speed controller output without taking into account the current and power limits.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

NOTICE
If the limits are used at the speed controller output (c1552, c1554) and a torque precontrol value is specified that exceeds these limits, then the drive can No longer be braked using OFF1 or OFF3. To prevent this, OFF1 or OFF3 should be interconnected with c1551 to deactivate these limits for OFF1 or OFF3 (see r0899).

c1555[0...n] Power limit / P_max

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Torque limiting
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -
Unit: kW **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink numeric **Scaling:** r2004
Factory interconnection: Parameter: 2004

Description: Signal for the motoring and negative generating power limit.

Dependency: See also: p1530, p1531

Note
The resulting motoring power limit is the minimum from p1530 and the signal which is read in.
The resulting regenerative power limit is the maximum from p1531 and the negative signal which is read in.

p1556[0...n] Power limit scaling / P_max scal

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Torque limiting
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0.00	3.4028235e+38	0.00

Description: Sets the scaling for the motoring and negative regenerative power limit.
A value of 0 means no power limiting.

p1557[0...n] Torque limit pulse technique / M_max pulse techn

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Torque limiting
Not relevant for motor type: Induction motor, Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** automatic
Unit: Nm **Unit group:** 7_1 **Unit selection:** p0505
Type of signal interconnection: Source numeric **Scaling:** p2003

Min:	Max:	Factory setting:
0.00 [Nm]	2e+07 [Nm]	0.00 [Nm]

Description: Sets the torque limit active in the pulse technique.

Dependency: The pulse technique must be selected (p1750.5 = 1) and be active (r1751.16 = 1).
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p1521, c1522, c1523, p1532, r1538, r1539

⚠ CAUTION

Increasing the value can mean that the anisotropic operating range of the motor is exited; the commutation position is then lost causing the drive to stall.

NOTICE

A signal interconnection to a parameter, which belongs to a drive data set, always acts on the active data set.

Note
With p1557 = 0, the torque limit is No longer active.

p1559[0...n] Loss braking, braking current / Loss braking Id

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Compound braking, Flux setpoint, Power loss optimization	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [%]	100 [%]	50 [%]

Description: Sets the modulation amplitude of the current component for loss braking for OFF1 or OFF3.
For loss braking, an additional power loss is generated in the motor so that it can brake faster.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p1401

p1560[0...n] Moment of inertia estimator accelerating torque threshold value / J_est M thr

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Acceleration model	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.10 [%]	100.00 [%]	10.00 [%]

Description: Sets the threshold for the accelerating torque for the moment of inertia estimator.
The moment of inertia estimator is active above this threshold.
The value is referred to the rated motor torque (r0333).

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p1400, p1561, p1562

Note
The moment of inertia estimation is inaccurate at very low accelerating torques. As a consequence, below this threshold, the estimator does not provide any new values.

p1561[0...n] Moment of inertia estimator change time moment of inertia / J_est t_chg J

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Acceleration model	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
10.00 [ms]	5000.00 [ms]	500.00 [ms]

Description: Sets the change time for the moment of inertia for the moment of inertia estimator.
Lower values mean that faster changes are possible.
For a higher value, this estimated value is smoothed more significantly.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p1400, p1560, p1562

p1562[0...n] Moment of inertia estimator change time load / J_est t load

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Acceleration model	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
5.00 [ms]	5000.00 [ms]	10.00 [ms]

Description: Sets the change time for the load torque for the moment of inertia estimator.
Lower values mean that faster changes are possible.
For a higher value, this estimated value is smoothed more significantly.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p1400, p1560, p1561

p1565 Moment of inertia estimator reset moment of inertia / J_est reset J

Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Acceleration model	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Min:	Max:	Factory setting:
-1	1	0

Description: Setting to reset the moment of inertia estimator for the currently selected drive data set (DDS).

Value:
-1: Reset moment of inertia and load
0: Inactive
1: Reset moment of inertia

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p1400, p1560, p1561, p1562

Note
The parameter is automatically reset to 0 after the reset.

r1568[0...5] Synchronous reluctance motor flux channel / RESM flux channel

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Flux setpoint	
Not relevant for motor type:	Induction motor, Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** PERCENT

Description: Display and numerical signal source for signals of the flux channel for a synchronous reluctance motor (RESM).
The values are referred to the rated motor flux of the direct axis (p0357 * r0331).

Index:
[0] = Setpoint before filter
[1] = Optimum flux characteristic output
[2] = Minimum value at low speed
[3] = Dynamic load-dependent boost
[4] = Field weakening value total
[5] = Field weakening value precontrol

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

Note
RESM: reluctance synchronous motor

c1569[0...n] Supplementary torque 3 / M_suppl 3

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Torque setpoints, Friction characteristic, Current setpoint filter	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: Nm	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** p2003
Factory interconnection:	Parameter: 3841	

Description: Signal for supplementary torque 3.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p3842

Note
The signal sink is preferably used to enter the friction characteristic.
The friction compensation is also active if the speed controller output reaches its torque limits, but the current limits have still not been reached.
The signal sink is after the torque limit (r1538, r1539). The signals that are entered are only limited by the current and power limits.

p1570[0...n] Flux setpoint / Flux set

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Flux setpoint	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** PERCENT
Min:	**Max:**	**Factory setting:**
50.0 [%]	200.0 [%]	100.0 [%]

Description: Sets the flux setpoint referred to rated motor flux.
The following applies for a synchronous reluctance motor:
Scaling the flux setpoint.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

NOTICE
A signal interconnection to a parameter, which belongs to a drive data set, always acts on the active data set.

Note
The following applies for a synchronous reluctance motor:
The scaling allows the flux setpoint to be adapted when operating with load-dependent optimum flux characteristic or with constant flux setpoint.

p1573[0...n] Flux threshold value magnetizing / Flux thr magnet

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Flux setpoint	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
10.0 [%]	200.0 [%]	100.0 [%]

Description: Sets the flux threshold value for enabling the speed setpoint and the end of magnetizing (r0056.4).

Note
The parameter only has an influence if the flux actual value reaches the threshold value p1573 more quickly during magnetizing than the time set in p0346. This is generally the case when selecting fast magnetization (p1401.6).
The parameter has no influence for flying restart (see p1200) and after DC braking (see p1231).

p1574[0...n] Voltage reserve dynamic / U_reserve dyn

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Flux setpoint	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: Vrms	**Unit group:** 5_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.0 [Vrms]	150.0 [Vrms]	10.0 [Vrms]

Description: Sets a dynamic voltage reserve.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p0500, p0501, p0502

Note
In the field weakening range, it must be expected that the control dynamic performance is somewhat restricted due to the limited possibilities of controlling/adjusting the voltage. This can be improved by increasing the voltage reserve. Increasing the reserve reduces the steady-state maximum output voltage (r0071).

p1575[0...n] Voltage target value limit / U_tgt val lim

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Flux setpoint	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
50.00 [%]	300.00 [%]	200.00 [%]

Description: Sets the limit of the voltage target value.
In steady-state field weakening operation this corresponds to the required output voltage.
The value of 100% refers to p0304.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

Note
The output voltage is only limited if the maximum output voltage (r0071) minus the voltage reserve (p1574) corresponds to a value higher than p1575.
Limiting via p1575 allows the influence of the voltage ripple of the line voltage to be eliminated at the operating point.

p1578[0...n] Flux reduction flux decrease smoothing time / Flux red dec t_sm

Data type: FloatingPoint32	**Visible in:** Extended display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications
Can be changed in the operating state:	Operation
Parameter group:	Flux setpoint
Not relevant for motor type:	Induction motor, Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage

Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
20 [ms]	5000 [ms]	200 [ms]

Description: Sets the smoothing time for the flux setpoint when decreasing the flux due to flux reduction (p1581 < 100 %).

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p1579

p1579[0...n] Flux reduction flux build-up smoothing time / Flux red up t_smth

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Flux setpoint	
Not relevant for motor type:	Induction motor, Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [ms]	5000 [ms]	4 [ms]

Description: Sets the smoothing time for the flux setpoint for the flux build-up due to flux reduction (p1581 < 100 %).

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p1578

Note
An excessively long smoothing time extends the time until the maximum torque is reached from the no-load phase.

p1581[0...n] Flux reduction factor / Flux red factor

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Flux setpoint	
Not relevant for motor type:	Induction motor, Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [%]	100 [%]	100 [%]

Description: Sets the lower limit of the flux setpoint to evaluate the optimum flux characteristic for a synchronous reluctance motor.
The value is referred to the rated motor flux (p0357 * r0331).

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

p1582[0...n] Flux setpoint smoothing time / Flux set t_smth

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	

Parameter group:	Flux setpoint	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
4 [ms]	5000 [ms]	15 [ms]

Description: Sets the smoothing time for the flux setpoint.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

p1586[0...n] Field weakening characteristic scaling / Field weak scal

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Flux setpoint	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
80.0 [%]	120.0 [%]	100.0 [%]

Description: Sets the scaling of the precontrol characteristic for the start of field weakening.
For values above 100 % and for partial load situations, the field weakening starts at higher speeds.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

Note
If the start of field weakening is shifted to lower speeds, then the voltage reserve is increased for partial load situations.
If the start of field weakening is shifted to higher speeds, the voltage reserve is appropriately reduced so that for fast load changes, it can be expected that this will have a negative impact on the dynamic performance.

r1593[0...1] Field weakening controller / flux controller output / Field/Fl_ctrl outp

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Flux setpoint	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Arms	**Unit group:** 6_2	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2002

Description: Displays the output of the field weakening controller (synchronous motor) or flux controller (induction motor).

Index: [0] = PI output
[1] = I output

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

p1595[0...n] Field weakening controller additional setpoint / Field_ctrl add_set

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Flux setpoint	

Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-80.00 [%]	50.00 [%]	0.00 [%]

Description: Sets an additional setpoint for the field weakening controller.
The value refers to the dynamic voltage reserve (p1574).

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

Note
For a value equal to zero, the field weakening controller is activated when the maximum voltage, calculated with the average value of the DC link voltage - and limited using p1575 - Is reached.
Positive values mean that the field weakening controller intervenes later.
Negative values cause the field weakening controller to intervene earlier, so that the voltage can move away from the modulation depth limit.

p1596[0...n] Field weakening controller integral-action time / Field_ctrl Tn

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Flux setpoint	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
10 [ms]	10000 [ms]	50 [ms]

Description: Sets the integral-action time of the field-weakening controller.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

r1597 Field weakening controller output / Field_ctrl outp

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Flux setpoint	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** PERCENT

Description: Displays the output of the field weakening controller.
The value is referred to the rated motor flux.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

p1601[0...n] Current injection ramp time / I_inject t_ramp

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Flux setpoint	

Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
1 [ms]	10000 [ms]	20 [ms]

Description: Synchronous reluctance motor:
Sets the ramp-up time of the current setpoint (p1610, p1611) when switching over from closed-loop controlled to open-loop controlled operation.
Synchronous motor:
Sets the ramp-down time of the current setpoint when switching over from open-loop controlled to closed-loop controlled operation.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

p1610[0...n] Starting torque static (without encoder) / M_start static

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Flux setpoint	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-200.0 [%]	200.0 [%]	50.0 [%]

Description: Sets the static starting torque setpoint for sensorless vector control in the low speed range.
This parameter is entered as a percentage referred to the rated motor torque (r0333).
For sensorless vector control, in the speed-controlled operating range (open loop), an absolute current is impressed. p1610 represents the maximum load that occurs at a constant setpoint speed.

NOTICE
p1610 should always be set to at least 10 % higher than the maximum steady-state load that can occur.
For Standard Drive Control (p0504 = 1), lower values can also be sufficient to facilitate starting.

Note
For p1610 = 0%, a current setpoint is calculated that corresponds to the no-load case (ASM: rated magnetizing current, RESM: no-load magnetizing current).
For p1610 = 100 %, a current setpoint is calculated that corresponds to the rated motor torque.
Negative values are converted into positive setpoints in the case of induction and permanent-magnet synchronous motors as well as closed-loop controlled reluctance motors.

p1611[0...n] Acceleration starting torque (encoderless) / M_start_accel

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Flux setpoint	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: %	**Unit group:** -	**Unit selection:** -

Min:	Max:	Factory setting:
0.0 [%]	200.0 [%]	30.0 [%]

Description: Sets the dynamic starting torque setpoint with encoderless vector control for the low speed range.
This parameter is entered as a percentage referred to the rated motor torque (r0333).

Note
When accelerating and braking p1611 is added to p1610 and the resulting total torque is converted into an appropriate current setpoint and controlled.
For pure accelerating torques, it is always favorable to use the torque precontrol of the speed controller (p1496).

p1616[0...n] Current setpoint smoothing time / I_set t_smth

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Flux setpoint	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
4 [ms]	10000 [ms]	40 [ms]

Description: Sets the smoothing time for the current/torque setpoint in the open-loop-controlled operating range in the case of sensorless vector control.

Note
This parameter is only effective in the range where current is injected for sensorless vector control.
For induction motors, the current setpoint is calculated from p1610 and p1611.

r1624 Field-generating current setpoint total / Id_set total

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Flux setpoint	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Arms	**Unit group:** 6_2	**Unit selection:** p0505

Description: Displays the limited field-generating current setpoint (Id_set).
This value comprises the steady-state field-generating current setpoint and a dynamic component that is only set when changes are made to the flux setpoint.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

r1650 Current setpoint torque-generating before filter / Iq_set before filt

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Current setpoint filter	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Arms	**Unit group:** 6_2	**Unit selection:** p0505

Description: Displays the torque generating current setpoint Iqset after the torque limits and the clock cycle interpolation is ahead of the current setpoint filters.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

r1651 Torque setpoint function generator / M_set FG

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Current setpoint filter
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: - **Calculated:** -
Unit: Nm **Unit group:** 7_1 **Unit selection:** p0505
Type of signal interconnection: Source numeric **Scaling:** p2003

Description: Displays the torque setpoint of the function generator.
Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

c1655[0...4] Current setpoint/Speed actual value filter nat. frequency tuning / I/n_set_filt f_n

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Speed actual value filter, Current setpoint filter
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: - **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink numeric **Scaling:** PERCENT
Factory interconnection: Fixed value: 100.00 [%]

Description: Signal for tuning the natural frequency of the current setpoint filter 1, 2 and speed actual value filter 5.
Index: [0] = Filter 1
[1] = Filter 2
[2] = Reserved
[3] = Reserved
[4] = Filter 5
Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

p1656[0...n].0...4 Current setpoint/Speed actual value filter activation / I_set_filt act

Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Current setpoint filter, Supplementary closed-loop control
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Min: **Max:** **Factory setting:**
- - 0000 0001 bin

Description: Setting for activating/deactivating the current setpoint filter 1, 2 and speed actual value filter 5.
Bit array:

Bit	Signal name	1 signal	0 signal
00	Filter 1	Active	Inactive
01	Filter 2	Active	Inactive
04	Filter 5	Active	Inactive

Dependency: The individual current setpoint/speed actual value filters are parameterized starting at p1657.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

Note
If not all of the filters are required, then the filters should be used consecutively starting from filter 1.

p1657[0...n] Current setpoint filter 1 type / I_set_filt 1 type

Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Current setpoint filter	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
1	2	1

Description: Sets the current setpoint filter 1 as low pass (PT2) or general 2nd-order filter.

Value:
1: PT2 low pass
2: General 2nd order filter

Dependency: The current setpoint filter 1 is activated via p1656.0 and parameterized via p1657 ... p1661.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

Note
For a general 2nd order filter, by inserting the same natural frequency in both the numerator and in the denominator, i.e. bandstop frequency, then a bandstop filter is implemented. If the numerator damping of zero is selected, the bandstop frequency is completely suppressed.
The denominator damping can be determined from the equation for the 3 dB bandwidth:
f_3dB bandwidth = 2 * D_denominator * f_bandstop frequency

p1658[0...n] Current setpoint filter 1 denominator natural frequency / I_set_filt1 fn_den

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Current setpoint filter	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: Hz	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.5 [Hz]	16000.0 [Hz]	1999.0 [Hz]

Description: Sets the denominator natural frequency for current setpoint filter 1 (PT2, general filter).

Dependency: The current setpoint filter 1 is activated via p1656.0 and parameterized via p1657 ... p1661.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

p1659[0...n] Current setpoint filter 1 denominator damping / I_set_filt 1 D_den

Data type: FloatingPoint32	**Visible in:** Extended display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications
Can be changed in the operating state:	Operation
Parameter group:	Current setpoint filter

Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.001	10.000	0.700

Description: Sets the denominator damping for current setpoint filter 1.

Dependency: The current setpoint filter 1 is activated via p1656.0 and parameterized via p1657 ... p1661.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

p1660[0...n] Current setpoint filter 1 numerator natural frequency / I_set_filt1 fn_num

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Current setpoint filter	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: Hz	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.5 [Hz]	16000.0 [Hz]	1999.0 [Hz]

Description: Sets the numerator natural frequency for current setpoint filter 1 (general filter).

Dependency: The current setpoint filter 1 is activated via p1656.0 and parameterized via p1657 ... p1661.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

p1661[0...n] Current setpoint filter 1 numerator damping / I_set_filt 1 D_num

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Current setpoint filter	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000	10.000	0.700

Description: Sets the numerator damping for current setpoint filter 1.

Dependency: The current setpoint filter 1 is activated via p1656.0 and parameterized via p1657 ... p1661.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

p1662[0...n] Current setpoint filter 2 type / I_set_filt 2 type

Data type: Integer16	**Visible in:** Extended display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications
Can be changed in the operating state:	Operation
Parameter group:	Current setpoint filter
Not relevant for motor type:	Synchronous or reluctance motor with starting cage

Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
1	2	1

Description: Sets current setpoint filter 2 as lowpass filter (PT2) or general 2nd order filter.

Value:
1: PT2 low pass
2: General 2nd order filter

Dependency: Current setpoint filter 2 is activated via p1656.1 and parameterized via p1662 ... p1666.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

Note
For a general 2nd order filter, by inserting the same natural frequency in both the numerator and in the denominator, i.e. bandstop frequency, then a bandstop filter is implemented. If the numerator damping of zero is selected, the bandstop frequency is completely suppressed.
The denominator damping can be determined from the equation for the 3 dB bandwidth:
f_3dB bandwidth = 2 * D_denominator * f_bandstop frequency

p1663[0...n] Current setpoint filter 2 denominator natural frequency / I_set_filt2 fn_den

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Current setpoint filter	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: Hz	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.5 [Hz]	16000.0 [Hz]	1999.0 [Hz]

Description: Sets the denominator natural frequency for current setpoint filter 2 (PT2, general filter).

Dependency: Current setpoint filter 2 is activated via p1656.1 and parameterized via p1662 ... p1666.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

p1664[0...n] Current setpoint filter 2 denominator damping / I_set_filt 2 D_den

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Current setpoint filter	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.001	10.000	0.700

Description: Sets the denominator damping for current setpoint filter 2.

Dependency: Current setpoint filter 2 is activated via p1656.1 and parameterized via p1662 ... p1666.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

p1665[0...n] Current setpoint filter 2 numerator natural frequency / I_set_filt2 fn_num

Data type: FloatingPoint32	**Visible in:** Extended display

Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Current setpoint filter	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: Hz	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.5 [Hz]	16000.0 [Hz]	1999.0 [Hz]

Description: Sets the numerator natural frequency for current setpoint filter 2 (general filter).

Dependency: Current setpoint filter 2 is activated via p1656.1 and parameterized via p1662 ... p1666.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

p1666[0...n] Current setpoint filter 2 numerator damping / I_set_filt 2 D_num

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Current setpoint filter	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000	10.000	0.700

Description: Sets the numerator damping for current setpoint filter 2.

Dependency: Current setpoint filter 2 is activated via p1656.1 and parameterized via p1662 ... p1666.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

p1677[0...n] Speed actual value filter 5 type / n_act_filt 5 type

Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed actual value filter, Supplementary closed-loop control	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
1	2	2

Description: Sets the speed actual value filter 5 as low pass (PT2) or general 2nd-order filter.

Value:
1: PT2 low pass
2: General 2nd order filter

Dependency: The speed actual value filter is activated via p1656.4 and parameterized via p1677 ... p1681.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

Note
For a general 2nd order filter, by inserting the same natural frequency in both the numerator and in the denominator, i.e. bandstop frequency, then a bandstop filter is implemented. If the numerator damping of zero is selected, the bandstop frequency is completely suppressed.
The denominator damping can be determined from the equation for the 3 dB bandwidth:
f_3dB bandwidth = 2 * D_denominator * f_bandstop frequency

p1678[0...n] Speed actual value filter 5 denominator natural frequency / n_act_filt5 fn_den

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed actual value filter, Supplementary closed-loop control	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: Hz	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.5 [Hz]	16000.0 [Hz]	1999.0 [Hz]

Description: Sets the denominator natural frequency for speed actual value filter 5 (PT2, general filter).

Dependency: The speed actual value filter is activated via p1656.4 and parameterized via p1677 ... p1681.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

p1679[0...n] Speed actual value filter 5 denominator damping / n_act_filt 5 D_den

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed actual value filter, Supplementary closed-loop control	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.001	10.000	0.700

Description: Sets the denominator damping for speed actual value filter 5.

Dependency: The speed actual value filter is activated via p1656.4 and parameterized via p1677 ... p1681.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

p1680[0...n] Speed actual value filter 5 numerator natural frequency / n_act_filt5 fn_num

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed actual value filter, Supplementary closed-loop control	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: Hz	**Unit group:** -	**Unit selection:** -

Min:	Max:	Factory setting:
0.5 [Hz]	16000.0 [Hz]	1999.0 [Hz]

Description: Sets the numerator natural frequency for speed actual value filter 5 (general filter).

Dependency: The speed actual value filter is activated via p1656.4 and parameterized via p1677 ... p1681.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

p1681[0...n] Speed actual value filter 5 numerator damping / n_act_filt 5 D_num

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed actual value filter, Supplementary closed-loop control	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000	10.000	0.700

Description: Sets the numerator damping for speed actual value filter 5.

Dependency: The speed actual value filter is activated via p1656.4 and parameterized via p1677 ... p1681.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

p1699 Filter data acceptance / Filt data accept

Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Current setpoint filter	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	1	0

Description: Activates data acceptance for parameter changes for the filter.
p1699 = 0:
The new filter data are immediately accepted.
p1699 = 1:
The new filter data are only accepted when this parameter is reset.

Dependency: Current setpoint filter 1 ... 2 (p1656 and following)
Speed actual value filter (p1677 and following)
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p1656

p1702[0...n] Isd current controller precontrol scaling / Isd_ctr_prectrScal

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	

Parameter group:	Current controller	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [%]	200.0 [%]	70.0 [%]

Description: Sets the scaling of the dynamic current controller precontrol for the flux-generating current component Isd.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

Note
The parameter is effective for permanent-magnet synchronous motors.

p1703[0...n] Isq current controller precontrol scaling / Isq_ctr_prectrScal

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Current controller	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [%]	200.0 [%]	70.0 [%]

Description: Sets the scaling of the dynamic current controller precontrol for the torque/force-generating current component Isq.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

c1707[0...1] Current setpoints Id Iq diagnostics / I_set Id Iq diag

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Current controller	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Arms	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** p2002
Factory interconnection:	Fixed value: 0.00 [Arms]	

Description: Signal for the current setpoints for diagnostics and for evaluation purposes.

Index: [0] = D component
[1] = Q component

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

p1710[0...n] Current controller adaptation direct axis starting point Kp / Id_adapt pt Kp

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Current controller	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	

Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: Arms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [Arms]	6000.00 [Arms]	0.00 [Arms]

Description: Sets the starting point of the current-dependent current controller adaptation where the current controller gain p1720 is effective.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p1720

NOTICE
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write-protected. Information in p0300 should be carefully observed when removing write protection.

Note
For p1712 = 100 % or p1402.2 = 0, the current controller adaptation is disabled and p1720 is effective over the entire range.

p1711[0...n] Current ctrl adaptation direct axis starting point Kp adapted / Id_adpt pt Kp adpt

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Current controller	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: Arms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [Arms]	6000.00 [Arms]	0.00 [Arms]

Description: Sets the starting point of the current-dependent current controller adaptation where the adapted current controller gain p1720 x p1712 is effective.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p1710, p1712, p1720

NOTICE
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write-protected. Information in p0300 should be carefully observed when removing write protection.

Note
For p1712 = 100 % or p1402.2 = 0, the current controller adaptation is disabled and p1720 is effective over the entire range.

p1712[0...n] Current controller adaptation direct axis P gain adaptation / Id_adapt Kp adapt

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Current controller	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -

Min:	Max:	Factory setting:
0.00 [%]	1000.00 [%]	100.00 [%]

Description: Sets the factor for the current controller P gain in the adaptation range (d-current > p1711).
The value is referred to p1720.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p1710, p1711, p1720

NOTICE
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write-protected. Information in p0300 should be carefully observed when removing write protection.

Note
For p1712 = 100 % or p1402.2 = 0, the current controller adaptation is disabled and p1720 is effective over the entire range.

p1715[0...n] Current controller P gain / I_ctrl Kp

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Current controller	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000	100000.000	0.000

Description: Sets the proportional gain of the current controller for the lower adaptation current range.
This value is preset when commissioning has been completed.

Dependency: See also: p0391, p0392, p0393

Note
For p0393 = 100 %, the current controller adaptation is disabled and p1715 is effective over the entire range.
The value is scaled to the ratio between p0304 and p0305 [V/A]. For synchronous motors, the rated voltage (p0304) is determined internally.
With a Kp value of 1.0, for a system deviation that corresponds to the rated motor current (p0305), a P component corresponding to the rated motor voltage (p0304) is generated.

p1717[0...n] Current controller integral-action time / I_ctrl Tn

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Current controller	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [ms]	1000.00 [ms]	2.00 [ms]

Description: Sets the integral-action time of the current controller.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p1715

r1718 Isq controller output / Isq_ctrl outp

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Current controller	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Vrms	**Unit group:** 5_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2001

Description: Displays the actual output of the Isq current controller (torque/force generating current, PI controller).
The value contains the proportional and integral components of the PI controller.

Dependency: Not visible in operating mode: "Dynamic Drive Control" (DDC, p0504 = 2)

r1719 Isq controller integral component / Isq_ctrl I_comp

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Current controller	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Vrms	**Unit group:** 5_1	**Unit selection:** p0505

Description: Displays the integral component of the Isq current controller (torque/force-generating current, PI controller).

Dependency: Not visible in operating mode: "Dynamic Drive Control" (DDC, p0504 = 2)

p1720[0...n] Current controller d axis P gain / Id_ctrl Kp

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Current controller	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000	100000.000	0.000

Description: Sets the proportional gain of the d-current controller for the lower adaptation current range.
This value is preset when commissioning has been completed.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

Note
The value is scaled to the ratio between p0304 and p0305 [V/A]. For synchronous motors, the rated voltage (p0304) is determined internally.
With a Kp value of 1.0, for a system deviation that corresponds to the rated motor current (p0305), a P component corresponding to the rated motor voltage (p0304) is generated.

p1722[0...n] Current controller d axis integral time / I_ctrl d-axis Tn

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	

	Parameter group:	Current controller	
	Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
	Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
	Unit: ms	**Unit group:** -	**Unit selection:** -
	Min:	**Max:**	**Factory setting:**
	0.00 [ms]	1000.00 [ms]	2.00 [ms]
Description:	Sets the integral time of the d-current controller.		
Dependency:	Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)		

r1723 Isd controller output / Isd_ctrl outp

	Data type: FloatingPoint32	**Visible in:** Extended display	
	Read permission:	Read drive data or acknowledge messages	
	Parameter group:	Current controller	
	Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
	Dyn. index [0...n]:	-	**Calculated:** -
	Unit: Vrms	**Unit group:** 5_1	**Unit selection:** p0505
	Type of signal interconnection:	Source numeric	**Scaling:** p2001
Description:	Displays the actual output of the Isd current controller (flux-generating current, PI controller). The value contains the proportional and integral components of the PI controller.		
Dependency:	Not visible in operating mode: "Dynamic Drive Control" (DDC, p0504 = 2)		

r1724 Isd controller integral component / Isd_ctrl I_comp

	Data type: FloatingPoint32	**Visible in:** Extended display	
	Read permission:	Read drive data or acknowledge messages	
	Parameter group:	Current controller	
	Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
	Dyn. index [0...n]:	-	**Calculated:** -
	Unit: Vrms	**Unit group:** 5_1	**Unit selection:** p0505
Description:	Displays the integral component of the Isd current controller (flux-generating current, PI controller).		
Dependency:	Not visible in operating mode: "Dynamic Drive Control" (DDC, p0504 = 2)		

r1725 Isd controller integral component limit / Isd_ctrl I_limit

	Data type: FloatingPoint32	**Visible in:** Extended display	
	Read permission:	Read drive data or acknowledge messages	
	Parameter group:	Current controller	
	Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
	Dyn. index [0...n]:	-	**Calculated:** -
	Unit: Vrms	**Unit group:** 5_1	**Unit selection:** p0505
Description:	Displays the limit value for the integral component of the Isd current controller.		
Dependency:	Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)		

p1730[0...n] Isd controller integral component shutdown threshold / Isd ctrl Tn shutd

	Data type: FloatingPoint32	**Visible in:** Extended display
	Read permission:	Read drive data or acknowledge messages
	Write permission:	Edit device configuration or drive applications
	Can be changed in the operating state:	Operation
	Parameter group:	Current controller

Not relevant for motor type: Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage

Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
30 [%]	150 [%]	30 [%]

Description: Sets the speed threshold for deactivating the integral component of the Isd controller.

The d current controller is only effective as P controller for speeds greater than the threshold value. Instead of the integral component, the quadrature arm decoupling is effective.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

⚠ WARNING

For settings above 80%, the d current controller is active up to the field weakening limit. When operated at the voltage limit, this can result in an unstable behavior. In order to avoid this, the dynamic voltage reserve p1574 should be increased.

Note

The parameter value is referred to the synchronous rated motor speed.

p1731[0...n] Isd controller combination current time component / Isd ctr I_combi T1

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Current controller	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [ms]	10000.00 [ms]	0.00 [ms]

Description: Sets the time constant to calculate the d current DC component difference (combination current) to add to the d current controller actual value.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

Note

It is not added for p1731 = 0.

r1732[0...1] Direct-axis voltage setpoint / Direct U set

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Current controller	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Vrms	**Unit group:** 5_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2001

Description: Display and numerical signal source for the direct-axis voltage setpoint Ud.

Index: [0] = Unsmoothed

[1] = Smoothed with p0045

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

r1733[0...1] Quadrature-axis voltage setpoint / Quad U set

Data type: FloatingPoint32 | **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Current controller
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: - | **Calculated:** -
Unit: Vrms | **Unit group:** 5_1 | **Unit selection:** p0505
Type of signal interconnection: Source numeric | **Scaling:** p2001

Description: Display and numerical signal source for the quadrature-axis setpoint Uq.

Index: [0] = Unsmoothed
[1] = Smoothed with p0045

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

p1740[0...n] Gain resonance damping for encoderless closed-loop control / Gain res_damp

Data type: FloatingPoint32 | **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Motor model
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: DDS n defined by: p0180 | **Calculated:** automatic
Unit: - | **Unit group:** - | **Unit selection:** -

Min:	Max:	Factory setting:
0.000	10.000	0.025

Description: Sets the controller gain for resonance damping in the current injection range. The setting is applicable for operation with encoderless vector control.

p1743[0...n] Motor model fault threshold neg phase-seq system stall detection / MotMod thr 2 stall

Data type: FloatingPoint32 | **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Motor model, Messages / Monitoring
Not relevant for motor type: Induction motor, Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: DDS n defined by: p0180 | **Calculated:** automatic
Unit: % | **Unit group:** - | **Unit selection:** -

Min:	Max:	Factory setting:
0.0 [%]	2000.0 [%]	5.0 [%]

Description: Sets the threshold value for the negative phase-sequence system to detect a stalled synchronous reluctance motor.
If the error signal (r1746[1]) exceeds the parameterized error threshold (r1746[4]), then status signal r1408.12 is set to 1.

Dependency: If a stalled drive is detected (r1408.12 = 1), fault F07902 is output after the delay time set in p2178.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: r1746, p2178

Note
Monitoring is only active in the range below 20% of the rated motor frequency p0310.
p1743 = 0 % deactivates the error signal check r1746[1].

p1744[0...n] Motor model speed threshold stall detection / MotMod n_thr stall

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor model, Messages / Monitoring	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.00 [rpm]	210000.00 [rpm]	100.00 [rpm]

Description: Sets the speed threshold value to detect a stalled motor.
If the adaptation controller output exceeds the parameterized speed difference, then in status word r1408.11 is set = 1.

Dependency: If a stalled drive is detected (r1408.11 = 1), fault F07902 is output after the delay time set in p2178.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p2178

Note
Speed monitoring is only effective in operation with a speed encoder (refer to p1300).
Stalling is also identified if steps/jumps occur in the speed signal, which exceed the value in p0492.

p1745[0...n] Motor model error threshold stall detection / MotMod ThrStall

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor model, Messages / Monitoring	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [%]	2000.0 [%]	5.0 [%]

Description: Sets the fault threshold in order to detect a motor that has stalled.
If the error signal (r1746[0]) exceeds the parameterized error threshold, then status signal r1408.12 is set to 1.

Dependency: If a stalled drive is detected (r1408.12 = 1), fault F07902 is output after the delay time set in p2178.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p2178

Note
Monitoring is only effective in the low-speed range (below p1755 * (100 % - p1756)).
It is deactivated if the threshold is set to 0 %.
For induction motors (ASM), when operated with speed encoder, the following applies:
For p1745 = 2000 %, checking the fault signal r1746 is deactivated, and the stall monitoring is realized solely by evaluating the flux difference.

r1746[0...5] Motor model error signal/threshold value stall detection / MotMod sig stall

Data type: FloatingPoint32	**Visible in:** Extended display
Read permission:	Read drive data or acknowledge messages

Parameter group:	Motor model, Messages / Monitoring	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -

Description: Signals and threshold values to initiate fault detection.

Index:
[0] = Signal variance
[1] = Negative phase-sequence system
[2] = Flux difference
[3] = Signal limit variance
[4] = Signal limit negative phase-sequence system
[5] = Signal limit flux difference

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

Note
For index [0]:
System variance is not calculated while magnetizing and only in the low speed range (below p1755 * (100 % - p1756)).
For Index[1]:
The signal of the negative phase-sequence system is only calculated for synchronous-reluctance motors.
For index [2]:
The signal of the flux difference is only calculated for synchronous-reluctance motors and induction motors.

p1747[0...n] Motor model pulse technique transition speed / MotMod puls tech n

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor model	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.00 [rpm]	210000.00 [rpm]	0.00 [rpm]

Description: Sets the transition (corner) speed for the transition into the pulse technique for encoderless operation of synchronous-reluctance motors (RESM) and permanent-magnet synchronous motors (PESM).

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

p1749[0...n] Motor model upper changeover speed / increase changeover speed / Up/incr n_chgov

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor model	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [%]	99.00 [%]	50.00 [%]

Description: Setting the speed threshold to switch over the motor model.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p1752, p1755, p1756

Note
Induction motor without speed encoder:
Depending on the motor data, the drive has calculated a minimum value of the operating frequency for rugged operation.
If the minimum value is greater than the lower changeover limit parameterized with p1755 * (1 - 2 * p1756), then the difference is displayed using p1749 * p1755.
The parameter value cannot be changed.

Synchronous reluctance motor (RESM):
Sets the hysteresis to define the upper transition (corner) speed to exit the low signal motor model for encoderless operation.
This value is entered as a percentage referred to p1747.

p1750[0...n].0...9 Motor model configuration / MotMod config

Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor model	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-	-	0000 0000 0000 0000 bin

Description: Sets the configuration for the motor model. For the automatic calculation, the bits are preassigned depending on the motor type (p0300) and the technological application (p0500 ... p0502).
Bit 00 = 1: Forces open-loop speed-controlled starting (ASM).
Bit 01 = 1: Forces the system to pass through frequency zero, open-loop-controlled (ASM).
Bit 02 = 1: Drive remains in full closed-loop control mode, even at zero frequency (ASM).
Bit 03 = 1: Motor model evaluates the saturation characteristic (ASM).
Bit 05 = 1: Test signal technique (pulse technique) to estimate the rotor position as it progresses (RESM, PMSM).
Bit 06 = 1: If the motor is blocked, sensorless vector control remains closed-loop speed controlled (ASM).
For a stalled (blocked) synchronous motor (PMSM), the sensorless vector control remains open-loop speed controlled.
Bit 07 = 1: Use rugged switchover limits to switchover the model between open-loop and closed-loop controlled operation (ASM).
Bit 08 = 1: Open-loop speed controlled operation independent of the speed setpoint (except for OFF3) (ASM).
Bit 09 = 1: Phase precontrol of the (percentage) absolute current specified using p1610+p1611 for starting with open-loop speed control (PMSM).

Bit array:

Bit	Signal name	1 signal	0 signal
00	Controlled start	Yes	No
01	Controlled through 0 Hz	Yes	No
02	Closed-loop ctrl oper. down to zero freq. for passive loads	Yes	No
03	Motor model Lh_pre = f(PsiEst)	Yes	No
05	Encoderless closed-loop control down to f = 0 (pulse technique)	Yes	No
06	Closed-/open-loop controlled when motor is blocked	Yes	No
07	Use rugged changeover limits	Yes	No
08	Closed-loop controlled until wait time p1758 has expired	Yes	No
09	Precontrol current phase angle when starting	Yes	No

Dependency: For bit 05:

The test signal technique (pulse technique) is not possible if a du/dt filter or a sine-wave filter is used as output filter (p0230).

Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

⚠ CAUTION
Bit 06 = 1 should not be used if the motor can be slowly reversed by the load at the torque limit. Long delay times due to blocking (p2177 > p1758) can cause the motor to stall. In this case you should deactivate the function or use closed-loop control over the complete speed range (note the information re bit 2 = 1). Bit 06 is preassigned for induction motors if commissioning the Dynamic Drive Control (p0504) was selected.

Note

Bits 00 ... 03 only have an influence for encoderless vector control,
Bit 04 only for vector control with encoder.
Bit 02 is pre-assigned depending on p0500.

For bit 02 = 1:
The sensorless vector control is effective down to zero frequency. A change is not made into the open-loop speed controlled mode.
This operating mode is possible for passive loads. These include applications where the load itself does not generate any active torque and therefore only acts reactively to the drive torque of the induction motor.
If bit 02 = 1, then bit 03 is automatically set to 1. Manual deselection is possible and may be sensible if the saturation characteristic (p1960) was not measured for third-party motors. Generally, for standard SIEMENS motors, the already pre-assigned (default value) saturation characteristic is adequate.
When the bit is set, the selection of bits 00 and 01 is ignored.

For bit 02 = 0:
If the model feedback is deactivated (p1784 = 0), then with bit 02 = 0, bit 03 is also automatically set to 0.

For bit 05:
The test signal technique (pulse technique) is supported for synchronous-reluctance motors (RESM) and for SIEMENS synchronous motors (PMSM), motor type p0300 = (2100..2109).
It is only possible to change bit 05 when the pulses are inhibited.

For bit 06 = 1:
The following applies for sensorless vector control of induction motors:
For a blocked motor (see p2175, p2177) the time condition in p1758 is bypassed and a change is not made into open-loop controlled operation.
The following applies for sensorless vector control of synchronous motors:
For a blocked motor (see p2175, p2177), the speed ramp-function generator is held in open-loop speed controlled operation, and a switchover is not made into closed-loop controlled operation.

For bit 07 = 1:
The following applies for sensorless vector control of induction motors:
If the changeover limits are parameterized too low (p1755, p1756), then they are automatically increased to rugged values by the absolute amount p1749 * p1755.
The effective time condition for changing over into open-controlled operation is obtained from the minimum of p1758 and 0.5 * r0384.
Activation can make sense for applications that demand a high torque at low frequencies and therefore low speed gradients.
Adequate parameterization must be ensured (p1610, p1611).

For bit 08 = 1:
No influence on the functionality of bits 00, 01, 02
The following applies for sensorless vector control of induction motors:
Changeover into open-loop speed controlled operation is no longer dependent on the speed setpoint (except for OFF3), but instead is essentially dependent on time condition p1758. As a consequence, a drive can be started or reversed in closed-loop speed controlled operation with setpoints from an external control system, if these briefly lie in the open-loop speed control range.

For bit 09 = 1:
The precontrol is always realized motoring, and is only active when the setting values p1610+p1611 are > 50%.
The function should be deactivated when starting in the generating mode.

r1751.0...22 Motor model status / MotMod status

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Motor model

Not relevant for motor type: Synchronous or reluctance motor with starting cage

Dyn. index [0...n]: - **Calculated:** -

Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the status of the motor model.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Controlled operation	Active	Inactive
01	Set ramp-function generator	Active	Inactive
02	Stop RsLh adaptation	Yes	No
03	Feedback	Active	Inactive
04	Encoder operation	Active	Inactive
05	Holding angle	Yes	No
06	Acceleration criterion	Active	Inactive
07	Set angle integrator PMSM, RESM	Yes	No
08	Stop Kt adaptation PMSM	Yes	No
09	PolID active encoderless PMSM, RESM	Yes	No
10	I injection PMSM, RESM	Yes	No
11	Speed controller output cannot be set to zero	Yes	No
12	Rs adapt waits	Yes	No
13	Motor operation	Yes	No
14	Stator frequency sign	Positive	Negative
15	Torque sign	Motoring	Generating
16	Pulse technique injection active PMSM, RESM	Yes	No
17	Operation with rugged model feedback	Enabled	Inhibited
18	Operation of the current model with current feedback	Enabled	Inhibited
19	Current feedback in the current model	Active	Inactive
20	Rugged increase of the changeover limits	Active	Inactive
21	Motor blocked (ramp-function generator stop) PMSM	No	Yes
22	Complete flux models available	Yes	No

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

Note

For bit 17:
Displays the enabled status of the rugged model feedback (p1784).
The feedback is used to increase the parameter ruggedness of the motor model and is effective in the operating range of the two-component closed loop current control.
For bit 18:
Displays the status when enabling the differential current feedback in the current model for operation with encoder.
The function is automatically enabled with p1784 > 0 or p1731 > 0.
The feedback is used for a rugged change between the current model and complete machine model with active rugged model feedback and combination current.
For bit 19:
Displays the currently active stator circuit feedback in current model operation.
For bit 20:
Displays the currently effective increase of the changeover limits by the value p1749 * p1755.
For bit 21:
For a blocked synchronous motor, the speed ramp-function generator is held in the open-loop speed controlled operating range if the torque setpoint reaches the torque limit and the speed is less than the threshold value in p2175.
For bit 22:
The complete flux models of the synchronous or synchronous reluctance motor are a precondition for model-based current controller adaptation (p1402).

PMSM: permanent-magnet synchronous motor

p1752[0...n] Motor model changeover speed operation with encoder / MotMod n_chgov enc

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor model	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.00 [rpm]	210000.00 [rpm]	210000.00 [rpm]

Description: Sets the speed to change over the motor model for operation with encoder.

Dependency: In U/f characteristic mode the parameter is of no significance.

Using the friction characteristic for operation with encoder:

When changing the motor model changeover speed p1752, the points along the friction characteristic should be recalculated and the friction characteristic recorded again (p3845). For slight changes, only the associated friction characteristic points must be recorded (see p3844).

Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

See also: p1753

p1753[0...n] Motor model changeover speed hysteresis operation with encoder / MotMod n_chgovHysE

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor model	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [%]	90.0 [%]	0.0 [%]

Description: Sets the hysteresis for the changeover speed of the motor model for operation with speed encoder.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

See also: p1752

Note
The value refers to p1752.

p1755[0...n] Motor model changeover speed encoderless operation / MotMod n_chgSnsorl

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor model	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505

Min:	Max:	Factory setting:
0.00 [rpm]	210000.00 [rpm]	210000.00 [rpm]

Description: Sets the speed to change over the motor model to encoderless operation.

Dependency: In U/f characteristic mode the parameter is of no significance.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p1749, p1756

NOTICE
The changeover speed represents the steady-state minimum speed up to which the motor model can be used in sensorless steady-state operation.
If the stability is not adequate close to the changeover speed, it may make sense to increase the parameter value.

Note
The changeover speed applies for the changeover between open-loop and closed-loop control mode.

p1756[0...n] Motor model changeover speed hysteresis encoderless operation / MotMod n_chgov hys

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor model	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [%]	95.0 [%]	50.0 [%]

Description: Sets the hysteresis for the changeover speed of the motor model for encoderless operation.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p1755

NOTICE
Extremely small hystereses can have a negative impact on the stability in the changeover speed range, and very high hystereses in the standstill range.

Note
The parameter value refers to p1755.
The lower hysteresis value is calculated with p1755 * (1 - p1756 / 100 %).

p1758[0...n] Motor model changeover delay time closed/open-loop control / MotMod t cl_op

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor model	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
100 [ms]	10000 [ms]	500 [ms]

Description: Sets the minimum time for falling below the changeover speed when changing from closed-loop controlled operation to open-loop controlled operation.

Dependency: The wait time has no significance if the setpoint speed before the ramp-function generator lies in the open-loop speed controlled operating range. In this case, the change is made without any delay.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p1755, p1756

Note
If p1758 is changed, commissioning must be selected in order to validate the value for the blocking monitoring.

p1759[0...n] Motor model changeover delay time open/cl-loop ctrl (induction) / MotMod t cl-lp ind

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor model	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [ms]	2000 [ms]	0 [ms]

Description: Sets the wait time when transitioning from open-loop controlled to closed-loop controlled operation for induction motors. The transition is made after the lower changeover speed p1755 * (1 - p1756 / 100 %) has been exceeded.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p1755, p1756

Note
With p1759 = 2000 ms, the wait time becomes ineffective and the model changeover is determined by the output frequency only (changeover for p1755).

p1760[0...n] Motor model with encoder speed adaptation Kp / MotMod wE n_ada Kp

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor model	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000	100000.000	1000.000

Description: Sets the proportional gain Kp of the controller for speed adaptation with encoder

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

p1761[0...n] Motor model with encoder speed adaptation Tn / MotMod wE n_ada Tn

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	

Can be changed in the operating state:	Operation	
Parameter group:	Motor model	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [ms]	1000 [ms]	4 [ms]

Description: Sets the integral-action time Tn of the controller for speed adaptation with encoder

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

p1764[0...n] Motor model without encoder speed adaptation Kp / MotMod woE n_adaKp

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor model	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000	100000.000	1000.000

Description: Sets the proportional gain of the controller for speed adaptation without encoder.

p1767[0...n] Motor model without encoder speed adaptation Tn / MotMod woE n_adaTn

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor model	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
1 [ms]	200 [ms]	4 [ms]

Description: Sets the integral time of the controller for speed adaptation without encoder

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

p1769[0...n] Motor model changeover delay time open/closed-loop ctrl (sync) / MotMod t cl-lp syn

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor model	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -

Min:	Max:	Factory setting:
0 [ms]	10000 [ms]	0 [ms]

Description: Sets the wait time when transitioning from open-loop controlled to closed-loop controlled operation for synchronous and reluctance motors.

The transition is made after twice the lower changeover speed p1755 * (1 - p1756 / 100 %) has been exceeded and below the upper changeover speed p1755.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

See also: p1755, p1756

Note

With p1759 = 0 ms and above p1755, the wait time becomes ineffective and the model changeover is determined by the output frequency only (changeover for p1755).

r1770[0...3] Motor model speed adaptation proportional component / MotMod n_adpt Kp

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Motor model	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000

Description: Displays the P component of the controller for speed adaptation.

Index: [0] = Summed signal
[1] = Model_1
[2] = Model_2
[3] = Standard deviation

r1771 Motor model speed adaptation I component / MotMod n_adpt Tn

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Motor model	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000

Description: Displays the I component of the controller for speed adaptation.

r1776[0...6] Motor model status signals / MotMod status sig

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Motor model	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Description: Displays the internal status signals of the motor model.
For index [0]:
Changeover ramp between current and voltage models.
For index [1]:
Changeover ramp for model feedback (only encoderless induction motors).
For index [2]:
Changeover ramp for frequency in the zero range (only encoderless induction motors).
For index [6]:
Transition ramp for EMF deviation at PLL input (PMSM without encoder)

Index: [0] = Changeover ramp motor model
[1] = Changeover ramp model tracking
[2] = Changeover ramp zero frequency induction motor without encoder
[3] = Reserved
[4] = Reserved
[5] = Reserved
[6] = Changeover ramp motor model PMSM without encoder

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

r1778 Motor model flux angle difference / MotMod ang diff

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Motor model, Motor
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: - **Calculated:** -
Unit: ° **Unit group:** - **Unit selection:** -

Description: Induction motor (ASM):
Displays the difference between the motor model flux angle and the transformation angle.

Permanent-magnet synchronous motor (PMSM):
Displays the angular difference between motor model and encoder.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

p1780[0...n].2...15 Motor model adaptation configuration / MotMod adpt config

Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Motor model, Motor
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** automatic
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
-	-	0000 1000 0111 1100 bin

Description: Sets the configuration for the adaptation circuit of the motor model.

Bit array:

Bit	Signal name	1 signal	0 signal
02	Select motor model ASM Lh adaptation	Yes	No
03	Select motor model PMSM kT adaptation	Yes	No
04	Select motor model offset adaptation	Yes	No
05	Select ASM Rr adaptation (only with encoder)	Yes	No

06	Select pole position identification PMSM/RESM encoderless	Yes	No
07	Select T(valve) with Rs adaptation	Yes	No
08	Deselect prelim. meas. of inductance for pole position ident.	Yes	No
09	Torque factor characteristic iq-dependent	Yes	No
10	Filter time combination current like current ctrl integral time	Yes	No
11	Reserved	Yes	No
12	Start encoderless with last angle	Yes	No
13	Fast pulsed pole position identification	Yes	No
14	Delay of the precontrol speed to the motor model	Yes	No
15	RESM Q flux model linear	Yes	No

Dependency: In the U/f characteristic operating mode, only bit 7 is relevant.
For active motor model feedback (see p1784), the Lh adaptation is internally deactivated automatically.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

Note
The following bits are preassigned when calculating the closed-loop control parameters:
Induction motor (ASM): bit 2, 4, 5, 12
Permanent magnet synchronous motor (PMSM): bit 3, 6, 9
Synchronous reluctance motor (RESM): bits 6, 9, 13, 14
For bits 2, 3:
In order that the correction values of the Lh and kT adaptation are correctly accepted when changing over the drive data set, a dedicated motor number must be entered into p0826 for each different motor.
For bit 7:
When selecting the compensation of the valve interlocking via Rs, the compensation in the gating unit is deactivated and is instead taken into account in the motor model.
For bit 9: (for synchronous motors and synchronous-reluctance motors)
The torque factor is calculated using the full current dependency.
For synchronous motors, the torque component of the magnet is specified using p0317. Here, p0316 is not relevant.
For bit 12 (for synchronous motors and bit 6 = 1):
The pole position identification is only carried out after power on and after the motor has coasted down. The switch-off speed p1226 should be as low as possible. If the power unit is switched off when the motor is stationary, then the next time that the power unit is switched on, the old angle is used as starting value. The precondition applies that while the power unit is switched off the motor does not rotate.
For bit 12: (for induction motors)
When switching on, the system starts with the last operating angle. With p1228 (pulse cancellation delay time), for OFF1 it can be achieved that the angle corresponds to that of the stationary motor.
For bit 13:
When the bit is set, the duration of the pole position identification is shortened. As a consequence, the pole wheel angle error can be slightly greater.

p1784[0...n] Motor model feedback scaling / MotMod fdbk scal

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor model	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [%]	1000.0 [%]	0.0 [%]

Description: Sets the scaling for model fault feedback.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)

Note
Feeding back the measured model fault to the model states increases the control stability and makes the motor model rugged against parameter errors.
When feedback is selected (p1784 > 0), Lh adaptation is not effective.

r1787[0...n] Motor model Lh adaptation corrective value / MotMod Lh corr

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Motor model	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: mH	**Unit group:** -	**Unit selection:** -

Description: Displays the corrective value for the Lh adaptation of the motor model for an induction motor (ASM).

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1), "Dynamic Drive Control" (DDC, p0504 = 2)
See also: p0826, p1780

Note
The adaptation result is reset if the magnetizing inductance of the induction motor is changed (p0360, r0382). This also happens when changing over the data set if a different motor is not being used (p0826).
The display of the inactive data sets is only updated when changing over the data set.

p1793[0...n] Slip compensation scaling (SDC) / Slip comp scal

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed controller	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [%]	600.0 [%]	100.0 [%]

Description: Sets the setpoint for slip compensation in [%] referred to r0330 (rated motor slip) in the Standard Drive Control operating mode.
p1793 = 0.0 %: slip compensation deactivated.
p1793 = 100.0 %: The slip is completely compensated.

Dependency: Prerequisite for a precise slip compensation for p1793 = 100 % is having the precise motor parameters (p0350 ... p0360).
If the parameters are not precisely known, a precise compensation can be achieved by varying p1793.
Not visible in operating mode: "Dynamic Drive Control" (DDC, p0504 = 2)

Note
The purpose of slip compensation is to maintain a constant motor speed regardless of the applied load. The fact that the motor speed decreases with increasing load is a typical characteristic of induction motors.
For synchronous motors, this effect does not occur and the parameter has no effect in this case.

r1797[0...n] Motor model kT adaptation corrective value / MotMod kT corr

Data type: FloatingPoint32 **Visible in:** Extended display

Read permission: Read drive data or acknowledge messages
Parameter group: Motor model, Extended torque control
Not relevant for motor type: Induction motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** -
Unit: Nm/A **Unit group:** - **Unit selection:** -

Description: Displays the corrective value of the kT adaptation of the motor model for a permanent-magnet synchronous motor (PMSM).

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p0826, p1780

Note
The display of the inactive data sets is only updated when changing over the data set.

p1798[0...n] Motor model pulse technique speed adaptation Kp / MotMod pulsTech Kp

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Motor model
Not relevant for motor type: Induction motor, Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** automatic
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0.000	1000.000	1.000

Description: Sets the proportional gain of the controller for speed adaptation with active pulse technique to estimate the continuous rotor position.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

p1799[0...n] Motor model pulse technique speed adaptation Tn / MotMod pulsTech Tn

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Motor model
Not relevant for motor type: Induction motor, Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** automatic
Unit: ms **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0 [ms]	1000 [ms]	10 [ms]

Description: Sets the integral time of the controller for speed adaptation with active pulse technique to estimate the continuous rotor position.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

p1800[0...n] Pulse frequency setpoint / Pulse freq set

Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications

Can be changed in the operating state:	Operation	
Parameter group:	Power unit, Sampling times	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: kHz	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
1.000 [kHz]	16.000 [kHz]	4.000 [kHz]

Description: Sets the pulse frequency for the converter.

This parameter is preset to the rated converter value when the drive is first commissioned.

Dependency: Values that can be set: 1, 2 ... 16 kHz as well as intermediate values, which can be calculated according to the following rule:

p1800 = (z / n + x) / p0115[0]; with x = 0 .. 7; z = 1 .. 8; n = 1 .. 9; with z <= n

p1800 is limited by the minimum and maximum pulse frequency of the power unit being used (e.g. minimum value of 2 kHz, maximum value of 8 or 16 kHz). The minimum pulse frequency is also dependent on the set maximum speed:

1000 * p1800 >= 8.3 * p1082 * r0313 / 60

See also: p0230

Note

When the pulse frequency is increased, depending on the particular power unit, the maximum output current can be reduced (derating, refer to r0067).

If a sine-wave filter is parameterized as output filter (p0230 = 3), then the pulse frequency cannot be set below the minimum value required for the filter.

For operation with motor reactors, the pulse frequency is limited to 4 kHz (see p0230).

If p1800 is changed during the commissioning phase, then it is possible that the old value will no longer be able to be set. The reason for this is that the dynamic limits of p1800 have been changed by a parameter that was set when the drive was commissioned (e.g. p1082).

The pulse frequency cannot be changed when the motor data identification is activated.

r1801[0...2] Pulse frequency / Pulse frequency

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Power unit	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: kHz	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** p2000

Description: Displays the actual converter switching frequency.

Index: [0] = Actual

[1] = Modulator minimum value

[2] = Modulator maximum value

Note

The selected pulse frequency (p1800) may be reduced if the drive converter has an overload condition (p0290).

p1802[0...n] Modulator mode / Modulator mode

Data type: Integer16	**Visible in:** Extended display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications
Can be changed in the operating state:	Ready for operation
Parameter group:	Power unit
Not relevant for motor type:	-

Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	6	0

Description: Sets the modulator mode.

Value:

0:	Asynchronous modulation (SVM/FTM)
1:	Flat top modulation (FTM)
2:	Space vector modulation (SVM)
3:	SVM without overcontrol
4:	SVM/FTM without overcontrol
5:	SVM with pulse frequency reduction
6:	SVM/FTM with pulse frequency reduction

Dependency: If a sine-wave filter is parameterized as output filter (p0230 = 4), then only space vector modulation without overcontrol can be selected as modulation type (p1802 = 3).

See also: r0192, p0230

Note

When modulation modes are enabled that could lead to overmodulation (p1802 = 0, 1, 2, 5, 6), the modulation depth must be limited using p1803 (default p1803 < 100 %). The higher the overmodulation, the greater the current ripple and torque ripple.

When changing p1802[x], the values for all of the other existing indices are also changed.

SVM: Space Vector Modulation

FTM: Flat Top Modulation

p1803[0...n] Maximum modulation depth / Mod_depth max

Variant:	G220	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Power unit	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
20.0 [%]	150.0 [%]	106.0 [%]

Description: Sets the maximum modulation depth.

Note

p1803 = 100% is the overcontrol limit for space vector modulation, when considering an ideal converter without any switching delay.

p1803[0...n] Maximum modulation depth / Mod_depth max

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Power unit	
Not relevant for motor type:	-	

Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
20.0 [%]	150.0 [%]	100.0 [%]

Description: Sets the maximum modulation depth.

Note
p1803 = 100% is the overcontrol limit for space vector modulation, when considering an ideal converter without any switching delay.

p1806[0...n] Filter time constant Vdc correction / Tc_filt Vdc_corr

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Power unit	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [ms]	10000.0 [ms]	0.0 [ms]

Description: Sets the filter time constant for the DC link voltage.
This time constant is used to calculate the modulation depth.

r1807 Actual DC link voltage to calculate the modulation depth / VdcActValMod_depth

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Power unit	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: V	**Unit group:** 5_2	**Unit selection:** p0505

Description: Displays the DC link voltage that is used to convert the setpoint voltage into an equivalent modulation depth.

r1809 Modulator mode actual / Modulator mode act

Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Power unit	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** -

Description: Displays the effective modulator mode.

Value:
1: Flat top modulation (FTM)
2: Space vector modulation (SVM)

p1810.0...15 Modulator configuration / Modulator config

Data type: Unsigned32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	

Can be changed in the operating state:	Operation		
Parameter group:	Power unit		
Not relevant for motor type:	-		
Dyn. index [0...n]:	-	**Calculated:** -	
Unit: -	**Unit group:** -	**Unit selection:** -	
Min:	**Max:**	**Factory setting:**	
-	-	0000 0000 0000 0000 bin	

Description: Sets the configuration for the modulator.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Avg value filter for V_lim (only for Vdc_comp in modulator)	Yes	No
01	DC link voltage compensation in the current control	Yes	No
08	Pulse frequency reduction (speed dependent) stage 1	Yes	No
09	Pulse frequency reduction (speed dependent) stage 2	Yes	No
15	Increase overmodulation range	Yes	No

NOTICE

Bit 01 = 0 can only be set when the pulses are inhibited.

For fast current changes, bit 15 = 1 together with p1802 = 0, 2 and p1803 > 106 % result in a significant increase in the torque ripple. As a consequence, increasing the modulation limit must be checked on an application for application basis.

Note

For bit 00 = 0:
Voltage limiting is realized from the minimum of the DC link voltage; this results in lower ripple in the output current and a reduced output voltage.
For bit 00 = 1:
Voltage limiting is realized from the averaged DC link voltage (higher output voltage with increased ripple in the output current).
The selection is only valid if the DC link voltage is not compensated in the current controller (p1810.01 = 0).

For bit 01 = 0:
DC link voltage compensation in the modulator.
For bit 01 = 1:
DC link voltage compensation in the current control.

For bit 08 = 1:
Above the frequency threshold r1836[0], the pulse frequency is switched to the value in p1800. Below r1836[0] (minus the hysteresis), the pulse frequency is reduced to the next possible pulse frequency.

For bit 09 = 1:
Above the frequency threshold r1836[1], the pulse frequency is increased to the next possible value.
Below r1836[1] (minus the hysteresis), the pulse frequency is reduced to the next possible pulse frequency.
Setting p1810.08 = 0 means that p1810.09 is automatically reset.

For bit 15 = 1:
For p1802 = 0, 2 and p1803 > 106 %, dynamically, a modulation depth of more than 106 % is permitted.
When p1803 is increased, the dynamic modulation depth reserve p1574 should be increased so that the maximum output voltage r0071 approximately remains the same.

c1812[0...1] Offset calibration output actual value sensing / Offs_cal_act_outp

Data type: Unsigned8	**Visible in:** Extended display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications

Parameter group: Power unit
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 1

Description: Signal to activate/deactivate (1 signal/0 signal) offset calibration of the output current/output voltage measurement.

Index: [0] = Offset calibration output current measurement
[1] = Offset calibration output current sensing

⚠ CAUTION
The absence of offset calibration can have a negative effect on control properties. Offset calibration must be performed before switching on the power unit for the first time after POWER ON.

Note
Offset calibration is only performed with pulses suppressed and can take up to one second.

p1820[0...n] Reverse the output phase sequence / Outp_ph_seq rev

Data type: Integer16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Ready for operation
Parameter group: Power unit
Not relevant for motor type: -
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0	1	0

Description: Sets the phase sequence reversal for the motor.
If the motor does not rotate in the required direction, then the output phase sequence can be reversed using this parameter.
For operation with a speed encoder, under certain circumstances, the encoder actual value must also be inverted (p0410).

Value:
0: Off
1: On

Dependency: See also: p1821

⚠ CAUTION
Changing the direction using p1820 or p1821 is not recognized by the "Safe Direction without encoder". As a consequence, the limit provided by SDI (Safe Direction) from r9733 no longer functions.

Note
This setting can only be changed when the pulses are inhibited.
p1821 can be used to reverse the phase sequence and encoder actual value.

p1821[0...n] Direction of rotation / Dir of rotation

Data type: Integer16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Commissioning
Parameter group: Motor data

Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	1	0

Description: Setting to change the direction of rotation.

If the parameter is changed, it reverses the direction of rotation of the motor and the encoder actual value without changing the setpoint.

Value:
0: Clockwise
1: Counterclockwise

Dependency: See also: F07434

⚠ DANGER

When using external speed actual values for the speed controller (see c1440), then its polarity must also be changed when the direction of rotation changes (p1821 = 1). Otherwise, a positive coupling can occur in the speed control loop and the drive would then be accelerated up to the speed limit.

NOTICE

For a drive data set changeover with differently set direction of rotation and pulse enable, an appropriate fault is output.
After changing parameter p1821, the direction of rotation is not automatically adapted in the safety area.

Note

For operation with the phase sequence U/V/W, the direction of rotation is defined when viewing the face side of the motor output shaft.
When changing the direction of rotation, the rotating field direction of the current controller is reversed. The speed actual value (e.g. r0063) is also reversed so that the control sense is kept and internally causing the direction of rotation to be reversed with the same setpoint. Further, the position actual values of the actual encoder are reversed (e.g. r0482[0...2]).
p1820 can be used to reverse the direction of the motor without reversing the encoder actual value. Without speed encoder, p1821 has the same effect as p1820.

p1825 Converter valve threshold voltage / Threshold voltage

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Power unit, Motor data identification routine	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** automatic
Unit: Vrms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [Vrms]	100.0 [Vrms]	0.6 [Vrms]

Description: Sets the threshold voltage drop of the valves (power semiconductor devices) to be compensated.

Note

The value is automatically calculated in the motor data identification routine.

p1828 Valve lockout time compensation / Comp t_lockout

Data type: FloatingPoint32	**Visible in:** Extended display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications
Can be changed in the operating state:	Operation

Parameter group:	Power unit, Motor data identification routine	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** automatic
Unit: µs	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [µs]	8.00 [µs]	0.00 [µs]

Description: Sets the valve lockout time to be compensated for all three output phases.

Note
The value is automatically calculated in the motor data identification routine.

p1832 Dead time compensation current level / t_dead_comp I_lev

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Power unit	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** automatic
Unit: Arms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [Arms]	10000.0 [Arms]	0.0 [Arms]

Description: Sets the current level for the dead time compensation. The dead time must be compensated as a result of the switching delay times of the converter.

Above the current level, the dead time is compensated using a previously calculated constant value in p1828.

Below the current level, the correction value for this phase is continuously reduced.

Dependency: The factory setting of p1832 is automatically set to 0.02 * rated current (r0207).

p1835[0...1] Pulse frequency reduction switchover frequency shift / f_puls_red f_swov

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Power unit	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Hz	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [Hz]	800.00 [Hz]	0.00 [Hz]

Description: Frequency to shift the switchover frequency r1836 for pulse frequency reduction.

The parameter value reduces the switchover frequency threshold with the same parameter index.

Index: [0] = Frequency limit 1

[1] = Frequency limit 2

Dependency: See also: r1836

r1836[0...1] Pulse frequency reduction, switchover frequency / f_puls_red f_swov

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	

Parameter group: Power unit
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: - **Calculated:** -
Unit: Hz **Unit group:** - **Unit selection:** -

Description: Displays the frequency limits, under which the pulse frequency is automatically reduced.
Starting from the parameterized pulse frequency p1800, the pulse frequency is reduced to the next possible one, if the frequency limits and an additional hysteresis are fallen below.

Index: [0] = Frequency limit 1
[1] = Frequency limit 2

Dependency: See also: p1810, p1835

Note
The pulse frequency reduction is not active for U/f control.
A minimum clearance of 10 Hz is kept between the frequency thresholds, which cannot be fallen below when changing p1835.
For index [0]:
Frequency limit for the first pulse frequence reduction (active for p1810.8 = 1).
For index [1]:
Frequency limit for the second pulse frequence reduction (active for p1810.9 = 1).

r1837.0...25 Gating unit configuration / Gating unit config

Variant: G220
Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Power unit
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Display for the configuration of the gating unit driver.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Modulation depth for a flying restart	Limited	Not limited
01	Modulation depth for Vdc closed-loop control	Limited	Not limited
02	Vdc_min controller	Active	Not active
03	Motor data identification routine	Active	Not active
04	Current offset calculation	Active	Not active
05	Simulation mode	Active	Not active
06	Reverse the output phase sequence	Active	Not active
07	Counterclockwise direction of rotation	Active	Not active
08	Synchronization (bypass)	Active	Not active
09	F07801 monitor by application	Active	Not active
10	Chassis Drive active	Yes	No
11	Short-circuit test active	No	Yes
12	FL modulation prohibited	Yes	No
13	F3E present	Yes	No
14	Suppression of the pulse enable requested	Yes	No
15	Extended suppression of the pulse enable requested	Yes	No
18	Modulation depth limiting	Yes	No
19	Reduced DC link capacitance (without F3E)	Yes	No
20	The setpoint is not reset	Yes	No
21	Voltage calibration active	Yes	No
22	Vdc correction deactivated in the gating unit	Yes	No

23	Fast current and DC link monitoring activated in bypass	Yes	No
24	Voltage measurement active	Yes	No
25	Synchronous reluctance motor type (adapted I2t calculation)	Yes	No

r1837.0...26 Gating unit configuration / Gating unit config

Variant: G220 Clean Power
Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Power unit
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Display for the configuration of the gating unit driver.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Modulation depth for a flying restart	Limited	Not limited
01	Modulation depth for Vdc closed-loop control	Limited	Not limited
02	Vdc_min controller	Active	Not active
03	Motor data identification routine	Active	Not active
04	Current offset calculation	Active	Not active
05	Simulation mode	Active	Not active
06	Reverse the output phase sequence	Active	Not active
07	Counterclockwise direction of rotation	Active	Not active
08	Synchronization (bypass)	Active	Not active
09	F07801 monitor by application	Active	Not active
10	Chassis Drive active	Yes	No
11	Short-circuit test active	No	Yes
12	FL modulation prohibited	Yes	No
13	F3E present	Yes	No
14	Suppression of the pulse enable requested	Yes	No
15	Extended suppression of the pulse enable requested	Yes	No
18	Modulation depth limiting	Yes	No
19	Reduced DC link capacitance (without F3E)	Yes	No
20	The setpoint is not reset	Yes	No
21	Voltage calibration active	Yes	No
22	Vdc correction deactivated in the gating unit	Yes	No
23	Fast current and DC link monitoring activated in bypass	Yes	No
24	Voltage measurement active	Yes	No
25	Synchronous reluctance motor type (adapted I2t calculation)	Yes	No
26	Output current reduction by infeed activated	Yes	No

r1838.0...31 Gating unit status words 1 and 2 / Gating unit ZSW1/2

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Control/status words, Power unit
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Displays status word 1 and 2 of the gating unit.
Bits 00..15: status word 1, bits 16..31: status word 2

Bit array:

Bit	Signal name	1 signal	0 signal
00	Fault time-critical	On	Off
01	Measured value ready	No	Yes
02	Pulse enable	On	Off
03	Upper switch-off signal path	Inactive	Active
04	Lower switch-off signal path	Inactive	Active
05	Test pulse operation active	Active	Not active
06	Test pulse measured values valid	Yes	No
07	Brake state	On	Off
08	Brake diagnostics	On	Off
09	Armature short-circuit braking	Active	Not active
10	Gating unit state bit 0	On	Off
11	Gating unit state bit 1	On	Off
12	Gating unit state bit 2	On	Off
13	Alarm status bit 0	On	Off
14	Alarm status bit 1	On	Off
15	Diagnostics 24 V	On	Off
16	Actual pulse frequency asynchronous (SVM)	Yes	No
17	Wobbulation active	Active	Not active
18	Even samples active	Active	Not active
19	Moving average active	Active	Not active
20	TLCC bit0	On	Off
21	TLCC bit1	On	Off
22	TLCC bit2	On	Off
23	DC link asymmetry alarm	Active	Not active
31	Fixed time active	Active	Not active

Note
Bits that are not written to are used for internal diagnostics.

r1839.0...31 Gating unit control words 1 and 2 / Gating unit STW1/2

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Control/status words, Power unit
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Displays control word 1 and 2 of the gating unit.
Bits 00..15: control word 1, bits 16..31: control word 2

Bit array:

Bit	Signal name	1 signal	0 signal
00	Fault	On	Off
01	Activate current offset correction	Yes	No
02	Pulse enable	On	Off
03	Sign-of-life bit 0	On	Off
04	Sign-of-life bit 1	On	Off
05	Activate voltage offset correction	Yes	No
06	Activate test pulses	On	Off

07	Brake	Active	Not active
08	Main contactor control	On	Off
09	Armature short-circuit braking	Active	Not active
10	Acknowledge fault	On	Off
11	Synchronization bit 0	On	Off
12	Synchronization bit 1	On	Off
13	Zero system selection bit 0	1	0
14	Zero system selection bit 1	1	0
15	Zero system selection bit 2	1	0
20	Activate Even Samples measuring configuration	Active	Not active
21	Accept acyclic parameters	Active	Not active
31	Activate measuring configuration Fixed Time	Yes	No

r1840.0...15 Gating unit status words 3 and 4 / Gating unit ZSW3/4

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Power unit
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Display for status word 3 and 4 of the gating unit.
Bits 00..15: status word 3, bits 16..31: status word 4

Bit array:

Bit	Signal name	1 signal	0 signal
00	Close main contactor command	On	Off
01	Digital input 0	1	0
02	Close bypass contactor command	On	Off
03	Digital input 1	1	0
04	Line frequency detected	Yes	No
05	SW3 bit 5	Yes	No
06	SW3 bit 6	Yes	No
07	SW3 bit 7	Yes	No
08	SW3 bit 8	Yes	No
09	SW3 bit 9	Yes	No
10	SW3 bit 10	Yes	No
11	SW3 bit 11	Yes	No
12	SW3 bit 12	Yes	No
13	SW3 bit 13	Yes	No
14	SW3 bit 14	Yes	No
15	SW3 bit 15	Yes	No

p1900 Motor data identification and rotating measurement / MotID and rot meas

Data type: Integer16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Ready for operation
Parameter group: Motor data identification routine, Rotating measurement/speed controller optimization, Motor optimization

Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	99	0

Description: Sets the motor data identification and speed controller optimization.

The motor identification should first be performed with the motor stationary (p1900 = 1, 2; also refer to p1910). Based on this, additional motor and control parameters can be determined using the motor data identification with the motor rotating (p1900 = 1, 3; also refer to p1960; not for p1300 < 20).

p1900 = 0:

Function deactivated.

p1900 = 1:

Sets p1910 = 1 and p1960 = 0, 1 depending on p1300

When the drive enable signals are present, a motor data identification routine is carried out at standstill with the next switch-on command. Current flows through the motor which means that it can align itself by up to a quarter of a revolution.

With the following switch-on command, a rotating motor data identification routine is carried out - and in addition, a speed controller optimization by making measurements at different motor speeds.

p1900 = 2:

Sets p1910 = 1 and p1960 = 0

When the drive enable signals are present, a motor data identification routine is carried out at standstill with the next switch-on command. Current flows through the motor which means that it can align itself by up to a quarter of a revolution.

p1900 = 3:

Sets p1960 = 0, 1 depending on p1300

This setting should only be selected if the motor data identification was already carried out at standstill.

When the drive enable signals are present, with the next switch-on command, a rotating motor data identification routine is carried out - and in addition, speed controller optimization by taking measurements at different motor speeds.

p1900 = 11, 12:

The same as p1900 = 1, 2 with the difference that all measurements are performed and then the system immediately goes into operation. For this purpose, p1909.18 is set = p1959.13 is set = 1 .

p1900 = 99:

In the actual drive data set, all results of the identifications are undone, and the state after first commissioning is restored.

Value:

0:	No optimization
1:	Identify motor data, optimize speed controller
2:	Identifying motor data (at standstill)
3:	Optimize speed controller (rotating)
11:	Identify motor data, optimize (rotating), operation
12:	Identify motor data, operation
99:	Reset motor/control parameters

Dependency: See also: p1300, p1910, p1960

See also: A07980, A07981, F07983, F07984, F07985, F07986, F07988, F07990, A07991

NOTICE
p1900 = 3: This setting should only be selected if the motor data identification was already carried out at standstill. If there is a motor holding brake, it must be open (p1215 = 2). To permanently accept the determined settings they must be saved in a non-volatile fashion. It is not possible to save the parameters during the rotating measurement.

Note
The motor and control parameters of the vector control are only optimally set when both measurements are carried out (initially at standstill, and then with the motor rotating). The measurement with rotating motor is not performed for p1300 < 20 (U/f controls).
An appropriate alarm is output when the parameter is set.
The switch-on command must remain set during a measurement and after the measurement has been completed, the drive automatically resets it.
The duration of the measurements can lie between 0.3 s and several minutes. This time is, for example, influenced by the motor size and the mechanical conditions.
p1900 is automatically set to 0 after the motor data identification routine has been completed.
For a reluctance motor, a pole position identification is carried out during the stationary measurement. As a consequence, faults that occur can also be assigned to the pole position identification.
For U/f control (p1300), identification with speed controller optimization does not make sense (e.g. p1900 = 1).
For p1900 = 99, write protection is withdrawn from an offline commissioning.

p1901.0...3 Test pulse evaluation configuration / Test puls config

Data type: Unsigned32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Power unit	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** automatic
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-	-	0000 bin

Description: Sets the configuration for the test pulse evaluation.
Bit 00: Check for conductor-to-conductor short circuit once/always when the pulses are enabled.
Bit 01: Check for ground fault once/always when the pulses are enabled.
Bit 02: Activation of the tests selected using bit 00 and/or bit 01 each time the pulses are enabled
Bit 03: Check the motor feeder cable for cable breakage (1-phase).

Recommendation: If the ground fault test is incorrectly initiated because the motor is not at a complete standstill, then the pulse cancellation delay time (p1228) should be increased.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Phase short-circuit test pulse active	Yes	No
01	Ground fault detection test pulse active	Yes	No
02	Test pulse at each pulse enable	Yes	No
03	Motor cable breakage detection active	Yes	No

Dependency: The ground fault test is only possible when the motor is stationary, and is therefore only realized when flying restart is deactivated (p1200 = 0).
When a sine-wave filter is connected, the short-circuit and the ground fault test are deactivated, as the filter could be excited by the test pulse.
See also: p0287

Note
If a conductor-to-conductor short-circuit is detected during the test, this is displayed in r1902.1.
If a ground fault is detected during the test, this is indicated in r1902.3.
For bit 02 = 0:
If the test was successful once after POWER ON (see r1902.0), it is not repeated.
For bit 02 = 1:
The test is not only performed after POWER ON, but also each time the pulses are enabled.

r1902.0...9 Test pulse evaluation status / Test puls ev stat

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Power unit
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the status of the test pulse evaluation.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Short-circuit test successfully performed	Yes	No
01	Phase short-circuit detected	Yes	No
02	Ground fault test successfully performed	Yes	No
03	Ground fault detected	Yes	No
04	Identification pulse width greater than the minimum pulse width	Yes	No
05	Pulse frequency for short-circuit test requested	Yes	No
06	Short-circuit test activated in the power stack driver	Yes	No
07	Short-circuit test pulse suppression active	Yes	No
08	Interrupted phase test successfully performed	Yes	No
09	Interrupted phase line detected	Yes	No

Note
If the ground fault test was selected, but not successfully performed, then sufficient current was not be able to be established during the test pulses.
For bit 04:
A test pulse longer than one sampling time has occurred

p1905 Parameter tuning selection / Par tuning select

Data type: Integer16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Ready for operation
Parameter group: Pole position identification/encoder calibration
Not relevant for motor type: Induction motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0	90	0

Description: Activation/deactivation of the fine encoder calibration.
The fine encoder calibration should be started during the first commissioning or after the encoder is replaced.
The fine calibration starts when the pulses are enabled and performs a rotating measurement (approximately 1 minute). In this case, a setpoint speed of at least 40 % of the rated motor speed must be specified, and the torque must be less than half of the rated motor torque.
The phases of the fine calibration of displayed using alarm A07976.
The fine calibration ends with the calculation of p0431 for the following pulse inhibit.
p1905 is automatically set to 0 at the end of the fine calibration.

Value:
0: Inactive
90: Fine encoder calibration

Dependency: If the motor encoder adjustment has not been performed (r3925.4 = 0) or the encoder calibration is activated (p1990 ! = 0), then encoder fine calibration is prevented.
See also: p1910, p1960, p1990
See also: A07976

NOTICE
During encoder fine calibration, the motor must be operated without a load - and if a motor holding brake is being used, this must be opened.

Note
For p1905 = 90 (fine encoder calibration)
- And if the pulses are not enabled, the fine calibration is only executed the next time that the pulses are enabled.
- The switchover of the motor data sets is suppressed.

p1906[0...n].0...16 Encoder adjustment/PolID configuration / Enc adj/PolID conf

Data type: Unsigned32	**Visible in:** Extended display		
Read permission:	Read drive data or acknowledge messages		
Write permission:	Edit device configuration or drive applications		
Can be changed in the operating state:	Ready for operation		
Parameter group:	Pole position identification/encoder calibration		
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage		
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -	
Unit: -	**Unit group:** -	**Unit selection:** -	
Min:	**Max:**	**Factory setting:**	
-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin	

Description: Sets the configuration for encoder adjustment and the pole position identification.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Encoder adjustment in operation (only with encoder)	Yes	No
16	Increase PolID current limit	Yes	No

Dependency: See also: p1990
See also: A07975

Note
Bit 00 = 0:
The motor shaft must be able to be freely rotated, and it is not permissible that any load torque is applied.
The runtime can be scaled for drives with high moment of inertia (p1999).
Bit 00 = 1:
For encoders without zero mark, or already detected zero mark, the adjustment is completed once the PolID has been executed.
For zero mark information that is still not known, after the PolID has been executed, the drive pulses remain enabled and the drive waits for a speed setpoint to be entered.
The operating state is signaled using A07975. The drive pulses are inhibited after approach and zero mark detection.
For permanent-magnet synchronous motors, to increase the quality of the result, a fine adjustment can be made (p1905).

Bit 16 = 0:
The maximum current for the PolID is limited to the value set in p0323.
Bit 16 = 1:
The maximum current is limited to the maximum from p0323 and 3*p0305. This setting should be selected if the limit using p0323 was selected very low, for instance to protect a gearbox.

p1909[0...n].0...28 Motor data identification control word / MotID STW

Data type: Unsigned32 **Visible in:** Extended display

Read permission:	Read drive data or acknowledge messages		
Write permission:	Edit device configuration or drive applications		
Can be changed in the operating state:	Ready for operation		
Parameter group:	Motor data identification routine		
Not relevant for motor type:	-		
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** automatic	
Unit: -	**Unit group:** -	**Unit selection:** -	
Min:	**Max:**	**Factory setting:**	
-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin	

Description: Sets the configuration for the motor data identification.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Stator inductance estimate no measurement	Yes	No
02	Rotor time constant estimate no measurement	Yes	No
03	Leakage inductance estimate no measurement	Yes	No
05	Determine Tr and Lsig evaluation in the time range	Yes	No
06	Activate vibration damping	Yes	No
07	Deactivate vibration detection	Yes	No
11	Deactivate saturation measurement pole Id	Yes	No
12	Deactivate rotor resistance Rr measurement	Yes	No
14	Deactivate valve interlocking time measurement	Yes	No
15	Basis meas (stator resistance, valve voltage, valve dead time)	Yes	No
16	Motor identification shortened	Yes	No
17	Measurement without control parameter calculation	Yes	No
18	After motID direct transition into operation	Yes	No
19	After MotID automatically save results	Yes	No
20	Estimate cable resistance	Yes	No
21	Calibrate output voltage measurement	Yes	No
22	Only identify circle	Yes	No
23	Deactivate circle identification	Yes	No
26	Measure with long cable	Yes	No
27	Deactivate saturation characteristic identification	Yes	No
28	Pulse inhibit for current 0 A	Yes	No

Note

For bit 20 = 1 (only for p0352 = 0 Ohm):

For motors with code number (with the exception of 1LE1, 1PE5, 1PC1), the cable resistance p0352 is calculated from the difference between the measurement results of the overall stator resistance and the stator resistance listed in the motor data sheet.

For all other motors, the stator resistance from the automatic calculation is used instead of that from the motor data sheet.

The following applies to permanent-magnet synchronous motors:

Bit 11 = 0 and "Closed-loop control" operating mode:

The direct inductance Ld and the quadrature inductance Lq are measured at a low current.

Bit 11 = 1 or "U/f" operating mode:

The stator inductance is measured with half the rated motor current.

If the stator is inductance is not measured but is to be estimated, then bit 0 should be set and bit 11 should be deselected.

For bit 15 = 1:

When selected, a basis measurement is performed comprising stator resistance, valve voltage fault and valve interlock time. Rotor resistance and inductance are not determined, so that for induction motors, the speed accuracy will be lower. With sine output filter (see p0230), only this basis measurement is possible.

For bit 21 = 1

Not available for chassis power units

For bit 22 = 1 (only for reluctance motors):

The circle identification is required for the flying restart function (p1200). It is executed in the motor data identification, and can be separately selected using this bit.

p1910 Motor data identification selection / MotID selection

Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Motor data identification routine	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	2	0

Description: Sets the motor data identification routine.

The motor data identification routine is carried out after the next switch-on command.

p1910 = 1:

All motor data and the converter characteristics are identified and then transferred to the following parameters corresponding to the motor type:

p0320, p0350, p0354, p0356, p0357, p0358, p0360, p1825, p1828

The control parameters are then automatically calculated.

Value:

0: Inhibited

1: Complete identification (ID) of the motor data with acceptance

2: Complete identification (ID) of motor data without acceptance

Dependency: "Quick commissioning" must have been carried out (see r3925.0) before executing the motor data identification routine.
When selecting the motor data identification routine, the drive data set changeover is suppressed.
When the sine-wave filter is connected, p1909.15 must be activated as only the stator resistance can be measured.
See also: p1900
See also: F07990, A07991

NOTICE
After the motor data identification (p1910 > 0) has been selected, alarm A07991 is output and a motor data identification routine is carried out as follows at the next switch-on command: - Current flows through the motor and a voltage is present at the drive converter output terminals. - During the identification routine, the motor shaft can rotate through a maximum of half a revolution. - However, no torque is generated.

Note
If there is a motor holding brake, it must be open (interconnect c0855 with a 1 signal).
To permanently accept the determined settings they must be saved in a non-volatile fashion.
When setting p1910, the following should be observed:
- "With acceptance" means:
The parameters specified in the description are overwritten with the identified values and therefore have an influence on the controller setting.
- "Without acceptance" means:
The controller settings remain unchanged.

The switch-on command must remain set during a measurement and after the measurement has been completed, the drive automatically resets it. The duration of the measurements can lie between 0.3 s and several minutes. This time is mainly influenced by the motor size. p1910 is automatically set = 0 after the motor data identification routine has been completed.
If only the stationary measurement is selected, then p1900 is also automatically set = 0. Otherwise, the rotating measurement is activated (p1960).

r1934[0...9] q inductance identified / Lq ident

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Rotating measurement/speed controller optimization	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mH	**Unit group:** -	**Unit selection:** -

Description: Displays the identified (differential) q inductance from the rotating measurement when p1959.5 is activated.
Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: r1935, p1959, p1960

Note
The Lq characteristic consists of the value pairs from r1934 and r1935 with the same index.
This value corresponds to the value of the total leakage inductance (r0377).

r1935[0...9] q inductance identification current / Lq I_ID

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Rotating measurement/speed controller optimization	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Arms	**Unit group:** -	**Unit selection:** -

Description: Displays the identification current to identify the q inductance ([0...9]).

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: r1934, p1959, p1960

Note
The Lq characteristic consists of the value pairs from r1934 and r1935 with the same index.

p1959[0...n].0...14 Rotating measurement configuration / Rot meas config

Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Rotating measurement/speed controller optimization	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-	-	0000 0000 0001 1111 bin

Description: Sets the configuration of the rotating measurement.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Encoder test active	Yes	No
01	Saturation characteristic identification	Yes	No
02	Moment of inertia identification	Yes	No
03	Re-calculates the speed controller parameters	Yes	No
04	Speed controller optimization (vibration test)	Yes	No
05	q leakage inductance ident. (for current controller adaptation)	Yes	No
11	Do not change the controller parameters during the measurement	Yes	No
12	Measurement shortened	Yes	No
13	After measurement direct transition into operation	Yes	No
14	Calculate actual speed smoothing time	Yes	No

Dependency: See also: F07988

Note

The encoder is only tested if the rotating measurement with encoder is selected (p1960 = 2).
The following parameters are influenced for the individual optimization steps:
Bit 00: None
Bit 01: p0320, p0360, p0362 ... p0369
Bit 02: p0341, p0342
Bit 03: p1400.0, p1458, p1459, p1460, p1462, p1463, p1470, p1472, p1496
Bit 04: Dependent on p1960
Bit 05: p0391, p0392, p0393, p1402.2 only for induction motors
p1960 = 1, 3: p1458, p1459, p1470, p1472, p1496, p1400.0
p1960 = 2, 4: p1458, p1459, p1460, p1462, p1496, p1461, p1463
The identification of the q leakage inductance can only be carried out for unloaded motors or motors with a low load (load approx. 30% below the rated motor torque). Only then is a current controller adaptation (p0391 ... p0393) parameterized if the q-leakage inductance under no-load conditions is at least 30 % higher than the total leakage inductance (p0356, p0358).
For bit 11 = 1:
Bits 02, 03, 04 no longer have any effect. It makes sense to set bit 11 if the speed controller and its adaptation were already set before the measurement.
For bit 12 = 1:
The selection only has an effect on the measurement p1960 = 1, 2. For the shortened measurement, the magnetizing current and moment of inertia are determined with a somewhat lower accuracy.
For bit 13 = 1:
After the measurement has been completed, the system immediately goes into closed-loop speed controlled operation.
For bit 14 = 1:
The filter time constant p1452 (or p1442 for operation with speed encoder) is set corresponding to the moment of inertia that was determined.

p1960 Rotating measurement selection / Rot meas sel

Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Rotating measurement/speed controller optimization	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-1	4	0

Description: Sets the rotating measurement.
The rotating measurement is carried out after the next switch-on command.
The setting possibilities of the parameter depend on the open-loop/closed-loop control operating mode (p1300).
p1300 < 20 (U/f open-loop control):
It is not possible to select rotating measurement or speed controller optimization.
p1300 = 20, 22 (encoderless operation):
Only rotating measurement or speed controller optimization can be selected in the encoderless mode.
p1300 = 21, 23 (operation with encoder):
Both versions (encoderless and with encoder) of the rotating measurement and speed controller optimization can be selected.

Value:

-1:	Reset parameter
0:	Inhibited
1:	Rotating measurement in encoderless operation
2:	Rotating measurement with encoder

3: Speed controller optimization in encoderless operation

4: Speed controller optimization with encoder

Dependency: Before the rotating measurement is carried out, the motor data identification routine (p1900, p1910, r3925) should have already been done.

When selecting the rotating measurement, the drive data set changeover is suppressed.

See also: p1300, p1900, p1959, p1967, r1968

See also: A07987

⚠ DANGER

For drives with a mechanical system that limits the distance moved, it must be ensured that this is not reached during the rotating measurement. If this is not the case, then it is not permissible that the measurement is carried out.

NOTICE

If there is a motor holding brake, it must be open (interconnect c0855 with a 1 signal).

To permanently accept the determined settings they must be saved in a non-volatile fashion.

It is not possible to save the parameters during the rotating measurement.

Note

Parameter changes are automatically made for the rotating measurement (e.g. p1120); this is the reason that up to the end of the measurement, and if No faults are present, parameters should not be manually changed.

The ramp-up and ramp-down times (p1120, p1121) are limited, for the rotating measurement, to 900 s.

For speed controller optimization with encoder (p1960 = 2, 4), the speed controller for encoderless operation is also pre-assigned (p1470, p1472).

Depending on whether the speed controller optimization is carried out with or without encoder, different Kp/Tn adaptations of the speed controller are set (p1464, p1465). If the drive should be controlled with as well as without speed encoder, then we recommend the use of two drive data sets (p0180). These can then be executed with different speed controller adaptations.

For p1960 = -1:

If the results of the last successful measurement are to be rejected, and the old parameters restored, then this can be realized by selecting p1960 = -1. This is only possible if the converter was not switched off in the meantime (see also r3925 bit 19).

p1961 Saturation characteristic speed to determine / Sat_char n determ

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Rotating measurement/speed controller optimization	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
26 [%]	75 [%]	40 [%]

Description: Sets the speed to determine the saturation characteristic and the encoder test.

The percentage value is referred to p0310 (rated motor frequency).

Dependency: See also: p0310, p1959

See also: F07983

Note

The saturation characteristics should be determined at an operating point with the lowest possible load.

p1965 Speed_ctrl_opt speed / n_opt speed

Data type: FloatingPoint32 **Visible in:** Extended display

Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Rotating measurement/speed controller optimization	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
10 [%]	75 [%]	40 [%]

Description: Sets the speed for the identification of the moment of inertia and the vibration test.
Induction motor:
The percentage value is referred to p0310 (rated motor frequency).
Synchronous motor:
The percentage value is referred to the minimum from p0310 (rated motor frequency) and p1082 (maximum speed).

Dependency: See also: p0310, p1959
See also: F07984, F07985

Note
In order to calculate the inertia, sudden speed changes are carried out - The specified value corresponds to the lower speed setpoint. This value is increased by 20 % for the upper speed value.
The q leakage inductance for induction motors (see p1959.5) is determined at zero speed and at 50 % of p1965 - however, with a maximum output frequency of 15 Hz and at a minimum of 10% of the rated motor speed.

p1967[0...n] Speed_ctrl_opt dynamic factor / n_opt dyn_factor

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Rotating measurement/speed controller optimization	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
1 [%]	400 [%]	67 [%]

Description: Sets the dynamic response factor for speed controller optimization.
After optimization, the dynamic response achieved is displayed in r1968.

Dependency: See also: p1959, r1968
See also: F07985

Note
For a rotating measurement, this parameter can be used to optimize the speed controller.
p1967 = 100 % --> speed controller optimization according to a symmetric optimum.
p1967 > 100 % --> optimization with a higher dynamic response (Kp higher, Tn lower).
If the actual dynamic response (see r1968) is significantly reduced with respect to the required dynamic response (p1967), then this can be as a result of mechanical load oscillations. If, in spite of this load behavior, a higher dynamic response is required, then the oscillation test (p1959.4 = 0) should be deactivated and the measurement repeated.

r1968 Speed_ctrl_opt dynamic factor actual / n_opt dyn_fact act

Data type: FloatingPoint32	**Visible in:** Extended display
Read permission:	Read drive data or acknowledge messages
Parameter group:	Rotating measurement/speed controller optimization

Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: - **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -

Description: Displays the dynamic factor which is actually achieved for the vibration test

Dependency: See also: p1959, p1967
See also: F07985

Note
This dynamic factor only refers to the control mode of the speed controller set in p1960.

r1970[0...1] Speed_ctrl_opt vibration test vibration frequency determined / n_opt f_vib det

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Rotating measurement/speed controller optimization
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: - **Calculated:** -
Unit: Hz **Unit group:** - **Unit selection:** -

Description: Displays the vibration frequencies determined by the vibration test.

Index: [0] = Frequency low
[1] = Frequency high

Dependency: See also: p1959
See also: F07985

r1973 Rotating measurement encoder test pulse number determined / n_opt puls no det

Data type: Integer32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Rotating measurement/speed controller optimization
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the number of pulses determined during the vibration test.

Note
A negative signal indicates an incorrect polarity of the encoder signal.

p1974[0...n] Speed_ctrl_opt saturation characteristic rotor flux maximum / n_opt rot_fl max

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Rotating measurement/speed controller optimization
Not relevant for motor type: Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** automatic
Unit: % **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
104 [%]	120 [%]	120 [%]

Description: Sets the maximum flux setpoint to measure the saturation characteristic.

p1980[0...n] PolID technique / PolID technique

Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Pole position identification/encoder calibration	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** automatic
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
1	10	1

Description: Setting the pole position identification technique. For encoderless synchronous and reluctance motors, the pole position identification is performed each time operation is enabled. The motor must be stationary for this to be performed.

Value:

1: Voltage pulsing 1st harmonics
4: Voltage pulsing 2-stage
6: Voltage pulsing 2-stage inverse
8: Voltage pulsing 2nd harmonic inverse (RESM)
10: DC current injection

Dependency: When commissioning, the technique is automatically preselected depending on the motor type being used.

p1980 = 8: only suitable for reluctance motors (p0300 = 6xxx)

p1980 = 1, 4, 6: only suitable for synchronous motors (p0300 = 2xxx)

p1980 = 4, 6: only suitable for synchronous motors with adequate asymmetry (not to be used for 1FK7 motors).

The function is enabled using p1780 bit 6.

If it can be absolutely ensured that the motor is stationary when the pulses are inhibited - and that the inverter is switched off with the motor stationary, then by using p1780 bit 12, it can be set as to whether the last position angle (with the pulses enabled) can be approached without pole position identification.

Pole position identification is not performed during a flying restart of a rotating motor.

See also: p0325, p0329, p1780

See also: F07969

Note

The current magnitudes are limited to the rated power unit values.
p1980 = 1, 8:
The current magnitude is set using p0329.
p1980 = 4, 6:
The current magnitude of the first measurement section is set using p0325, the second using p0329.
p1980 = 10:
The rated motor current is impressed to align.

p1982[0...n] PolID selection / PolID selection

Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Pole position identification/encoder calibration	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** automatic
Unit: -	**Unit group:** -	**Unit selection:** -

Min:	Max:	Factory setting:
0	2	0

Description: Activates the pole position identification routine to determine the commutation angle and to carry out a plausibility check.

Value:
0: Pole position identification off
1: Pole position identification for commutation
2: Pole position identification for plausibility check

Recommendation: For p1982 = 1:
This is used for synchronous motors with motor encoder without absolute data.
The information/data regarding the absolute commutation angle is supplied via a track C/D, Hall sensors, an absolute encoder or from the pole position identification routine.
For p1982 = 2:
This is used for synchronous motors with motor encoder with absolute data to check this data.
With p1982 = 2, each time the pulses are enabled it is checked whether the absolute position supplied from the encoder does not exceed a deviation of 45 degrees to the identified pole wheel position.

Dependency: See also: p0325, p0329, p1980, p1990, r1992

Note
For encoderless operation, the pole position identification routine is selected with p1780.6

r1985 PolID saturation curve / PolID sat_char

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Pole position identification/encoder calibration	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Arms	**Unit group:** -	**Unit selection:** -

Description: Displays the saturation curve of the pole position identification (saturation technique).
Displays the current characteristic of the pole position identification routine (elasticity technique).

Dependency: See also: p1980

Note
PolID: Pole position identification
Regarding the saturation technique:
The values for the characteristic of the last saturation-based pole position identification routine are output every 1 ms in order to record signals (e.g. trace).

r1987 PolID trigger characteristic / PolID trig_char

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Pole position identification/encoder calibration	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -

Description: Displays the trigger characteristic of the pole position identification routine.
The values for the characteristic of the last pole position identification routine are output every 1 ms in order to record signals (e.g. trace).
The values for trigger characteristic and saturation characteristic are always output in synchronism from a time perspective.

Dependency: See also: p1980

Note
PolID: Pole position identification
The following information and data can be taken from the trigger characteristic.
- The value -100% marks the angle at the start of the measurement.
- The value +100 % marks the commutation angle determined from the pole position identification routine.

p1990 Encoder adjustment determine angular commutation offset / Enc_adj det ang

Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Pole position identification/encoder calibration	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	2	0

Description:
This function is only required for synchronous motors and can be started when commissioning for the first time or after replacing an encoder.
The function acts on the active motor data set.
Alarm A07971 is output while the angular commutation offset is being determined.
p1990 is automatically set to 0 after the angular commutation offset has been determined.
For p1990 = 1 (encoder adjustment with acceptance), the following applies:
The angular commutation offset is determined and transferred into p0431.
For p1990 = 2 (encoder adjustment for checking), the following applies:
The angular commutation offset is determined and is not transferred into p0431. For a deviation of more than 6 ° electrical, fault F07413 is output.

Value:
0: Deactivated
1: Activated with transfer
2: Activated for checking

Dependency:
When selecting the encoder adjustment, the changeover of the drive data sets is suppressed.
Encoder adjustment is only carried out if function "Closed-loop speed/torque control" is activated.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p0325, p0329, p0431, p1900

⚠ CAUTION
When the encoder is being adjusted, the motor must be operated without a load - and if a motor holding brake is being used, this must be opened.

Note
Encoder adjustment can be configured in p1906.

p1991[0...n] Motor changeover angular commutation correction / Ang_com corr

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Pole position identification/encoder calibration	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -

Unit: ° | **Unit group:** - | **Unit selection:** -

Min:	Max:	Factory setting:
-180 [°]	180 [°]	0 [°]

Description: Sets the angle that is added to the commutating angle.

⚠ CAUTION

If the angular correction is not correctly set, when changing over and with closed-loop torque control, the motor can accelerate to high speeds in spite of the fact that a setpoint of zero has been entered.

r1992.0...15 PolID diagnostics / PolID diag

Data type: Unsigned16 | **Visible in:** Extended display

Read permission: Read drive data or acknowledge messages

Parameter group: Pole position identification/encoder calibration

Not relevant for motor type: Induction motor, Synchronous or reluctance motor with starting cage

Dyn. index [0...n]: - | **Calculated:** -

Unit: - | **Unit group:** - | **Unit selection:** -

Type of signal interconnection: Source binary/numeric | **Scaling:** -

Description: Displays the diagnostic information of the pole position identification (PolID).

Bit array:

Bit	Signal name	1 signal	0 signal
00	Critical encoder fault occurred	Yes	No
02	Encoder parking active	Yes	No
05	Encoder fault Class 1	Yes	No
06	Encoder fault Class 2	Yes	No
07	Pole position identification for encoder carried out	Yes	No
08	Fine synchronization carried out	Yes	No
09	Coarse synchronization carried out	Yes	No
10	Commutation information available	Yes	No
11	Speed information available	Yes	No
12	Position information available	Yes	No
15	Zero mark passed	Yes	No

Dependency: See also: p0325, p0329, p1980, p1982, p1990

Note

The data of r1992 are updated in a 4 ms cycle.

p1999[0...n] Angular commutation offset calibration and PolID scaling / Com_ang_offs scal

Data type: FloatingPoint32 | **Visible in:** Extended display

Read permission: Read drive data or acknowledge messages

Write permission: Edit device configuration or drive applications

Can be changed in the operating state: Operation

Parameter group: Pole position identification/encoder calibration

Not relevant for motor type: Induction motor, Synchronous or reluctance motor with starting cage

Dyn. index [0...n]: MDS n defined by: p0130 | **Calculated:** -

Unit: % | **Unit group:** - | **Unit selection:** -

Min:	Max:	Factory setting:
10 [%]	5000 [%]	100 [%]

Description: Sets the scaling for the runtime of the automatic encoder calibration and of the pole position identification technique in which the current is injected.

Dependency: See also: p0341, p0342

⚠ CAUTION
For p1999 > 100 % (setting large moments of inertia) the following applies: There is no locked rotor monitoring (F07970 fault value 2). The plausibility check of the encoder signal (F07970 fault value 4) only checks the sign.

Note
For high moments of inertia, it is practical to scale the runtime of the calibration higher.

p2000 Reference speed reference frequency / n_ref f_ref

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Reference variables	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** automatic
Unit: rpm	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** -
Min:	**Max:**	**Factory setting:**
6.00 [rpm]	210000.00 [rpm]	1500.00 [rpm]

Description: Sets the reference quantity for speed and frequency.
All speeds or frequencies specified as relative value are referred to this reference quantity.
The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).
The following applies: Reference frequency (in Hz) = reference speed (in ((rpm) / 60) x pole pair number)

Dependency: See also: p2001, p2002, p2003, p2004

Note
If a signal interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.
Example 1:
The signal of an analog input is interconnected to a speed setpoint (e.g. c1070[0]). The actual percentage input value is cyclically converted into the absolute speed setpoint using the reference speed (p2000).
Example 2:
The setpoint from PROFIdrive (r2050[1]) is interconnected to a speed setpoint (e.g. c1070[0]). The actual input value is cyclically converted into a percentage value via the pre-specified scaling 4000 hex. This percentage value is converted to the absolute speed setpoint via reference speed (p2000).

p2001 Reference voltage / Reference voltage

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Reference variables	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** automatic
Unit: Vrms	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** -
Min:	**Max:**	**Factory setting:**
10 [Vrms]	100000 [Vrms]	1000 [Vrms]

Description: Sets the reference quantity for voltages.

All voltages specified as relative value are referred to this reference quantity. This also applies for direct voltage values (= rms value) like the DC link voltage.

The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

Note:

This reference quantity also applies to direct voltage values. It is not interpreted as rms value, but as DC voltage value.

Note

If a signal interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.

p2002 Reference current / I_ref

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Reference variables	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** automatic
Unit: Arms	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** -
Min:	**Max:**	**Factory setting:**
0.10 [Arms]	100000.00 [Arms]	100.00 [Arms]

Description: Sets the reference quantity for currents.

All currents specified as relative value are referred to this reference quantity.

The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

NOTICE

If various DDS are used with different motor data, then the reference quantities remain the same as these are not changed over with the DDS. The resulting conversion factor should be taken into account (e.g. for trace records).
Example:
p2002 = 100 A
Reference quantity 100 A corresponds to 100 %
p0305[0] = 100 A
Rated motor current 100 A for MDS0 in DDS0 --> 100 % corresponds to 100 % of the rated motor current
p0305[1] = 50 A
Rated motor current 50 A for MDS1 in DDS1 --> 100 % corresponds to 200 % of the rated motor current

Note

Pre-assigned value is p0640.
If a signal interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.

p2003 Reference torque / M_ref

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Reference variables	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** automatic
Unit: Nm	**Unit group:** 7_2	**Unit selection:** p0505

Type of signal interconnection:	Source numeric	**Scaling:** -
Min:	**Max:**	**Factory setting:**
0.01 [Nm]	2e+07 [Nm]	1.00 [Nm]

Description: Sets the reference quantity for torque.
All torques specified as relative value are referred to this reference quantity.
The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

Note
Pre-assigned value is 2 * r0333.
If a signal interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.
Example:
The actual value of the total torque (r0079) is interconnected with a measuring socket (e.g. c0771[0]). The actual torque is cyclically converted into a percentage of the reference torque (p2003) and output according to the parameterized scaling.

p2004 Reference power / P_ref

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Reference variables	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** automatic
Unit: kW	**Unit group:** 14_10	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** -
Min:	**Max:**	**Factory setting:**
0.01 [kW]	20000.00 [kW]	20000.00 [kW]

Description: Displays the reference quantity for power.
All power ratings specified as relative value are referred to this reference quantity.
The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

Dependency: This value is calculated as follows:
Calculated from torque times speed.
See also: p2000, p2003

Note
If a signal interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.
The reference power is calculated as follows:
- 2 * Pi * reference speed / 60 * reference torque (motor)

p2005 Reference angle / Reference angle

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Reference variables	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** automatic
Unit: °	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** -

Min:	Max:	Factory setting:
90.00 [°]	180.00 [°]	90.00 [°]

Description: Sets the reference quantity for angle.
All angles specified as relative value are referred to this reference quantity.
The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

Note
If a signal interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.

p2006 Reference temperature / Ref temp

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Reference variables	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** automatic
Unit: °C	**Unit group:** 21_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** -
Min:	**Max:**	**Factory setting:**
50.00 [°C]	300.00 [°C]	100.00 [°C]

Description: Sets the reference quantity for temperature.
All temperatures specified as relative value are referred to this reference quantity.

Note
The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).
0 % (0000 hex) corresponds to 0 degree Celsius in the SI system of units
0 % (0000 hex) corresponds to 32 degrees Fahrenheit in the US system of units

p2007 Reference acceleration / a_ref

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Reference variables	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** automatic
Unit: rev/s²	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** -
Min:	**Max:**	**Factory setting:**
0.01 [rev/s²]	500000.00 [rev/s²]	0.01 [rev/s²]

Description: Sets the reference quantity for acceleration rates.
All acceleration rates specified as relative value are referred to this reference quantity.
The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

Note
If a signal interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.
The reference acceleration is calculated as follows:
Reference speed (p2000) converted from 1/min to 1/s divided by 1 s
--> p2007 = p2000 [rpm] / (60 [s/min] * 1 [s])

p2008 Infeed reference frequency / Infeed f_reference

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Reference variables	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** automatic
Unit: Hz	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** -
Min:	**Max:**	**Factory setting:**
0.10 [Hz]	1000.00 [Hz]	50.00 [Hz]

Description: Sets the reference quantity for the line frequency.
All of the quantities specified relative to the line frequency refer to this quantity.
The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).
The following applies: Infeed reference frequency (in Hz)

r2029[0...7] Fieldbus interface error statistics / Fieldbus error

Variant:	G220, G220 Clean Power	
Available for module:	Communication Module Modbus RTU/BACnet MS TP	
Data type: Unsigned32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Configuration	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Description: Displays the receive errors at the field bus interface (RS485).
Index: [0] = Number of error-free telegrams
[1] = Number of rejected telegrams
[2] = Number of framing errors
[3] = Number of overrun errors
[4] = Number of parity errors
[5] = Number of starting character errors
[6] = Number of checksum errors
[7] = Number of length errors

r2043.0...2 PROFIdrive PZD state / PD PZD state

Data type: Unsigned8	**Visible in:** Extended display
Read permission:	Read drive data or acknowledge messages
Parameter group:	Configuration
Not relevant for motor type:	-

Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary **Scaling:** -

Description: Displays the PROFIdrive PZD state.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Setpoint failure	Yes	No
01	Isochronous operation active	Yes	No
02	Fieldbus running	Yes	No

Note
When using the "setpoint failure" signal, the bus can be monitored and an application-specific response triggered when the setpoint fails.

c2045 PB/PN clock synchronous controller sign-of-life / PB/PN ctr SoL

Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Configuration
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink numeric **Scaling:** -
Factory interconnection: Fixed value: 0

Description: Signal for the sign-of-life of the clock synchronous PROFIBUS/PROFINET controller.
The sign-of-life is expected at bits 12 to 15. Bits 0 to 11 are not evaluated.
The sign-of-life signal is normally received in PZD4 (control word 2) from the controller.

Dependency: See also: p0925

NOTICE
It is possible that the interconnection is locked as a result of a set PROFIdrive telegram.

r2050[0...31].0...15 PROFIdrive PZD receive word / PZD receive word

Data type: Unsigned16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Receive direction
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** 4000H

Description: Display and numerical signal source to interconnect PZD (setpoints) in the word format received from the fieldbus controller.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20
[20] = PZD 21
[21] = PZD 22
[22] = PZD 23
[23] = PZD 24
[24] = PZD 25
[25] = PZD 26
[26] = PZD 27
[27] = PZD 28
[28] = PZD 29
[29] = PZD 30
[30] = PZD 31
[31] = PZD 32

Bit array:

Bit	Signal name	1 signal	0 signal
00	Bit 0	On	Off
01	Bit 1	On	Off
02	Bit 2	On	Off
03	Bit 3	On	Off
04	Bit 4	On	Off
05	Bit 5	On	Off
06	Bit 6	On	Off
07	Bit 7	On	Off
08	Bit 8	On	Off
09	Bit 9	On	Off
10	Bit 10	On	Off
11	Bit 11	On	Off
12	Bit 12	On	Off
13	Bit 13	On	Off
14	Bit 14	On	Off
15	Bit 15	On	Off

Dependency: See also: r2060

NOTICE
When interconnecting a numerical signal source several times, all numerical signal sinks must either have the integer or floating point data type. A signal interconnection of a single PZD can only take place either on r2050 or r2060.

c2053[0...31] PROFIdrive PZD send word / PZD send word

Data type: Unsigned16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Send direction	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** 4000H
Factory interconnection:	Fixed value: 0	

Description: Signal of the PZD (actual values) in the word format, which is sent to the fieldbus controller.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20
[20] = PZD 21
[21] = PZD 22
[22] = PZD 23
[23] = PZD 24
[24] = PZD 25
[25] = PZD 26
[26] = PZD 27
[27] = PZD 28
[28] = PZD 29
[29] = PZD 30
[30] = PZD 31
[31] = PZD 32

NOTICE
A signal interconnection of an individual PZD is only possible either with c2053 or c2063. It is possible that the interconnection is locked as a result of a set PROFIdrive telegram.

r2054 PROFIBUS status / PB status

Variant: G220, G220 Clean Power
Available for module: PROFIBUS Communication Module
Data type: Integer16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Configuration
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Status display for the PROFIBUS interface.

Value:
0: Off
1: No connection (search for baud rate)
2: Connection OK (baud rate found)
3: Cyclic connection with master (data exchange)
4: Cyclic data OK

Note
For r2054 = 2:
If the status is not exited, then set or check the PROFIBUS address (r0918).
For r2054 = 3:
In state 3 (the LED flashes green), a cyclic connection has been established to the PROFIBUS master; however, one of the following prerequisites is missing for cyclic operation:
- No setpoints are being received as the PROFIBUS master is in the STOP condition.
Only for isochronous operation, the following applies:
- The drive is not in synchronism as the global control (GC) has an error.
For r2054 = 4:
In the status 4 (LED green), the cyclic connection to the PROFIBUS master has been established and setpoints are being received. The isochronous mode is OK, the global control (GC) is error-free.
This state does not provide any statement regarding the quality of the clock cycle synchronous sign-of-life characters on the drive objects.

r2055[0...2] PROFIBUS diagnostics standard / PB diag standard

Variant: G220, G220 Clean Power
Available for module: PROFIBUS Communication Module
Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Configuration
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Diagnostics display for the PROFIBUS interface.

Index:
[0] = Master bus address
[1] = Master input total length bytes
[2] = Master output total length bytes

r2060[0...30] PROFIdrive PZD receive double word / PZD recv DW

Data type: Integer32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Receive direction
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -

Unit: - **Unit group:** - **Unit selection:** -

Type of signal interconnection: Source numeric **Scaling:** 4000H

Description: Display and numerical signal source to interconnect PZD (setpoints) with double word format received from the fieldbus controller.

Index:
[0] = PZD 1 + 2
[1] = PZD 2 + 3
[2] = PZD 3 + 4
[3] = PZD 4 + 5
[4] = PZD 5 + 6
[5] = PZD 6 + 7
[6] = PZD 7 + 8
[7] = PZD 8 + 9
[8] = PZD 9 + 10
[9] = PZD 10 + 11
[10] = PZD 11 + 12
[11] = PZD 12 + 13
[12] = PZD 13 + 14
[13] = PZD 14 + 15
[14] = PZD 15 + 16
[15] = PZD 16 + 17
[16] = PZD 17 + 18
[17] = PZD 18 + 19
[18] = PZD 19 + 20
[19] = PZD 20 + 21
[20] = PZD 21 + 22
[21] = PZD 22 + 23
[22] = PZD 23 + 24
[23] = PZD 24 + 25
[24] = PZD 25 + 26
[25] = PZD 26 + 27
[26] = PZD 27 + 28
[27] = PZD 28 + 29
[28] = PZD 29 + 30
[29] = PZD 30 + 31
[30] = PZD 31 + 32

Dependency: See also: r2050

NOTICE
When interconnecting a numerical signal source several times, all numerical signal sinks must either have the integer or floating point data type. A signal interconnection of a single PZD can only take place either on r2050 or r2060. A maximum of 4 indices of the "trace" function can be used.

c2063[0...30] PROFIdrive PZD send double word / PZD send DW

Data type: Unsigned32 **Visible in:** Standard display

Read permission: Read drive data or acknowledge messages

Write permission: Edit device configuration or drive applications

Parameter group: Send direction

Not relevant for motor type: -

Dyn. index [0...n]: - **Calculated:** -

Unit: - **Unit group:** - **Unit selection:** -

Type of signal interconnection: Sink numeric **Scaling:** 4000H
Factory interconnection: Fixed value: 0

Description: Signal of the PZD (actual values) in the double word format, which is sent to the fieldbus controller.

Index:
[0] = PZD 1 + 2
[1] = PZD 2 + 3
[2] = PZD 3 + 4
[3] = PZD 4 + 5
[4] = PZD 5 + 6
[5] = PZD 6 + 7
[6] = PZD 7 + 8
[7] = PZD 8 + 9
[8] = PZD 9 + 10
[9] = PZD 10 + 11
[10] = PZD 11 + 12
[11] = PZD 12 + 13
[12] = PZD 13 + 14
[13] = PZD 14 + 15
[14] = PZD 15 + 16
[15] = PZD 16 + 17
[16] = PZD 17 + 18
[17] = PZD 18 + 19
[18] = PZD 19 + 20
[19] = PZD 20 + 21
[20] = PZD 21 + 22
[21] = PZD 22 + 23
[22] = PZD 23 + 24
[23] = PZD 24 + 25
[24] = PZD 25 + 26
[25] = PZD 26 + 27
[26] = PZD 27 + 28
[27] = PZD 28 + 29
[28] = PZD 29 + 30
[29] = PZD 30 + 31
[30] = PZD 31 + 32

NOTICE
A signal interconnection of an individual PZD is only possible either with c2053 or c2063. It is possible that the interconnection is locked as a result of a set PROFIdrive telegram. A maximum of 4 indices of the "trace" function can be used.

p2100[0...19] Change fault response fault number / Chg resp flt_no

Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Faults / alarms
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0	65535	0

Description: Selects the faults for which the fault response should be changed

Dependency: The fault is selected and the required response is set under the same index.
See also: p2101

Note
Re-parameterization is also possible if a fault is present. The change only becomes effective after the fault has been resolved.

p2101[0...19] Change fault response response / Chg resp resp

Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Faults / alarms	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	7	0

Description: Sets the fault response for the selected fault.

Value:
0: NONE
1: OFF1
2: OFF2
3: OFF3
5: STOP2
6: Internal armature short-circuit / DC braking
7: ENCODER (p0491)

Dependency: The fault is selected and the required response is set under the same index.
See also: p2100

NOTICE
For the following cases, it is not possible to re-parameterize the fault response to a fault:
- Fault number does not exist (exception value = 0).
- Message type is not "fault" (F).
- Fault response is not permissible for the set fault number.

Note
Re-parameterization is also possible if a fault is present. The change only becomes effective after the fault has been resolved.
The fault response can only be changed for faults with the appropriate identification (see the List Manual, chapter "Faults and alarms").
Example:
F12345 and fault response = OFF3 (OFF1, OFF2, NONE)
--> The default fault response OFF3 can be changed to OFF1, OFF2 or NONE.
For value = 1 (OFF1):
Braking along the ramp-function generator down ramp followed by a pulse inhibit.
For value = 2 (OFF2):
Internal/external pulse inhibit.
For value = 3 (OFF3):
Braking along the OFF3 down ramp followed by a pulse inhibit.
For value = 5 (STOP2):
n_set = 0
For value = 6 (armature short-circuit, internal/DC braking):
The value can only be set for all motor data sets when p1231 = 3, 4.
a) For synchronous motors (p0300 = 2xx, 4xx), an internal armature short-circuit is executed.
b) For induction motors (p0300 = 1xx), a DC braking is initiated.
For value = 7 (ENCODER (p0491)):
The fault response set in p0491 is executed if applicable.
Note:
IASC: Internal Armature Short Circuit
DCBRK: DC braking

c2103[0...n] 1st acknowledge faults / 1st acknowledgment

Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Faults / alarms	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	[0] Fixed value: 0 [1] Parameter: 722.2 [2] Fixed value: 0 [3] Fixed value: 0	

Description: Signal 1 to acknowledge faults.

NOTICE
It is possible that the interconnection is locked as a result of a set PROFIdrive telegram.

Note
A fault acknowledgment is triggered with a 0/1 signal.

c2104[0...n] 2nd acknowledge faults / 2nd acknowledgment

Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Faults / alarms	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -

Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: [0] Parameter: 722.2
[1] Fixed value: 0
[2] Fixed value: 0
[3] Fixed value: 0

Description: Signal 2 to acknowledge faults.

Note
A fault acknowledgment is triggered with a 0/1 signal.

c2106[0...n] External fault 1 / External fault 1

Data type: Unsigned8 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Faults / alarms
Not relevant for motor type: -
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 1

Description: Signal for external fault 1.
Dependency: See also: F07860

Note
An external fault is triggered with a 1/0 edge.

c2107[0...n] External fault 2 / External fault 2

Data type: Unsigned8 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Faults / alarms
Not relevant for motor type: -
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 1

Description: Signal for external fault 2.
Dependency: See also: F07861

Note
An external fault is initiated with a 1->0 edge.
Function "Temperature monitoring braking resistor" is activated if this signal is interconnected with r0722, and an active external fault 2 also inhibits braking resistor operation.

r2109[0...63] Fault time removed in milliseconds / t_flt removed ms

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Faults / alarms
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: ms **Unit group:** - **Unit selection:** -

Description: Displays the system runtime in milliseconds when the fault was removed.

Dependency: See also: r0945, r0947, r0948, r0949, r2114, r2130, r2133, r2136, r3120, r3122

NOTICE
The time comprises r2136 (days) and r2109 (milliseconds).

Note
The buffer parameters are cyclically updated in the background (refer to status signal in r2139).
The structure of the fault buffer and the assignment of the indices is shown in r0945.

r2111 Alarm counter / Alarm counter

Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Faults / alarms
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Number of alarms that have occurred.

Dependency: See also: r2122, r2123, r2124, r2125

Note
The parameter is reset to 0 at POWER ON.

r2114[0...1] System runtime total / Sys runtime tot

Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Diagnostics general
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the total system runtime of the converter.
The time comprises r2114[0] (milliseconds) and r2114[1] (days).
After r2114[0] has reached a value of 86.400.000 ms (24 hours) this value is reset and r2114[1] is incremented.

Index: [0] = Milliseconds
[1] = Days

Note
The counter values are saved when the power supply is switched off.
After the converter is switched on, the counter continues to run with the last value that was saved.

p2118[0...19] Change message type message number / Chg type msg_no

Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Faults / alarms
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0	65535	0

Description: Selects faults or alarms for which the message type should be changed.

Dependency: Selects the fault or alarm selection and sets the required type of message realized under the same index.
See also: p2119

Note
Re-parameterization is also possible if a message is present. The change only becomes effective after the message has gone.

p2119[0...19] Change message type type / Change type type

Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Faults / alarms	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
1	3	1

Description: Sets the message type for the selected fault or alarm.

Value:
1: Fault (F)
2: Alarm (A)
3: No message (N)

Dependency: Selects the fault or alarm selection and sets the required type of message realized under the same index.
See also: p2118

Note
Re-parameterization is also possible if a message is present. The change only becomes effective after the message has gone.
The message type can only be changed for messages with the appropriate identification (exception, value = 0).
Example:
F12345(A) --> Fault F12345 can be changed to alarm A12345.

r2121 Counter alarm buffer changes / A buff changed

Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Faults / alarms	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** -

Description: This counter is incremented every time the alarm buffer changes.

Dependency: See also: r2122, r2123, r2124, r2125

r2122[0...63] Alarm code / Alarm code

Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Faults / alarms	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -

Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the codes of alarms that have occurred.

Dependency: See also: r2123, r2124, r2125, r2134, r2145, r2146, r3121, r3123

NOTICE
The properties of the alarm buffer should be taken from the corresponding product documentation.

Note

The parameters of the alarm buffer are cyclically updated (states are indicated in r2139).
Alarm buffer structure (general principle):
Currently active alarms:
r2122[0], r2124[0], r2123[0], r2125[0], r3121[0], r3123[0] --> oldest active alarm
. . .
r2122[7], r2124[7], r2123[7], r2125[7], r3121[7], r3123[7] --> latest active alarm
For more than 8 active alarms, only the entries are overwritten at the eighth position (index 7).

History of alarms that have gone (problem no longer active):
r2122[8], r2124[8], r2123[8], r2125[8], r3121[8], r3123[8] --> latest alarm that has gone
. . .
r2122[63], r2124[63], r2123[63], r2125[63], r3121[63], r3123[63] --> oldest alarm that has gone

r2123[0...63] Alarm time received in milliseconds / t_alarm recv ms

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Faults / alarms
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: ms **Unit group:** - **Unit selection:** -

Description: Displays the system runtime in milliseconds when the alarm occurred.

Dependency: See also: r2114, r2122, r2124, r2125, r2134, r2145, r2146, r3121, r3123

NOTICE
The time comprises r2145 (days) and r2123 (milliseconds).

Note

The buffer parameters are cyclically updated in the background (refer to status signal in r2139).
The structure of the alarm buffer and the assignment of the indices is shown in r2122.

r2124[0...63] Alarm value / Alarm value

Data type: Integer32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Faults / alarms
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays additional information about the active alarm (as integer number).

Dependency: See also: r2122, r2123, r2125, r2134, r2145, r2146, r3121, r3123

Note

The buffer parameters are cyclically updated in the background (refer to status signal in r2139).
The structure of the alarm buffer and the assignment of the indices is shown in r2122.

r2125[0...63] Alarm time removed in milliseconds / t_alarm removed ms

Data type: Unsigned32 **Visible in:** Extended display

Read permission: Read drive data or acknowledge messages
Parameter group: Faults / alarms
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: ms **Unit group:** - **Unit selection:** -

Description: Displays the system runtime in milliseconds when the alarm was removed.

Dependency: See also: r2114, r2122, r2123, r2124, r2134, r2145, r2146, r3121, r3123

NOTICE
The time comprises r2146 (days) and r2125 (milliseconds).

Note
The buffer parameters are cyclically updated in the background (refer to status signal in r2139).
The structure of the alarm buffer and the assignment of the indices is shown in r2122.

r2130[0...63] Fault time received in days / t_fault recv days

Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Faults / alarms
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the system runtime in days when the fault occurred.

Dependency: See also: r0945, r0947, r0948, r0949, r2109, r2114, r2133, r2136, r3120, r3122

NOTICE
The time comprises r2130 (days) and r0948 (milliseconds).

Note
The buffer parameters are cyclically updated in the background (refer to status signal in r2139).

r2131 Actual fault code / Act fault code

Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Faults / alarms
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** -

Description: Displays the code of the oldest active fault.

Note
0: No fault present.

r2132 Actual alarm code / Alarm code act

Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Faults / alarms
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** -

Description: Displays the code of the last alarm that occurred.

Note
0: No alarm present.

r2133[0...63] Fault value for float values / Fault val float

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Faults / alarms
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays additional information about the fault that occurred for float values.
Dependency: See also: r0945, r0947, r0948, r0949, r2109, r2130, r2136

Note
The buffer parameters are cyclically updated in the background (refer to status signal in r2139).

r2134[0...63] Alarm value for float values / Alarm value float

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Faults / alarms
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays additional information about the active alarm for float values.
Dependency: See also: r2122, r2123, r2124, r2125, r2145, r2146, r3121, r3123

Note
The buffer parameters are cyclically updated in the background (refer to status signal in r2139).

r2135.6...15 Status word faults/alarms 2 / ZSW fault/alarm 2

Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Faults / alarms
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Displays the second status word of faults and alarms.

Bit array:

Bit	Signal name	1 signal	0 signal
06	No alarm motor overtemperature	Yes	No
07	No alarm thermal power unit overload	Yes	No
12	Fault motor overtemperature	Yes	No
13	Fault power unit thermal overload	Yes	No
14	Alarm motor overtemperature	Yes	No
15	Alarm power unit thermal overload	Yes	No

r2136[0...63] Fault time removed in days / t_flt rem days

Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages

Parameter group: Faults / alarms
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the system runtime in days when the fault was removed.

Dependency: See also: r0945, r0947, r0948, r0949, r2109, r2114, r2130, r2133, r3120, r3122

NOTICE
The time comprises r2136 (days) and r2109 (milliseconds).

Note
The buffer parameters are cyclically updated in the background (refer to status signal in r2139).

r2139.0...15 Status word faults/alarms 1 / ZSW fault/alarm 1

Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Faults / alarms
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Displays status word 1 of faults and alarms.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Being acknowledged	Yes	No
01	Acknowledgment required	Yes	No
03	Fault present	Yes	No
05	Safety message present	Yes	No
07	Alarm present	Yes	No
11	Alarm class bit 0	High	Low
12	Alarm class bit 1	High	Low
13	Maintenance required	Yes	No
14	Maintenance urgently required	Yes	No
15	Fault gone/can be acknowledged	Yes	No

Note
For bit 03, 05, 07:
These bits are set if at least one fault/alarm or safety message occurs. The entry in the fault/alarm buffer or safety message buffer is delayed. This is the reason that the fault/alarm buffer or safety message buffer should only be read if, after "Fault active", "Alarm active" or "Safety message active" occurs, a change is also identified in the buffer (r0944, r2121, r60044).
For bits 11, 12:
These status bits are used for the classification of internal alarm classes and are intended for diagnostic purposes only on certain automation systems with integrated SINAMICS functionality.

p2140[0...n] Hysteresis speed 2 / n_hysteresis 2

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Speed messages
Not relevant for motor type: -

Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.00 [rpm]	300.00 [rpm]	90.00 [rpm]

Description: Sets the hysteresis speed (bandwidth) for the following signals:
"|n_act| <= speed threshold 2" (r2197.1)
"|n_act| > speed threshold 2" (r2197.2)

Dependency: See also: p2155, r2197

p2141[0...n] Speed threshold 1 / n_thr val 1

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed messages	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.00 [rpm]	210000.00 [rpm]	5.00 [rpm]

Description: Sets the speed threshold value for signal "f or n comparison value reached or exceeded" (r2199.1).

Dependency: See also: p2142, r2199

p2142[0...n] Hysteresis speed 1 / n_hysteresis 1

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed messages	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.00 [rpm]	300.00 [rpm]	2.00 [rpm]

Description: Sets the hysteresis speed (bandwidth) for signal "f or n / v comparison value reached or exceeded" (r2199.1).

Dependency: See also: p2141, r2199

c2144[0...n] Motor stall monitoring enable (negated) / Mot stall enab neg

Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Speed messages	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal for the negated enable (0 signal = enable) of the motor blocked monitoring.

Dependency: See also: p2163, p2164, p2166, r2197, r2198
See also: F07900

Note
When interconnecting the enable signal with r2197.7 then the stall signal is suppressed if there is no speed setpoint - actual value deviation.

r2145[0...63] Alarm time received in days / t_alarm recv days

Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Faults / alarms
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the system runtime in days when the alarm occurred.

Dependency: See also: r2114, r2122, r2123, r2124, r2125, r2134, r2146, r3121, r3123

NOTICE
The time comprises r2145 (days) and r2123 (milliseconds).

Note
The buffer parameters are cyclically updated in the background (refer to status signal in r2139).

r2146[0...63] Alarm time cleared in days / t_alarm clear days

Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Faults / alarms
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the system runtime in days when the alarm was cleared.

Dependency: See also: r2114, r2122, r2123, r2124, r2125, r2134, r2145, r3121, r3123

NOTICE
The time comprises r2146 (days) and r2125 (milliseconds).

Note
The buffer parameters are cyclically updated in the background (refer to status signal in r2139).

c2148[0...n] Ramp-function generator active / RFG active

Data type: Unsigned8 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Speed messages
Not relevant for motor type: -
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** automatic
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal for command "Ramp-function generator active" for the following messages.
"Speed setpoint - actual value deviation within tolerance t_on" (r2199.4)
"Ramp-up/ramp-down completed" (r2199.5)

NOTICE
It is possible that the interconnection is locked as a result of a set PROFIdrive telegram.

Note
The binary signal sink is automatically preassigned with r1199.2.

p2149[0...n].0...5 Monitoring configuration / Mon config

Data type: Unsigned32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed messages, Load torque monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-	-	0000 1001 bin

Description: Sets the configuration for messages and monitoring functions.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Enable alarm A07903	Yes	No
01	Load monitoring only in the 1st quadrant	Yes	No
03	n_act > p2155 own hysteresis	Yes	No
05	Stall monitoring for encoderless speed control	Yes	No

Dependency: See also: r2197
See also: A07903

Note
For bit 00:
Alarm A07903 is output when the bit is set with r2197.7 = 0 (n_set <> n_act).
For bit 01:
When the bit is set, the load monitoring is only executed in the 1st quadrant as a result of the positive characteristic parameters (p2182 ... p2190).
For bit 03:
When the bit is set, r2197.1 and r2197.2 are determined using separate hysteresis functions.
For bit 05:
When this bit is set, a change to open-loop speed controlled operation is only possible when the motor is stationary.

p2150[0...n] Hysteresis speed 3 / n_hysteresis 3

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed messages	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505

Min:	Max:	Factory setting:
0.00 [rpm]	300.00 [rpm]	2.00 [rpm]

Description: Sets the hysteresis speed (bandwidth) for the following signals:
"|n_act| < speed threshold 3" (r2199.0)
"n_set >= 0" (r2198.5)
"n_act >= 0" (r2197.3)

Dependency: See also: p2161, r2197, r2199

c2151[0...n] Speed setpoint for messages/signals / n_set for msg

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Speed messages	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: rpm	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** p2000
Factory interconnection:	Parameter: 1170	

Description: Signal for the speed setpoint for the following messages:
"Speed setpoint - actual value deviation within tolerance t_off" (r2197.7)
"Ramp-up/ramp-down completed" (r2199.5)
"|n_set| < p2161" (r2198.4)
"n_set > 0" (r2198.5)

Dependency: See also: r2197, r2198, r2199

p2152[0...n] Delay for comparison n > n_max / Del n > n_max

Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed messages	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [ms]	10000 [ms]	200 [ms]

Description: Sets the delay time for comparing the speed with the maximum speed.

Dependency: See also: p1082, r1084, r1087, p2162

p2153[0...n] Speed actual value filter time constant / n_ActV filt Tc

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed messages	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -

Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [ms]	1000000 [ms]	0 [ms]

Description: Sets the time constant of the PT1 element to smooth the speed / velocity actual value.
The smoothed actual speed/velocity is compared with the threshold values and is only used for messages and signals.

Dependency: See also: r2169

c2154[0...n] Speed setpoint 2 for messages / n_set 2 message

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Speed messages	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: rpm	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** p2000
Factory interconnection:	Fixed value: 0.00 [rpm]	

Description: Signal for speed setpoint 2.
The sum of c2151 and c2154 is used for the following messages/signals:
"Speed setpoint - actual value deviation within tolerance t_off" (r2197.7)
"Speed setpoint - actual value deviation within tolerance t_on" (r2199.4)
"Ramp-up/ramp-down completed" (r2199.5)

Dependency: See also: c2151, r2197, r2199

p2155[0...n] Speed threshold 2 / n_thr val 2

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed messages	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.00 [rpm]	210000.00 [rpm]	900.00 [rpm]

Description: Sets the speed threshold value for the following messages:
"|n_act| <= speed threshold 2" (r2197.1)
"|n_act| > speed threshold 2" (r2197.2)

Dependency: See also: p2140, r2197

⚠ CAUTION
The filter monitoring function is deactivated with p2155 = 0.0.

Note
The parameter is used as alarm threshold for underspeed monitoring.

p2156[0...n] On-delay comparison value reached / t_on cmpr val rchd

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	

Can be changed in the operating state:	Operation	
Parameter group:	Speed messages	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [ms]	10000.0 [ms]	0.0 [ms]

Description: Sets the switch-on delay time for the signal "Comparison value reached" (r2199.1).

Dependency: See also: p2141, p2142, r2199

p2157[0...n] Speed threshold 5 / n_thresh val 5

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed messages	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.00 [rpm]	210000.00 [rpm]	900.00 [rpm]

Description: Sets the speed threshold value for the following messages:
"|n_act| <= speed threshold value 5" (r2198.0)
"|n_act| > speed threshold value 5" (r2198.1)

Dependency: See also: p2150, p2158

p2158[0...n] Delay for n_act comparison with speed threshold value 5 / Del compar n_5

Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed messages	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [ms]	10000 [ms]	10 [ms]

Description: Sets the delay time for the comparison of the speed with the speed threshold value 5 (p2157).

Dependency: See also: p2150, p2157

p2159[0...n] Speed threshold 6 / n_thresh val 6

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed messages	

Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.00 [rpm]	210000.00 [rpm]	900.00 [rpm]

Description: Sets the speed threshold value for the following messages:
"|n_act| <= speed threshold value 6" (r2198.2)
"|n_act| > speed threshold value 6" (r2198.3)

Dependency: See also: p2150, p2160

p2160[0...n] Delay for n_act comparison with speed threshold value 6 / Del compar n_6

Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed messages	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [ms]	10000 [ms]	10 [ms]

Description: Sets the delay time for the comparison of the speed with the speed threshold value 6 (p2159).

Dependency: See also: p2150, p2159

p2161[0...n] Speed threshold 3 / n_thr val 3

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed messages	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.00 [rpm]	210000.00 [rpm]	5.00 [rpm]

Description: Sets the speed threshold value for signal "|n_act| < speed threshold 3" (r2199.0).

Dependency: See also: p2142, r2199

⚠ CAUTION
The threshold monitoring function is deactivated with p2161 = 0.0.

Note
The parameter is used as fault threshold for underspeed monitoring

p2162[0...n] Hysteresis speed n_act > n_max / Hyst n_act>n_max

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	

Can be changed in the operating state:	Operation	
Parameter group:	Speed messages	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.00 [rpm]	60000.00 [rpm]	0.00 [rpm]

Description: Sets the hysteresis speed (bandwidth) for signal "n_act > n_max" (r2197.6).

Dependency: See also: r1084, r1087, r2197

NOTICE

For p0322 = 0, the following applies: p2162 <= 0.1 * p0311
For p0322 > 0, the following applies: p2162 <= 1.02 * p0322 - p1082
If one of the conditions is violated, p2162 is appropriately and automatically reduced when exiting the commissioning mode.

Note

For a negative speed limit, the hysteresis is effective below the limit value and for a positive speed limit, above the limit value.
If significant overshoot occurs in the maximum speed range (e.g. due to load shedding), you are advised to increase the dynamic response of the speed controller (if possible). If this is insufficient, the hysteresis p2162 can only be increased by more than 10% of the rated speed when the maximum speed (p0322) of the motor is sufficiently greater than the speed limit p1082.

p2163[0...n] Speed threshold 4 / n_thr val 4

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed messages	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.00 [rpm]	210000.00 [rpm]	90.00 [rpm]

Description: Sets the speed threshold value for signal "Speed setpoint - actual value deviation in tolerance t_off" (r2197.7).

Dependency: See also: p2164, p2166, r2197

p2164[0...n] Hysteresis speed 4 / n_hysteresis 4

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed messages	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.00 [rpm]	200.00 [rpm]	2.00 [rpm]

Description: Sets the hysteresis speed (bandwidth) for signal "Speed setpoint - actual value deviation in tolerance t_off" (r2197.7).
Dependency: See also: p2163, p2166, r2197

p2165[0...n] Load monitoring stall monitoring upper threshold / Stall_mon up thr

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Load torque monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.00 [rpm]	210000.00 [rpm]	0.00 [rpm]

Description: Sets the upper speed threshold of the stall monitoring of the pump or fan.
The lower limit is formed by the speed threshold 1 of the load monitoring (p2182).
The stall monitoring is active between p2182 and p2165.
Dependency: The following applies: p2182 < p2165
See also: p2181, p2182, p2193
See also: A07891, F07894, A07926

Note
For p2165 = 0 or p2165 < p2182, the following applies:
There is no special stall monitoring for the pump/fan, but only the remaining load monitoring functions (e.g. leakage monitoring for a pump) for the pump or fan are active.

p2166[0...n] Off-delay n_act = n_set / t_del_off n_i=n_so

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed messages, Enable logic	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [ms]	10000.0 [ms]	200.0 [ms]

Description: Sets the switch-off delay time for signal "Speed setpoint - actual value deviation in tolerance t_off" (r2197.7).
Dependency: See also: p2163, p2164, r2197

p2167[0...n] Switch-on delay n_act = n_set / t_on n_act=n_set

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed messages, Enable logic	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -

Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [ms]	10000.0 [ms]	200.0 [ms]

Description: Sets the switch-on delay time for signal "Speed setpoint - actual value deviation in tolerance t_on" (r2199.4).

p2168[0...n] Load monitoring stall monitoring torque threshold / Stall_mon M_thr

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Load torque monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: Nm	**Unit group:** 7_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.00 [Nm]	2e+07 [Nm]	1e+07 [Nm]

Description: Sets the torque threshold of the stall monitoring of the pump or fan.

If, in the monitored speed range from p2182 to p2165, the torque exceeds this threshold, then this is evaluated as either the motor having stalled or heavy-duty starting.

Dependency: For pumps, the following applies (p2193 = 4):

- The leakage characteristic must lie below the torque threshold for the stall monitoring
- The torque threshold for dry running operation must lie below the torque threshold for stall monitoring

For fans, the following applies (p2193 = 5):

- The torque threshold for the stall monitoring must lie above the torque threshold to identify belt breakage (p2191).

See also: p2165, p2181, p2191, p2193

See also: A07891, F07894, A07926

Note

The following applies for p2168 = 0:
The special stall monitoring for pump/fan is deactivated.
Then, only the remaining load monitoring functions (e.g. the leakage monitoring for a pump) for pump or fan are realized.

r2169 Actual speed smoothed signals / n_act smth message

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Speed messages, Load torque monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000

Description: Displays the smoothed speed actual value for messages

Dependency: See also: p2153

p2170[0...n] Current threshold value / I_thres

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	

Parameter group:	Messages / Monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: Arms	**Unit group:** 6_2	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.00 [Arms]	10000.00 [Arms]	0.00 [Arms]

Description: Sets the absolute current threshold for the messages.
"I_act >= I_threshold p2170" (r2197.8)
"I_act < I_threshold p2170" (r2198.8)

Dependency: See also: p2171

p2171[0...n] Current threshold value reached delay time / I_thresh rch t_del

Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Messages / Monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [ms]	10000 [ms]	10 [ms]

Description: Sets the delay time for the comparison of the current actual value (r0068) with the current threshold value (p2170).

Dependency: See also: p2170

p2172[0...n] DC link voltage threshold value / Vdc thresh val

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Messages / Monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: V	**Unit group:** 5_2	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0 [V]	2000 [V]	800 [V]

Description: Sets the threshold value for the DC link voltage for the following messages:
"Vdc_act <= Vdc_threshold p2172" (r2197.9)
"Vdc_act > Vdc_threshold p2172" (r2197.10)

Dependency: See also: p2173

p2173[0...n] DC link voltage comparison delay time / t_del Vdc

Data type: Unsigned16	**Visible in:** Extended display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications
Can be changed in the operating state:	Operation
Parameter group:	Messages / Monitoring

Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [ms]	10000 [ms]	10 [ms]

Description: Sets the delay time for the comparison of the DC link voltage r0070 with the threshold value p2172.

Dependency: See also: p2172

p2174[0...n] Torque threshold value 1 / M_thr val 1

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Messages / Monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: Nm	**Unit group:** 7_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.00 [Nm]	2e+07 [Nm]	5.13 [Nm]

Description: Sets the torque threshold value for the messages:
"Torque actual value > Torque threshold value 1 and n_set reached" (r2198.9)
"Torque setpoint < Torque threshold value 1" (r2198.10)
"Torque actual value > Torque threshold value 1" (r2198.13)

Dependency: See also: p2195, r2198

p2175[0...n] Motor blocked speed threshold / Mot blk n_thr

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed messages	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.00 [rpm]	210000.00 [rpm]	120.00 [rpm]

Description: Sets the speed threshold for signal "Motor blocked" (r2198.6).

Dependency: See also: p0500, p2177, r2198
See also: F07900

Note
The following applies for sensorless vector control for induction motors:
At low speeds in open-loop speed controlled operation (see p1755, p1756), a blocked motor cannot be detected.
The following applies for sensorless vector control for permanent magnet synchronous motors:
At low speeds in open-loop speed controlled operation (see p1755, p1756), a blocked motor can only be detected if p2175 = p1755, and p1750.6 is set to 1.

p2176[0...n] Torque threshold value comparison delay time / M_thrsh comp T_del

Data type: Unsigned16	**Visible in:** Extended display

Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Messages / Monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [ms]	10000 [ms]	200 [ms]

Description: Sets the delay time for the comparison of the torque actual value (r0080) with torque threshold value 1 (p2174).

Dependency: See also: p2174

p2177[0...n] Motor blocked delay time / Mot blk t_del

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Speed messages	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000 [s]	65.000 [s]	3.000 [s]

Description: Sets the delay time for signal "Motor blocked " (r2198.6).

Dependency: See also: p0500, p2175, r2198
See also: F07900

Note
The following applies for sensorless vector control:
At low speeds a locked motor can only be detected if no change is made to open-loop speed controlled operation. If this is the case, the value in p2177 must be reduced accordingly (p2177 < p1758) before time p2177 has elapsed in order to detect the locked state reliably.
As countermeasure, it is generally also possible to set p1750.6. This is only not permitted if the drive is slowly reversed by the load at the torque limit (speed below p1755 for longer than p1758).

p2178[0...n] Motor stalled delay time / Mot stall t_del

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Messages / Monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000 [s]	10.000 [s]	0.010 [s]

Description: Sets the delay time for the message "Motor stalled" (r2198.7).

Dependency: See also: r2198

Note
In the open-loop speed controlled operating range (see p1755, p1756), vector control stall monitoring depends on threshold p1745.
At higher speeds, the difference between flux setpoint r0083 and flux actual value r0084 is monitored.

p2179[0...n] Output load identification current limit / Outp_ld iden I_lim

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Messages / Monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: Arms	**Unit group:** 6_2	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.00 [Arms]	1000.00 [Arms]	0.00 [Arms]

Description: Sets the current limit for output load identification.
A missing output load is displayed using the "Output load not available" message (r2197.11 = 1).
This message is output with a delay time (p2180).

Dependency: See also: p2180

NOTICE
For synchronous motors the output current can be almost zero under no load conditions.

Note
Missing output load is signaled in the following cases:
- The motor is not connected.
- A phase failure has occurred.

p2180[0...n] Output load detection delay time / Out_load det t_del

Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Messages / Monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [ms]	10000 [ms]	2000 [ms]

Description: Sets the delay time for the message "output load not available" (r2197.11 = 1).

Dependency: See also: p2179

p2181[0...n] Load monitoring response / Load mon resp

Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	

Parameter group:	Load torque monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	8	0

Description: Sets the response when evaluating the load monitoring.

Value:
0: Load monitoring disabled
1: A07920 for torque/speed too low
2: A07921 for torque/speed too high
3: A07922 for torque/speed out of tolerance
4: F07923 for torque/speed too low
5: F07924 for torque/speed too high
6: F07925 for torque/speed out of tolerance
7: Pump/fan load monitoring as alarm
8: Pump/fan load monitoring as fault

Dependency: See also: p2182, p2183, p2184, p2185, p2186, p2187, p2188, p2189, p2190, p2192, p2193, r2198, c3230, p3231
See also: A07891, A07892, A07893, F07894, F07895, F07896, A07920, A07921, A07922, F07923, F07924, F07925

Note
This parameter setting has no effect on the generation of fault F07936.
The following load monitoring responses p2181 are possible for the various load monitoring configurations p2193:
p2193 = 1, 2, 3 --> p2181 = 0, 1, 2, 3
p2193 = 4, 5 --> p2181 = 0, 4, 5

p2182[0...n] Load monitoring speed threshold value 1 / n_thr 1

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Load torque monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.00 [rpm]	210000.00 [rpm]	150.00 [rpm]

Description: Sets the speed/torque envelope curve for load monitoring.
The envelope curve (upper and lower envelope curve) is defined as follows based on 3 speed thresholds:
p2182 (n_threshold 1) --> p2185 (M_threshold 1, upper), p2186 (M_threshold 1, lower)
p2183 (n_threshold 2) --> p2187 (M_threshold 2, upper), p2188 (M_threshold 2, lower)
p2184 (n_threshold 3) --> p2189 (M_threshold 3, upper), p2190 (M_threshold 3, lower)

Dependency: The following applies: p2182 < p2183 < p2184
See also: p2183, p2184, p2185, p2186
See also: A07926

Note
In order that the load monitoring can reliably respond, the speed threshold p2182 should always be set lower than the minimum motor speed to be monitored.

p2183[0...n] Load monitoring speed threshold value 2 / n_thr 2

Data type: FloatingPoint32 **Visible in:** Extended display

Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Load torque monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.00 [rpm]	210000.00 [rpm]	900.00 [rpm]

Description: Sets the speed/torque envelope curve for load monitoring.
The envelope curve (upper and lower envelope curve) is defined as follows based on 3 speed thresholds:
p2182 (n_threshold 1) --> p2185 (M_threshold 1, upper), p2186 (M_threshold 1, lower)
p2183 (n_threshold 2) --> p2187 (M_threshold 2, upper), p2188 (M_threshold 2, lower)
p2184 (n_threshold 3) --> p2189 (M_threshold 3, upper), p2190 (M_threshold 3, lower)

Dependency: The following applies: p2182 < p2183 < p2184
See also: p2182, p2184, p2187, p2188
See also: A07926

p2184[0...n] Load monitoring speed threshold value 3 / n_thr 3

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Load torque monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.00 [rpm]	210000.00 [rpm]	1500.00 [rpm]

Description: Sets the speed/torque envelope curve for load monitoring.
The envelope curve (upper and lower envelope curve) is defined as follows based on 3 speed thresholds:
p2182 (n_threshold 1) --> p2185 (M_threshold 1, upper), p2186 (M_threshold 1, lower)
p2183 (n_threshold 2) --> p2187 (M_threshold 2, upper), p2188 (M_threshold 2, lower)
p2184 (n_threshold 3) --> p2189 (M_threshold 3, upper), p2190 (M_threshold 3, lower)

Dependency: The following applies: p2182 < p2183 < p2184
See also: p2182, p2183, p2189, p2190
See also: A07926

Note
In order that the load monitoring can reliably respond, the speed threshold p2184 should always be set higher than the maximum motor speed to be monitored.

p2185[0...n] Load monitoring torque threshold 1 upper / M_thr 1 upper

Data type: FloatingPoint32	**Visible in:** Extended display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications
Can be changed in the operating state:	Operation
Parameter group:	Load torque monitoring

Not relevant for motor type: -
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** -
Unit: Nm **Unit group:** 7_1 **Unit selection:** p0505
Min: **Max:** **Factory setting:**
0.00 [Nm] 2e+07 [Nm] 1e+07 [Nm]

Description: Sets the speed/torque envelope curve for load monitoring.

Dependency: The following applies: p2185 > p2186
See also: p2182, p2186
See also: A07926

Note
The upper envelope curve is defined by p2185, p2187 and p2189.

p2186[0...n] Load monitoring torque threshold 1 lower / M_thr 1 lower

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Load torque monitoring
Not relevant for motor type: -
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** -
Unit: Nm **Unit group:** 7_1 **Unit selection:** p0505
Min: **Max:** **Factory setting:**
0.00 [Nm] 2e+07 [Nm] 0.00 [Nm]

Description: Sets the speed/torque envelope curve for load monitoring.

Dependency: The following applies: p2186 < p2185
See also: p2182, p2185
See also: A07926

Note
The lower envelope curve is defined by p2186, p2188 and p2190.

p2187[0...n] Load monitoring torque threshold 2 upper / M_thr 2 upper

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Load torque monitoring
Not relevant for motor type: -
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** -
Unit: Nm **Unit group:** 7_1 **Unit selection:** p0505
Min: **Max:** **Factory setting:**
0.00 [Nm] 2e+07 [Nm] 1e+07 [Nm]

Description: Sets the speed/torque envelope curve for load monitoring.

Dependency: The following applies: p2187 > p2188
See also: p2183, p2188
See also: A07926

Note
The upper envelope curve is defined by p2185, p2187 and p2189.

p2188[0...n] Load monitoring torque threshold 2 lower / M_thr 2 lower

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Load torque monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: Nm	**Unit group:** 7_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.00 [Nm]	2e+07 [Nm]	0.00 [Nm]

Description: Sets the speed/torque envelope curve for load monitoring.

Dependency: The following applies: p2188 < p2187
See also: p2183, p2187
See also: A07926

Note
The lower envelope curve is defined by p2186, p2188 and p2190.

p2189[0...n] Load monitoring torque threshold 3 upper / M_thr 3 upper

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Load torque monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: Nm	**Unit group:** 7_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.00 [Nm]	2e+07 [Nm]	1e+07 [Nm]

Description: Sets the speed/torque envelope curve for load monitoring.

Dependency: The following applies: p2189 > p2190
See also: p2184, p2190
See also: A07926

Note
The upper envelope curve is defined by p2185, p2187 and p2189.

p2190[0...n] Load monitoring torque threshold 3 lower / M_thr 3 lower

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Load torque monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: Nm	**Unit group:** 7_1	**Unit selection:** p0505

Min:	Max:	Factory setting:
0.00 [Nm]	2e+07 [Nm]	0.00 [Nm]

Description: Sets the speed/torque envelope curve for load monitoring.

Dependency: The following applies: p2190 < p2189
See also: p2184, p2189
See also: A07926

Note
The lower envelope curve is defined by p2186, p2188 and p2190.

p2191[0...n] Load monitoring torque threshold no load / M_thr no load

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Load torque monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: Nm	**Unit group:** 7_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.00 [Nm]	2e+07 [Nm]	0.00 [Nm]

Description: Setting of the torque threshold to identify dry running operation for pumps or belt breakage for fans.

Dependency: The following applies: p2191< p2168 if p2168 <> 0
See also: p2181, p2182, p2184, p2193
See also: A07892, F07895, A07926

Note
For the setting p2191 = 0, the monitoring for dry running operation or belt breakage is deactivated.
Pre-assignment: p2191 = 5 % of the rated motor torque (r0333).

p2192[0...n] Load monitoring delay time / Load mon t_del

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Load torque monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [s]	65.00 [s]	10.00 [s]

Description: Sets the delay time to evaluate the load monitoring.

p2193[0...n] Load monitoring configuration / Load mon config

Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	

	Parameter group:	Load torque monitoring	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
	Unit: -	**Unit group:** -	**Unit selection:** -
	Min:	**Max:**	**Factory setting:**
	0	5	0

Description: Sets the load monitoring configuration.

Value:

0: Monitoring switched out
1: Monitoring torque and load drop
2: Monitoring speed and load drop
3: Monitoring load drop
4: Monitoring pump and load failure
5: Monitoring fan and load failure

Dependency: See also: p2182, p2183, p2184, p2185, p2186, p2187, p2188, p2189, p2190, p2192, r2198, c3230, p3231, c3232
See also: A07891, A07892, A07893, F07894, F07895, F07896, A07920, A07921, A07922, F07923, F07924, F07925, F07936

Note
For the load monitoring, depending on the set configuration (p2193) the following response (p2181) is possible:
p2193 = 1, 2, 3 --> p2181 = 0, 1, 2, 3
p2193 = 4, 5 --> p2181 = 0, 4, 5

p2194[0...n] Torque threshold value 2 / M_thr val 2

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Messages / Monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [%]	100.00 [%]	90.00 [%]

Description: Sets the torque threshold value for the message "Torque utilization < torque threshold value 2" (BO: r2199.11).
Message "Torque setpoint < p2174" (r2198.10) and "Torque utilization < p2194" (r2199.11) are only evaluated after "Run-up completed" and the delay time has expired.

Dependency: See also: r0033, p2195, r2199

p2195[0...n] Torque utilization switch-off delay / M_util t_off

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Messages / Monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [ms]	1000.0 [ms]	800.0 [ms]

Description: Sets the switch-off delay time for the negated signal "Run-up completed".
Message "Torque setpoint < p2174" (r2198.10) and "Torque utilization < p2194" (r2199.11) are only evaluated after "Run-up completed" and the delay time has expired.

Dependency: See also: p2174, p2194

p2196[0...n] Torque utilization scaling / M_util scal

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Messages / Monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [%]	1000.00 [%]	100.00 [%]

Description: Sets the scaling factor for torque utilization (r0033).

r2197.0...13 Status word monitoring 1 / ZSW mon 1

Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Speed messages, Control/status words	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source binary/numeric	**Scaling:** -

Description: Displays the first status word of the monitoring functions.

Bit array:

Bit	Signal name	1 signal	0 signal
00	|n_act| <= n_min p1080	Yes	No
01	|n_act| <= speed threshold 2 p2155	Yes	No
02	|n_act| > speed threshold 2 p2155	Yes	No
03	n_act >= 0	Yes	No
04	|n_act| >= n_set	Yes	No
05	|n_act| <= n_standstill p1226	Yes	No
06	|n_act| > n_max	Yes	No
07	Speed setpoint - actual value deviation in tolerance t_off	Yes	No
08	I_act >= I_threshold value p2170	Yes	No
09	Vdc_act <= Vdc_threshold value p2172	Yes	No
10	Vdc_act > Vdc_threshold value p2172	Yes	No
11	Output load is not present	Yes	No
12	|n_act| > n_max (delayed)	Yes	No
13	|n_act| > n_max (F07901)	Yes	No

NOTICE
For bit 06:
When the overspeed is reached, this bit is set and F07901 output immediately following this. The bit is canceled again as soon as the next pulse inhibit is present.

Note
For bit 00:
The threshold value is set in p1080 and the hysteresis in p2150.
For bit 01, 02:
The threshold value is set in p2155 and the hysteresis in p2140.
For bit 03:
1 signal direction of rotation positive.
0 signal: direction of rotation negative.
The hysteresis is set in p2150.
For bit 04:
The threshold value is set in r1119 and the hysteresis in p2150.
For bit 05:
The threshold value is set in p1226 and the delay time in p1228.
For bit 06:
The hysteresis is set in p2162.
For bit 07:
The threshold value is set in p2163 and the hysteresis is set in p2164.
For bit 08:
The threshold value is set in p2170 and the delay time in p2171.
For bit 09, 10:
The threshold value is set in p2172 and the delay time in p2173.
For bit 11:
The threshold value is set in p2179 and the delay time in p2180.
For bit 12:
The threshold value is set in p2182, the hysteresis in p2162, and the delay time (for canceling the signal) in p2152.
For bit 13:
Only for internal Siemens use.

r2198.0...13 Status word monitoring 2 / ZSW monitor 2

Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Speed messages, Load torque monitoring, Control/status words
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Displays the second status word of the monitoring functions.

Bit array:

Bit	Signal name	1 signal	0 signal
00	|n_act| <= speed threshold value 5	Yes	No
01	|n_act| > speed threshold value 5	Yes	No
02	|n_act| <= speed threshold value 6	Yes	No
03	|n_act| > speed threshold value 6	Yes	No
04	|n_set| < p2161	Yes	No
05	n_set > 0	Yes	No
06	Motor blocked	Yes	No
07	Motor stalled	Yes	No
08	|I_act| < I_threshold value p2170	Yes	No
09	|M_act| > torque threshold value 1 and n_set reached	Yes	No
10	|M_set| < torque threshold value 1	Yes	No
11	Load in the alarm range	Yes	No
12	Load in the fault range	Yes	No
13	|M_act| > torque threshold value 1	Yes	No

Note
For bit 10:
The torque threshold value 1 is set in p2174.
For bit 12:
This bit is reset after the fault cause disappears, even if the fault itself is still present.

r2199.0...11 Status word monitoring 3 / ZSW monitor 3

Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Speed messages, Control/status words
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Displays the third status word of the monitoring functions.

Bit array:

Bit	Signal name	1 signal	0 signal
00	|n_act| < speed threshold 3	Yes	No
01	f or n comparison value reached or exceeded	Yes	No
04	Speed setpoint - actual value deviation in tolerance t_on	Yes	No
05	Ramp-up/ramp-down completed	Yes	No
06	Current below the zero current threshold	Yes	No
07	Speed deviation model/external in tolerance	Yes	No
11	Torque utilization < torque threshold value 2	Yes	No

Note
For bit 00:
The speed threshold value 3 is set in p2161.
For bit 01:
The comparison value is set in p2141. We recommend setting the hysteresis (p2142) for canceling the bit to a value lower than that in p2141. Otherwise, the bit is not reset.
For bit 11:
The torque threshold value 2 is set in p2194.

c2200[0...n] Technology controller enable / Tec_ctrl enable

Variant: G220, G220 Clean Power
Available when function is active: PID controller
Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Technology PID controller
Not relevant for motor type: -
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal to activate/deactivate the technology controller.
The technology controller is switched in with a 1 signal.

p2201[0...n] Technology controller fixed value 1 / Tec_ctrl FixVal 1

Variant: G220, G220 Clean Power

Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Fixed setpoints	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: %	**Unit group:** 9_1	**Unit selection:** p0595
Type of signal interconnection:	Source numeric	**Scaling:** PERCENT
Min:	**Max:**	**Factory setting:**
-200.00 [%]	200.00 [%]	10.00 [%]

Description: Sets the value for fixed value 1 of the technology controller.

Dependency: See also: c2220, c2221, c2222, c2223, r2224, r2229

NOTICE
A signal interconnection to a parameter, which belongs to a drive data set, always acts on the active data set.

p2202[0...n] Technology controller fixed value 2 / Tec_ctrl FixVal 2

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Fixed setpoints	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: %	**Unit group:** 9_1	**Unit selection:** p0595
Type of signal interconnection:	Source numeric	**Scaling:** PERCENT
Min:	**Max:**	**Factory setting:**
-200.00 [%]	200.00 [%]	20.00 [%]

Description: Sets the value for fixed value 2 of the technology controller.

Dependency: See also: c2220, c2221, c2222, c2223, r2224, r2229

NOTICE
A signal interconnection to a parameter, which belongs to a drive data set, always acts on the active data set.

p2203[0...n] Technology controller fixed value 3 / Tec_ctrl FixVal 3

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	

Parameter group: Fixed setpoints
Not relevant for motor type: -
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** -
Unit: % **Unit group:** 9_1 **Unit selection:** p0595
Type of signal interconnection: Source numeric **Scaling:** PERCENT

Min:	Max:	Factory setting:
-200.00 [%]	200.00 [%]	30.00 [%]

Description: Sets the value for fixed value 3 of the technology controller.
Dependency: See also: c2220, c2221, c2222, c2223, r2224, r2229

NOTICE
A signal interconnection to a parameter, which belongs to a drive data set, always acts on the active data set.

p2204[0...n] Technology controller fixed value 4 / Tec_ctrl FixVal 4

Variant: G220, G220 Clean Power
Available when function is active: PID controller
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Fixed setpoints
Not relevant for motor type: -
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** -
Unit: % **Unit group:** 9_1 **Unit selection:** p0595
Type of signal interconnection: Source numeric **Scaling:** PERCENT

Min:	Max:	Factory setting:
-200.00 [%]	200.00 [%]	40.00 [%]

Description: Sets the value for fixed value 4 of the technology controller.
Dependency: See also: c2220, c2221, c2222, c2223, r2224, r2229

NOTICE
A signal interconnection to a parameter, which belongs to a drive data set, always acts on the active data set.

p2205[0...n] Technology controller fixed value 5 / Tec_ctrl FixVal 5

Variant: G220, G220 Clean Power
Available when function is active: PID controller
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Fixed setpoints
Not relevant for motor type: -
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** -
Unit: % **Unit group:** 9_1 **Unit selection:** p0595
Type of signal interconnection: Source numeric **Scaling:** PERCENT

Min:	Max:	Factory setting:
-200.00 [%]	200.00 [%]	50.00 [%]

Description: Sets the value for fixed value 5 of the technology controller.

Dependency: See also: c2220, c2221, c2222, c2223, r2224, r2229

NOTICE
A signal interconnection to a parameter, which belongs to a drive data set, always acts on the active data set.

p2206[0...n] Technology controller fixed value 6 / Tec_ctrl FixVal 6

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Fixed setpoints	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: %	**Unit group:** 9_1	**Unit selection:** p0595
Type of signal interconnection:	Source numeric	**Scaling:** PERCENT
Min:	**Max:**	**Factory setting:**
-200.00 [%]	200.00 [%]	60.00 [%]

Description: Sets the value for fixed value 6 of the technology controller.

Dependency: See also: c2220, c2221, c2222, c2223, r2224, r2229

NOTICE
A signal interconnection to a parameter, which belongs to a drive data set, always acts on the active data set.

p2207[0...n] Technology controller fixed value 7 / Tec_ctrl FixVal 7

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Fixed setpoints	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: %	**Unit group:** 9_1	**Unit selection:** p0595
Type of signal interconnection:	Source numeric	**Scaling:** PERCENT
Min:	**Max:**	**Factory setting:**
-200.00 [%]	200.00 [%]	70.00 [%]

Description: Sets the value for fixed value 7 of the technology controller.

Dependency: See also: c2220, c2221, c2222, c2223, r2224, r2229

NOTICE
A signal interconnection to a parameter, which belongs to a drive data set, always acts on the active data set.

p2208[0...n] Technology controller fixed value 8 / Tec_ctrl FixVal 8

Variant:	G220, G220 Clean Power	

Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Fixed setpoints	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: %	**Unit group:** 9_1	**Unit selection:** p0595
Type of signal interconnection:	Source numeric	**Scaling:** PERCENT
Min:	**Max:**	**Factory setting:**
-200.00 [%]	200.00 [%]	80.00 [%]

Description: Sets the value for fixed value 8 of the technology controller.

Dependency: See also: c2220, c2221, c2222, c2223, r2224, r2229

NOTICE
A signal interconnection to a parameter, which belongs to a drive data set, always acts on the active data set.

p2209[0...n] Technology controller fixed value 9 / Tec_ctrl FixVal 9

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Fixed setpoints	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: %	**Unit group:** 9_1	**Unit selection:** p0595
Type of signal interconnection:	Source numeric	**Scaling:** PERCENT
Min:	**Max:**	**Factory setting:**
-200.00 [%]	200.00 [%]	90.00 [%]

Description: Sets the value for fixed value 9 of the technology controller.

Dependency: See also: c2220, c2221, c2222, c2223, r2224, r2229

NOTICE
A signal interconnection to a parameter, which belongs to a drive data set, always acts on the active data set.

p2210[0...n] Technology controller fixed value 10 / Tec_ctrl FixVal 10

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	

Parameter group: Fixed setpoints
Not relevant for motor type: -
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** -
Unit: % **Unit group:** 9_1 **Unit selection:** p0595
Type of signal interconnection: Source numeric **Scaling:** PERCENT

Min:	Max:	Factory setting:
-200.00 [%]	200.00 [%]	100.00 [%]

Description: Sets the value for fixed value 10 of the technology controller.
Dependency: See also: c2220, c2221, c2222, c2223, r2224, r2229

NOTICE
A signal interconnection to a parameter, which belongs to a drive data set, always acts on the active data set.

p2211[0...n] Technology controller fixed value 11 / Tec_ctrl FixVal 11

Variant: G220, G220 Clean Power
Available when function is active: PID controller
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Fixed setpoints
Not relevant for motor type: -
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** -
Unit: % **Unit group:** 9_1 **Unit selection:** p0595
Type of signal interconnection: Source numeric **Scaling:** PERCENT

Min:	Max:	Factory setting:
-200.00 [%]	200.00 [%]	110.00 [%]

Description: Sets the value for fixed value 11 of the technology controller.
Dependency: See also: c2220, c2221, c2222, c2223, r2224, r2229

NOTICE
A signal interconnection to a parameter, which belongs to a drive data set, always acts on the active data set.

p2212[0...n] Technology controller fixed value 12 / Tec_ctrl FixVal 12

Variant: G220, G220 Clean Power
Available when function is active: PID controller
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Fixed setpoints
Not relevant for motor type: -
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** -
Unit: % **Unit group:** 9_1 **Unit selection:** p0595
Type of signal interconnection: Source numeric **Scaling:** PERCENT

Min:	Max:	Factory setting:
-200.00 [%]	200.00 [%]	120.00 [%]

Description: Sets the value for fixed value 12 of the technology controller.
Dependency: See also: c2220, c2221, c2222, c2223, r2224, r2229

NOTICE
A signal interconnection to a parameter, which belongs to a drive data set, always acts on the active data set.

p2213[0...n] Technology controller fixed value 13 / Tec_ctrl FixVal 13

Variant: G220, G220 Clean Power
Available when function is active: PID controller
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Fixed setpoints
Not relevant for motor type: -
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** -
Unit: % **Unit group:** 9_1 **Unit selection:** p0595
Type of signal interconnection: Source numeric **Scaling:** PERCENT

Min:	Max:	Factory setting:
-200.00 [%]	200.00 [%]	130.00 [%]

Description: Sets the value for fixed value 13 of the technology controller.
Dependency: See also: c2220, c2221, c2222, c2223, r2224, r2229

NOTICE
A signal interconnection to a parameter, which belongs to a drive data set, always acts on the active data set.

p2214[0...n] Technology controller fixed value 14 / Tec_ctrl FixVal 14

Variant: G220, G220 Clean Power
Available when function is active: PID controller
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Fixed setpoints
Not relevant for motor type: -
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** -
Unit: % **Unit group:** 9_1 **Unit selection:** p0595
Type of signal interconnection: Source numeric **Scaling:** PERCENT

Min:	Max:	Factory setting:
-200.00 [%]	200.00 [%]	140.00 [%]

Description: Sets the value for fixed value 14 of the technology controller.
Dependency: See also: c2220, c2221, c2222, c2223, r2224, r2229

NOTICE
A signal interconnection to a parameter, which belongs to a drive data set, always acts on the active data set.

p2215[0...n] Technology controller fixed value 15 / Tec_ctrl FixVal 15

Variant: G220, G220 Clean Power

Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Fixed setpoints	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: %	**Unit group:** 9_1	**Unit selection:** p0595
Type of signal interconnection:	Source numeric	**Scaling:** PERCENT
Min:	**Max:**	**Factory setting:**
-200.00 [%]	200.00 [%]	150.00 [%]

Description: Sets the value for fixed value 15 of the technology controller.

Dependency: See also: c2220, c2221, c2222, c2223, r2224, r2229

NOTICE
A signal interconnection to a parameter, which belongs to a drive data set, always acts on the active data set.

p2216[0...n] Technology controller fixed value selection method / Tec_ctr FixVal sel

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: Integer16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Fixed setpoints	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
1	2	1

Description: Sets the method to select the fixed setpoints.

Value:
1: Direct selection
2: Binary selection

c2220[0...n] Technology controller fixed value selection bit 0 / Tec_ctrl sel bit 0

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Fixed setpoints	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0
Description: Signal to select a fixed value of the technology controller.
Dependency: See also: c2221, c2222, c2223

c2221[0...n] Technology controller fixed value selection bit 1 / Tec_ctrl sel bit 1

Variant: G220, G220 Clean Power
Available when function is active: PID controller
Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Fixed setpoints
Not relevant for motor type: -
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0
Description: Signal to select a fixed value of the technology controller.
Dependency: See also: c2220, c2222, c2223

c2222[0...n] Technology controller fixed value selection bit 2 / Tec_ctrl sel bit 2

Variant: G220, G220 Clean Power
Available when function is active: PID controller
Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Fixed setpoints
Not relevant for motor type: -
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0
Description: Signal to select a fixed value of the technology controller.
Dependency: See also: c2220, c2221, c2223

c2223[0...n] Technology controller fixed value selection bit 3 / Tec_ctrl sel bit 3

Variant: G220, G220 Clean Power
Available when function is active: PID controller
Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Fixed setpoints
Not relevant for motor type: -
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal to select a fixed value of the technology controller.

Dependency: See also: c2220, c2221, c2222

r2224 Technology controller fixed value effective / Tec_ctr FixVal eff

Variant: G220, G220 Clean Power
Available when function is active: PID controller
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Fixed setpoints
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: % **Unit group:** 9_1 **Unit selection:** p0595
Type of signal interconnection: Source numeric **Scaling:** PERCENT

Description: Displays the selected and effective fixed value of the technology controller.

Dependency: See also: r2229

r2225.0 Technology controller fixed value selection status word / Tec_ctr FixVal ZSW

Variant: G220, G220 Clean Power
Available when function is active: PID controller
Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Fixed setpoints
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Displays the status word of the fixed value selection of the technology controller.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Technology controller fixed value selected	Yes	No

r2229 Technology controller number actual / Tec_ctrl no act

Variant: G220, G220 Clean Power
Available when function is active: PID controller
Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Fixed setpoints
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the number of the selected fixed setpoint of the technology controller.

Dependency: See also: r2224

p2230[0...n].0...4 Technology controller motorized potentiometer configuration / Tec_ctr moP config

Variant: G220, G220 Clean Power

Available when function is active:	PID controller	
Data type: Unsigned32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motorized potentiometer	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-	-	0000 0100 bin

Description: Sets the configuration for the motorized potentiometer of the technology controller.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Data save active	Yes	No
02	Initial rounding-off active	Yes	No
03	Non-volatile data save active for p2230.0 = 1	Yes	No
04	Ramp-function generator always active	Yes	No

Dependency: See also: r2231, p2240

Note

For bit 00:

0: The setpoint for the motorized potentiometer is not saved and after ON is specified using p2240.

1: The setpoint for the motorized potentiometer is saved and after ON is specified using r2231. In order to save in a non-volatile fashion, bit 03 should be set to 1.

For bit 02:

0: Without initial rounding-off

1: With initial rounding-off.

The selected ramp-up/down time is correspondingly exceeded. The initial rounding-off is a sensitive way of specifying small changes (progressive reaction when keys are pressed). The jerk for initial rounding is independent of the ramp-up time and only depends on the selected maximum value (p2237).

It is calculated as follows:

r = 0.0001 x max(p2237, |p2238|) [%] / 0.13^2 [s^2]

The jerk is active until maximum acceleration is reached (a_max = p2237 [%] / p2247 [s] or a_max = p2238 [%] / p2248 [s]); after this, the drive continues to operate with constant, linear acceleration.

The higher the maximum acceleration (the lower that p2247 is), the longer the ramp-up time increases with respect to the set ramp-up time.

For bit 03:

0: Non-volatile data save deactivated.

1. The setpoint for the motorized potentiometer is saved in a non-volatile fashion (for p2230.0 = 1).

For bit 04:

When the bit is set, the ramp-function generator is computed independent of the pulse enable. The actual output value of the motorized potentiometer is always in r2250.

r2231 Technology controller motorized potentiometer setpoint memory / Tec_ctrl moP mem

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Motorized potentiometer	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -

Unit: % **Unit group:** 9_1 **Unit selection:** p0595

Description: Displays the setpoint memory for the motorized potentiometer of the technology controller.
For p2230.0 = 1, the last setpoint that was saved is specified after ON.

Dependency: See also: p2230

c2235[0...n] Technology controller motorized potentiometer raise setpoint / Tec_ctrl moP raise

Variant: G220, G220 Clean Power
Available when function is active: PID controller
Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Motorized potentiometer
Not relevant for motor type: -
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal to continually increase the setpoint for the motorized potentiometer of the technology controller.
The setpoint change (r2250) depends on the set ramp-up time (p2247) and the duration of the signal that is present (c2235).

Dependency: See also: c2236

c2236[0...n] Technology controller motorized potentiometer lower setpoint / Tec_ctrl moP lower

Variant: G220, G220 Clean Power
Available when function is active: PID controller
Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Motorized potentiometer
Not relevant for motor type: -
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal to continuously reduce the setpoint for the motorized potentiometer of the technology controller.
The setpoint change (r2250) depends on the set ramp-down time (p2248) and the duration of the signal that is present (c2236).

Dependency: See also: c2235

p2237[0...n] Technology controller motorized potentiometer maximum value / Tec_ctrl moP max

Variant: G220, G220 Clean Power
Available when function is active: PID controller
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation

Parameter group:	Motorized potentiometer	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: %	**Unit group:** 9_1	**Unit selection:** p0595
Min:	**Max:**	**Factory setting:**
-200.00 [%]	200.00 [%]	100.00 [%]

Description: Sets the maximum value for the motorized potentiometer of the technology controller.

Dependency: See also: p2238

p2238[0...n] Technology controller motorized potentiometer minimum value / Tec_ctrl moP min

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motorized potentiometer	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: %	**Unit group:** 9_1	**Unit selection:** p0595
Min:	**Max:**	**Factory setting:**
-200.00 [%]	200.00 [%]	-100.00 [%]

Description: Sets the minimum value for the motorized potentiometer of the technology controller.

Dependency: See also: p2237

p2240[0...n] Technology controller motorized potentiometer starting value / Tec_ctrl moP start

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motorized potentiometer	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: %	**Unit group:** 9_1	**Unit selection:** p0595
Min:	**Max:**	**Factory setting:**
-200.00 [%]	200.00 [%]	0.00 [%]

Description: Sets the starting value for the motorized potentiometer of the technology controller.
For p2230.0 = 0, this setpoint is specified after ON.

Dependency: See also: p2230

r2245 Technology controller mot. potentiometer setpoint before RFG / Tec_ctr mop befRFG

Variant:	G220, G220 Clean Power
Available when function is active:	PID controller

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Motorized potentiometer	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** 9_1	**Unit selection:** p0595
Type of signal interconnection:	Source numeric	**Scaling:** PERCENT

Description: Displays the effective setpoint in front of the internal motorized potentiometer ramp-function generator of the technology controller.

Dependency: See also: r2250

p2247[0...n] Technology controller motorized potentiometer ramp-up time / Tec_ctr moP t_r-up

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motorized potentiometer	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [s]	1000.0 [s]	10.0 [s]

Description: Sets the ramp-up time for the internal ramp-function generator for the motorized potentiometer of the technology controller.

Dependency: See also: p2248

Note
The time is referred to 100 %.
When the initial rounding-off is activated (p2230.2 = 1) the ramp-up is correspondingly extended.

p2248[0...n] Technology controller motorized potentiometer ramp-down time / Tec_ctrMoP t_rdown

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motorized potentiometer	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [s]	1000.0 [s]	10.0 [s]

Description: Sets the ramp-down time for the internal ramp-function generator for the motorized potentiometer of the technology controller.

Dependency: See also: p2247

Note
The time is referred to 100 %.
When the initial rounding-off is activated (p2230.2 = 1) the ramp-down is correspondingly extended.

r2250 Technology controller motorized potentiometer setpoint after RFG / Tec_ctr moP aftRFG

Variant: G220, G220 Clean Power
Available when function is active: PID controller
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Motorized potentiometer
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: % **Unit group:** 9_1 **Unit selection:** p0595
Type of signal interconnection: Source numeric **Scaling:** PERCENT

Description: Displays the effective setpoint after the internal ramp-function generator for the motorized potentiometer of the technology controller.

Dependency: See also: r2245

p2251 Technology controller mode / Tec_ctrl mode

Variant: G220, G220 Clean Power
Available when function is active: PID controller
Data type: Integer16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Ready for operation
Parameter group: Technology PID controller
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0	2	0

Description: Sets the mode for using the technology controller output.

Value:
0: Technology controller as speed main setpoint
1: Technology controller as supplementary speed setpoint
2: Technology controller can be freely interconnected

Dependency: p2251 = 0, 1 is only effective if the enable signal of the technology controller is interconnected (c2200 > 0). The controller is enabled if the enable via c2200 and also the drive enable are present.
p2251 = 1, 2 not possible when the essential service mode (ESM) activated with p3881 = 4.

Note
ESM: Essential Service Mode

p2252.0...8 Technology controller configuration / Tec_ctrl config

Variant: G220, G220 Clean Power
Available when function is active: PID controller
Data type: Unsigned16 **Visible in:** Extended display

Read permission:	Read drive data or acknowledge messages		
Write permission:	Edit device configuration or drive applications		
Can be changed in the operating state:	Operation		
Parameter group:	Technology PID controller		
Not relevant for motor type:	-		
Dyn. index [0...n]:	-	**Calculated:** -	
Unit: -	**Unit group:** -	**Unit selection:** -	
Min:	**Max:**	**Factory setting:**	
-	-	0000 0000 0011 0000 bin	

Description: Sets the configuration of the technology controller.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Ramp-up/down time independent of setpoint sign	Yes	No
01	Integrator independent of Kp	Yes	No
02	Shutdown output signal without ramp	Yes	No
03	Actual value limit	Yes	No
04	Ramp-up/ramp-down function generator bypass	Deactivated	Activated
05	Integrator active for skip speeds	Yes	No
06	Internal controller limit not displayed	Yes	No
07	Activate Kp adaptation	Yes	No
08	Activate Tn adaptation	Yes	No

Dependency: For bit 04 = 0:
The setting is only effective when the PID controller is deactivated.
See also: p2280, p2285

⚠ CAUTION

For bit 04 = 1 (p2251 = 0):
The PID controller can oscillate if the ramp-up and ramp-down times of the speed setpoint channel are not taken into account when setting controller parameters p2280 and p2285.

Note

For bit 00 = 0:
The ramp-down time (p2258) switches to the ramp-up time (p2257) when the sign for the output signal r2260 changes. When the sign changes, the output signal is kept at zero for one arithmetic cycle.
For bit 00 = 1:
When r2260 has a positive gradient, the ramp-up time (p2257) is active; when it has a negative gradient, the ramp-down time (p2258) is active. The sign for r2260 does not have any effect on the ramp time.

For bit 01 = 0:
The integration time of the PID controller is evaluated with the gain factor Kp (p2280) (p2285 = integral time).
For bit 01 = 1:
The integration time of the PID controller is independent of the gain factor (p2285 = integration time) if p2280 > 0.

For bit 02 = 0 (only for p2251 = 1.2):
When the PID controller is deactivated via c2200, the output signal r2294 is reduced to zero along the down ramp p2293.
For bit 02 = 1 (only for p2251 = 1.2):
When the PID controller is deactivated via c2200, the output signal r2294 is set directly to zero.

For bit 03 = 0:
The actual values are not limited by p2267 and p2268.
For bit 03 = 1:
The actual values are limited by p2267 and p2268.

For bit 04 = 0 (only for p2251 = 0):
The ramp-function generator in the speed setpoint channel is bypassed when the technology controller is operational.
As a consequence, ramp times p1120, p1121 are not taken into consideration when configuring the controller.
For bit 04 = 1 (only for p2251 = 0):
The ramp-function generator in the speed setpoint channel is not bypassed when the technology controller is operational.
As a consequence, the ramp-up and ramp-down times (p1120, p1121) remain effective, and must be taken into account as controlled system variables when setting the PID controller parameters (p2280, p2285).
The enable ramps of the PID controller are ensured in this setting by p1120, p1121 as well as rounding functions p1130 and p1131. The ramp-up/ramp-down time of the PID controller limiting p2293 must be set appropriately shorter, as otherwise this has an impact on the speed setpoint channel.

For bit 05 = 0 (only for p2251 = 0):
The integral component of the PID controller is held if a skip band or the minimum speed range is passed through in the speed set point channel.
This prevents the speed from oscillating between the edges of the skip band.
For bit 05 = 1 (only for p2251 = 0):
The setting is only effective if a skip band is no longer active.
The integral component of the PID controller is not held in the range of the skip speeds.
The skip band is passed through even for small system deviations and low controller gain factors. In so doing, the controller integral time must be selected large enough so that no undesirable speed oscillations occur between the skip band edges.
The influence of a minimum speed p1080 on the integration behavior can be reduced by raising the lower PID controller limit to p1080 / p2000 * 100%.

For bit 06 = 1:
When internal limits are reached, then bit 10 and bit 11 are not displayed in status word r2349 (e.g. for OFF1/OFF3).

c2253[0...n] Technology controller setpoint 1 / Tec_ctrl set 1

Variant: G220, G220 Clean Power

Available when function is active: PID controller

Data type: FloatingPoint32 **Visible in:** Standard display

Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Technology setpoint/actual values	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** PERCENT
Factory interconnection:	Fixed value: 0.00 [%]	

Description: Signal for setpoint 1 of the technology controller.

Dependency: See also: c2254, p2255

c2254[0...n] Technology controller setpoint 2 / Tec_ctrl set 2

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Technology setpoint/actual values	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** PERCENT
Factory interconnection:	Fixed value: 0.00 [%]	

Description: Signal for setpoint 2 of the technology controller.

Dependency: See also: c2253, p2256

p2255 Technology controller setpoint 1 scaling / Tec_ctrl set1 scal

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Technology setpoint/actual values	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [%]	100.00 [%]	100.00 [%]

Description: Sets the scaling for the setpoint 1 of the technology controller.

Dependency: See also: c2253

p2256 Technology controller setpoint 2 scaling / Tec_ctrl set2 scal

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Technology setpoint/actual values	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [%]	100.00 [%]	100.00 [%]

Description: Sets the scaling for the setpoint 2 of the technology controller.

Dependency: See also: c2254

p2257 Technology controller ramp-up time / Tec_ctrl t_ramp-up

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Technology setpoint/actual values	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [s]	650.00 [s]	1.00 [s]

Description: Sets the ramp-up time of the technology controller.

Dependency: See also: p2252, p2258

Note
The ramp-up time is referred to 100 %.

p2258 Technology controller ramp-down time / Tec_ctrl t_ramp-dn

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Technology setpoint/actual values	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [s]	650.00 [s]	1.00 [s]

Description: Sets the ramp-down time of the technology controller.

Dependency: See also: p2252, p2257

Note
The ramp-down time is referred to 100 %.

r2259 Technology controller total setpoint / Tec_ctr total setp

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Technology setpoint/actual values	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** 9_1	**Unit selection:** p0595
Type of signal interconnection:	Source numeric	**Scaling:** PERCENT

Description: Displays the total setpoint of the technology controller before the ramp-function generator.

r2260 Technology controller setpoint after ramp-function generator / Tec_ctr set aftRFG

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Technology setpoint/actual values	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** 9_1	**Unit selection:** p0595
Type of signal interconnection:	Source numeric	**Scaling:** PERCENT

Description: Displays the setpoint after the ramp-function generator of the technology controller.

p2261 Technology controller setpoint filter time constant / Tec_ctrl set Tc

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Technology setpoint/actual values	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000 [s]	60.000 [s]	0.000 [s]

Description: Sets the time constant for the setpoint filter (PT1) of the technology controller.

r2262 Technology controller setpoint after filter / Tec_ctr set aftFil

Variant:	G220, G220 Clean Power	

Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Technology setpoint/actual values	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** 9_1	**Unit selection:** p0595
Type of signal interconnection:	Source numeric	**Scaling:** PERCENT

Description: Display for the smoothed setpoint after the setpoint filter (PT1) of the technology controller.

p2263 Technology controller type / Tec_ctrl type

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Technology setpoint/actual values	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	1	0

Description: Sets the type of technology controller.

Value:
0: D component in the actual value signal
1: D component in system deviation

c2264[0...n] Technology controller actual value / Tec_ctrl ActV

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Technology setpoint/actual values	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** PERCENT
Factory interconnection:	Fixed value: 0.00 [%]	

Description: Signal for the actual value of the technology controller.

p2265 Technology controller actual value filter time constant / Tec_ctrl act Tc

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Standard display	

Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Technology setpoint/actual values	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000 [s]	60.000 [s]	0.000 [s]

Description: Sets the time constant for the actual value filter (PT1) of the technology controller.

r2266 Technology controller actual value after filter / Tec_ctr act aftFil

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Technology setpoint/actual values	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** 9_1	**Unit selection:** p0595
Type of signal interconnection:	Source numeric	**Scaling:** PERCENT

Description: The display for the smoothed actual value after the filter (PT1) of the technology controller.

p2267 Technology controller upper limit actual value / Tec_ctrl u_lim act

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Technology setpoint/actual values	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** 9_1	**Unit selection:** p0595
Min:	**Max:**	**Factory setting:**
-10000.00 [%]	10000.00 [%]	200.00 [%]

Description: Sets the upper limit for the actual value signal of the technology controller.

Dependency: See also: p2252, c2264, p2265, p2271

NOTICE
If the actual value exceeds this upper limit, this results in fault F07426.

Note
Limiting only active for p2252.3 = 1.

p2268 Technology controller lower limit actual value / Tec_ctrl l_lim act

Variant:	G220, G220 Clean Power	

Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Technology setpoint/actual values	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** 9_1	**Unit selection:** p0595
Min:	**Max:**	**Factory setting:**
-10000.00 [%]	10000.00 [%]	-200.00 [%]

Description: Sets the lower limit for the actual value signal of the technology controller.

Dependency: See also: p2252, c2264, p2265, p2271

NOTICE
If the actual value falls below this lower limit, this results in fault F07426.

Note
Limiting only active for p2252.3 = 1.

p2269 Technology controller gain actual value / Tec_ctrl gain ActV

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Technology setpoint/actual values	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [%]	500.00 [%]	100.00 [%]

Description: Sets the scaling factor for the actual value of the technology controller.

Dependency: See also: c2264, p2265, p2267, p2268, p2271

Note
For 100%, the actual value is not changed.

p2270 Technology controller actual value function / Tec_ctr ActV fct

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	

Parameter group:	Technology setpoint/actual values	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	3	0

Description: Setting to use an arithmetic function for the actual value signal of the technology controller.

Value:
0: Output (y) = input (x)
1: Root function (root from x)
2: Square function (x * x)
3: Cube function (x * x * x)

Dependency: See also: c2264, p2265, p2267, p2268, p2269, p2271

p2271 Technology controller actual value inversion (sensor type) / Tec_ctrl ActV inv

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: Integer16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Technology setpoint/actual values	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	1	0

Description: Setting to invert the actual value signal of the technology controller.
The inversion depends on the sensor type for the actual value signal.

Value:
0: No inversion
1: Inversion

⚠ CAUTION
If the actual value inversion is incorrectly selected, then the closed-loop control with the technology controller can become unstable and can oscillate!

Note
The correct setting can be determined as follows:
- Inhibit technology controller (c2200 = 0).
- Increase the motor speed and in so doing, measure the actual value signal of the technology controller.
--> If the actual value increases as the motor speed increases, then p2271 should be set to 0 (no inversion).
--> If the actual value decreases as the motor speed increases, then p2271 should be set to 1 (the actual value signal is inverted).

r2272 Technology controller actual value scaled / Tec_ctrl ActV scal

Variant:	G220, G220 Clean Power
Available when function is active:	PID controller
Data type: FloatingPoint32	**Visible in:** Standard display
Read permission:	Read drive data or acknowledge messages
Parameter group:	Technology setpoint/actual values

Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: % **Unit group:** 9_1 **Unit selection:** p0595
Type of signal interconnection: Source numeric **Scaling:** PERCENT

Description: Display for the scaled actual value signal of the technology controller.
Dependency: See also: c2264, p2265, r2266, p2267, p2268, p2269, p2270, p2271

r2273 Technology controller system deviation / Tec_ctrl SysDev

Variant: G220, G220 Clean Power
Available when function is active: PID controller
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Technology PID controller
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: % **Unit group:** 9_1 **Unit selection:** p0595
Type of signal interconnection: Source numeric **Scaling:** PERCENT

Description: Displays the system deviation between the setpoint and actual value of the technology controller.
Dependency: See also: p2263

p2274 Technology controller differentiation time constant / Tec_ctrl D comp Tc

Variant: G220, G220 Clean Power
Available when function is active: PID controller
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Technology PID controller
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: s **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0.000 [s]	60.000 [s]	0.000 [s]

Description: Sets the time constant for the differentiation (D component) of the technology controller.

Note
p2274 = 0: Differentiation is deactivated.

p2280 Technology controller proportional gain / Tec_ctrl Kp

Variant: G220, G220 Clean Power
Available when function is active: PID controller
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation

Parameter group:	Technology PID controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000	1000.000	1.000

Description: Sets the proportional gain (P component) of the technology controller.

Dependency: See also: p2252

Note
p2280 = 0: The proportional gain is disabled.

p2285 Technology controller integral time / Tec_ctrl Tn

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Technology PID controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000 [s]	10000.000 [s]	30.000 [s]

Description: Sets the integral time (I component, integrating time constant) of the technology controller.

NOTICE
The following applies for p2251 = 0:
If the output of the technology controller lies within the range of a suppression (skip) bandwidth (p1091 ... p1094, p1101) or below the minimum speed (p1080), the integral component of the controller is held so that the controller temporarily works as a P controller. This is necessary in order to prevent the controller from behaving in an unstable manner, as the ramp-function generator switches to the parameterized up and down ramps (p1120, p1121) at the same time in order to avoid setpoint steps. This state can be exited or avoided by changing the controller setpoint or by using the start speed (= minimum speed).

Note
When the controller output reaches the limit, the I component of the controller is held.
p2285 = 0:
The integral time is disabled and the I component of the controller is reset.

c2286[0...n] Hold technology controller integrator / Tec_ctr integ hold

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Technology PID controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -

Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Parameter: 56.13	

Description: Signal to hold the integrator for the technology controller.

c2289[0...n] Technology controller precontrol signal / Tec_ctr prectr_sig

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Technology PID controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** PERCENT
Factory interconnection:	Fixed value: 0.00 [%]	

Description: Precontrol signal of the technology controller.

c2290[0...n] Technology controller limiting enable / Tec_ctrl lim enab

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Technology PID controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 1	

Description: Signal to enable the technology controller output.
The technology controller output is enabled with a 1 signal.

p2291 Technology controller maximum limiting / Tec_ctrl max_lim

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Technology PID controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -

Type of signal interconnection:	Source numeric	**Scaling:** PERCENT
Min:	**Max:**	**Factory setting:**
-200.00 [%]	200.00 [%]	100.00 [%]

Description: Sets the maximum limit of the technology controller.

Dependency: See also: p2292

⚠ CAUTION

The maximum limit must always be greater than the minimum limit (p2291 > p2292).

p2292 Technology controller minimum limiting / Tec_ctrl min_lim

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Technology PID controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** PERCENT
Min:	**Max:**	**Factory setting:**
-200.00 [%]	200.00 [%]	0.00 [%]

Description: Sets the minimum limit of the technology controller.

Dependency: See also: p2291

⚠ CAUTION

The maximum limit must always be greater than the minimum limit (p2291 > p2292).

p2293 Technology controller ramp-up/ramp-down time / Tec_ctr t_RU/RD

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Technology PID controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [s]	100.00 [s]	1.00 [s]

Description: Sets the ramping time for the output signal of the technology controller.

Dependency: See also: p2291, p2292

Note

The time refers to the set maximum and minimum limits (p2291, p2292).

r2294 Technology controller output signal / Tec_ctrl outp_sig

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Technology PID controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** PERCENT

Description: Display for the output signal of the technology controller.

Dependency: See also: p2295

p2295 Technology controller output scaling / Tec_ctrl outp scal

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Technology PID controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** PERCENT
Min:	**Max:**	**Factory setting:**
-100.00 [%]	100.00 [%]	100.00 [%]

Description: Sets the scaling for the output signal of the technology controller.

c2296[0...n] Technology controller output scaling / Tec_ctrl outp scal

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Technology PID controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** PERCENT
Factory interconnection:	Parameter: 2295	

Description: Signal for the scaling value of the technology controller.

Dependency: See also: p2295

c2297[0...n] Technology controller maximum limiting / Tec_ctrl max_lim

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Technology PID controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** PERCENT
Factory interconnection:	Parameter: 1084	

Description: Signal for the maximum limiting of the technology controller.

Dependency: See also: p2291

Note
In order that the output of the technology controller does not exceed the maximum speed limit, its upper limit c2297 should be interconnected to the actual maximum speed r1084.

c2298[0...n] Technology controller minimum limiting / Tec_ctrl min_lim

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Technology PID controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** PERCENT
Factory interconnection:	Parameter: 2292	

Description: Signal for the minimum limiting of the technology controller.

Dependency: See also: p2292

Note
If the technology controller is operated in the negative direction of rotation in mode p2251 = 0, its lower limit c2298 should be interconnected to the actual minimum speed r1087.

c2299[0...n] Technology controller limit offset / Tec_ctrl lim offs

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Technology PID controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -

Type of signal interconnection: Sink numeric **Scaling:** PERCENT
Factory interconnection: Fixed value: 0.00 [%]

Description: Signal for the offset of the output limiting of the technology controller.

p2302 Technology controller output signal starting value / Tec_ctr start val

Variant: G220, G220 Clean Power
Available when function is active: PID controller
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Technology PID controller
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0.00 [%]	200.00 [%]	0.00 [%]

Description: Sets the start value for the output of the technology controller.
If the drive is switched on and the technology controller is already enabled (see c2200, r0056.3), then its output signal r2294 first goes to the start value p2302, before the controller starts to operate.

Dependency: The starting value is only effective in the mode "technology controller as speed main setpoint" (p2251 = 0).
If the technology controller is first enabled when the drive is switched on, a start speed remains ineffective, and the controller output starts with the actual setpoint speed of the ramp-function generator.

Note
If the technology controller operates on the speed/setpoint channel (p2251 = 0), then the starting value is interpreted as the starting speed and when operation is enabled, it is connected to the output of the technology controller (r2294).
If fault F07426 "Technology controller actual value limited" occurs while ramping up to the start value, the start value is kept as the speed setpoint instead of switching to closed-loop control operation.

p2306 Technology controller system deviation inversion / Tec_ctr SysDev inv

Variant: G220, G220 Clean Power
Available when function is active: PID controller
Data type: Integer16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Ready for operation
Parameter group: Technology PID controller
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0	1	0

Description: Setting to invert the system deviation of the technology controller.
The setting depends on the type of control loop.

Value:
0: No inversion
1: Inversion

⚠ CAUTION
If the actual value inversion is incorrectly selected, then the closed-loop control with the technology controller can become unstable and can oscillate!

Note

The correct setting can be determined as follows:
- Inhibit technology controller (c2200 = 0).
- Increase the motor speed and in so doing, measure the actual value signal (of the technology controller).
- If the actual value increases with increasing motor speed, then the inversion should be switched out.
- If the actual value decreases with increasing motor speed, then the inversion should be set.

For value = 0:
The drive reduces the output speed when the actual value rises (e.g. for heating fans, intake pump, compressor).
For value = 1:
The drive increases the output speed when the actual value increases (e.g. for cooling fans, discharge pumps).

c2310 Technology controller Kp adaptation input value / Kp adapt input

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Technology PID controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** PERCENT
Factory interconnection:	Fixed value: 0.00 [%]	

Description: Signal for the input value of the adaptation of proportional gain Kp for the technology controller.

Dependency: See also: p2252, p2311, p2312, p2313, p2314, c2315, r2316

p2311 Technology controller Kp adaptation lower value / Kp adapt lower val

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Technology PID controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000	1000.000	1.000

Description: Sets the lower value for the adaptation of proportional gain Kp for the technology controller.

Dependency: See also: c2310, p2312, p2313, p2314, c2315, r2316

⚠ CAUTION
The upper value must be set higher than the lower value (p2312 > p2311).

Note
Kp adaptation is activated with p2252.7 = 1.

p2312 Technology controller Kp adaptation upper value / Kp adapt upper val

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Technology PID controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000	1000.000	10.000

Description: Sets the upper value for the adaptation of proportional gain Kp for the technology controller.

Dependency: See also: c2310, p2311, p2313, p2314, c2315, r2316

⚠ CAUTION
The upper value must be set higher than the lower value (p2312 > p2311).

Note
Kp adaptation is activated with p2252.7 = 1.

p2313 Technology controller Kp adaptation lower starting point / Kp adapt lower pt

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Technology PID controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [%]	400.00 [%]	0.00 [%]

Description: Sets the lower starting point for the adaptation of proportional gain Kp for the technology controller.

Dependency: See also: c2310, p2311, p2312, p2314, c2315, r2316

⚠ CAUTION
The upper starting point must be set higher than the lower starting point (p2314 > p2313).

Note
Kp adaptation is activated with p2252.7 = 1.

p2314 Technology controller Kp adaptation upper starting point / Kp adapt upper pt

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Technology PID controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [%]	400.00 [%]	100.00 [%]

Description: Sets the upper activation point for the adaptation of proportional gain Kp for the technology controller.

Dependency: See also: c2310, p2311, p2312, p2313, c2315, r2316

⚠ CAUTION

The upper starting point must be set higher than the lower starting point (p2314 > p2313).

Note

Kp adaptation is activated with p2252.7 = 1.

c2315 Technology controller Kp adaptation scaling / Kp adapt scal

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Technology PID controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** PERCENT
Factory interconnection:	Fixed value: 100.00 [%]	

Description: Signal to scale the results of the adaptation of the proportional gain Kp for the technology controller.

Dependency: See also: c2310, p2311, p2312, p2313, p2314, r2316

Note

Kp adaptation is activated with p2252.7 = 1.

r2316 Technology controller, Kp adaptation output / Kp adapt output

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Technology PID controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -

Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** -

Description: Display for the output signal of the adaptation of proportional gain Kp for the technology controller.

Dependency: See also: p2252, c2310, p2311, p2312, p2313, p2314, c2315

c2317 Technology controller Tn adaptation input value / Tn adapt input

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Technology PID controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** PERCENT
Factory interconnection:	Fixed value: 0.00 [%]	

Description: Signal for the input value of the adaptation of integral time Tn for the technology controller.

Dependency: See also: p2252, p2318, p2319, p2320, p2321, r2322

Note
Tn adaptation is activated with p2252.8 = 1.

p2318 Technology controller Tn adaptation upper value / Tn adapt upper val

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Technology PID controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000 [s]	60.000 [s]	3.000 [s]

Description: Sets the upper value for the adaptation of integral time Tn for the technology controller.

Dependency: See also: c2317, p2319, p2320, p2321, r2322

Note
Tn adaptation is activated with p2252.8 = 1.

p2319 Technology controller Tn adaptation lower value / Tn adapt lower val

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	

Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Technology PID controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000 [s]	60.000 [s]	10.000 [s]

Description: Sets the lower value for the adaptation of integral time Tn for the technology controller.

Dependency: See also: c2317, p2318, p2320, p2321, r2322

Note
Tn adaptation is activated with p2252.8 = 1.

p2320 Technology controller Tn adaptation lower starting point / Tn adapt lower pt

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Technology PID controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [%]	400.00 [%]	0.00 [%]

Description: Sets the lower activation point for the adaptation of integral time Tn for the technology controller.

Dependency: See also: c2317, p2318, p2319, p2321, r2322

⚠ CAUTION
The upper starting point must be set higher than the lower starting point (p2321 > p2320).

Note
Tn adaptation is activated with p2252.8 = 1.

p2321 Technology controller Tn adaptation upper starting point / Tn adapt upper pt

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Technology PID controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -

Min:	Max:	Factory setting:
0.00 [%]	400.00 [%]	100.00 [%]

Description: Sets the upper activation point for the adaptation of integral time Tn for the technology controller.

Dependency: See also: c2317, p2318, p2319, p2320, r2322

⚠ CAUTION

The upper starting point must be set higher than the lower starting point (p2321 > p2320).

Note

Tn adaptation is activated with p2252.8 = 1.

r2322 Technology controller Tn adaptation output / Tn adapt outp

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Technology PID controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** -

Description: Display for the output signal of the adaptation of integral time Tn for the technology controller.

Dependency: See also: p2252, c2317, p2318, p2319, p2320, p2321

Note

Tn adaptation is activated with p2252.8 = 1.

p2339 Hold techn. controller I component for n_skip threshold value / Hold I comp thr

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Technology PID controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** 9_1	**Unit selection:** p0595
Min:	**Max:**	**Factory setting:**
0.00 [%]	200.00 [%]	2.00 [%]

Description: Sets the threshold value for the system deviation of the technology controller, which controls holding the controller integral component in the range of the skip speeds of the ramp-function generator.

Recommendation: To avoid speed setpoint steps in the range of the skip speeds, we recommend setting p2252.4 = 1 (ramp-function generator bypass deactivated).

Dependency: The parameter has no effect for p2252.5 = 1 (integrator hold deactivated).
See also: r2273

Note
Only p2251 = 0:
If the output signal of the technology controller reaches a skip band in the speed setpoint channel, then the integral component of the controller is held, if at the same time, the system deviation is lower than the threshold value set here. By holding the integral component, it can be avoided that the controller oscillates in the range of the skip bands.

r2344 Technology controller last speed setpoint (smoothed) / Tec_ctrl n_set_sm

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Technology PID controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** PERCENT

Description: Displays the smoothed speed setpoint of the technology controller prior to switching to operation with fault response (see p2345).

Dependency: The parameter is only active if the technology controller mode is set to p2251 = 0 (technology controller as main setpoint).
See also: p2345

Note
Smoothing time = 10 s

p2345 Technology controller fault response / Tec_ctrl flt resp

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Technology PID controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	2	0

Description: Sets the response of the technology controller to the occurrence of fault F07426 (technology controller actual value limited).
The fault response is executed if status bit 8 or 9 in the technology controller status word r2349 is set. If both status bits are zero, a switch back to technology controller operation will follow.

Value:
0: Function inhibited
1: On fault: Changeover to r2344 (or p2302)
2: On fault: Changeover to p2215

Dependency: The parameterized fault response is only effective if the technology controller mode is set to p2251 = 0 (technology controller as main setpoint).
See also: p2267, p2268, r2344

NOTICE
Dependent upon the application, the changing over of the setpoint when fault F07426 occurs can lead to the fault condition disappearing and the re-activation of the technology controller. This can repeat itself and cause limit oscillations. In this case, a different fault response or a different fixed setpoint 15 for the fault response p2345 = 2 should be selected.

Note
If the fault occurs while running up, then the start setpoint (p2302) is kept as the end value without changing over to the fault response setpoint.

r2349.0...15 Technology controller status word / Tec_ctrl ZSW

Variant: G220, G220 Clean Power
Available when function is active: PID controller
Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Technology PID controller
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Displays the status word of the technology controller.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Technology controller deactivated	Yes	No
01	Technology controller limited	Yes	No
02	Technology controller motorized potentiometer limited max	Yes	No
03	Technology controller motorized potentiometer limited min	Yes	No
04	Technology controller speed setpoint total in setpoint channel	Yes	No
05	Technology controller RFG bypassed in the setpoint channel	Yes	No
06	Technology controller starting value at the current limit	No	Yes
07	Technology controller output negative	Yes	No
08	Technology controller actual value at the minimum	Yes	No
09	Technology controller actual value at the maximum	Yes	No
10	Technology controller output at the minimum	Yes	No
11	Technology controller output at the maximum	Yes	No
12	Fault response active	Yes	No
13	Technology controller limiting enable	Yes	No
15	Technology controller autotuning active	Yes	No

Dependency: The technology controller only operates if the drive has been commissioned and the motor data identification and the rotating measurement have been completed or deactivated.
Bit 12 is only active in the mode "technology controller as speed main setpoint" (p2251 = 0).
Bit 15 indicates that the PID controller is in the auto tuning mode (see p2350).

p2350 Enable PID autotuning / Enable PID tuning

Variant: G220, G220 Clean Power
Available when function is active: PID controller
Data type: Integer16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications

Can be changed in the operating state:	Ready for operation	
Parameter group:	Technology controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	4	0

Description: Activates the function to automatically tune the PID controller. This parameter is set to zero after automatic tuning has been completed or is canceled.

Value:

0: Autotuning deactivated
1: PID autotuning with ZN technique
2: PID autotuning with increased dynamic response
3: PID autotuning with low / No overshoot
4: PI autotuning (without D component)

Dependency: Precondition for autotuning is that the technology controller operates in mode p2251 = 0 (main speed setpoint).
PID autotuning can only be activated when the drive is switched off. The function is active as soon as the PID controller is enabled (see c2200 and p0346).
See also: r2349

Note
The tuning technique should be selected depending on the particular application. Generally, this involves processes with long time constants.
The tuning technique itself is identical for all values. Only the P, I and D values are calculated differently.
For p2350 = 1:
Ziegler-Nichols standard tuning (ZN tuning). Standard technique to dimension the PID controller.
This setting is recommended for standard applications.
For p2350 = 2:
More dynamic tuning with shorter rise time than for p2350 = 1 and possible overshoot.
Recommended for applications that require a faster response than for "PID autotuning based on the ZN technique".
For p2350 = 3:
Tuning with low or No overshoot, and therefore lower dynamic response than for p2350 = 1.
Recommended for applications where overshoot is not desirable.
For p2350 = 4:
Tuning where gain and integral time are changed for a dampened response.
Recommended for applications where a D component is not desirable.

p2354 PID autotuning monitoring time / PID tuning t_monit

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Technology controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
60 [s]	65000 [s]	240 [s]

Description: Monitoring time for process response for PID autotuning.

The time monitoring is started after activating PID autotuning (p2350). If, within this time, the control loop is not excited, then the autotuning function is canceled and an appropriate fault is output.

Dependency: See also: p2350

Note
Monitoring time p2354 must be set longer than half the cycle duration of the process variable oscillation.

p2355[0...1] PID autotuning excitation / PID tuning excit

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Technology controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [%]	50 [%]	[0] 5 [%] [1] 10 [%]

Description: Sets the excitation of the PID control loop used. The offset defines the constant component and the amplitude defines the additive dynamic component of the excitation.

Recommendation: For encoderless vector control, p2000 * p2355[1] should not be set less than the motor model switchover speed p1755. It should be noted that p2000 * (p2355[1] - p2355[0]) should not be less than the switchover hysteresis p1755 * (1 - p1756 / 100%).

Index: [0] = Amplitude
[1] = Offset

Dependency: The amplitude of the excitation signal is limited to 50 % of the offset.

Note
If the Vdc_max controller responds during autotuning (see p1240, p1280), to achieve better results, the offset and/or the amplitude should be reduced and optimization performed again.

p2357 Actual value filter denominator natural frequency / Act_filt fn_den

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Technology setpoint/actual values	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** automatic
Unit: Hz	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.1 [Hz]	2000.0 [Hz]	1999.0 [Hz]

Description: Sets the denominator natural frequency for the actual value filter (PT2).
Dependency: The speed actual value filter is parameterized via p2357 ... p2358.

p2358 Actual value filter denominator damping / Act_filt D_den

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Technology setpoint/actual values	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** automatic
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.001	10.000	0.700

Description: Sets the denominator damping for the actual value filter.
Dependency: The speed actual value filter is parameterized via p2357 ... p2358.

p2390[0...n] Speed start of hibernation mode / Hib mode n_start

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Hibernation mode	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.000 [rpm]	21000.000 [rpm]	0.000 [rpm]

Description: Sets the speed for the start of the "hibernation mode" function.

The total speed of this activation threshold is the sum of the minimum speed p1080 and p2390.

If the speed setpoint undershoots this start speed, the delay time in p2391 is started. If the restart threshold is no longer reached before the delay time expires, the hibernation mode boost speed p2395 is impressed for the time period p2394 and then the motor is brought to a standstill via the down ramp of the setpoint channel. The drive is switched off (hibernation mode active). The drive is automatically switched on again as soon as the speed setpoint exceeds the restart threshold.

Note
The speed at which the hibernation mode is started is set to 4 % of the nominal speed when commissioning is completed.

p2391[0...n] Hibernation mode delay time / Hib mode t_delay

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Hibernation mode	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [s]	3599 [s]	120 [s]

Description: Sets the delay time for the "hibernation mode" function.
To ensure that the drive can be shut down (pulse inhibit), a restart condition must not occur during this time.

Dependency: See also: p2390, p2392, p2393

p2392 Hibernation mode restart value with technology controller / Hib start w/ tec

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Hibernation mode	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** automatic
Unit: %	**Unit group:** 9_1	**Unit selection:** p0595
Min:	**Max:**	**Factory setting:**
0.000 [%]	200.000 [%]	0.000 [%]

Description: Sets the motor restart time with the "Hibernation mode" function.
If the hibernation mode function is active, the technology controller continues to operate and supplies a speed setpoint to the setpoint channel. Since the drive is deactivated, there is no system deviation at the input of the technology controller. As soon as this exceeds the restart value p2392, the drive is automatically switched on and the speed is controlled to 1.05 * (p1080 + p2390) via the up ramp of the setpoint channel.

Note
When commissioning is completed, the restart value (technological variable) is set to 5% of the nominal value of the PID base value in p0596.
Example:
p0596 = 1000 bar
--> p2392 = 5 % * 1000 bar = 50 bar

p2393[0...n] Hibernation mode restart speed relative w/o techn controller / Hib start w/o tec

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	

Parameter group:	Hibernation mode	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.000 [rpm]	21000.000 [rpm]	0.000 [rpm]

Description: Sets the starting speed to restart the motor for the "hibernation mode" function.

When the hibernation mode is active, a speed setpoint is still supplied to the setpoint channel. When the setpoint increases again, and the restart speed is exceeded, the drive is automatically switched on and the speed setpoint is ramped up to p1080 + p2390 + p2393 along the up ramp of the setpoint channel.

The restart speed is the sum of the minimum speed p1080, the hibernation start speed p2390 and the relative restart speed p2393.

Dependency: See also: p1080

Note
The parameter is set to 6 % of the nominal speed when commissioning is exited.

p2394[0...n] Hibernation mode boost time period / Hib mode t_boost

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Hibernation mode	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [s]	3599 [s]	0 [s]

Description: Sets the boost time period for the "hibernation mode" function.

Before the drive is finally switched off (hibernation mode), the setpoint speed is moved to the boost speed p2395 for the time set in p2394. Depending on the application, this allows the hibernation intervals to be extended (in time).

⚠ CAUTION
The controller is not operational while the boost speed is being impressed. As a result, for example, for pump applications, it must be ensured that the tank does not overflow as a result of the additional boost. For compressors, it must be ensured that the boost speed does not result in an overpressure condition.

Note
For p2394 = 0 s, the following applies:
The boost speed is not used.

p2395[0...n] Hibernation mode boost speed / Hib mode n_boost

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	

Can be changed in the operating state:	Operation	
Parameter group:	Hibernation mode	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.000 [rpm]	21000.000 [rpm]	0.000 [rpm]

Description: Sets the boost speed for the "hibernation mode" function.

The motor is accelerated to the hibernation mode boost speed p2395 for the hibernation mode boost time period p2394 before it is brought to a standstill via the down ramp of the setpoint channel (p1121) and subsequently switched off (pulse inhibit).

Dependency: See also: p2394

⚠ CAUTION

The controller is not operational while the boost speed is being impressed. As a result, for example, for pump applications, it must be ensured that the tank does not overflow as a result of the additional boost. For compressors, it must be ensured that the boost speed does not result in an overpressure condition.

p2396[0...n] Hibernation mode maximum shutdown time / Hib t_off max

Variant:	G220, G220 Clean Power	
Available when function is active:	PID controller	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Hibernation mode	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [s]	863999 [s]	0 [s]

Description: Sets the maximum shutdown time for the "Hibernation mode" function.

If the drive is in the hibernation mode (pulse inhibit) then it is switched on again at the latest after the maximum switch-off time has expired. If the restart conditions are fulfilled earlier, then the drive is correspondingly switched on earlier.

⚠ DANGER

The drive automatically powers itself up at the latest after the maximum switch-off time has expired.

⚠ CAUTION

Once the maximum shutdown time has expired, the drive switches itself on automatically and accelerates to the start speed. The technology controller only becomes effective again when this speed is reached (for p2398 = 1).

Depending on the application, for instance for pumps, it should be ensured that as a result of cyclic starts the tank does not overflow or for compressors, an overpressure condition does not occur.

Note

Automatic restart once the maximum OFF time has elapsed is deactivated by setting p2396 = 0 s.

r2397[0...1] Hibernation mode output speed actual / Hib n_outp act

Variant:	G220, G220 Clean Power
Available when function is active:	PID controller

Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Hibernation mode
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: rpm **Unit group:** 3_1 **Unit selection:** p0505
Type of signal interconnection: Source numeric **Scaling:** p2000

Description: Display for the actual output speed for function "hibernation mode".

Note
Zero is displayed if the boost or starting speed is not active.

p2398 Hibernation mode operating type / Hib mode op_type

Variant: G220, G220 Clean Power
Available when function is active: PID controller
Data type: Integer16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Ready for operation
Parameter group: Hibernation mode
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0	1	0

Description: Sets the operating mode for the "Hibernation mode" function.

Value:
0: Hibernation mode inhibited
1: Hibernation mode activated

Dependency: See also: c2200, p2251

⚠ CAUTION
When the "hibernation mode" function is active, the motor can start again automatically.

Note
When the "hibernation mode" function (p2398 = 1) is activated, its behavior is defined as to whether the technology controller is additionally switched in (closed-loop) or switched out (open-loop).
The technology controller is enabled via binector signal sink p2200 and its mode is set in p2251.
c2200 = 0, p2251 = 0:
Hibernation mode operates without technology controller (open-loop)
c2200 = 1, p2251 = 0:
Hibernation mode operates with technology controller (closed-loop)

r2399.0...8 Hibernation mode status words / Hib ZSW

Variant: G220, G220 Clean Power
Available when function is active: PID controller
Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Hibernation mode
Not relevant for motor type: -

	Dyn. index [0...n]:	-	**Calculated:** -
	Unit: -	**Unit group:** -	**Unit selection:** -
	Type of signal interconnection:	Source binary/numeric	**Scaling:** -

Description: Displays the status word for function "hibernation mode".

Bit array:

Bit	Signal name	1 signal	0 signal
00	Hibernation mode enabled (p2398 <> 0)	Yes	No
01	Hibernation mode active	Yes	No
02	Hibernation mode delay active	Yes	No
03	Hibernation boost active	Yes	No
04	Hibernation mode motor switched off	Yes	No
05	Hibernation mode switched off cyclic restart active	Yes	No
06	Hibernation mode motor restarts	Yes	No
07	Hibernation mode supplies total setpoint for ramp-fct generator	Yes	No
08	Hibernation mode bypasses ramp-fct generator in setpoint channel	Yes	No

Dependency: See also: p2398

p2496 LR dimension system physical length units / Dim sys unit phy

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Data type: Integer16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Position control, Basic parameters / mechanical system	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	8	3

Description: Sets the physical length units.

Value:

0:	LU (user-defined)
1:	km
2:	m
3:	mm
4:	µm
5:	nm
6:	in
7:	ft
8:	mi

Note
This parameter is only of significance for visualization (e.g. using the commissioning tool).
Internally in the drive, the neutral length unit (LU) without dimensions is used for calculations.

p2496 LR dimension system physical length units / Dim sys unit phy

Variant: G220, G220 Clean Power

Available when function is active:	Position control	
Values for:	Basic positioner for rotary motion	
Data type: Integer16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Position control, Basic parameters / mechanical system	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	10	10

Description: Sets the physical length units.

Value:
0: LU (user-defined)
10: °

Note
This parameter is only of significance for visualization (e.g. using the commissioning tool).
Internally in the drive, the neutral length unit (LU) without dimensions is used for calculations.

p2497 LR dimension system physical velocity / Dim sys v phy

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Data type: Integer16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Position control, Basic parameters / mechanical system	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	15	8

Description: Sets the physical unit for the velocities.

Value:
0: 1000LU/min (user-defined)
1: km/h
2: km/min
3: m/h
4: m/min
5: m/s
6: mm/h
7: mm/min
8: mm/s
11: in/min
12: in/s
13: ft/min
14: ft/s

15: mi/h

p2497 LR dimension system physical velocity / Dim sys v phy

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Values for:	Basic positioner for rotary motion	
Data type: Integer16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Position control, Basic parameters / mechanical system	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	18	18

Description: Sets the physical unit for the velocities.

Value:
0: 1000LU/min (user-defined)
18: °/s

p2498 LR dimension system physical acceleration / Dim sys a phy

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Data type: Integer16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Position control, Basic parameters / mechanical system	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	11	7

Description: Sets the physical unit for the accelerations.

Value:
0: 1000LU/s² (user-defined)
6: m/s²
7: mm/s²
10: in/s²
11: ft/s²

p2498 LR dimension system physical acceleration / Dim sys a phy

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Values for:	Basic positioner for rotary motion	
Data type: Integer16	**Visible in:** Standard display	

Read permission:	Read drive data or acknowledge messages		
Write permission:	Edit device configuration or drive applications		
Can be changed in the operating state:	Commissioning		
Parameter group:	Position control, Basic parameters / mechanical system		
Not relevant for motor type:	-		
Dyn. index [0...n]:	-	**Calculated:** -	
Unit: -	**Unit group:** -	**Unit selection:** -	
Min:	**Max:**	**Factory setting:**	
0	18	18	

Description: Sets the physical unit for the accelerations.

Value:
0: 1000LU/s² (user-defined)
18: °/s²

p2499 LR dimension system physical jerk / Dim sys phy jerk

Variant:	G220, G220 Clean Power		
Available when function is active:	Position control		
Data type: Integer16	**Visible in:** Standard display		
Read permission:	Read drive data or acknowledge messages		
Write permission:	Edit device configuration or drive applications		
Can be changed in the operating state:	Commissioning		
Parameter group:	Position control, Basic parameters / mechanical system		
Not relevant for motor type:	-		
Dyn. index [0...n]:	-	**Calculated:** -	
Unit: -	**Unit group:** -	**Unit selection:** -	
Min:	**Max:**	**Factory setting:**	
0	11	7	

Description: Sets the physical unit für jerk.

Value:
0: 1000LU/s³ (user-defined)
7: mm/s³
10: in/s³
11: ft/s³

p2499 LR dimension system physical jerk / Dim sys phy jerk

Variant:	G220, G220 Clean Power		
Available when function is active:	Position control		
Values for:	Basic positioner for rotary motion		
Data type: Integer16	**Visible in:** Standard display		
Read permission:	Read drive data or acknowledge messages		
Write permission:	Edit device configuration or drive applications		
Can be changed in the operating state:	Commissioning		
Parameter group:	Position control, Basic parameters / mechanical system		
Not relevant for motor type:	-		
Dyn. index [0...n]:	-	**Calculated:** -	
Unit: -	**Unit group:** -	**Unit selection:** -	

Min:	Max:	Factory setting:
0	18	18

Description: Sets the physical unit für jerk.

Value:
0: 1000LU/s³ (user-defined)
18: °/s³

p2502[0...n] LR encoder assignment / Encoder assignment

Variant: G220, G220 Clean Power
Available when function is active: Position control
Data type: Integer16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Commissioning
Parameter group: Basic parameters / mechanical system, Actual position value preprocessing
Not relevant for motor type: -
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0	2	1

Description: Setting to assign the encoder.
The actual value preprocessing and the closed-loop position control are carried out using the assigned encoder.

Value:
0: No encoder
1: Motor encoder
2: Encoder 2

Dependency: See also: p0187, p0188

NOTICE
For the setting p2502 = 0 (no encoder), closed-loop position control is not possible. This setting is only practical as supportive measure to implement encoderless closed-loop speed control (e.g. if the motor encoder is defective).

Note
An encoder data set must be assigned to the assigned encoder (p2502 = 1, 2, 3).

p2503[0...n] LR length unit MU per 10 mm / MU per 10 mm

Variant: G220, G220 Clean Power
Available when function is active: Position control
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Commissioning
Parameter group: Position control
Not relevant for motor type: -
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** -
Unit: mm **Unit group:** 10_3 **Unit selection:** p2496

Min:	Max:	Factory setting:
0.000001 [mm]	2.1474837e+09 [mm]	10.000000 [mm]

Description: Sets the length unit MU per 10 mm set by the user.
For a linear scale, this establishes a reference between the physical arrangement and the neutral length units LU used in the drive.
Example, linear scale:
p2503 = 10000 means: 10 mm should be resolved to µm (this means that 1 LU = 1 µm).

Note
When selecting a physical length unit, the drive automatically preassigns the parameter and it cannot be changed.
The assignment to the grid spacing can be achieved using this for a rotary axis with linear encoder.
MU: measurement unit

p2503[0...n] LR length unit MU per 10 mm / MU per 10 mm

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Position control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: °	**Unit group:** 10_4	**Unit selection:** p2496
Min:	**Max:**	**Factory setting:**
0.000001 [°]	2.1474837e+09 [°]	10.000000 [°]

Description: Sets the length unit MU per 10 mm set by the user.
For a linear scale, this establishes a reference between the physical arrangement and the neutral length units LU used in the drive.
Example, linear scale:
p2503 = 10000 means: 10 mm should be resolved to µm (this means that 1 LU = 1 µm).

Note
When selecting a physical length unit, the drive automatically preassigns the parameter and it cannot be changed.
The assignment to the grid spacing can be achieved using this for a rotary axis with linear encoder.
MU: measurement unit

p2504[0...n] LR motor/load motor revolutions / Mot/load mot rev

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Data type: Unsigned32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Position control, Basic parameters / mechanical system	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
1	1048576	1

Description: Sets the motor revolutions for the gearbox factor between the motor shaft and load shaft.
Gearbox factor = motor revolutions (p2504) / load revolutions (p2505)

Dependency: See also: p0432, p0433, p2505

p2505[0...n] LR motor/load load revolutions / Mot/load load rev

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Data type: Integer32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Position control, Basic parameters / mechanical system	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-1048576	1048576	1

Description: Sets the load revolutions for the gearbox factor between the motor shaft and load shaft.
Gearbox factor = motor revolutions (p2504) / load revolutions (p2505)

Dependency: See also: p0432, p0433, p2504

p2506[0...n] LR length unit MU per load distance / MU per load dist

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Position control, Basic parameters / mechanical system	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: mm	**Unit group:** 10_3	**Unit selection:** p2496
Min:	**Max:**	**Factory setting:**
0.000001 [mm]	2.1474837e+09 [mm]	10.000000 [mm]

Description: Sets the length unit MU per load distance set by the user.
For a rotary encoder, this establishes a reference between the actual physical situation and the user-specific length unit MU.
Example:
Rotary encoder, ballscrew with 10 mm/revolution, 10 mm should be broken down to units of µm.
Length unit LU (p2496 = 0)
--> One load distance corresponds to 10000 LU (i.e. 1 LU = 1 µm)
--> p2506 = 10000

Physical unit µm (2496) = 4
--> One load distance corresponds to 10000 µm
--> p2506 = 10000

Dependency: See also: p2496

p2506[0...n] LR length unit MU per load revolution / MU per load rev

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Position control, Basic parameters / mechanical system	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: °	**Unit group:** 10_4	**Unit selection:** p2496
Min:	**Max:**	**Factory setting:**
0.000001 [°]	2.1474837e+09 [°]	360.000000 [°]

Description: Sets the rotary unit MU per load revolution set by the user. For a rotary encoder, this establishes a reference between the physical arrangement and the user-specific rotating unit MU.

Example:

Rotating unit LU (p2496 = 0)

Rotary encoder, 1 revolution should be broken down into mdegrees, (i.e. 1 LU = 1 mdegrees).

--> One load revolution corresponds to 360000 LU

--> p2506 = 360000

Dependency: See also: p2496

Note

When selecting a physical length unit, the drive automatically preassigns the parameter and it cannot be changed.

p2507[0...n] LR absolute encoder adjustment status / Abs_enc_adj stat

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Data type: Integer16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Position control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	EDS n defined by: p0140	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	3	1

Description: Activates the adjustment and display of the status of the adjustment for absolute encoders.

For p2507 = 2:

This initiates encoder adjustment. The status is displayed using the other values.

Value:

0: Error occurred while adjusting

1: Absolute encoder not adjusted

2: Absolute encoder not adjusted and encoder adjustment initiated

3: Absolute encoder adjusted

Dependency: See also: c2598, p2599, c11500

⚠ CAUTION

For rotating absolute encoders, when adjusting, a range is set up symmetrically around zero with half of the encoder range, within which the position must be re-established after switch-off/switch-on. In this range, it is only permissible that the encoder overflows.
After the adjustment has been completed, it must be guaranteed that the range is not exited. The reason for this is that outside the range, there is no clear reference any longer between the encoder actual value and mechanical system.
If the home position (c2598) lies in this range, then the position actual value is set when adjusting to the home position. Otherwise, adjustment is canceled with F07443.
There is no overflow for linear absolute encoders. This means that after the adjustment, the position can be re-established in the complete traversing range after switch-off/switch-on. When adjusting, the position actual value is set to the home position.

Note
To permanently accept the determined position offset, it must be retentively saved (p0977).
This adjustment can only be initiated for an absolute encoder.

c2510[0...3] LR selecting measuring probe evaluation / MT_eval select

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Homing, Traversing blocks, Position control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal to select the measuring probe.
0 signal, measuring probe 1 is used.
1 signal, measuring probe 2 is used.

Index: [0] = Position control
[1] = Motor encoder
[2] = Encoder 2
[3] = Encoder 3

Dependency: See also: p2502, c2511

Note
When function "Basic positioner" is activated, the measuring probe is selected at the 0/1 edge at r2684.1 (passive homing active).

c2511[0...3] LR measuring probe evaluation edge / MT_eval edge

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Homing, Traversing blocks, Position control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal to evaluate the measuring probe edge.
1 signal:
The falling edge of the measuring probe (c2510) is used.
0 signal:
The rising edge of the measuring probe (c2510) is used.

Index: [0] = Position control
[1] = Motor encoder
[2] = Encoder 2
[3] = Encoder 3

Dependency: See also: p2502, c2510

c2512[0...3] LR pos. actual value preprocessing activate corr. value (edge) / ActV_prepCorrAct

Variant: G220, G220 Clean Power
Available when function is active: Position control
Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Actual position value preprocessing
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: [0] Parameter: 2684.7
[1] Fixed value: 0
[2] Fixed value: 0
[3] Fixed value: 0

Description: Signal for function "Position actual value preprocessing activate correction value (edge)".
0/1 signal:
The correction value available via c2513 is activated.

Index: [0] = Position control
[1] = Motor encoder
[2] = Encoder 2
[3] = Encoder 3

Dependency: See also: p2502, c2513, r2684

c2513[0...3] LR position actual value preprocessing correction value / ActV_prep corr

Variant: G220, G220 Clean Power
Available when function is active: Position control
Data type: FloatingPoint64 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Actual position value preprocessing
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: mm **Unit group:** 10_3 **Unit selection:** p2496

Type of signal interconnection:	Sink numeric	**Scaling:** -
Factory interconnection:	[0] Parameter: 2685 [1] Fixed value: 0.00 [mm] [2] Fixed value: 0.00 [mm] [3] Fixed value: 0.00 [mm]	

Description: Signal for the correction value for position actual value preprocessing.

Index: [0] = Position control
[1] = Motor encoder
[2] = Encoder 2
[3] = Encoder 3

Dependency: See also: p2502, c2512, r2521, r2685

c2513[0...3] LR position actual value preprocessing correction value / ActV_prep corr

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint64	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Actual position value preprocessing	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °	**Unit group:** 10_4	**Unit selection:** p2496
Type of signal interconnection:	Sink numeric	**Scaling:** -
Factory interconnection:	[0] Parameter: 2685 [1] Fixed value: 0.00 [°] [2] Fixed value: 0.00 [°] [3] Fixed value: 0.00 [°]	

Description: Signal for the correction value for position actual value preprocessing.

Index: [0] = Position control
[1] = Motor encoder
[2] = Encoder 2
[3] = Encoder 3

Dependency: See also: p2502, c2512, r2521, r2685

c2514[0...3] LR activate position actual value setting / Set s_act act

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Actual position value preprocessing	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal to activate function "Set position actual value".

Index: [0] = Position control
[1] = Motor encoder
[2] = Encoder 2
[3] = Encoder 3

Dependency: See also: p2502, c2515

⚠ WARNING

As long as the position actual value is set, encoder increments that are received are not evaluated. In this state, any position difference cannot be corrected!

NOTICE

When function "Set position actual value" is activated while the function "Homing mark search" or "Measuring probe evaluation" is activated, then the corresponding function is deactivated.

Note

1 signal:
The position actual value is set to the setting value in c2515. Alarm A07497 "Position setting value activated" is output. Encoder increments that are received in the meantime, are not taken into account.
1/0 signal:
The position actual value processing is activated and is based on the setting value.

c2515[0...3] LR set position actual setting value / Set s_act setVal

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Actual position value preprocessing	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** -
Factory interconnection:	Fixed value: 0.00	

Description: Signal for the setting value of function "Set position actual value".

Index: [0] = Position control
[1] = Motor encoder
[2] = Encoder 2
[3] = Encoder 3

Dependency: See also: p2502, c2514

c2516[0...3] LR position offset / Position offset

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Actual position value preprocessing	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm	**Unit group:** 10_3	**Unit selection:** p2496

Type of signal interconnection:	Sink numeric	**Scaling:** -
Factory interconnection:	[0] Parameter: 2667 [1] Fixed value: 0.00 [mm] [2] Fixed value: 0.00 [mm] [3] Fixed value: 0.00 [mm]	

Description: Signal for the position offset.

Index: [0] = Position control
[1] = Motor encoder
[2] = Encoder 2
[3] = Encoder 3

Dependency: See also: p2502, r2667

c2516[0...3] LR position offset / Position offset

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Actual position value preprocessing	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °	**Unit group:** 10_4	**Unit selection:** p2496
Type of signal interconnection:	Sink numeric	**Scaling:** -
Factory interconnection:	[0] Parameter: 2667 [1] Fixed value: 0.00 [°] [2] Fixed value: 0.00 [°] [3] Fixed value: 0.00 [°]	

Description: Signal for the position offset.

Index: [0] = Position control
[1] = Motor encoder
[2] = Encoder 2
[3] = Encoder 3

Dependency: See also: p2502, r2667

r2520[0...2].0...15 LR position actual value preprocessing encoder control word / ActV_prep STW

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Position control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** -

Description: Display for the encoder control word generated by the position actual value preprocessing.

Index: [0] = Motor encoder
[1] = Encoder 2
[2] = Encoder 3

Bit array:	Bit	Signal name	1 signal	0 signal
	00	Request function 1	Yes	No
	01	Request function 2	Yes	No
	02	Request function 3	Yes	No
	03	Request function 4	Yes	No
	04	Request command bit 0	Yes	No
	05	Request command bit 1	Yes	No
	06	Request command bit 2	Yes	No
	07	Flying measurement mode/homing mark search	Flying measurement	Homing marks
	13	Cyclically request absolute value	Yes	No
	14	Request parking encoder	Yes	No
	15	Request acknowledge encoder fault	Yes	No

Dependency: See also: c0480

r2521[0...3] LR position actual value / s_act

Variant: G220, G220 Clean Power

Available when function is active: Position control

Data type: FloatingPoint64 **Visible in:** Standard display

Read permission: Read drive data or acknowledge messages

Parameter group: Jog, Homing, Traversing blocks, Direct setpoint input (MDI), Actual position value preprocessing

Not relevant for motor type: -

Dyn. index [0...n]: - **Calculated:** -

Unit: mm **Unit group:** 10_3 **Unit selection:** p2496

Type of signal interconnection: Source numeric **Scaling:** -

Description: Displays the position actual value determined by the position actual value processing.

Index:
[0] = Position control
[1] = Motor encoder
[2] = Encoder 2
[3] = Reserved

Dependency: See also: p2502, r2526

Note
r2526.0 = 1 --> The position actual value in r2521[0] for the position control is valid.
r2527.0 = 1 --> The position actual value in r2521[1] for encoder 1 is valid.
r2528.0 = 1 --> The position actual value in r2521[2] for encoder 2 is valid.

r2521[0...3] LR position actual value / s_act

Variant: G220, G220 Clean Power

Available when function is active: Position control

Values for: Basic positioner for rotary motion

Data type: FloatingPoint64 **Visible in:** Standard display

Read permission: Read drive data or acknowledge messages

Parameter group: Jog, Homing, Traversing blocks, Direct setpoint input (MDI), Actual position value preprocessing

Not relevant for motor type: -

Dyn. index [0...n]: - **Calculated:** -

Unit: ° **Unit group:** 10_4 **Unit selection:** p2496

Type of signal interconnection: Source numeric **Scaling:** -

Description: Displays the position actual value determined by the position actual value processing.

Index: [0] = Position control
[1] = Motor encoder
[2] = Encoder 2
[3] = Reserved

Dependency: See also: p2502, r2526

Note
r2526.0 = 1 --> The position actual value in r2521[0] for the position control is valid.
r2527.0 = 1 --> The position actual value in r2521[1] for encoder 1 is valid.
r2528.0 = 1 --> The position actual value in r2521[2] for encoder 2 is valid.

r2522[0...3] LR velocity actual value / v_act

Variant: G220, G220 Clean Power

Available when function is active: Position control

Data type: FloatingPoint32 **Visible in:** Standard display

Read permission: Read drive data or acknowledge messages

Parameter group: Jog, Homing, Traversing blocks, Direct setpoint input (MDI), Actual position value preprocessing

Not relevant for motor type: -

Dyn. index [0...n]: - **Calculated:** -

Unit: mm/s **Unit group:** 11_3 **Unit selection:** p2497

Type of signal interconnection: Source numeric **Scaling:** -

Description: Displays the velocity actual value determined by the position actual value processing.

Index: [0] = Position control
[1] = Motor encoder
[2] = Encoder 2
[3] = Reserved

Dependency: See also: p2502, r2526

Note
r2526.0 = 1 --> The velocity actual value in r2522[0] for the position control is valid.
r2527.0 = 1 --> The velocity actual value in r2522[1] for encoder 1 is valid.
r2528.0 = 1 --> The velocity actual value in r2522[2] for encoder 2 is valid.

r2522[0...3] LR velocity actual value / v_act

Variant: G220, G220 Clean Power

Available when function is active: Position control

Values for: Basic positioner for rotary motion

Data type: FloatingPoint32 **Visible in:** Standard display

Read permission: Read drive data or acknowledge messages

Parameter group: Jog, Homing, Traversing blocks, Direct setpoint input (MDI), Actual position value preprocessing

Not relevant for motor type: -

Dyn. index [0...n]: - **Calculated:** -

Unit: °/s **Unit group:** 11_4 **Unit selection:** p2497

Type of signal interconnection: Source numeric **Scaling:** -

Description: Displays the velocity actual value determined by the position actual value processing.

Index: [0] = Position control
[1] = Motor encoder
[2] = Encoder 2
[3] = Reserved

Dependency: See also: p2502, r2526

Note
r2526.0 = 1 --> The velocity actual value in r2522[0] for the position control is valid.
r2527.0 = 1 --> The velocity actual value in r2522[1] for encoder 1 is valid.
r2528.0 = 1 --> The velocity actual value in r2522[2] for encoder 2 is valid.

r2523[0...3] LR measured value / Measured value

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Data type: FloatingPoint64	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Position control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm	**Unit group:** 10_3	**Unit selection:** p2496
Type of signal interconnection:	Source numeric	**Scaling:** -

Description: Displays the measured values that were determined using functions "Homing mark search" and "Measuring probe evaluation".

Index: [0] = Position control
[1] = Motor encoder
[2] = Encoder 2
[3] = Reserved

Dependency: See also: p2502, r2526

Note
r2526.2 = 1 --> The measured value in r2523[0] for the closed-loop position control is valid.
r2527.2 = 1 --> The measured value in r2523[1] for encoder 1 is valid.
r2528.2 = 1 --> The measured value in r2523[2] for encoder 2 is valid.

r2523[0...3] LR measured value / Measured value

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint64	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Position control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °	**Unit group:** 10_4	**Unit selection:** p2496
Type of signal interconnection:	Source numeric	**Scaling:** -

Description: Displays the measured values that were determined using functions "Homing mark search" and "Measuring probe evaluation".

Index: [0] = Position control
[1] = Motor encoder
[2] = Encoder 2
[3] = Reserved

Dependency: See also: p2502, r2526

Note
r2526.2 = 1 --> The measured value in r2523[0] for the closed-loop position control is valid.
r2527.2 = 1 --> The measured value in r2523[1] for encoder 1 is valid.
r2528.2 = 1 --> The measured value in r2523[2] for encoder 2 is valid.

r2526.0...12 LR status word / ZSW

Variant: G220, G220 Clean Power
Available when function is active: Position control
Data type: Unsigned16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Actual position value preprocessing
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Displays the status word of the position controller.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Position actual value valid	Yes	No
01	Homing active	Yes	No
02	Measured value valid	Yes	No
03	Position control active	Yes	No
04	Fixed stop reached	Yes	No
05	Fixed stop outside window	Yes	No
06	Position controller output limited	Yes	No
07	Request tracking mode	Yes	No
08	Clamping active when traveling to fixed stop	Yes	No
09	Setting value for adjustment valid	Yes	No
10	Absolute encoder adjusted	Yes	No
11	Absolute encoder adjustment unsuccessful	Yes	No
12	Absolute encoder being adjusted	Yes	No

Dependency: See also: r2521, r2522, r2523

Note
For bit 04:
The signal is influenced via p2634.
For bit 05:
The signal is influenced via p2635.

r2527.0...12 LR actual value sensing status word motor encoder / ActV_sens ZSW Menc

Variant: G220, G220 Clean Power
Available when function is active: Position control
Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Position control

Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Display and signal source for the status word of the actual position sensing for encoder 1.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Position actual value valid	Yes	No
01	Homing active	Yes	No
02	Measured value valid	Yes	No
10	Absolute encoder adjusted	Yes	No
11	Absolute encoder adjustment unsuccessful	Yes	No
12	Absolute encoder being adjusted	Yes	No

r2528.0...12 LR actual value sensing status word encoder 2 / ActV Sens ZSW enc2

Variant: G220, G220 Clean Power
Available when function is active: Position control
Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Position control
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Display and signal source for the status word of the actual position sensing for encoder 2

Bit array:

Bit	Signal name	1 signal	0 signal
00	Position actual value valid	Yes	No
01	Homing active	Yes	No
02	Measured value valid	Yes	No
10	Absolute encoder adjusted	Yes	No
11	Absolute encoder adjustment unsuccessful	Yes	No
12	Absolute encoder being adjusted	Yes	No

c2530 LR position setpoint / s_set

Variant: G220, G220 Clean Power
Available when function is active: Position control
Data type: FloatingPoint64 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Position controller
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: mm **Unit group:** 10_3 **Unit selection:** p2496
Type of signal interconnection: Sink numeric **Scaling:** -
Factory interconnection: Parameter: 2665

Description: Signal for the position setpoint of the position controller.

Dependency: See also: r2665

c2530 LR position setpoint / s_set

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint64	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Position controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °	**Unit group:** 10_4	**Unit selection:** p2496
Type of signal interconnection:	Sink numeric	**Scaling:** -
Factory interconnection:	Parameter: 2665	

Description: Signal for the position setpoint of the position controller.

Dependency: See also: r2665

c2531 LR velocity setpoint / v_set

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Position controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm/s	**Unit group:** 11_3	**Unit selection:** p2497
Type of signal interconnection:	Sink numeric	**Scaling:** -
Factory interconnection:	Parameter: 2666	

Description: Signal for the velocity setpoint of the position controller.

Dependency: See also: r2666

c2531 LR velocity setpoint / v_set

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Position controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °/s	**Unit group:** 11_4	**Unit selection:** p2497
Type of signal interconnection:	Sink numeric	**Scaling:** -
Factory interconnection:	Parameter: 2666	

Description: Signal for the velocity setpoint of the position controller.

Dependency: See also: r2666

c2532 LR position actual value / s_act

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Data type: FloatingPoint64	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Position controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm	**Unit group:** 10_3	**Unit selection:** p2496
Type of signal interconnection:	Sink numeric	**Scaling:** -
Factory interconnection:	Parameter: 2521[0]	

Description: Signal for the position actual value of the position controller.

Dependency: See also: r2521

c2532 LR position actual value / s_act

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint64	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Position controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °	**Unit group:** 10_4	**Unit selection:** p2496
Type of signal interconnection:	Sink numeric	**Scaling:** -
Factory interconnection:	Parameter: 2521[0]	

Description: Signal for the position actual value of the position controller.

Dependency: See also: r2521

p2533[0...n] LR position setpoint filter time constant / s_set_filt Tc

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Position controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [ms]	1000.00 [ms]	0.00 [ms]

Description: Sets the time constant for the position setpoint filter (PT1).

Note
The effective Kv factor (position loop gain) is reduced with the filter. This allows a softer control behavior with improved tolerance with respect to noise/disturbances.
Applications:
- Reduces the precontrol dynamic response.
- Jerk limiting.

p2534[0...n] LR speed precontrol factor / n_prectrl fact

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Position controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [%]	200.00 [%]	0.00 [%]

Description: Setting for activation and weighting of the speed precontrol value.
Value = 0 % --> The precontrol is deactivated.

Dependency: See also: p2535, p2536, r2563

Note
When the axis control loop is optimally set as well as a precisely determined equivalent time constant of the speed control loop, the precontrol factor is 100%.

p2535[0...n] LR speed precontrol symmetrizing filter dead time / n_prectrFil t_dead

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Position controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00	2.00	0.00

Description: Sets the "fractional" dead time to emulate the timing behavior of the speed control loop.
The selected multiplier refers to the position controller sampling time (dead time= p2535 * position controller clock cycle).

Dependency: See also: p0115, p2536

NOTICE
When speed precontrol is active (p2534 > 0 %), the following applies: In addition to the set dead time (p2535), internally two position controller sampling times are effective. When speed precontrol is inactive (p2534 = 0 %), the following applies: No dead time is effective (p2535 and internal).

Note
Together with p2536, the time response of the closed speed control loop can be emulated.

p2536[0...n] LR speed precontrol symmetrizing filter PT1 / n_prectrl filt PT1

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Position controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [ms]	100.00 [ms]	0.00 [ms]

Description: Sets a PT1 filter to emulate the time response of the closed speed control loop.

Dependency: See also: p2535

NOTICE
When speed precontrol is inactive (p2534 = 0 %), the following applies: If a PT1 filter has been set, it is not effective.

Note
Together with p2535, the time response of the closed speed control loop can be emulated.

c2537 LR position controller adaptation / Adaptation

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Position controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** PERCENT
Factory interconnection:	Fixed value: 100.00 [%]	

Description: Signal for the adaptation of the proportional gain of the position controller.

Dependency: See also: p2538

p2538[0...n] LR proportional gain / Kp

Variant:	G220, G220 Clean Power

Available when function is active:	Position control	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Position controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: 1000 rpm	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000 [1000 rpm]	300.000 [1000 rpm]	1.000 [1000 rpm]

Description: Sets the proportional gain (P gain, position loop gain, Kv factor) of the position controller.

Dependency: See also: c2537, p2539, r2557, r2558

Note
The proportional gain is used define at which traversing velocity which following error is obtained (without precontrol)
Low proportional gain:
Slow response to a setpoint - actual value difference, the following error becomes large.
High proportional gain:
Fast response to the setpoint - actual value difference, the following error becomes small.

p2539[0...n] LR integral time / Tn

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Position controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [ms]	100000.00 [ms]	0.00 [ms]

Description: Setting to activate the integral time of the position controller.
Value = 0 ms --> The I component of the position controller is deactivated.

Dependency: See also: p2538, r2559

p2540 LR position controller output speed limit / LR_outp n_lim

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	

Parameter group:	Position controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000
Min:	**Max:**	**Factory setting:**
0.000 [rpm]	210000.000 [rpm]	210000.000 [rpm]

Description: Sets the speed limit of the position controller output.

Dependency: See also: c2541

c2541 LR position controller output speed limit signal / LR_outp n_lim sig

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Position controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** p2000
Factory interconnection:	Parameter: 2540	

Description: Signal for limiting the position controller output.

Dependency: See also: p2540

p2542 LR standstill window / Standstill window

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Position monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm	**Unit group:** 10_3	**Unit selection:** p2496
Min:	**Max:**	**Factory setting:**
0.000000 [mm]	2.1474839e+09 [mm]	0.250000 [mm]

Description: Sets the standstill window for the standstill monitoring function.

After the standstill monitoring time expires, it is cyclically checked whether the difference between the setpoint and actual position is located within the standstill window and, if required, an appropriate fault is output.

Value = 0 --> The standstill monitoring is deactivated.

Dependency: See also: p2543, p2544

Note

The following applies for the setting of the standstill window and positioning window:
Standstill window (p2542) >= positioning window (p2544)

p2542 LR standstill window / Standstill window

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Position monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °	**Unit group:** 10_4	**Unit selection:** p2496
Min:	**Max:**	**Factory setting:**
0.000000 [°]	2.1474839e+09 [°]	10.000000 [°]

Description: Sets the standstill window for the standstill monitoring function.

After the standstill monitoring time expires, it is cyclically checked whether the difference between the setpoint and actual position is located within the standstill window and, if required, an appropriate fault is output.

Value = 0 --> The standstill monitoring is deactivated.

Dependency: See also: p2543, p2544

Note

The following applies for the setting of the standstill window and positioning window:
Standstill window (p2542) >= positioning window (p2544)

p2543 LR standstill monitoring time / t_standstill mon

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Position monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [ms]	100000.00 [ms]	200.00 [ms]

Description: Sets the standstill monitoring time for the standstill monitoring function.

After the standstill monitoring time expires, it is cyclically checked whether the difference between the setpoint and actual position is located within the standstill window and, if required, an appropriate fault is output.

Dependency: See also: p2542, p2545

Note

The following applies for the setting of the standstill and positioning monitoring time:
Standstill monitoring time (p2543) <= positioning monitoring time (p2545)

p2544 LR positioning window / Pos_window

Variant:	G220, G220 Clean Power

Available when function is active:	Position control	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Position monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm	**Unit group:** 10_3	**Unit selection:** p2496
Min:	**Max:**	**Factory setting:**
0.000000 [mm]	2.1474839e+09 [mm]	0.050000 [mm]

Description: Sets the positioning window for the positioning monitoring function.

After the positioning monitoring time expires, it is checked once as to whether the difference between the setpoint and actual position lies within the positioning window and if required an appropriate fault is output.

Value = 0 --> The positioning monitoring function is deactivated.

Dependency: See also: p2542, p2545, r2684

Note

The following applies for the setting of the standstill and positioning window:
Standstill window (p2542) >= positioning window (p2544)

p2544 LR positioning window / Pos_window

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Position monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °	**Unit group:** 10_4	**Unit selection:** p2496
Min:	**Max:**	**Factory setting:**
0.000000 [°]	2.1474839e+09 [°]	2.000000 [°]

Description: Sets the positioning window for the positioning monitoring function.

After the positioning monitoring time expires, it is checked once as to whether the difference between the setpoint and actual position lies within the positioning window and if required an appropriate fault is output.

Value = 0 --> The positioning monitoring function is deactivated.

Dependency: See also: p2542, p2545, r2684

Note

The following applies for the setting of the standstill and positioning window:
Standstill window (p2542) >= positioning window (p2544)

p2545 LR positioning monitoring time / t_pos_mon

Variant:	G220, G220 Clean Power

Available when function is active:	Position control	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Position monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [ms]	100000.00 [ms]	1000.00 [ms]

Description: Sets the positioning monitoring time for the positioning monitoring.
After the positioning monitoring time expires, it is checked once as to whether the difference between the setpoint and actual position lies within the positioning window and if required an appropriate fault is output.

Dependency: See also: p2543, p2544, r2684

Note
The following applies for the setting of the standstill and positioning monitoring time:
Standstill monitoring time (p2543) <= positioning monitoring time (p2545)

p2546[0...n] LR dynamic following error monitoring tolerance / s_delta_mon tol

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Position monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: mm	**Unit group:** 10_3	**Unit selection:** p2496
Min:	**Max:**	**Factory setting:**
0.000000 [mm]	2.1474839e+09 [mm]	1.000000 [mm]

Description: Sets the tolerance for the dynamic following error monitoring.
If the dynamic following error (r2563) exceeds the selected tolerance, then an appropriate fault is output.
Value = 0 --> The dynamic following error monitoring is deactivated.

Dependency: See also: r2563, r2684

Note
The tolerance bandwidth is intended to prevent the dynamic following error monitoring incorrectly responding due to operational control sequences (e.g. during load surges).

p2546[0...n] LR dynamic following error monitoring tolerance / s_delta_mon tol

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint32	**Visible in:** Standard display	

Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Position monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: °	**Unit group:** 10_4	**Unit selection:** p2496
Min:	**Max:**	**Factory setting:**
0.000000 [°]	2.1474839e+09 [°]	36.000000 [°]

Description: Sets the tolerance for the dynamic following error monitoring.
If the dynamic following error (r2563) exceeds the selected tolerance, then an appropriate fault is output.
Value = 0 --> The dynamic following error monitoring is deactivated.

Dependency: See also: r2563, r2684

Note
The tolerance bandwidth is intended to prevent the dynamic following error monitoring incorrectly responding due to operational control sequences (e.g. during load surges).

p2547 LR cam switching position 1 / Cam position 1

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Data type: FloatingPoint64	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Position monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm	**Unit group:** 10_3	**Unit selection:** p2496
Min:	**Max:**	**Factory setting:**
-2.1474828e+09 [mm]	2.1474828e+09 [mm]	0.000000 [mm]

Description: Sets cam switching position 1.

Dependency: See also: p2548, r2683

⚠ CAUTION
Only after the axis has been homed can it be guaranteed that the cam switching signals when output have a "true" position reference.

Note
Position actual value <= cam switching position 1 --> r2683.8 = 1 signal
Position actual value > cam switching position 1 --> r2683.8 = 0 signal

p2547 LR cam switching position 1 / Cam position 1

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint64	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	

Can be changed in the operating state:	Operation	
Parameter group:	Position monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °	**Unit group:** 10_4	**Unit selection:** p2496
Min:	**Max:**	**Factory setting:**
-2.1474828e+09 [°]	2.1474828e+09 [°]	0.000000 [°]

Description: Sets cam switching position 1.

Dependency: See also: p2548, r2683

⚠ CAUTION

Only after the axis has been homed can it be guaranteed that the cam switching signals when output have a "true" position reference.

Note

Position actual value <= cam switching position 1 --> r2683.8 = 1 signal
Position actual value > cam switching position 1 --> r2683.8 = 0 signal

p2548 LR cam switching position 2 / Cam position 2

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Data type: FloatingPoint64	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Position monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm	**Unit group:** 10_3	**Unit selection:** p2496
Min:	**Max:**	**Factory setting:**
-2.1474828e+09 [mm]	2.1474828e+09 [mm]	0.000000 [mm]

Description: Sets cam switching position 2.

Dependency: See also: p2547, r2683

⚠ CAUTION

Only after the axis has been homed can it be guaranteed that the cam switching signals when output have a "true" position reference.

Note

Position actual value <= cam switching position 2 --> r2683.9 = 1 signal
Position actual value > cam switching position 2 --> r2683.9 = 0 signal

p2548 LR cam switching position 2 / Cam position 2

Variant:	G220, G220 Clean Power
Available when function is active:	Position control
Values for:	Basic positioner for rotary motion
Data type: FloatingPoint64	**Visible in:** Extended display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications

Can be changed in the operating state:	Operation	
Parameter group:	Position monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °	**Unit group:** 10_4	**Unit selection:** p2496
Min:	**Max:**	**Factory setting:**
-2.1474828e+09 [°]	2.1474828e+09 [°]	0.000000 [°]

Description: Sets cam switching position 2.

Dependency: See also: p2547, r2683

⚠ CAUTION

Only after the axis has been homed can it be guaranteed that the cam switching signals when output have a "true" position reference.

Note

Position actual value <= cam switching position 2 --> r2683.9 = 1 signal
Position actual value > cam switching position 2 --> r2683.9 = 0 signal

c2549 LR enable 1 / Enable 1

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Position controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Parameter: 899.2	

Description: Signal for position controller enable 1.

Dependency: See also: r0899, c2550

Note

The position controller is enabled using the following AND logic operation:
- c2549
- c2550

c2550[0...n] LR enable 2 / Enable 2

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Position controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 1

Description: Signal for position controller enable 2.

Dependency: See also: c2549

Note
The position controller is enabled using the following AND logic operation:
- c2549
- c2550
When function "Closed-loop position control" or "Basic positioner" is activated, then c2550 is interconnected to a 1 signal.

c2552 LR signal travel to fixed stop active / Signal TfS act

Variant: G220, G220 Clean Power
Available when function is active: Position control
Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Position monitoring
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Parameter: 2683.14

Description: Signal for message "Travel to fixed stop active".
1 signal:
The activity associated with travel to fixed stop is signaled and the detection of the fixed stop is started via the maximum following error (p2634).

Dependency: See also: r2683

r2556 LR position setpoint after setpoint smoothing / s_set after interp

Variant: G220, G220 Clean Power
Available when function is active: Position control
Data type: FloatingPoint64 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Position controller
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: mm **Unit group:** 10_3 **Unit selection:** p2496
Type of signal interconnection: Source numeric **Scaling:** -

Description: Displays the position setpoint after the setpoint smoothing.

r2556 LR position setpoint after setpoint smoothing / s_set after interp

Variant: G220, G220 Clean Power
Available when function is active: Position control
Values for: Basic positioner for rotary motion
Data type: FloatingPoint64 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Position controller

Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: ° **Unit group:** 10_4 **Unit selection:** p2496
Type of signal interconnection: Source numeric **Scaling:** -

Description: Displays the position setpoint after the setpoint smoothing.

r2557 LR position controller input system deviation / LR_inp SysDev

Variant: G220, G220 Clean Power
Available when function is active: Position control
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Position controller
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: mm **Unit group:** 10_3 **Unit selection:** p2496
Type of signal interconnection: Source numeric **Scaling:** -

Description: Displays the difference between the position setpoint and the position actual value at the position controller input.

r2557 LR position controller input system deviation / LR_inp SysDev

Variant: G220, G220 Clean Power
Available when function is active: Position control
Values for: Basic positioner for rotary motion
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Position controller
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: ° **Unit group:** 10_4 **Unit selection:** p2496
Type of signal interconnection: Source numeric **Scaling:** -

Description: Displays the difference between the position setpoint and the position actual value at the position controller input.

r2558 LR position controller output P component / LR_outp P comp

Variant: G220, G220 Clean Power
Available when function is active: Position control
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Position controller
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: rpm **Unit group:** 3_1 **Unit selection:** p0505
Type of signal interconnection: Source numeric **Scaling:** p2000

Description: Displays the P component at the output of the position controller (speed setpoint).

r2559 LR position controller output I component / LR_outp I comp

Variant: G220, G220 Clean Power

Available when function is active:	Position control	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Position controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000

Description: Displays the I component at the output of the position controller (speed setpoint).

r2560 LR speed setpoint / n_set

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Position controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000

Description: Displays the speed setpoint after limiting (c2541).

r2561 LR speed precontrol value / n_prectrl value

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Position controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000

Description: Displays the speed setpoint due to the precontrol.

r2562 LR total speed setpoint / n_set total

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Position controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000

Description: Displays the total speed setpoint
This value is obtained from the sum of the speed precontrol and position controller output.
Dependency: See also: r2560, r2561

r2563 LR following error dynamic model / Follow error dyn

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Jog, Homing, Traversing blocks, Direct setpoint input (MDI), Position monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm	**Unit group:** 10_3	**Unit selection:** p2496
Type of signal interconnection:	Source numeric	**Scaling:** -

Description: Displays the dynamic following error.
This value is the deviation, corrected by the velocity-dependent component, between the position setpoint and the position actual value.

Note
For p2534 >= 100 % (precontrol activated) the following applies:
The dynamic following error (r2563) corresponds to the system deviation (r2557) at the position controller input.
For 0 % < p2534 < 100 % (precontrol activated) or p2534 = 0 % (precontrol deactivated) the following applies:
The dynamic following error (r2563) is the deviation between the measured position actual value and a value that is calculated from the position setpoint via a PT1 model. This compensates the system-related velocity-dependent system deviation for a P controller.

r2563 LR following error dynamic model / Follow error dyn

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Jog, Homing, Traversing blocks, Direct setpoint input (MDI), Position monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °	**Unit group:** 10_4	**Unit selection:** p2496
Type of signal interconnection:	Source numeric	**Scaling:** -

Description: Displays the dynamic following error.
This value is the deviation, corrected by the velocity-dependent component, between the position setpoint and the position actual value.

Note
For p2534 >= 100 % (precontrol activated) the following applies:
The dynamic following error (r2563) corresponds to the system deviation (r2557) at the position controller input.
For 0 % < p2534 < 100 % (precontrol activated) or p2534 = 0 % (precontrol deactivated) the following applies:
The dynamic following error (r2563) is the deviation between the measured position actual value and a value that is calculated from the position setpoint via a PT1 model. This compensates the system-related velocity-dependent system deviation for a P controller.

r2564 LR torque precontrol value / M_prectrl val

Variant:	G220, G220 Clean Power

Available when function is active:	Position control	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Position controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Nm	**Unit group:** 7_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2003

Description: Displays the torque precontrol value.

Dependency: See also: c1511, c1512

Note
The torque precontrol value is the derivation over time of the speed precontrol value and is referred to a moment of inertia of 1 kgm^2/2 PI. When using the precontrol, then this should be evaluated corresponding to the actual moment of inertia.

r2565 LR following error actual / Following err act

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Position controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm	**Unit group:** 10_3	**Unit selection:** p2496
Type of signal interconnection:	Source numeric	**Scaling:** -

Description: Displays the actual following error.
This value is the deviation between the position setpoint - after fine interpolation - and the position actual value.

NOTICE
When speed precontrol is active (p2534 > 0 %), the following applies:
To calculate this value, the position setpoint is delayed by two position controller sampling times.
When speed precontrol is inactive (p2534 = 0 %), the following applies:
To calculate this value, the position setpoint is delayed by two position controller clock cycles.

r2565 LR following error actual / Following err act

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Position controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °	**Unit group:** 10_4	**Unit selection:** p2496
Type of signal interconnection:	Source numeric	**Scaling:** -

Description: Displays the actual following error.
This value is the deviation between the position setpoint - after fine interpolation - and the position actual value.

NOTICE
When speed precontrol is active (p2534 > 0 %), the following applies: To calculate this value, the position setpoint is delayed by two position controller sampling times. When speed precontrol is inactive (p2534 = 0 %), the following applies: To calculate this value, the position setpoint is delayed by two position controller clock cycles.

p2567[0...n] LR torque precontrol moment of inertia / M_prectrl M_inert

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Position controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: kgm²	**Unit group:** 25_1	**Unit selection:** p0100
Min:	**Max:**	**Factory setting:**
0.000000 [kgm²]	100000.000000 [kgm²]	0.000000 [kgm²]

Description: Sets the moment of inertia for the torque precontrol.

Dependency: See also: p2534, r2564

Note

When calculating the torque precontrol value (c2654), the time derivation of the speed precontrol value is multiplied by 2 PI * p2567.

For reasons associated with the compatibility to earlier firmware versions, the factory setting for p2567 = 1 kgm^2/2 PI. This means that r2564 remains as standard the derivation over time of the speed precontrol value and is referred, as before, to a moment of inertia of 1 kgm^2/2 PI. For torque precontrol, the moment of inertia can now be directly entered into p2567 (instead of subsequently evaluating the precontrol value).

c2568 EPOS hardware limit switch activation / HW lim switch act

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Position limits	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal to activate the hardware limit switch.

For c2568 = 1 signal:

Negative hardware limit switch (c2569) and positive hardware limit switch (c2570) are activated.

For c2568 = 0 signal:

Negative hardware limit switch (c2569) and positive hardware limit switch (c2570) are not evaluated.

Dependency: See also: c2569, c2570

Note
The traversing range can also be limited using software limit switches.

c2569 EPOS negative hardware limit switch / Neg HW lim switch

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Position limits	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 1	

Description: Signal for the hardware limit switch in the negative direction of travel.

Recommendation: Set the OFF3 ramp-down time (p1135) so that after the axis reaches the hardware limit switch at maximum velocity, the braking distance traveled by the axis is not longer than the distance that is available.

Sets message 07491 as alarm (A07491):

Set the maximum deceleration (p2573) so that after the axis reaches the hardware limit switch at maximum velocity, the braking distance traveled by the axis is not longer than the distance that is available.

Dependency: See also: p1135, c2568, c2570, p2573, r2684

⚠ CAUTION

The hardware limit switch is low active.

Sets message 07491 as fault (F07491):

For a 0 signal, the drive stops with the OFF3 ramp-down time (p1135), status signal r2684.13 = 1 is set, saved and the corresponding fault is output. After the fault has been acknowledged, only motion moving away from the hardware limit switch is permitted.

For a 0/1 signal and valid travel direction, when the hardware limit switch is exited, this is detected and status signal r2684.13 is set to 0.

Sets message 07491 as alarm (A07491):

For a 0 signal, the axis is stopped with the maximum deceleration (p2573), status signal r2684.13 is set to 1, saved and the appropriate alarm is output. Only motion away from the hardware limit switch is permitted.

For a 0/1 signal and valid travel direction, when the hardware limit switch is exited, this is detected and status signal r2684.13 is set to 0 and the alarm is cleared.

c2570 EPOS positive hardware limit switch / Pos HW lim switch

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Position limits	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 1	

Description: Signal for the hardware limit switch in the positive direction of travel.

Recommendation: Set the OFF3 ramp-down time (p1135) so that after the axis reaches the hardware limit switch at maximum velocity, the braking distance traveled by the axis is not longer than the distance that is available.

Setting message 07492 as alarm (A07492):

Set the maximum deceleration (p2573) so that after the axis reaches the hardware limit switch at maximum velocity, the braking distance traveled by the axis is not longer than the distance that is available.

Dependency: See also: p1135, c2568, c2569, p2573, r2684

⚠ CAUTION

The hardware limit switch is low active.

Sets message 07492 as fault (F07492):

For a 0 signal
the drive stops with the OFF3 ramp-down time (p1135), status signal r2684.14 = 1 is set, saved and the corresponding fault is output. After the fault has been acknowledged, only motion moving away from the hardware limit switch is permitted.

For a 0/1 signal
and valid travel direction, when the hardware limit switch is exited, this is detected and status signal r2684.14 is set to 0.

Setting message 07492 as alarm (A07492):

For a 0 signal
the axis is stopped with the maximum deceleration (p2573), status signal r2684.14 is set = 1, saved and the appropriate alarm is output. Only motion away from the hardware limit switch is permitted.

For a 0/1 signal
and valid travel direction, when the hardware limit switch is exited, this is detected and status signal r2684.14 is set = 0 and the alarm is cleared.

p2571 EPOS maximum velocity / v_max

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Dynamic response limits	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm/s	**Unit group:** 11_3	**Unit selection:** p2497
Min:	**Max:**	**Factory setting:**
0.010 [mm/s]	4e+07 [mm/s]	500.000 [mm/s]

Description: Sets the maximum velocity for the "basic positioner" function (EPOS).

Dependency: See also: r1084, r1087, p2503, p2504, p2505, p2506

Note
The maximum velocity is active in all of the operating modes of the basic positioner.
The maximum velocity for the basic positioner should be aligned with the maximum speed/velocity of the speed/velocity controller:
Rotary encoders:
p2571[1000 LU/min] = min(p1082, p1083, |p1086|)[rpm] x p2505/p2504 x p2506/1000
Linear encoders:
p2571[1000 LU/min] = min(p1082, p1083, |p1086|)[m/min] x p2503/10[m]

p2571 EPOS maximum velocity / v_max

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Dynamic response limits	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °/s	**Unit group:** 11_4	**Unit selection:** p2497
Min:	**Max:**	**Factory setting:**
0.010 [°/s]	4e+07 [°/s]	18000.000 [°/s]

Description: Sets the maximum velocity for the "basic positioner" function (EPOS).

Dependency: See also: r1084, r1087, p2503, p2504, p2505, p2506

Note
The maximum velocity is active in all of the operating modes of the basic positioner.
The maximum velocity for the basic positioner should be aligned with the maximum speed/velocity of the speed/velocity controller:
Rotary encoders:
p2571[1000 LU/min] = min(p1082, p1083, |p1086|)[rpm] x p2505/p2504 x p2506/1000
Linear encoders:
p2571[1000 LU/min] = min(p1082, p1083, |p1086|)[m/min] x p2503/10[m]

p2572 EPOS maximum acceleration / a_max

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Dynamic response limits, Jog	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm/s²	**Unit group:** 12_3	**Unit selection:** p2498
Type of signal interconnection:	Source numeric	**Scaling:** -

Min:	Max:	Factory setting:
0.001 [mm/s²]	2e+06 [mm/s²]	10000.000 [mm/s²]

Description: Sets the maximum acceleration for the "basic positioner" function (EPOS).

Dependency: See also: p2619, c2644

Note
The maximum acceleration appears to exhibit jumps (without jerk).
"Traversing blocks" operating mode:
The programmed acceleration override (p2619) acts on the maximum acceleration.
"Direct setpoint input/MDI" operating mode:
The acceleration override is effective (c2644, 4000 hex = 100 %).
"Jog" and "Active homing" operating modes:
No acceleration override is active. The axis starts with the maximum acceleration.

p2572 EPOS maximum acceleration / a_max

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Dynamic response limits, Jog	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °/s²	**Unit group:** 12_4	**Unit selection:** p2498
Type of signal interconnection:	Source numeric	**Scaling:** -
Min:	**Max:**	**Factory setting:**
0.001 [°/s²]	2e+06 [°/s²]	360000.000 [°/s²]

Description: Sets the maximum acceleration for the "basic positioner" function (EPOS).

Dependency: See also: p2619, c2644

Note
The maximum acceleration appears to exhibit jumps (without jerk).
"Traversing blocks" operating mode:
The programmed acceleration override (p2619) acts on the maximum acceleration.
"Direct setpoint input/MDI" operating mode:
The acceleration override is effective (c2644, 4000 hex = 100 %).
"Jog" and "Active homing" operating modes:
No acceleration override is active. The axis starts with the maximum acceleration.

p2573 EPOS maximum deceleration / -a_max

Variant:	G220, G220 Clean Power
Available when function is active:	Basic positioner
Data type: FloatingPoint32	**Visible in:** Standard display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications
Can be changed in the operating state:	Ready for operation
Parameter group:	Dynamic response limits, Jog

Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm/s²	**Unit group:** 12_3	**Unit selection:** p2498
Type of signal interconnection:	Source numeric	**Scaling:** -
Min:	**Max:**	**Factory setting:**
0.001 [mm/s²]	2e+06 [mm/s²]	10000.000 [mm/s²]

Description: Sets the maximum deceleration for the "basic positioner" function (EPOS).

Dependency: See also: p2620, c2645

Note
The maximum deceleration appears to exhibit jumps (without jerk).
"Traversing blocks" operating mode:
The programmed deceleration override (p2620) acts on the maximum deceleration.
"Direct setpoint input/MDI" operating mode:
The deceleration override is effective (c2645, 4000 hex = 100 %).
"Jog" and "Active homing" operating modes:
No deceleration override is effective. The axis breaks with the maximum deceleration.

p2573 EPOS maximum deceleration / -a_max

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Dynamic response limits, Jog	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °/s²	**Unit group:** 12_4	**Unit selection:** p2498
Type of signal interconnection:	Source numeric	**Scaling:** -
Min:	**Max:**	**Factory setting:**
0.001 [°/s²]	2e+06 [°/s²]	360000.000 [°/s²]

Description: Sets the maximum deceleration for the "basic positioner" function (EPOS).

Dependency: See also: p2620, c2645

Note
The maximum deceleration appears to exhibit jumps (without jerk).
"Traversing blocks" operating mode:
The programmed deceleration override (p2620) acts on the maximum deceleration.
"Direct setpoint input/MDI" operating mode:
The deceleration override is effective (c2645, 4000 hex = 100 %).
"Jog" and "Active homing" operating modes:
No deceleration override is effective. The axis breaks with the maximum deceleration.

p2574 EPOS jerk limiting / Jerk lim

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	

Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Dynamic response limits	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm/s³	**Unit group:** 13_3	**Unit selection:** p2499
Min:	**Max:**	**Factory setting:**
0.001 [mm/s³]	1e+08 [mm/s³]	200000.000 [mm/s³]

Description: Sets the jerk limiting

Dependency: See also: p2572, p2573, c2575

Note

The jerk limiting is internally converted into a jerk time as follows:

Jerk time Tr = max(p2572, p2573) / p2574

The jerk time is internally limited to 1000 ms, and is rounded off to an integer multiple of the sampling time of the basic positioner cycle.

The jerk time is valid for the acceleration and deceleration phases also for unequal maximum acceleration (p2572) and maximum deceleration (p2573).

For unequal maximum acceleration and maximum deceleration, the motion is not optimal from a time perspective as the jerk limit cannot be used for the lower of the two values.

If, in the traversing profile, the acceleration time without jerk limiting is shorter than jerk time Tr, then motion with jerk limiting is not time-optimized.

For traversing motion with a direct transition between acceleration and deceleration (i.e. jerk time is greater than the constant velocity phase), jerk can increase up to twice the parameterized jerk.

CONTINUE_FLYING with direction reversal acts internally just like a CONTINUE_WITH_STOP without the "position reached" being set. Without jerk limiting, this behavior can hardly be noticed as, when reversing, the position setpoint is only kept at zero for one interpolator clock cycle.

For block change enable CONTINUE_WITH_STOP, jerk limiting results in a longer delay time.

p2574 EPOS jerk limiting / Jerk lim

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Dynamic response limits	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °/s³	**Unit group:** 13_4	**Unit selection:** p2499
Min:	**Max:**	**Factory setting:**
0.001 [°/s³]	1e+08 [°/s³]	7.2e+06 [°/s³]

Description: Sets the jerk limiting

Dependency: See also: p2572, p2573, c2575

Note
The jerk limiting is internally converted into a jerk time as follows:
Jerk time Tr = max(p2572, p2573) / p2574
The jerk time is internally limited to 1000 ms, and is rounded off to an integer multiple of the sampling time of the basic positioner cycle.
The jerk time is valid for the acceleration and deceleration phases also for unequal maximum acceleration (p2572) and maximum deceleration (p2573).
For unequal maximum acceleration and maximum deceleration, the motion is not optimal from a time perspective as the jerk limit cannot be used for the lower of the two values.
If, in the traversing profile, the acceleration time without jerk limiting is shorter than jerk time Tr, then motion with jerk limiting is not time-optimized.
For traversing motion with a direct transition between acceleration and deceleration (i.e. jerk time is greater than the constant velocity phase), jerk can increase up to twice the parameterized jerk.
CONTINUE_FLYING with direction reversal acts internally just like a CONTINUE_WITH_STOP without the "position reached" being set. Without jerk limiting, this behavior can hardly be noticed as, when reversing, the position setpoint is only kept at zero for one interpolator clock cycle.
For block change enable CONTINUE_WITH_STOP, jerk limiting results in a longer delay time.

c2575 EPOS jerk limiting activation / Jerk limit act

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Dynamic response limits, Jog, Homing, Traversing blocks, Direct setpoint input (MDI)	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal to activate jerk limiting.
Activating/deactivating:
- Using c2575 = 1 signal or 0 signal.
- Using the JERK command in the traversing block (only for c2575 = 0 signal).

Dependency: See also: p2574

Note
A change to the signal state is only accepted at zero speed.

p2576 EPOS modulo correction modulo range / Modulo corr range

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: FloatingPoint64	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Basic parameters / mechanical system, Actual position value preprocessing	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -

	Unit: mm	**Unit group:** 10_3	**Unit selection:** p2496
	Min:	**Max:**	**Factory setting:**
	0.000100 [mm]	2.1474828e+09 [mm]	360.000000 [mm]
Description:	Sets the modulo range for axes with modulo correction.		
Dependency:	See also: c2577		

p2576 EPOS modulo correction modulo range / Modulo corr range

	Variant:	G220, G220 Clean Power	
	Available when function is active:	Basic positioner	
	Values for:	Basic positioner for rotary motion	
	Data type: FloatingPoint64	**Visible in:** Standard display	
	Read permission:	Read drive data or acknowledge messages	
	Write permission:	Edit device configuration or drive applications	
	Can be changed in the operating state:	Ready for operation	
	Parameter group:	Basic parameters / mechanical system, Actual position value preprocessing	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	**Calculated:** -
	Unit: °	**Unit group:** 10_4	**Unit selection:** p2496
	Min:	**Max:**	**Factory setting:**
	0.000100 [°]	2.1474828e+09 [°]	360.000000 [°]
Description:	Sets the modulo range for axes with modulo correction.		
Dependency:	See also: c2577		

c2577 EPOS modulo correction activation / Modulo corr act

	Variant:	G220, G220 Clean Power	
	Available when function is active:	Basic positioner	
	Data type: Unsigned8	**Visible in:** Standard display	
	Read permission:	Read drive data or acknowledge messages	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	Basic parameters / mechanical system, Actual position value preprocessing	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	**Calculated:** -
	Unit: -	**Unit group:** -	**Unit selection:** -
	Type of signal interconnection:	Sink binary	
	Factory interconnection:	Fixed value: 0	
Description:	Signal to activate modulo correction.		
Dependency:	See also: p2576		

Note

When the signal state changes, this only becomes effective in the "ready for switching on" state.
Selecting modulo correction:
The actual position setpoint in the modulo range is corrected. The position actual value differs from the position setpoint by the following error and can also leave the modulo range.
Deselecting modulo correction:
It is based on the actual position actual value.

c2578 EPOS negative software limit switch / Neg SW lim switch

Variant:	G220, G220 Clean Power

Available when function is active:	Basic positioner	
Data type: FloatingPoint64	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Position limits	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm	**Unit group:** 10_3	**Unit selection:** p2496
Type of signal interconnection:	Sink numeric	**Scaling:** -
Factory interconnection:	Parameter: 2580	

Description: Signal for the negative software limit switch.

Dependency: See also: c2579, p2580, p2581, c2582

NOTICE
A change to the software limit switch immediately becomes effective. If the software limit switch is changed, then this results in the positions in the traversing blocks being checked.

Note
The following applies for the setting of the software limit switch:
Negative software limit switch < positive software limit switch

c2578 EPOS negative software limit switch / Neg SW lim switch

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint64	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Position limits	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °	**Unit group:** 10_4	**Unit selection:** p2496
Type of signal interconnection:	Sink numeric	**Scaling:** -
Factory interconnection:	Parameter: 2580	

Description: Signal for the negative software limit switch.

Dependency: See also: c2579, p2580, p2581, c2582

NOTICE
A change to the software limit switch immediately becomes effective. If the software limit switch is changed, then this results in the positions in the traversing blocks being checked.

Note
The following applies for the setting of the software limit switch:
Negative software limit switch < positive software limit switch

c2579 EPOS positive software limit switch / Pos SW lim switch

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: FloatingPoint64	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	

Write permission: Edit device configuration or drive applications
Parameter group: Dynamic response limits
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: mm **Unit group:** 10_3 **Unit selection:** p2496
Type of signal interconnection: Sink numeric **Scaling:** -
Factory interconnection: Parameter: 2581

Description: Signal for the positive setpoint limit switch.

Dependency: See also: c2578, p2580, p2581, c2582

NOTICE
A change to the software limit switch immediately becomes effective. If the software limit switch is changed, then this results in the positions in the traversing blocks being checked.

Note
The following applies for the setting of the software limit switch:
Negative software limit switch < positive software limit switch

c2579 EPOS positive software limit switch / Pos SW lim switch

Variant: G220, G220 Clean Power
Available when function is active: Basic positioner
Values for: Basic positioner for rotary motion
Data type: FloatingPoint64 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Dynamic response limits
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: ° **Unit group:** 10_4 **Unit selection:** p2496
Type of signal interconnection: Sink numeric **Scaling:** -
Factory interconnection: Parameter: 2581

Description: Signal for the positive setpoint limit switch.

Dependency: See also: c2578, p2580, p2581, c2582

NOTICE
A change to the software limit switch immediately becomes effective. If the software limit switch is changed, then this results in the positions in the traversing blocks being checked.

Note
The following applies for the setting of the software limit switch:
Negative software limit switch < positive software limit switch

p2580 EPOS negative software limit switch / Neg SW lim switch

Variant: G220, G220 Clean Power
Available when function is active: Basic positioner
Data type: FloatingPoint64 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Position limits

Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm	**Unit group:** 10_3	**Unit selection:** p2496
Type of signal interconnection:	Source numeric	**Scaling:** -
Min:	**Max:**	**Factory setting:**
-2.1474828e+09 [mm]	2.1474828e+09 [mm]	-2.1474828e+09 [mm]

Description: Sets the software limit switch, in the negative direction of travel.

Dependency: See also: c2578, c2579, p2581, c2582

p2580 EPOS negative software limit switch / Neg SW lim switch

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint64	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Position limits	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °	**Unit group:** 10_4	**Unit selection:** p2496
Type of signal interconnection:	Source numeric	**Scaling:** -
Min:	**Max:**	**Factory setting:**
-2.1474828e+09 [°]	2.1474828e+09 [°]	-2.1474828e+09 [°]

Description: Sets the software limit switch, in the negative direction of travel.

Dependency: See also: c2578, c2579, p2581, c2582

p2581 EPOS positive software limit switch / Pos SW lim switch

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: FloatingPoint64	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Dynamic response limits	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm	**Unit group:** 10_3	**Unit selection:** p2496
Type of signal interconnection:	Source numeric	**Scaling:** -
Min:	**Max:**	**Factory setting:**
-2.1474828e+09 [mm]	2.1474828e+09 [mm]	2.1474828e+09 [mm]

Description: Sets the software limit switch, in the positive direction of travel.

Dependency: See also: c2578, c2579, p2580, c2582

p2581 EPOS positive software limit switch / Pos SW lim switch

Variant:	G220, G220 Clean Power

Available when function is active:	Basic positioner	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint64	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Dynamic response limits	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °	**Unit group:** 10_4	**Unit selection:** p2496
Type of signal interconnection:	Source numeric	**Scaling:** -
Min:	**Max:**	**Factory setting:**
-2.1474828e+09 [°]	2.1474828e+09 [°]	2.1474828e+09 [°]

Description: Sets the software limit switch, in the positive direction of travel.

Dependency: See also: c2578, c2579, p2580, c2582

c2582 EPOS software limit switch activation / SW lim switch act

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Position limits	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal to activate the software limit switch.

Dependency: See also: c2578, c2579, p2580, p2581

⚠ CAUTION

Software limit switch is effective for:
- Axis is homed (r2684.11 = 1) and
- c2582 = 1 signal.

Software limit switch is ineffective for:
- Modulo correction active (c2577 = 1 signal) or
- "Active homing" is executed.

NOTICE

Target position for relative positioning outside software limit switch:
The traversing block is started and the axis comes to a standstill at the software limit switch. An appropriate alarm is output and the traversing block is interrupted. Traversing blocks with valid position can be activated.

Target position for absolute positioning outside software limit switch:
In the "traversing blocks" mode, the traversing block is not started and an appropriate fault is output.

Axis outside the valid traversing range:
If the axis is already outside the valid traversing range, then an appropriate fault is output. The fault can be acknowledged at standstill. Traversing blocks with valid position can be activated.

Note
The traversing range can also be limited using hardware limit switches.

p2583 EPOS backlash compensation / Backlash comp

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Basic positioner	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm	**Unit group:** 10_3	**Unit selection:** p2496
Min:	**Max:**	**Factory setting:**
-200000.000000 [mm]	200000.000000 [mm]	0.000000 [mm]

Description:
Sets the amount of play (backlash) for positive or negative play.
0: backlash compensation is deactivated.
> 0: Positive backlash (normal case)
When the direction is reversed, the encoder actual value leads the actual value.
< 0: Negative backlash
When the direction is reversed, the actual value leads the encoder actual value.

Dependency:
If a stationary axis is referenced by "setting the home position", or an adjusted with absolute encoder is switched on, then the setting of c2604 is relevant for entering the compensation value.
c2604 = 1:
Traveling in the positive direction -> A compensation value is immediately entered.
Traveling in the negative direction -> A compensation value is not entered
c2604 = 0:
Traveling in the positive direction -> A compensation value is not entered
Traveling in the negative direction -> A compensation value is immediately entered.
When again setting the home position (a homed axis) or for "passive homing", c2604 is not relevant but instead the history of the axis.
See also: c2604, r2667

p2583 EPOS backlash compensation / Backlash comp

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Basic positioner	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °	**Unit group:** 10_4	**Unit selection:** p2496

Min:	Max:	Factory setting:
-200000.000000 [°]	200000.000000 [°]	0.000000 [°]

Description: Sets the amount of play (backlash) for positive or negative play.
0: backlash compensation is deactivated.
> 0: Positive backlash (normal case)
When the direction is reversed, the encoder actual value leads the actual value.
< 0: Negative backlash
When the direction is reversed, the actual value leads the encoder actual value.

Dependency: If a stationary axis is referenced by "setting the home position", or an adjusted with absolute encoder is switched on, then the setting of c2604 is relevant for entering the compensation value.
c2604 = 1:
Traveling in the positive direction -> A compensation value is immediately entered.
Traveling in the negative direction -> A compensation value is not entered
c2604 = 0:
Traveling in the positive direction -> A compensation value is not entered
Traveling in the negative direction -> A compensation value is immediately entered.
When again setting the home position (a homed axis) or for "passive homing", c2604 is not relevant but instead the history of the axis.
See also: c2604, r2667

p2584.0...3 EPOS functions configuration / EPOS fct config

Variant:	G220, G220 Clean Power		
Available when function is active:	Basic positioner		
Data type: Unsigned32	**Visible in:** Extended display		
Read permission:	Read drive data or acknowledge messages		
Write permission:	Edit device configuration or drive applications		
Can be changed in the operating state:	Ready for operation		
Parameter group:	Basic positioner		
Not relevant for motor type:	-		
Dyn. index [0...n]:	-	**Calculated:** -	
Unit: -	**Unit group:** -	**Unit selection:** -	
Min:	**Max:**	**Factory setting:**	
-	-	0100 bin	

Description: Sets the configuration for additional functions for the basic positioner (EPOS).

Bit array:

Bit	Signal name	1 signal	0 signal
00	Activate position feedback signal	Yes	No
01	Hardware limit switch evaluation	Level evaluation	Edge evaluation
02	Travel to fixed stop - torque calculation based on the offset	Yes	No
03	Active homing with absolute encoder adjustment	Yes	No

Note
For bit 00:
When the bit is set, for traversing blocks with absolute target positions (p2617[x]) when the tolerance window (p2688) is reached, the traversing block number (p2616[x]) is output bit-coded (r2689).
For bit 01:
When the bit is set, the hardware limit switch is evaluated, level-triggered.
This setting is recommended for a poor position actual value resolution, as in this case the direction does not have to be evaluated.
For bit 02:
When the bit is set, for "Travel to fixed stop", the torque setpoints are calculated based on the offset for the torque limit (p1532).
For bit 03:
After successful active homing, an absolute encoder is adjusted (p2507).

p2585 EPOS jog 1 setpoint velocity / Jog 1 v_set

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Jog	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm/s	**Unit group:** 11_3	**Unit selection:** p2497
Min:	**Max:**	**Factory setting:**
-4e+07 [mm/s]	4e+07 [mm/s]	-5.000 [mm/s]

Description: Sets the setpoint velocity for jog 1.
Dependency: See also: p2587, c2589, c2591

p2585 EPOS jog 1 setpoint velocity / Jog 1 v_set

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Jog	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °/s	**Unit group:** 11_4	**Unit selection:** p2497
Min:	**Max:**	**Factory setting:**
-4e+07 [°/s]	4e+07 [°/s]	-180.000 [°/s]

Description: Sets the setpoint velocity for jog 1.
Dependency: See also: p2587, c2589, c2591

p2586 EPOS jog 2 setpoint velocity / Jog 2 v_set

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Jog	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm/s	**Unit group:** 11_3	**Unit selection:** p2497
Min:	**Max:**	**Factory setting:**
-4e+07 [mm/s]	4e+07 [mm/s]	5.000 [mm/s]

Description: Sets the setpoint velocity for jog 2.

Dependency: See also: p2588, c2590, c2591

p2586 EPOS jog 2 setpoint velocity / Jog 2 v_set

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Jog	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °/s	**Unit group:** 11_4	**Unit selection:** p2497
Min:	**Max:**	**Factory setting:**
-4e+07 [°/s]	4e+07 [°/s]	180.000 [°/s]

Description: Sets the setpoint velocity for jog 2.

Dependency: See also: p2588, c2590, c2591

p2587 EPOS jog 1 traversing distance / Jog 1 distance

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Jog	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm	**Unit group:** 10_3	**Unit selection:** p2496

Min:	Max:	Factory setting:
0.000000 [mm]	2.1474828e+09 [mm]	1.000000 [mm]

Description: Sets the traversing distance for incremental jog 1.

Dependency: See also: p2585, c2589, c2591

Note
Incremental jog 1 is started with c2591 = 1 signal and c2589 = 0/1 signal.
With c2589 = 0 signal, incremental jogging is interrupted.

p2587 EPOS jog 1 traversing distance / Jog 1 distance

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Jog	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °	**Unit group:** 10_4	**Unit selection:** p2496
Min:	**Max:**	**Factory setting:**
0.000000 [°]	2.1474828e+09 [°]	36.000000 [°]

Description: Sets the traversing distance for incremental jog 1.

Dependency: See also: p2585, c2589, c2591

Note
Incremental jog 1 is started with c2591 = 1 signal and c2589 = 0/1 signal.
With c2589 = 0 signal, incremental jogging is interrupted.

p2588 EPOS jog 2 traversing distance / Jog 2 distance

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Jog	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm	**Unit group:** 10_3	**Unit selection:** p2496
Min:	**Max:**	**Factory setting:**
0.000000 [mm]	2.1474828e+09 [mm]	1.000000 [mm]

Description: Sets the traversing distance for incremental jog 2.

Dependency: See also: p2586, c2590, c2591

Note
Incremental jog 2 is started with c2591 = 1 signal and c2590 = 0/1 signal.
Incremental jogging is interrupted with c2590 = 0 signal.

p2588 EPOS jog 2 traversing distance / Jog 2 distance

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Jog	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °	**Unit group:** 10_4	**Unit selection:** p2496
Min:	**Max:**	**Factory setting:**
0.000000 [°]	2.1474828e+09 [°]	36.000000 [°]

Description: Sets the traversing distance for incremental jog 2.

Dependency: See also: p2586, c2590, c2591

Note
Incremental jog 2 is started with c2591 = 1 signal and c2590 = 0/1 signal.
Incremental jogging is interrupted with c2590 = 0 signal.

c2589 EPOS jog 1 / Jog 1

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Jog	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal for jog 1.

Dependency: When jogging, the axis is accelerated or braked with the maximum acceleration/deceleration (p2572/p2573).
c2591 = 0 signal
The axis endlessly moves with the setpoint velocity, jog 1 (p2585).
c2591 = 1 signal
The axis traverses through a parameterized distance (p2585) with the setpoint velocity, jog 1 (p2587).
See also: p2572, p2573, p2585, p2587, c2591

NOTICE
The parameter may be protected as a result of r0922 and cannot be changed.

c2590 EPOS jog 2 / Jog 2

Variant:	G220, G220 Clean Power
Available when function is active:	Basic positioner

Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Jog
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal for jog 2.

Dependency: When jogging, the axis is accelerated or braked with the maximum acceleration/deceleration (p2572/p2573).
c2591 = 0 signal
The axis endlessly moves with the setpoint velocity, jog 2 (p2586).
c2591 = 1 signal
The axis traverses through a parameterized distance (p2586) with the setpoint velocity, jog 2 (p2588).
See also: p2572, p2573, p2586, p2588, c2591

NOTICE
The parameter may be protected as a result of r0922 and cannot be changed.

c2591 EPOS jogging incremental / Jog incr

Variant: G220, G220 Clean Power
Available when function is active: Basic positioner
Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Jog
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal for incremental jogging.

Dependency: See also: p2585, p2586, p2587, p2588, c2589, c2590

c2595 EPOS homing start / Hom start

Variant: G220, G220 Clean Power
Available when function is active: Basic positioner
Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Homing
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal to start "Active homing" or "Passive homing".
0/1 signal edge: Homing is started.
1/0 signal edge: Homing is interrupted.

Dependency: See also: c2597, c2598, p2599, r2684

NOTICE
The parameter may be protected as a result of r0922 and cannot be changed.

Note
Active homing (c2597 = 0 signal):
Active homing can only be activated (0/1 edge) after traversing motion that is being processed has been completed.
With the start, where relevant, the state signal "home position set" (r2684.11) is reset.
Passive homing (c2597 = 1 signal):
With the start, the state signal "home position set" (r2684.11) is not reset.

c2596 EPOS set home position / Set hom_pos

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Homing	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal for "Set home position".

Dependency: See also: c2598, p2599, r2684

NOTICE
The parameter may be protected as a result of r0922 and cannot be changed.

Note
Home position setting is effective in the following operating states:
- In the basic state.
- For FIXED STOP with progress condition END (corresponds to the initial state).
- For traversing block interrupted via c2640 = 0 signal (intermediate stop).
- For EPOS not enabled and position actual value valid

c2597 EPOS homing type selection / Hom_type selection

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Homing	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal to select homing type.
1 signal: Passive homing
0 signal: Active homing

Dependency: See also: c2595

Note
Homing is activated as follows:
- Select homing type (c2597)
- Start homing (c2595 = 0/1 signal edge)

c2598[0...3] EPOS home position signal / Hom_pos signal

Variant: G220, G220 Clean Power
Available when function is active: Basic positioner
Data type: FloatingPoint64 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Homing
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: mm **Unit group:** 10_3 **Unit selection:** p2496
Type of signal interconnection: Sink numeric **Scaling:** -
Factory interconnection: Parameter: 2599

Description: Signal for the home position.
This value is used as reference for the following homing operations:
- Active homing
- Set home position
- Passive homing
- Absolute value adjustment

Index: [0] = Position control
[1] = Motor encoder
[2] = Encoder 2
[3] = Encoder 3

Dependency: See also: p2502, p2507, c2595, c2596, c2597, p2599

Note
When function "Basic positioner" is activated, the following applies:
Incremental measuring system:
After the home position is reached, the drive accepts the actual axis position from the position value received via c2598[0].
Absolute encoder:
When adjusting the encoder, the position received is set as the actual axis position.

c2598[0...3] EPOS home position signal / Hom_pos signal

Variant: G220, G220 Clean Power
Available when function is active: Basic positioner
Values for: Basic positioner for rotary motion
Data type: FloatingPoint64 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages

Write permission:	Edit device configuration or drive applications	
Parameter group:	Homing	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °	**Unit group:** 10_4	**Unit selection:** p2496
Type of signal interconnection:	Sink numeric	**Scaling:** -
Factory interconnection:	Parameter: 2599	

Description: Signal for the home position.
This value is used as reference for the following homing operations:
- Active homing
- Set home position
- Passive homing
- Absolute value adjustment

Index: [0] = Position control
[1] = Motor encoder
[2] = Encoder 2
[3] = Encoder 3

Dependency: See also: p2502, p2507, c2595, c2596, c2597, p2599

Note
When function "Basic positioner" is activated, the following applies:
Incremental measuring system:
After the home position is reached, the drive accepts the actual axis position from the position value received via c2598[0].
Absolute encoder:
When adjusting the encoder, the position received is set as the actual axis position.

p2599 EPOS home position value / Home_pos_value

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: FloatingPoint64	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Homing	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm	**Unit group:** 10_3	**Unit selection:** p2496
Type of signal interconnection:	Source numeric	**Scaling:** -
Min:	**Max:**	**Factory setting:**
-2.1474828e+09 [mm]	2.1474828e+09 [mm]	0.000000 [mm]

Description: Sets the position value for the home position.
This value is set as the actual axis position after homing or adjustment.

Dependency: See also: p2507, c2595, c2596, c2597, c2598

p2599 EPOS home position value / Home_pos_value

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	

Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint64	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Homing	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °	**Unit group:** 10_4	**Unit selection:** p2496
Type of signal interconnection:	Source numeric	**Scaling:** -
Min:	**Max:**	**Factory setting:**
-2.1474828e+09 [°]	2.1474828e+09 [°]	0.000000 [°]

Description: Sets the position value for the home position.
This value is set as the actual axis position after homing or adjustment.

Dependency: See also: p2507, c2595, c2596, c2597, c2598

p2600 EPOS active homing home position offset / Home pos offset

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: FloatingPoint64	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Homing	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm	**Unit group:** 10_3	**Unit selection:** p2496
Min:	**Max:**	**Factory setting:**
-2.1474828e+09 [mm]	2.1474828e+09 [mm]	0.000000 [mm]

Description: Sets the home position shift for active homing.

Dependency: See also: c2598

p2600 EPOS active homing home position offset / Home pos offset

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint64	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Homing	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °	**Unit group:** 10_4	**Unit selection:** p2496

Min:	Max:	Factory setting:
-2.1474828e+09 [°]	2.1474828e+09 [°]	0.000000 [°]

Description: Sets the home position shift for active homing.

Dependency: See also: c2598

p2601 EPOS passive homing inner window / Inner window

Variant: G220, G220 Clean Power

Available when function is active: Basic positioner

Data type: FloatingPoint64 **Visible in:** Extended display

Read permission: Read drive data or acknowledge messages

Write permission: Edit device configuration or drive applications

Can be changed in the operating state: Operation

Parameter group: Homing

Not relevant for motor type: -

Dyn. index [0...n]: - **Calculated:** -

Unit: mm **Unit group:** 10_3 **Unit selection:** p2496

Min:	Max:	Factory setting:
0.000000 [mm]	2.1474828e+09 [mm]	0.000000 [mm]

Description: Sets the inner window for passive homing.
For a value = 0, the evaluation of the inner window is deactivated.

Dependency: See also: c2597, p2602, r2684

NOTICE
The inner window must be set so that it is smaller than the outer window.

Note
If the difference between the homing position and sensed actual position is less than the inner window, then No correction is executed for a homed axis.
If the difference between the homing position and detected actual position is greater than the inner window and less than the outer window (p2602), then a correction is executed for a homed axis.

p2601 EPOS passive homing inner window / Inner window

Variant: G220, G220 Clean Power

Available when function is active: Basic positioner

Values for: Basic positioner for rotary motion

Data type: FloatingPoint64 **Visible in:** Extended display

Read permission: Read drive data or acknowledge messages

Write permission: Edit device configuration or drive applications

Can be changed in the operating state: Operation

Parameter group: Homing

Not relevant for motor type: -

Dyn. index [0...n]: - **Calculated:** -

Unit: ° **Unit group:** 10_4 **Unit selection:** p2496

Min:	Max:	Factory setting:
0.000000 [°]	2.1474828e+09 [°]	0.000000 [°]

Description: Sets the inner window for passive homing.
For a value = 0, the evaluation of the inner window is deactivated.

Dependency: See also: c2597, p2602, r2684

NOTICE
The inner window must be set so that it is smaller than the outer window.

Note
If the difference between the homing position and sensed actual position is less than the inner window, then No correction is executed for a homed axis.
If the difference between the homing position and detected actual position is greater than the inner window and less than the outer window (p2602), then a correction is executed for a homed axis.

p2602 EPOS passive homing outer window / Outer window

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: FloatingPoint64	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Homing	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm	**Unit group:** 10_3	**Unit selection:** p2496
Min:	**Max:**	**Factory setting:**
0.000000 [mm]	2.1474828e+09 [mm]	0.000000 [mm]

Description: Sets the outer window for passive homing.
For a value = 0, the evaluation of the outer window is deactivated.

Dependency: See also: c2597, r2684

NOTICE
The inner window must be set so that it is smaller than the outer window.

Note
If the difference between the homing position and detected actual position is greater than the outer window, then No correction is executed for a homed axis. Further, an appropriate message is output and r2684.3 is set to 1.

p2602 EPOS passive homing outer window / Outer window

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint64	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Homing	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °	**Unit group:** 10_4	**Unit selection:** p2496
Min:	**Max:**	**Factory setting:**
0.000000 [°]	2.1474828e+09 [°]	0.000000 [°]

Description: Sets the outer window for passive homing.
For a value = 0, the evaluation of the outer window is deactivated.

Dependency: See also: c2597, r2684

NOTICE
The inner window must be set so that it is smaller than the outer window.

Note
If the difference between the homing position and detected actual position is greater than the outer window, then No correction is executed for a homed axis. Further, an appropriate message is output and r2684.3 is set to 1.

c2604 EPOS active homing start direction / Act homing direct

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Homing	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal for the start direction for active homing.
1 signal: Start in the negative direction.
0 signal: Start in the positive direction.

Dependency: See also: p2583, c2595, c2597

p2605 EPOS active homing approach velocity reference cam / v_appr ref_cam

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Homing	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm/s	**Unit group:** 11_3	**Unit selection:** p2497
Min:	**Max:**	**Factory setting:**
0.0001 [mm/s]	4e+07 [mm/s]	100.0000 [mm/s]

Description: Sets the approach velocity to the reference cam for active homing.

Dependency: Active homing only starts with the approach velocity to the reference cam when there is a reference cam (p2607 = 1).
See also: c2595, c2597, c2604, p2606, p2607

Note
When traversing to the reference cam, the velocity override is effective.
If, at the start of active homing, the axis is already at the reference cam, then the axis immediately starts to traverse to the zero mark.

p2605 EPOS active homing approach velocity reference cam / v_appr ref_cam

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Homing	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °/s	**Unit group:** 11_4	**Unit selection:** p2497
Min:	**Max:**	**Factory setting:**
0.0001 [°/s]	4e+07 [°/s]	3600.0000 [°/s]

Description: Sets the approach velocity to the reference cam for active homing.

Dependency: Active homing only starts with the approach velocity to the reference cam when there is a reference cam (p2607 = 1).
See also: c2595, c2597, c2604, p2606, p2607

Note
When traversing to the reference cam, the velocity override is effective.
If, at the start of active homing, the axis is already at the reference cam, then the axis immediately starts to traverse to the zero mark.

p2606 EPOS active homing reference cam maximum distance / Ref_cam max s

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: FloatingPoint64	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Homing	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm	**Unit group:** 10_3	**Unit selection:** p2496
Min:	**Max:**	**Factory setting:**
0.000000 [mm]	2.1474828e+09 [mm]	2.1474828e+09 [mm]

Description: Sets the maximum distance after starting active homing when traversing to the reference cam.

Dependency: See also: c2595, c2597, c2604, p2605, p2607

Note
When using a reversing cam, the maximum distance must be set appropriately long.

p2606 EPOS active homing reference cam maximum distance / Ref_cam max s

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint64	**Visible in:** Extended display	

Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Homing	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °	**Unit group:** 10_4	**Unit selection:** p2496
Min:	**Max:**	**Factory setting:**
0.000000 [°]	2.1474828e+09 [°]	2.1474828e+09 [°]

Description: Sets the maximum distance after starting active homing when traversing to the reference cam.

Dependency: See also: c2595, c2597, c2604, p2605, p2607

Note
When using a reversing cam, the maximum distance must be set appropriately long.

p2607 EPOS active homing reference cam available / Ref_cam pres

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Homing	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	1	1

Description: Sets whether or not a reference cam is available for active homing.
Value = 1: Reference cam present.
Value = 0: No reference cam present.

Dependency: See also: c2595, c2597, c2604, p2605, p2606

p2608 EPOS active homing approach velocity zero mark / v_appr hom_ZM

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Homing	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm/s	**Unit group:** 11_3	**Unit selection:** p2497
Min:	**Max:**	**Factory setting:**
0.0001 [mm/s]	4e+07 [mm/s]	25.0000 [mm/s]

Description: Sets the approach velocity after detecting the reference cam to search for the zero mark for active homing.

Dependency: If there is no reference cam (p2607 = 0), active homing starts immediately with the axis traversing to the zero mark.
See also: c2595, c2597, c2604, p2607, p2609, p2610

⚠ CAUTION

If the reference cam is not adjusted so that for each active homing the same zero mark for synchronization is detected, then an "incorrect" axis reference point is obtained.
After the reference cam has been left, the search for the zero mark is activated with a time delay due to internal factors. This is the reason that the reference cam should be adjusted in this center between two zero marks and the approach velocity should be adapted to the distance between two zero marks.

Note
The velocity override is not effective when traversing to the zero mark.

p2608 EPOS active homing approach velocity zero mark / v_appr hom_ZM

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Homing	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °/s	**Unit group:** 11_4	**Unit selection:** p2497
Min:	**Max:**	**Factory setting:**
0.0001 [°/s]	4e+07 [°/s]	900.0000 [°/s]

Description: Sets the approach velocity after detecting the reference cam to search for the zero mark for active homing.

Dependency: If there is no reference cam (p2607 = 0), active homing starts immediately with the axis traversing to the zero mark.
See also: c2595, c2597, c2604, p2607, p2609, p2610

⚠ CAUTION

If the reference cam is not adjusted so that for each active homing the same zero mark for synchronization is detected, then an "incorrect" axis reference point is obtained.
After the reference cam has been left, the search for the zero mark is activated with a time delay due to internal factors. This is the reason that the reference cam should be adjusted in this center between two zero marks and the approach velocity should be adapted to the distance between two zero marks.

Note
The velocity override is not effective when traversing to the zero mark.

p2609 EPOS active homing max distance reference cam and zero mark / Max s ref_cam ZM

Variant:	G220, G220 Clean Power
Available when function is active:	Basic positioner
Data type: FloatingPoint32	**Visible in:** Standard display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications
Can be changed in the operating state:	Operation
Parameter group:	Homing

Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm	**Unit group:** 10_3	**Unit selection:** p2496
Min:	**Max:**	**Factory setting:**
0.000000 [mm]	2.1474828e+09 [mm]	20.000000 [mm]

Description: Sets the maximum distance after leaving the reference cam when traversing to the zero mark.

Dependency: See also: c2595, c2597, c2604, p2607, p2608, p2610

p2609 EPOS active homing max distance reference cam and zero mark / Max s ref_cam ZM

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Homing	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °	**Unit group:** 10_4	**Unit selection:** p2496
Min:	**Max:**	**Factory setting:**
0.000000 [°]	2.1474828e+09 [°]	720.000000 [°]

Description: Sets the maximum distance after leaving the reference cam when traversing to the zero mark.

Dependency: See also: c2595, c2597, c2604, p2607, p2608, p2610

p2610 EPOS active homing tolerance band for distance to zero mark / Tol_band to ZM

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Homing	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm	**Unit group:** 10_3	**Unit selection:** p2496
Min:	**Max:**	**Factory setting:**
0.000000 [mm]	2.1474828e+09 [mm]	2.1474828e+09 [mm]

Description: Sets the tolerance bandwidth for the distance to the zero mark

The zero mark is evaluated within the maximum distance between the reference cam and zero mark (p2609) minus the tolerance bandwidth for the distance to the zero mark (p2610).

Dependency: See also: p2609

p2610 EPOS active homing tolerance band for distance to zero mark / Tol_band to ZM

Variant:	G220, G220 Clean Power

Available when function is active:	Basic positioner	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Homing	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °	**Unit group:** 10_4	**Unit selection:** p2496
Min:	**Max:**	**Factory setting:**
0.000000 [°]	2.1474828e+09 [°]	2.1474828e+09 [°]

Description: Sets the tolerance bandwidth for the distance to the zero mark

The zero mark is evaluated within the maximum distance between the reference cam and zero mark (p2609) minus the tolerance bandwidth for the distance to the zero mark (p2610).

Dependency: See also: p2609

p2611 EPOS active homing approach velocity home position / v_appr hom_pos

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Homing	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm/s	**Unit group:** 11_3	**Unit selection:** p2497
Min:	**Max:**	**Factory setting:**
0.0001 [mm/s]	4e+07 [mm/s]	25.0000 [mm/s]

Description: Sets the approach velocity after detecting the zero mark to approach the home position.

Dependency: See also: c2595, c2597, c2604, p2607, p2609, p2610

Note
When traversing to the home position, the velocity override is not effective.

p2611 EPOS active homing approach velocity home position / v_appr hom_pos

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Homing	

Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: °/s **Unit group:** 11_4 **Unit selection:** p2497
Min: **Max:** **Factory setting:**
0.0001 [°/s] 4e+07 [°/s] 900.0000 [°/s]

Description: Sets the approach velocity after detecting the zero mark to approach the home position.

Dependency: See also: c2595, c2597, c2604, p2607, p2609, p2610

Note
When traversing to the home position, the velocity override is not effective.

c2612[0...1] EPOS active homing reference cam / Ref_cam

Variant: G220, G220 Clean Power
Available when function is active: Basic positioner
Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Homing
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal for the reference cam.

Index: [0] = Reference cam selection 1
[1] = Reference cam selection 2

Dependency: See also: r0922, p2607

NOTICE
Parameter c2612[0] may be protected as a result of r0922 and cannot be changed.

Note
The selection of reference cam 1 or 2 can be configured using p11550.

c2613 EPOS active homing negative reversing cam / Neg reversing cam

Variant: G220, G220 Clean Power
Available when function is active: Basic positioner
Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Homing
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 1

Description: Signal for the reversing cam in the negative direction of travel.
1 signal: Reversing cam not reached.
0 signal: Reversing cam reached.

Dependency: See also: c2614

Note
If, during active homing of the positive and negative reversing cam, a 0 signal is detected, then the axis remains at a standstill.

c2614 EPOS active homing positive reversing cam / Pos reversing cam

Variant: G220, G220 Clean Power
Available when function is active: Basic positioner
Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Homing
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 1

Description: Signal for the reversing cam in the positive direction of travel.
1 signal: Reversing cam not reached.
0 signal: Reversing cam reached.

Dependency: See also: c2613

Note
If, during active homing of the positive and negative reversing cam, a 0 signal is detected, then the axis remains at a standstill.

p2615 EPOS maximum number of traversing blocks / Trav_block qty max

Variant: G220, G220 Clean Power
Available when function is active: Basic positioner
Data type: Unsigned8 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Commissioning
Parameter group: Traversing blocks
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
1	64	64

Description: Sets the maximum number of traversing blocks that are available.

Dependency: See also: p2616, p2617, p2618, p2619, p2620, p2621, p2622, p2623

p2616[0...n] EPOS traversing block block number / Trav_blk, blk no

Variant: G220, G220 Clean Power
Available when function is active: Basic positioner
Data type: Integer16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages

Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Traversing blocks	
Not relevant for motor type:	-	
Dyn. index [0...n]:	n defined by: p2615	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-1	63	-1

Description: Sets a block number.
-1: Invalid block number. These blocks are not taken into account.
0 ... 63: valid block number.

Dependency: The number of indices depends on p2615.
See also: p2615, p2617, p2618, p2619, p2620, p2621, p2622, p2623

p2617[0...n] EPOS traversing block position / Trav_block pos

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: FloatingPoint64	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Traversing blocks	
Not relevant for motor type:	-	
Dyn. index [0...n]:	n defined by: p2615	**Calculated:** -
Unit: mm	**Unit group:** 10_3	**Unit selection:** p2496
Min:	**Max:**	**Factory setting:**
-2.1474828e+09 [mm]	2.1474828e+09 [mm]	0.000000 [mm]

Description: Sets the target position for the traversing block.

Dependency: The number of indices depends on p2615.
See also: p2615, p2616, p2618, p2619, p2620, p2621, p2622, p2623

Note
The target position is approached in either relative or absolute terms depending on p2623.

p2617[0...n] EPOS traversing block position / Trav_block pos

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint64	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Traversing blocks	
Not relevant for motor type:	-	
Dyn. index [0...n]:	n defined by: p2615	**Calculated:** -
Unit: °	**Unit group:** 10_4	**Unit selection:** p2496

Min:	Max:	Factory setting:
-2.1474828e+09 [°]	2.1474828e+09 [°]	0.000000 [°]

Description: Sets the target position for the traversing block.

Dependency: The number of indices depends on p2615.
See also: p2615, p2616, p2618, p2619, p2620, p2621, p2622, p2623

Note
The target position is approached in either relative or absolute terms depending on p2623.

p2618[0...n] EPOS traversing block velocity / Trav_block v

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Traversing blocks	
Not relevant for motor type:	-	
Dyn. index [0...n]:	n defined by: p2615	**Calculated:** -
Unit: mm/s	**Unit group:** 11_3	**Unit selection:** p2497
Min:	**Max:**	**Factory setting:**
0.0001 [mm/s]	4e+07 [mm/s]	100.0000 [mm/s]

Description: Sets the velocity for the traversing block.

Dependency: The number of indices depends on p2615.
See also: p2615, p2616, p2617, p2619, p2620, p2621, p2622, p2623, c2646

Note
The velocity can be influenced using the velocity override (c2646).

p2618[0...n] EPOS traversing block velocity / Trav_block v

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Traversing blocks	
Not relevant for motor type:	-	
Dyn. index [0...n]:	n defined by: p2615	**Calculated:** -
Unit: °/s	**Unit group:** 11_4	**Unit selection:** p2497
Min:	**Max:**	**Factory setting:**
0.0001 [°/s]	4e+07 [°/s]	3600.0000 [°/s]

Description: Sets the velocity for the traversing block.

Dependency: The number of indices depends on p2615.
See also: p2615, p2616, p2617, p2619, p2620, p2621, p2622, p2623, c2646

Note
The velocity can be influenced using the velocity override (c2646).

p2619[0...n] EPOS traversing block acceleration override / Trav_block a_over

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Traversing blocks	
Not relevant for motor type:	-	
Dyn. index [0...n]:	n defined by: p2615	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
1.0 [%]	100.0 [%]	100.0 [%]

Description: Sets the acceleration override for the traversing block.
The override refers to the maximum acceleration (p2572).

Dependency: The number of indices depends on p2615.
See also: p2572, p2615, p2616, p2617, p2618, p2620, p2621, p2622, p2623

p2620[0...n] EPOS traversing deceleration override / Trav_block -a_over

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Traversing blocks	
Not relevant for motor type:	-	
Dyn. index [0...n]:	n defined by: p2615	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
1.0 [%]	100.0 [%]	100.0 [%]

Description: Sets the deceleration override for the traversing block.
The override refers to the maximum deceleration (p2573).

Dependency: The number of indices depends on p2615.
See also: p2573, p2615, p2616, p2617, p2618, p2619, p2621, p2622, p2623

NOTICE
If, when calculating the traversing profile, it is identified that the target position of the next block with the programmed deceleration override will not be reached without direction reversal (flying block change), then the old (actual) deceleration override remains effective.

p2621[0...n] EPOS traversing block task / Trav_block task

Variant:	G220, G220 Clean Power

Available when function is active:	Basic positioner	
Data type: Integer16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Traversing blocks	
Not relevant for motor type:	-	
Dyn. index [0...n]:	n defined by: p2615	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
1	9	1

Description: Sets the required task for the traversing block.

Value:

1:	POSITIONING
2:	FIXED STOP
3:	ENDLESS_POS
4:	ENDLESS_NEG
5:	WAITING
6:	GOTO
7:	SET_O
8:	RESET_O
9:	JERK

Dependency: The number of indices depends on p2615.
See also: p2615, p2616, p2617, p2618, p2619, p2620, p2622, p2623

p2622[0...n] EPOS traversing block task parameter / Trav_blck task_par

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: Integer32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Traversing blocks	
Not relevant for motor type:	-	
Dyn. index [0...n]:	n defined by: p2615	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-2147483648	2147483647	0

Description: Sets additional information/data of the appropriate task for the traversing block.

Dependency: The number of indices depends on p2615.
See also: p2615, p2616, p2617, p2618, p2619, p2620, p2621, p2623

Note
The following should be set depending on the task:
FIXED STOP: Clamping torque and clamping force (rotary 0...65536 [0.01 Nm], linear 0...65536 [N])
WAIT: Wait time [ms]
GOTO: Block number
SET_O: 1, 2 or 3 - set direct output 1, 2 or 3 (both)
RESET_O: 1, 2 or 3 - reset direct output 1, 2 or 3 (both)
JERK: 0 - deactivate, 1 - activate

p2623[0...n] EPOS traversing block task mode / Trav_block mode

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: Unsigned16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Traversing blocks	
Not relevant for motor type:	-	
Dyn. index [0...n]:	n defined by: p2615	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	65535	0

Description:
Sets the influence of the task for the traversing block.
Value = 0000 cccc bbbb aaaa
cccc: Positioning mode
cccc = 0000 --> ABSOLUTE
cccc = 0001 --> RELATIVE
cccc = 0010 --> ABS_POS (only for a rotary axis with modulo correction)
cccc = 0011 --> ABS_NEG (only for a rotary axis with modulo correction)
bbbb: Progression condition
bbbb = 0000 --> END
bbbb = 0001 --> CONTINUE_WITH_STOP
bbbb = 0010 --> CONTINUE_FLYING
bbbb = 0011 --> CONTINUE_EXTERNAL
bbbb = 0100 --> CONTINUE_EXTERNAL_WAIT
bbbb = 0101 --> CONTINUE_EXTERNAL_ALARM
aaaa: IDs
aaaa = 000x --> show/hide block (x = 0: show, x = 1: hide)

Dependency:
The number of indices depends on p2615.
See also: p2615, p2616, p2617, p2618, p2619, p2620, p2621, p2622

c2625 EPOS traversing block selection bit 0 / Trav_blk sel bit 0

Variant:	G220, G220 Clean Power
Available when function is active:	Basic positioner
Data type: Unsigned8	**Visible in:** Standard display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications
Parameter group:	Traversing blocks

Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal to select the traversing block, bit 0.

Dependency: Parameters c2625, c2626, c2627, c2628 and c2629 are used to select one of the maximum 64 traversing blocks.
See also: c2626, c2627, c2628, c2629, c2630

c2626 EPOS traversing block selection bit 1 / Trav_blk sel bit 1

Variant: G220, G220 Clean Power
Available when function is active: Basic positioner
Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Traversing blocks
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal to select the traversing block, bit 1.

Dependency: Parameters c2625, c2626, c2627, c2628 and c2629 are used to select one of the maximum 64 traversing blocks.
See also: c2625, c2627, c2628, c2629, c2630

c2627 EPOS traversing block selection bit 2 / Trav_blk sel bit 2

Variant: G220, G220 Clean Power
Available when function is active: Basic positioner
Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Traversing blocks
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal to select the traversing block, bit 2.

Dependency: Parameters c2625, c2626, c2627, c2628 and c2629 are used to select one of the maximum 64 traversing blocks.
See also: c2625, c2626, c2628, c2629, c2630

c2628 EPOS traversing block selection bit 3 / Trav_blk sel bit 3

Variant: G220, G220 Clean Power
Available when function is active: Basic positioner
Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages

Write permission:	Edit device configuration or drive applications	
Parameter group:	Traversing blocks	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal to select the traversing block, bit 3.

Dependency: Parameters c2625, c2626, c2627, c2628 and c2629 are used to select one of the maximum 64 traversing blocks.
See also: c2625, c2626, c2627, c2629, c2630

c2629 EPOS traversing block selection bit 4 / Trav_blk sel bit 4

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Traversing blocks	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal to select the traversing block, bit 4.

Dependency: Parameters c2625, c2626, c2627, c2628 and c2629 are used to select one of the maximum 64 traversing blocks.
See also: c2625, c2626, c2627, c2628, c2630

c2630 EPOS traversing block selection bit 5 / Trav_blk sel bit 5

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Traversing blocks	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal to select the traversing block, bit 5.

Dependency: Parameters c2625, c2626, c2627, c2628, c2629 and c2630 are used to select one of the maximum 64 traversing blocks.
See also: c2625, c2626, c2627, c2628, c2629

c2631 EPOS activate traversing task (0 -> 1) / Trav_task act

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	

Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Traversing blocks	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal for "Activate traversing task".
c2631 = 0/1 signal
The traversing task, selected using c2625 ... c2629, is started.

Dependency: See also: c2625, c2626, c2627, c2628, c2629, c2630, c2640, c2641

NOTICE
The parameter may be protected as a result of r0922 and cannot be changed.

Note
To start a traversing block, the axis must be homed (r2684.11 = 1).
The status signal r2684.12 = 0/1 signal is used for acknowledgment.
A traversing task can be influenced using the following signals:
- Intermediate stop via c2640.
- Reject traversing task via c2641.

p2632 EPOS external block change evaluation / Ext block chg eval

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Traversing blocks	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	1	0

Description: Sets the mode to evaluate "external block change".

Value:
0: External block change via a measuring probe
1: External block change via c2633

Dependency: See also: p2623, c2633, r2677, r2678

Note
In the mode "external block change via measuring probe" (p2632 = 0), the following applies:
When starting a traversing block with the block change enable CONTINUE_EXTERNAL, CONTINUE_EXTERNAL_WAIT and CONTINUE_EXTERNAL_ALARM, an activated "passive homing" is interrupted.
After ending the block, "Passive homing" must be reactivated using a 0/1 edge in c2595.

c2633 EPOS external block change (0 -> 1) / Ext blk chg (0->1)

Variant:	G220, G220 Clean Power

Available when function is active:	Basic positioner	
Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Traversing blocks	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal for the "External block change" for a positive signal edge.

Dependency: The evaluation of the signal is only active p2632 = 1.
See also: p2623, p2632, c2640, c2641, r2677, r2678

NOTICE
The parameter may be protected as a result of r0922 and cannot be changed.

Note
A positive signal edge initiates a flying block change in the subsequent traversing block.
When the external block change is identified, the actual position is saved in r2678.
A traversing task can be influenced using the following signals:
- Intermediate stop via c2640.
- Reject traversing task via c2641.

p2634[0...n] EPOS fixed stop maximum following error / Following err max

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Traversing blocks	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: mm	**Unit group:** 10_3	**Unit selection:** p2496
Min:	**Max:**	**Factory setting:**
0.000000 [mm]	2.1474828e+09 [mm]	1.000000 [mm]

Description: Sets the following error to detect the "fixed stop reached" state (r2526.4).

Dependency: See also: r2526, p2621, r2675

Note
The state "fixed stop reached" is detected if the following error exceeds the theoretically calculated following error value by p2634.

p2634[0...n] EPOS fixed stop maximum following error / Following err max

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint32	**Visible in:** Standard display	

Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Traversing blocks	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: °	**Unit group:** 10_4	**Unit selection:** p2496
Min:	**Max:**	**Factory setting:**
0.000000 [°]	2.1474828e+09 [°]	36.000000 [°]

Description: Sets the following error to detect the "fixed stop reached" state (r2526.4).

Dependency: See also: r2526, p2621, r2675

Note
The state "fixed stop reached" is detected if the following error exceeds the theoretically calculated following error value by p2634.

p2635 EPOS fixed stop monitoring window / Fixed stop mon

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Traversing blocks	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm	**Unit group:** 10_3	**Unit selection:** p2496
Min:	**Max:**	**Factory setting:**
0.000000 [mm]	2.1474828e+09 [mm]	0.125000 [mm]

Description: Sets the monitoring window of the actual position after the fixed stop is reached.

Dependency: See also: r2526, r2683

Note
If, after the fixed stop is reached, the end stop shifts in either the positive or negative direction by more than the value set here, then r2526.5 is set to 1 and an appropriate message is output.

p2635 EPOS fixed stop monitoring window / Fixed stop mon

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Traversing blocks	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -

Unit: ° | **Unit group:** 10_4 | **Unit selection:** p2496

Min: 0.000000 [°] | **Max:** 2.1474828e+09 [°] | **Factory setting:** 3.600000 [°]

Description: Sets the monitoring window of the actual position after the fixed stop is reached.

Dependency: See also: r2526, r2683

Note
If, after the fixed stop is reached, the end stop shifts in either the positive or negative direction by more than the value set here, then r2526.5 is set to 1 and an appropriate message is output.

c2637 EPOS fixed stop reached / Fixed stop reached

Variant: G220, G220 Clean Power

Available when function is active: Basic positioner

Data type: Unsigned8 | **Visible in:** Extended display

Read permission: Read drive data or acknowledge messages

Write permission: Edit device configuration or drive applications

Parameter group: Traversing blocks

Not relevant for motor type: -

Dyn. index [0...n]: - | **Calculated:** -

Unit: - | **Unit group:** - | **Unit selection:** -

Type of signal interconnection: Sink binary

Factory interconnection: Parameter: 2526.4

Description: Signal for feedback signal "Fixed stop reached".
1 signal: Fixed stop is reached.
0 signal: Fixed stop is not reached.

Dependency: See also: r2526, p2634

NOTICE
The parameter may be protected as a result of r0922 and cannot be changed.

Note
The identification of "fixed stop reached" is, for the factory setting, dependent on the signal r2526.4 (fixed stop reached). This signal is influenced via p2634 (EPOS fixed stop, maximum following error).

c2638 EPOS fixed stop outside the monitoring window / Fixed stop outside

Variant: G220, G220 Clean Power

Available when function is active: Basic positioner

Data type: Unsigned8 | **Visible in:** Extended display

Read permission: Read drive data or acknowledge messages

Write permission: Edit device configuration or drive applications

Parameter group: Traversing blocks

Not relevant for motor type: -

Dyn. index [0...n]: - | **Calculated:** -

Unit: - | **Unit group:** - | **Unit selection:** -

Type of signal interconnection: Sink binary

Factory interconnection: Parameter: 2526.5

Description: Signal for feedback signal "Fixed stop outside the monitoring window".
1 signal: Fixed stop is located outside the monitoring window.
0 signal: Fixed stop is inside the monitoring window.

Dependency: See also: r2526, p2635

Note
The identification of "fixed stop outside the monitoring window" is, for the factory setting, dependent on signal source r2526.5 (fixed stop outside window). This signal source is influenced via p2635 (EPOS fixed stop monitoring window).

c2639 EPOS torque limit reached / M_limit reached

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Traversing blocks	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Parameter: 1407.7	

Description: Signal for feedback signal "Torque limit reached" when traversing to fixed stop.
1 signal: Torque limit is reached.
0 signal: Torque limit is not reached.

Dependency: See also: r1407

Note
For the factory setting, the feedback signal from "torque limit reached" is dependent on signal source r1407.7 (torque limit reached).

c2640 EPOS intermediate stop (0 signal) / Intermediate stop

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Traversing blocks, Direct setpoint input (MDI)	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal for "No intermediate stop/intermediate stop".
1 signal: No intermediate stop
0 signal: Intermediate stop.

Dependency: See also: c2631, c2641, c2647, c2649

⚠ CAUTION
For c2649 = 1 signal, the following applies:
Motion starts without any explicit control signal.

NOTICE
The parameter may be protected as a result of r0922 and cannot be changed.

Note
This signal is only effective in the modes "traversing blocks" and "direct setpoint input/MDI".
When the intermediate stop is activated, then the axis brakes with the parameterized deceleration (p2620 or c2645).

c2641 EPOS reject traversing task (0 signal) / Trav_task reject

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Traversing blocks, Direct setpoint input (MDI)	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal for "Do not reject traversing task/reject traversing task".
1 signal: Do not reject traversing task.
0 signal: Reject traversing task

Dependency: See also: c2631, c2640, c2647, c2649

⚠ CAUTION
For c2649 = 1 signal, the following applies:
Motion starts without any explicit control signal.

NOTICE
The parameter may be protected as a result of r0922 and cannot be changed.

Note
This signal is only effective in the modes "traversing blocks" and "direct setpoint input/MDI".
When activating reject traversing tasks, then the axis brakes with the maximum deceleration (p2573).

c2642 EPOS direct setpoint input/MDI position setpoint / MDI s_set

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: FloatingPoint64	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Direct setpoint input (MDI)	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm	**Unit group:** 10_3	**Unit selection:** p2496
Type of signal interconnection:	Sink numeric	**Scaling:** -
Factory interconnection:	Fixed value: 0.00 [mm]	

Description: Signal for the position setpoint in the mode "direct setpoint input/MDI".

Dependency: See also: c2648, c2649, c2650

NOTICE
The parameter may be protected as a result of r0922 and cannot be changed.

Note
Depending on c2649, the position setpoint is either transferred continuously or edge-triggered.
The position setpoint input is interpreted as length unit [LU].

c2642 EPOS direct setpoint input/MDI position setpoint / MDI s_set

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint64	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Direct setpoint input (MDI)	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °	**Unit group:** 10_4	**Unit selection:** p2496
Type of signal interconnection:	Sink numeric	**Scaling:** -
Factory interconnection:	Fixed value: 0.00 [°]	

Description: Signal for the position setpoint in the mode "direct setpoint input/MDI".

Dependency: See also: c2648, c2649, c2650

NOTICE
The parameter may be protected as a result of r0922 and cannot be changed.

Note
Depending on c2649, the position setpoint is either transferred continuously or edge-triggered.
The position setpoint input is interpreted as length unit [LU].

c2643 EPOS direct setpoint input/MDI velocity setpoint / MDI v_set

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Direct setpoint input (MDI)	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm/s	**Unit group:** 11_3	**Unit selection:** p2497
Type of signal interconnection:	Sink numeric	**Scaling:** -
Factory interconnection:	Fixed value: 100.00 [mm/s]	

Description: Signal for the velocity setpoint in the mode "Direct setpoint input/MDI".

Dependency: See also: c2649, c2650

NOTICE
The parameter may be protected as a result of r0922 and cannot be changed.

Note
Depending on c2649, the velocity setpoint is either transferred continuously or edge-triggered.
The velocity setpoint input is interpreted as [1000 LU/min].

c2643 EPOS direct setpoint input/MDI velocity setpoint / MDI v_set

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Direct setpoint input (MDI)	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °/s	**Unit group:** 11_4	**Unit selection:** p2497
Type of signal interconnection:	Sink numeric	**Scaling:** -
Factory interconnection:	Fixed value: 3600.00 [°/s]	

Description: Signal for the velocity setpoint in the mode "Direct setpoint input/MDI".

Dependency: See also: c2649, c2650

NOTICE

The parameter may be protected as a result of r0922 and cannot be changed.

Note

Depending on c2649, the velocity setpoint is either transferred continuously or edge-triggered.
The velocity setpoint input is interpreted as [1000 LU/min].

c2644 EPOS direct setpoint input/MDI acceleration override / MDI a_over

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Direct setpoint input (MDI)	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** PERCENT
Factory interconnection:	Fixed value: 100.00 [%]	

Description: Signal for acceleration override in the operating mode "direct setpoint input/MDI".

Dependency: See also: c2649, c2650, c11560

NOTICE

The parameter may be protected as a result of r0922 and cannot be changed.

Note

Depending on c2649, the acceleration override is either transferred continuously or edge-triggered.
The signal value 4000 hex (16384 dec) corresponds to 100 %.

c2645 EPOS direct setpoint input/MDI deceleration override / MDI -a_over

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: FloatingPoint32	**Visible in:** Standard display	

Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Traversing blocks
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink numeric **Scaling:** PERCENT
Factory interconnection: Fixed value: 100.00 [%]

Description: Signal for the deceleration override in the operating mode "Direct setpoint input/MDI".

Dependency: See also: c2649, c2650, c11561

NOTICE

If, when calculating the traversing profile, it is identified that the target position with the programmed deceleration override cannot be reached without reversing the direction, then when accepting the dynamic values, the larger deceleration override is accepted and becomes effective.
The parameter may be protected as a result of r0922 and cannot be changed.

Note

Depending on c2649, the deceleration override is either transferred continuously or edge-triggered.
The signal value 4000 hex (16384 dec) corresponds to 100 %.

c2646 EPOS velocity override / v_over

Variant: G220, G220 Clean Power
Available when function is active: Basic positioner
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Jog, Homing, Traversing blocks, Direct setpoint input (MDI)
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink numeric **Scaling:** PERCENT
Factory interconnection: Fixed value: 100.00 [%]

Description: Signal for the velocity override.
This velocity override is effective in the following operating modes "Direct setpoint input/MDI", "Traversing blocks", "Jogging" and "Active homing" (when approaching the reference cam).

Dependency: See also: p2571, p2585, p2586, p2605, p2618, c2643, r2681

NOTICE

The parameter may be protected as a result of r0922 and cannot be changed.

Note

The effective override (r2681) can differ from the specified override due to limits (e.g. maximum velocity).

c2647 EPOS direct setpoint input/MDI selection / MDI selection

Variant: G220, G220 Clean Power
Available when function is active: Basic positioner
Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Direct setpoint input (MDI)

Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal to select operating mode "Direct setpoint input/MDI".

Dependency: See also: c2640, c2641, c2642, c2643, c2644, c2645, c2646, c2648, c2649, c2650, c2651, c2652, c2653

Note
In this mode, using c2653, a flying changeover can be made between setting-up and positioning.
In this mode, even if the axis is not referenced (r2684.11 = 0) relative positioning is possible.

c2648 EPOS direct setpoint input/MDI positioning type / MDI pos_type

Variant: G220, G220 Clean Power
Available when function is active: Basic positioner
Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Direct setpoint input (MDI)
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal for the positioning type in mode "Direct setpoint input/MDI".
1 signal: Absolute positioning is selected.
0 signal: Relative positioning is selected.

Dependency: See also: c2649, c2650, c2654

NOTICE
Absolute positioning:
To traverse, the home position must be set (r2684.11 = 1).
Relative positioning:
To traverse, "Home position set" is not required.

Note
Depending on c2649, the positioning type is either transferred continuously or edge-triggered.
This parameter is only evaluated for c2654 = 0.
This parameter is possibly not evaluated as a result of the selected telegram.

c2649 EPOS direct setpoint input/MDI transfer type selection / MDI trans_type sel

Variant: G220, G220 Clean Power
Available when function is active: Basic positioner
Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Direct setpoint input (MDI)
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal to define how values are transferred in operating mode "Direct setpoint input/MDI".
1 signal: Values are continually transferred (refer to parameter under dependency).
0 signal: The values are transferred for c2650 = 0/1 signal.

Dependency: See also: c2642, c2643, c2644, c2645, c2648, c2650, c2651, c2652

⚠ CAUTION
For a 1 signal, the following applies: Motion starts without any explicit control signal.

Note
Parameter c2649 can only be changed when r0922 = 999.

c2650 EPOS direct setpoint input/MDI setpoint acceptance edge / MDI set_accept

Variant: G220, G220 Clean Power
Available when function is active: Basic positioner
Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Direct setpoint input (MDI)
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal to accept the values for edge-triggered selection (c2649 = 0 signal) in the operating mode "Direct setpoint input/MDI".
c2650 = 0/1 signal and c2649 = 0 signal
Values are accepted, edge-triggered (refer to parameter under dependency).

Dependency: See also: c2640, c2641, c2642, c2643, c2644, c2645, c2648, c2649, c2651, c2652, r2684

NOTICE
The parameter may be protected as a result of r0922 and cannot be changed.

Note
The status signal r2684.12 = 0/1 signal is used for acknowledgment.
The operating mode "direct setpoint input/MDI" can be influenced via the following signals:
- Intermediate stop via c2640.
- Reject traversing task via c2641.

c2651 EPOS direct setpoint input/MDI direction selection, positive / MDI dir_sel pos

Variant: G220, G220 Clean Power
Available when function is active: Basic positioner
Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Direct setpoint input (MDI)
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal for the positive direction selection in operating mode "Direct setpoint input/MDI".

Dependency: See also: p2576, c2648, c2649, c2650, c2652, c2653, c2654

Note
The following applies for "setting-up":
- The traversing direction can be specified using this parameter.
- If both directions (c2651, c2652) are selected, then the axis remains stationary (zero speed).
- If both directions (c2651, c2652) are deselected, then the axis remains stationary (zero speed).
The following applies for "positioning":
Using parameters c2651 and c2652, when the modulo correction (c2577 = 1 signal) is activated and absolute positioning (c2648 = 1 signal), the travel direction is specified as follows:
c2651 / c2652
0 signal / 0 signal: Absolute positioning through the shortest distance.
1 signal / 0 signal: Absolute positioning in the positive direction.
0 signal / 1 signal: Absolute positioning in the negative direction.
1 signal / 1 signal: Absolute positioning through the shortest distance.

c2652 EPOS direct setpoint input/MDI direction selection negative / MDI dir_sel neg

Variant: G220, G220 Clean Power
Available when function is active: Basic positioner
Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Direct setpoint input (MDI)
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: The signal for the negative direction selection in the operating mode "Direct setpoint input/MDI".

Dependency: See also: p2576, c2648, c2649, c2650, c2651, c2653, c2654

Note
The following applies for "setting-up":
- The travel direction is specified using this signal.
- If both directions (c2651, c2652) are selected, then the axis remains stationary (zero speed).
- If both directions (c2651, c2652) are deselected, then the axis remains stationary (zero speed).
The following applies for "positioning":
Using c2651 and c2652, when the modulo correction (c2577 = 1 signal) is activated and absolute positioning (c2648 = 1 signal), the travel direction can be specified as follows:
c2651 / c2652
0 signal / 0 signal: Absolute positioning through the shortest distance.
1 signal / 0 signal: Absolute positioning in the positive direction.
0 signal / 1 signal: Absolute positioning in the negative direction.
1 signal / 1 signal: Absolute positioning through the shortest distance.

c2653 EPOS direct setpoint input/MDI setting-up selection / MDI setting-up sel

Variant: G220, G220 Clean Power
Available when function is active: Basic positioner
Data type: Unsigned8 **Visible in:** Standard display

Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Direct setpoint input (MDI)	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal for setting-up in operating mode "Direct setpoint input/MDI".
1 signal: Setting-up selected.
0 signal: Positioning selected.

Dependency: See also: c2651, c2652

Note
In the operating mode "direct setpoint input/MDI", it is possible to make a flying changeover between setting-up and positioning.
For "setting up" (c2653 = 1 signal), the following applies:
A traversing direction must be selected using parameters c2651 and c2652.

c2654 EPOS direct setpoint input/MDI mode adaptation / MDI mode adapt

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: Unsigned16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Direct setpoint input (MDI)	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** -
Factory interconnection:	Fixed value: 0	

Description: Signal of the MDI mode via PROFIdrive telegram 110 in operating mode "direct setpoint input/MDI".
c2654 = 0: Signals are evaluated.
c2654 > 0: Signals are not evaluated.
The evaluation involves the following signals:
- c2648 (positioning type)
- c2651 (positive direction selection)
- c2652 (negative direction selection)

In this case, the following definitions apply:
Signal via c2654 = xx0x hex -> absolute
Signal via c2654 = xx1x hex -> relative
Signal via c2654 = xx2x hex -> abs_pos (only for modulo correction)
Signal via c2654 = xx3x hex -> abs_neg (only for modulo correction)

Dependency: See also: c2648, c2651, c2652

c2655[0...1] EPOS select tracking mode / Sel tracking mode

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: Unsigned8	**Visible in:** Extended display	

Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Basic positioner
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: [0] Fixed value: 1
[1] Parameter: 2526.7

Description: Signal to select tracking operation.
c2655[0] or c2655[1] = 1 signal
Tracking mode after withdrawing the enable signal.
c2655[0] and c2655[1] = 0 signal
No tracking mode after withdrawing the enable signal.

NOTICE
The parameter may be protected as a result of r0922 and cannot be changed.

Note
For the following events, independent of the signal that is present, the tracking mode is selected:
- After running up.
- After r2526.0 = 0/1 edge.
- While a fault is active.

c2661 EPOS measured value valid feedback signal / MeasVal valid FS

Variant: G220, G220 Clean Power
Available when function is active: Basic positioner
Data type: Unsigned8 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Traversing blocks
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Parameter: 2526.2

Description: Signal for feedback signal "Measured value valid".
1 signal: The measured value received via c2660 is valid.
0 signal: The measured value received via c2660 is valid.

Dependency: See also: r2526

r2665 EPOS position setpoint / s_set

Variant: G220, G220 Clean Power
Available when function is active: Basic positioner
Data type: FloatingPoint64 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Jog, Homing, Traversing blocks, Direct setpoint input (MDI)
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -

	Unit: mm	**Unit group:** 10_3	**Unit selection:** p2496
	Type of signal interconnection:	Source numeric	**Scaling:** -
Description:	Displays the actual absolute position setpoint.		
Dependency:	See also: c2530		

Note
As default, c2530 is interconnected with r2665.

r2665 EPOS position setpoint / s_set

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint64	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Jog, Homing, Traversing blocks, Direct setpoint input (MDI)	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °	**Unit group:** 10_4	**Unit selection:** p2496
Type of signal interconnection:	Source numeric	**Scaling:** -
Description:	Displays the actual absolute position setpoint.	
Dependency:	See also: c2530	

Note
As default, c2530 is interconnected with r2665.

r2666 EPOS velocity setpoint / v_set

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Jog, Homing, Traversing blocks, Direct setpoint input (MDI)	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm/s	**Unit group:** 11_3	**Unit selection:** p2497
Type of signal interconnection:	Source numeric	**Scaling:** -
Description:	Displays the actual velocity setpoint.	
Dependency:	See also: c2531	

Note
As default, c2531 is interconnected with r2666.

r2666 EPOS velocity setpoint / v_set

Variant:	G220, G220 Clean Power
Available when function is active:	Basic positioner
Values for:	Basic positioner for rotary motion
Data type: FloatingPoint32	**Visible in:** Standard display
Read permission:	Read drive data or acknowledge messages
Parameter group:	Jog, Homing, Traversing blocks, Direct setpoint input (MDI)
Not relevant for motor type:	-

	Dyn. index [0...n]:	-	**Calculated:** -
	Unit: °/s	**Unit group:** 11_4	**Unit selection:** p2497
	Type of signal interconnection:	Source numeric	**Scaling:** -
Description:	Displays the actual velocity setpoint.		
Dependency:	See also: c2531		

Note
As default, c2531 is interconnected with r2666.

r2667 EPOS backlash compensation value / Backlash value

	Variant:	G220, G220 Clean Power	
	Available when function is active:	Basic positioner	
	Data type: FloatingPoint32	**Visible in:** Extended display	
	Read permission:	Read drive data or acknowledge messages	
	Parameter group:	Basic positioner	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	**Calculated:** -
	Unit: mm	**Unit group:** 10_3	**Unit selection:** p2496
	Type of signal interconnection:	Source numeric	**Scaling:** -
Description:	Displays the actual effective value for backlash compensation.		
Dependency:	See also: c2516		

Note
As default, c2516 is interconnected with r2667.

r2667 EPOS backlash compensation value / Backlash value

	Variant:	G220, G220 Clean Power	
	Available when function is active:	Basic positioner	
	Values for:	Basic positioner for rotary motion	
	Data type: FloatingPoint32	**Visible in:** Extended display	
	Read permission:	Read drive data or acknowledge messages	
	Parameter group:	Basic positioner	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	**Calculated:** -
	Unit: °	**Unit group:** 10_4	**Unit selection:** p2496
	Type of signal interconnection:	Source numeric	**Scaling:** -
Description:	Displays the actual effective value for backlash compensation.		
Dependency:	See also: c2516		

Note
As default, c2516 is interconnected with r2667.

r2669.0...5 EPOS actual operating mode / Op mode act

	Variant:	G220, G220 Clean Power
	Available when function is active:	Basic positioner
	Data type: Unsigned32	**Visible in:** Standard display
	Read permission:	Read drive data or acknowledge messages
	Parameter group:	Jog, Homing, Traversing blocks, Direct setpoint input (MDI)
	Not relevant for motor type:	-

Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Displays the actual active operating mode.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Jog operating mode	Active	Not active
01	Operating mode active homing	Active	Not active
02	Operating mode traversing blocks	Active	Not active
03	Operating mode positioning for direct setpoint input / MDI	Active	Not active
04	Operating mode setting up for direct setpoint input / MDI	Active	Not active
05	Option passive homing	Active	Not active

Dependency: See also: c2589, c2590, c2595, c2631, c2647, c2653

r2670.0...15 EPOS status word active traversing block / ZSW act trav_blk

Variant: G220, G220 Clean Power
Available when function is active: Basic positioner
Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Traversing blocks
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Displays the status word for the active traversing block.
r2670.0: Active traversing block, bit 0
...
r2670.5: Active traversing block, bit 5
r2670.15: MDI active

Bit array:

Bit	Signal name	1 signal	0 signal
00	Active traversing block bit 0	Active	Not active
01	Active traversing block bit 1	Active	Not active
02	Active traversing block bit 2	Active	Not active
03	Active traversing block bit 3	Active	Not active
04	Active traversing block bit 4	Active	Not active
05	Active traversing block bit 5	Active	Not active
15	MDI active	Active	Not active

Dependency: See also: c2631, c2647

Note
For bit 00 ... 05:
Displays the active traversing block in the traversing blocks operating mode.
For bit 15:
For a 1 signal, the operating mode - direct setpoint input/MDI - is active

r2671 EPOS actual position setpoint / s_set act

Variant: G220, G220 Clean Power
Available when function is active: Basic positioner
Data type: FloatingPoint64 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages

Parameter group: Jog, Traversing blocks, Direct setpoint input (MDI)
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: mm **Unit group:** 10_3 **Unit selection:** p2496
Type of signal interconnection: Source numeric **Scaling:** -

Description: Displays the position setpoint presently being processed.

Note
A position of 0 is displayed for non position-related tasks (e.g. ENDLESS_POS, ENDLESS_NEG).

r2671 EPOS actual position setpoint / s_set act

Variant: G220, G220 Clean Power
Available when function is active: Basic positioner
Values for: Basic positioner for rotary motion
Data type: FloatingPoint64 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Jog, Traversing blocks, Direct setpoint input (MDI)
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: ° **Unit group:** 10_4 **Unit selection:** p2496
Type of signal interconnection: Source numeric **Scaling:** -

Description: Displays the position setpoint presently being processed.

Note
A position of 0 is displayed for non position-related tasks (e.g. ENDLESS_POS, ENDLESS_NEG).

r2672 EPOS actual velocity setpoint / v_set act

Variant: G220, G220 Clean Power
Available when function is active: Basic positioner
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Jog, Homing, Traversing blocks, Direct setpoint input (MDI)
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: mm/s **Unit group:** 11_3 **Unit selection:** p2497
Type of signal interconnection: Source numeric **Scaling:** -

Description: Displays the velocity setpoint presently being processed.

r2672 EPOS actual velocity setpoint / v_set act

Variant: G220, G220 Clean Power
Available when function is active: Basic positioner
Values for: Basic positioner for rotary motion
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Jog, Homing, Traversing blocks, Direct setpoint input (MDI)
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: °/s **Unit group:** 11_4 **Unit selection:** p2497

Type of signal interconnection: Source numeric **Scaling:** -

Description: Displays the velocity setpoint presently being processed.

r2673 EPOS actual acceleration override / a_over act

Variant: G220, G220 Clean Power
Available when function is active: Basic positioner
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Jog, Traversing blocks, Direct setpoint input (MDI)
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** -

Description: Displays the acceleration override presently being processed.

Note
An override of 100% is effective in the "Jogging" and "Active homing" operating modes.

r2674 EPOS actual deceleration override / -a_over act

Variant: G220, G220 Clean Power
Available when function is active: Basic positioner
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Jog, Traversing blocks, Direct setpoint input (MDI)
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** -

Description: Displays the deceleration override presently being processed.

Note
An override of 100% is effective in the "Jogging" and "Active homing" operating modes.

r2675 EPOS actual task / Task act

Variant: G220, G220 Clean Power
Available when function is active: Basic positioner
Data type: Integer16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Traversing blocks
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** -

Description: Display for the task presently being processed.

Value:
0: Inactive
1: POSITIONING
2: FIXED STOP
3: ENDLESS_POS

4: ENDLESS_NEG
5: WAITING
6: GOTO
7: SET_O
8: RESET_O
9: JERK

Dependency: See also: p2621

r2676 EPOS actual task parameter / Task par act

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: Integer32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Traversing blocks	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** -

Description: Displays the task parameter presently being processed in the "traversing blocks" operating mode.

Dependency: See also: p2622

Note
The following is displayed depending on the task:
FIXED STOP: Clamping torque (0 ... 65536 [0.01 Nm]) or clamping force (0 ... 65536 [N])
WAIT: Wait time [ms]
GOTO: Block number
SET_O: 1, 2, 3 --> direct output 1, 2 or 3 (both) is set
RESET_O: 1, 2, 3 --> direct output 1, 2 or 3 (both) is reset
JERK: 0 --> deactivate, 1 --> activate

r2677 EPOS actual task mode / Task mode act

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: Unsigned16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Traversing blocks	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** -

Description: Displays the task mode presently being processed.

Dependency: See also: p2623

r2678 EPOS external block change actual position / Ext blk chg s_act

Variant:	G220, G220 Clean Power
Available when function is active:	Basic positioner
Data type: FloatingPoint64	**Visible in:** Standard display
Read permission:	Read drive data or acknowledge messages

Parameter group:	Traversing blocks, Direct setpoint input (MDI)	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm	**Unit group:** 10_3	**Unit selection:** p2496
Type of signal interconnection:	Source numeric	**Scaling:** -

Description: Displays the actual position for the following events:
- External block change via measuring probe (p2632 = 0, c2661 = 0/1 signal).
- External block change via c2633 (p2632 = 1, c2633 = 0/1 signal).
- Activate traversing task (c2631 = 0/1 signal).

Dependency: See also: c2631, p2632, c2633, c2661

r2678 EPOS external block change actual position / Ext blk chg s_act

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint64	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Traversing blocks, Direct setpoint input (MDI)	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °	**Unit group:** 10_4	**Unit selection:** p2496
Type of signal interconnection:	Source numeric	**Scaling:** -

Description: Displays the actual position for the following events:
- External block change via measuring probe (p2632 = 0, c2661 = 0/1 signal).
- External block change via c2633 (p2632 = 1, c2633 = 0/1 signal).
- Activate traversing task (c2631 = 0/1 signal).

Dependency: See also: c2631, p2632, c2633, c2661

r2680 EPOS clearance reference cam and zero mark / Clear ref_cams/ZM

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Homing	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm	**Unit group:** 10_3	**Unit selection:** p2496
Type of signal interconnection:	Source numeric	**Scaling:** -

Description: Display for the distance (clearance) between the reference cam and zero mark.
The value is determined for active homing.

r2680 EPOS clearance reference cam and zero mark / Clear ref_cams/ZM

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	

Parameter group: Homing
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: ° **Unit group:** 10_4 **Unit selection:** p2496
Type of signal interconnection: Source numeric **Scaling:** -

Description: Display for the distance (clearance) between the reference cam and zero mark.
The value is determined for active homing.

r2681 EPOS velocity override effective / v_over effective

Variant: G220, G220 Clean Power
Available when function is active: Basic positioner
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Jog, Homing, Traversing blocks, Direct setpoint input (MDI)
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** -

Description: Displays the actual effective velocity override.
Dependency: See also: p2571, c2646

Note
The effective override can differ from the specified override due to limits (e.g. p2571, maximum velocity).

r2682 EPOS residual distance to go / Residual distance

Variant: G220, G220 Clean Power
Available when function is active: Basic positioner
Data type: FloatingPoint64 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Jog, Traversing blocks, Direct setpoint input (MDI)
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: mm **Unit group:** 10_3 **Unit selection:** p2496
Type of signal interconnection: Source numeric **Scaling:** -

Description: Displays the current residual distance.
The remaining distance is the distance to still to be moved through up to the end of the actual positioning task.
Dependency: See also: r2665, r2671, r2678

r2682 EPOS residual distance to go / Residual distance

Variant: G220, G220 Clean Power
Available when function is active: Basic positioner
Values for: Basic positioner for rotary motion
Data type: FloatingPoint64 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Jog, Traversing blocks, Direct setpoint input (MDI)
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -

Unit: ° **Unit group:** 10_4 **Unit selection:** p2496
Type of signal interconnection: Source numeric **Scaling:** -

Description: Displays the current residual distance.
The remaining distance is the distance to still to be moved through up to the end of the actual positioning task.

Dependency: See also: r2665, r2671, r2678

r2683.0...14 EPOS status word 1 / POS_ZSW1

Variant: G220, G220 Clean Power
Available when function is active: Position control
Data type: Unsigned16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Control/status words, Jog, Homing, Traversing blocks, Direct setpoint input (MDI), Position monitoring
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Display for status word 1 of the basic positioner (EPOS).

Bit array:

Bit	Signal name	1 signal	0 signal
00	Tracking mode active	Yes	No
01	Velocity limiting active	Yes	No
02	Setpoint fixed	Yes	No
03	Set position reached	Yes	No
04	Axis moves forward	Yes	No
05	Axis moves backward	Yes	No
06	Negative software limit switch reached	Yes	No
07	Positive software limit switch reached	Yes	No
08	Position actual value <= cam switching position 1	Yes	No
09	Position actual value <= cam switching position 2	Yes	No
10	Direct output 1 via traversing block	Yes	No
11	Direct output 2 via traversing block	Yes	No
12	Fixed stop reached	Yes	No
13	Fixed stop clamping torque reached	Yes	No
14	Travel to fixed stop active	Yes	No

Dependency: See also: r2684

Note
For bit 02, 04, 05, 06, 07:
This signals designate the state after jerk limiting.
For bits 08, 09:
These signals are generated in function "Closed-loop position control".

r2684.0...15 EPOS status word 2 / POS_ZSW2

Variant: G220, G220 Clean Power
Available when function is active: Position control
Data type: Unsigned16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages

Parameter group: Position limits, Dynamic response limits, Control/status words, Jog, Homing, Traversing blocks, Direct setpoint input (MDI), Basic parameters / mechanical system, Position monitoring
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Display for status word 2 of the basic positioner (EPOS).

Bit array:

Bit	Signal name	1 signal	0 signal
00	Active homing active	Active	Not active
01	Passive homing active	Active	Not active
02	Homing active	Active	Not active
03	Printing mark outside outer window	Yes	No
04	Axis accelerating	Yes	No
05	Axis decelerating	Yes	No
06	Jerk limiting active	Yes	No
07	Activate correction	Yes	No
08	Following error in tolerance	Yes	No
09	Modulo correction active	Yes	No
10	Target position reached	Yes	No
11	Home position set	Yes	No
12	Acknowledgment traversing block activated	Yes	No
13	Negative hardware limit switch reached	Yes	No
14	Positive hardware limit switch reached	Yes	No
15	Traversing command active	Yes	No

Note
For bit 02:
The "homing active" signal is an OR logic operation of "active homing active" and "passive homing active"
For bit 00 ... 07 and 11 ... 14:
For bit 08:
The signal is generated in function "Closed-loop position control".

r2685 EPOS corrective value / Correction value

Variant: G220, G220 Clean Power
Available when function is active: Basic positioner
Data type: FloatingPoint64 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Basic positioner
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: mm **Unit group:** 10_3 **Unit selection:** p2496
Type of signal interconnection: Source numeric **Scaling:** -

Description: Display for the correction value of the position actual value.
Dependency: See also: r2684

Note
Using this value, for example, modulo corrections are carried out.

r2685 EPOS corrective value / Correction value

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint64	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Basic positioner	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °	**Unit group:** 10_4	**Unit selection:** p2496
Type of signal interconnection:	Source numeric	**Scaling:** -

Description: Display for the correction value of the position actual value.

Dependency: See also: r2684

Note
Using this value, for example, modulo corrections are carried out.

r2686[0...1] EPOS torque limiting effective / M_limit eff

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Basic positioner	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** -

Description: Displays the active torque limit.
r2686[0]:
Displays the active upper torque limit when traveling to fixed stop (referred to c1522, c1523).
r2686[1]:
Displays the active lower torque limit when traveling to fixed stop (referred to c1522, c1523).

Index: [0] = Upper
[1] = Lower

Dependency: See also: p1520, p1521, c1522, c1523, r2676

Note
As standard, the following signals are interconnected:
c1528 with r2686[0] and
c1529 with r2686[1]

r2687 EPOS torque setpoint / M_set

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Traversing blocks	
Not relevant for motor type:	-	

Dyn. index [0...n]:	-	**Calculated:** -
Unit: Nm	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** -

Description: Displays the active torque setpoint when reaching the fixed stop (referred to c1522, c1523).

Dependency: See also: p1520, p1521, c1522, c1523, r2676

p2688 EPOS position feedback signal tolerance window / Pos_FS tol

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Basic positioner	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm	**Unit group:** 10_3	**Unit selection:** p2496
Min:	**Max:**	**Factory setting:**
0.000000 [mm]	2.1474828e+09 [mm]	0.050000 [mm]

Description: Sets the tolerance window for the position feedback signal.
If, for a positioning operation, the actual position (r2521) lies within this tolerance window of the target position, then the traversing block number is displayed in r2689.

Dependency: This parameter is only active when the "Position feedback signal" function is activated (p2584.0 = 1).
See also: p2584, r2689

p2688 EPOS position feedback signal tolerance window / Pos_FS tol

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Basic positioner	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °	**Unit group:** 10_4	**Unit selection:** p2496
Min:	**Max:**	**Factory setting:**
0.000000 [°]	2.1474828e+09 [°]	1.500000 [°]

Description: Sets the tolerance window for the position feedback signal.
If, for a positioning operation, the actual position (r2521) lies within this tolerance window of the target position, then the traversing block number is displayed in r2689.

Dependency: This parameter is only active when the "Position feedback signal" function is activated (p2584.0 = 1).
See also: p2584, r2689

r2689[0...1] EPOS position feedback signal display / Pos_FS display

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: Unsigned32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Basic positioner	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** -

Description: Displays the traversing block numbers for position feedback signal.
Here, the block numbers of the traversing blocks are displayed bit-coded whose absolute target positions lie within the tolerance window around the actual position.

Index: [0] = Position feedback signal low
[1] = Position feedback signal high

Dependency: This parameter is only active when the "Position feedback signal" function is activated (p2584.0 = 1).
See also: p2584, p2688

Note
r2689[0]:
Bit-coded display of traversing block numbers 0 to 31
r2689[1]:
Bit-coded display of traversing block numbers 32 to 63

p2720[0...n].0...2 Load gear configuration / Load gear config

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Data type: Unsigned32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Encoder evaluation, Basic parameters / mechanical system	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-	-	0000 bin

Description: Sets the configuration for position tracking for a load gear.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Load gear activate position tracking	Yes	No
02	Load gear reset position	Yes	No

Note
For the following events, the non-volatile, saved position values are automatically reset:
- When an encoder replacement has been identified.
- When changing the configuration of the Encoder Data Set (EDS).
- When adjusting the absolute encoder again.

p2721[0...n] Load gear rotary absolute encoder revolutions virtual / Abs rot rev

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Data type: Unsigned32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Encoder evaluation, Basic parameters / mechanical system	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	4194303	0

Description: Sets the number of rotations that can be resolved for a rotary absolute encoder with activated position tracking of the load gear.

Dependency: This parameter is only of significance for an absolute encoder (p0404.1 = 1) with activated position tracking of the load gear (p2720.0 = 1).

Note

The resolution that is set must be able to be represented using r2723.

For rotary axes/modulo axes, the following applies:

This parameter is preset with p0421 when activating position tracking and can be changed.

For linear axes, the following applies:

This parameter is pre-assigned with p0421 when activating position tracking, expanded by 6 bits for multiturn information (maximum number of overflows) and cannot be changed.

p2722[0...n] Load gear position tracking tolerance window / Pos track tol

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Encoder evaluation, Basic parameters / mechanical system	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00	4.2949673e+09	0.00

Description: Sets a tolerance window for position tracking.

After the system is switched on, the difference between the saved position and the actual position is determined.

The following response is initiated:

- Difference within the tolerance window: The position is reproduced based on the encoder actual value.
- Difference outside the tolerance window: An appropriate message is output.

⚠ CAUTION

Rotation, for example through a complete encoder range is not detected.

Note
The value is entered in complete encoder pulses.
For p2720.0 = 1, the value is automatically pre-assigned one quarter of the encoder range.
Example:
Quarter of the encoder range = (p0408 * p0421) / 4
It is possible that the tolerance window may not be able to be precisely set due to the data type (floating point number with 23 bit mantissa).

r2723[0...n] Load gear absolute value / Load gear AbsV

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Data type: Unsigned32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Encoder evaluation, Basic parameters / mechanical system	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** -

Description: Displays the absolute value after the load gear.

NOTICE
The encoder position actual value must be requested using the encoder control word Gn_STW.13.

Note
The increments are displayed in the format the same as r0483.

r2724[0...n] Load gear position difference / Load gear pos diff

Variant:	G220, G220 Clean Power	
Available when function is active:	Position control	
Data type: Integer32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Encoder evaluation, Basic parameters / mechanical system	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** -

Description: Displays the position difference before the load gear between switching off and switching on.

Note
The increments are displayed in the same format as for r0483/r2723.
If the measuring gearbox of the motor encoder is not activated, the position difference should be read in encoder increments.
If the measuring gear of the motor encoder is activated, the position difference is converted using the measuring gear ratio.

c2730[0...3] LR pos. actual value preprocessing activate neg. corr. (edge) / ActV_prep neg corr

Variant:	G220, G220 Clean Power
Available when function is active:	Position control
Data type: Unsigned8	**Visible in:** Extended display
Read permission:	Read drive data or acknowledge messages

Write permission: Edit device configuration or drive applications
Parameter group: Actual position value preprocessing
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal for function "Position actual value processing activate negative correction value (edge)".
0/1 signal:
The correction value available via c2513 is negated and activated.

Index: [0] = Position control
[1] = Motor encoder
[2] = Encoder 2
[3] = Encoder 3

Dependency: See also: p2502, c2513, r2684

r2741 LR acceleration precontrol value / Accel_prectrl_val

Variant: G220, G220 Clean Power
Available when function is active: Position control
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Position controller
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: rev/s² **Unit group:** 39_1 **Unit selection:** p0505
Type of signal interconnection: Source numeric **Scaling:** p2007

Description: Displays the acceleration precontrol value.

Dependency: See also: c1495

Note
The acceleration precontrol value is a derivation of the speed precontrol value with respect to time.

p2940[0...n].0...4 Saturation measurement configuration / Sat meas config

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Motor data identification routine
Not relevant for motor type: Induction motor, Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: MDS n defined by: p0130 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
-	-	0000 0000 bin

Description: Sets the configuration for measuring the saturation characteristic.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Deactivate extrapolation measured values	Yes	No
01	Deactivate omit boundary regions	Yes	No
02	Deactivate compensation of the ohmic resistance	Yes	No

03	Deactivate use of voltage measured values	Yes	No
04	Activate extended measurement	Yes	No

p2941[0...n] Saturation measurement measuring range direct axis positive / Sat meas range D+

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Motor data identification routine
Not relevant for motor type: Induction motor, Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: MDS n defined by: p0130 **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
50 [%]	500 [%]	150 [%]

Description: Sets the positive end value of measuring range of the magnetic direct axis for measuring the saturation characteristic.
Dependency: The value is referred to the rated motor current p0305.

p2942[0...n] Saturation measurement measuring range direct axis negative / Sat meas range D-

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Motor data identification routine
Not relevant for motor type: Induction motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor
Dyn. index [0...n]: MDS n defined by: p0130 **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
-500 [%]	0 [%]	-150 [%]

Description: Sets the negative end value of measuring range of the magnetic direct axis for measuring the saturation characteristic.
Dependency: The value is referred to the rated motor current p0305.

p2943[0...n] Saturation measurement measuring range quadrature axis / Sat meas range Q

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Motor data identification routine
Not relevant for motor type: Induction motor, Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: MDS n defined by: p0130 **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
50 [%]	500 [%]	150 [%]

Description: Sets the end value of the measuring range of the magnetic quadrature axis for measuring the saturation characteristic.
Dependency: The value is referred to the rated motor current p0305.

p2944[0...n] Saturation measurement quiescent current / Sat meas I_quies

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor data identification routine	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
50 [%]	300 [%]	100 [%]

Description: Sets the impressed current between the measuring points of the saturation characteristic measurement.

Dependency: The value is referred to the rated motor current p0305.

p2945[0...n] Saturation measurement duration scaling / Sat meas duration

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor data identification routine	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
50 [%]	1000 [%]	100 [%]

Description: Sets the scaling factor for the duration of the measurement of the saturation characteristic.

Note
The required duration depends on the number of measuring points (measuring range p2941, p2943) as well as on the selected scaling (time).

p2946[0...n] Saturation measurement extrapolation direct axis / Sat extr range D

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor data identification routine	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [%]	100 [%]	20 [%]

Description: Sets the extrapolation range of the magnetic direct axis to extend the measured saturation characteristic.

Dependency: The value is referred to the rated motor current p0305.

p2947[0...n] Saturation measurement extrapolation quadrature axis / Sat extr range Q

Data type: FloatingPoint32	**Visible in:** Extended display

Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor data identification routine	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [%]	100 [%]	20 [%]

Description: Sets the extrapolation range of the magnetic quadrature axis to extend the measured saturation characteristic.

Dependency: The value is referred to the rated motor current p0305.

r2948[0...3] Saturation measurement parameter fit RMSE / Sat meas Fit RMSE

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Motor data identification routine	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Description: Displays the average effective error of the calculated flux model for the measuring points.

Index:
[0] = Measurement direct axis
[1] = Measurement quadrature axis
[2] = Extrapolation direct axis
[3] = Extrapolation quadrature axis

Note
RMSE: Root mean square error

r3113.0...15 NAMUR message bit bar / NAMUR bit bar

Data type: Unsigned16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Control/status words, Faults / alarms	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source binary/numeric	**Scaling:** -

Description: Display for the status of the NAMUR message bit bar.
The faults and alarms are assigned to the appropriate signaling/message classes and influence a specific message bit.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Fault converter information electronics/software error	Yes	No
01	Line supply fault	Yes	No
02	DC link overvoltage	Yes	No
03	Fault drive converter power electronics	Yes	No
04	Drive converter overtemperature	Yes	No
05	Ground fault	Yes	No
06	Motor overload	Yes	No
07	Bus error	Yes	No
08	External safety-relevant shutdown	Yes	No
09	Motor encoder fault	Yes	No

10	Error communication internal	Yes	No
11	Fault infeed	Yes	No
15	Other faults	Yes	No

Note

For bit 00:

Hardware or software malfunction was identified. Carry out a POWER ON of the component involved. If it occurs again, contact Technical Support.

For bit 01:

A line supply fault has occurred (phase failure, voltage level, ...). Check the line supply / fuses. Check the supply voltage. Check the wiring.

For bit 02:

The DC link voltage has assumed an inadmissibly high value. Check the dimensioning of the system (line supply, reactor, voltages). Check the infeed settings.

For bit 03:

An inadmissible operating state of the power electronics was identified (overcurrent, overtemperature, IGBT failure, ...). Check that the permissible duty cycles are maintained. Check the ambient temperatures (fan).

For bit 04:

The temperature in the component has exceeded the highest permissible limit. Check the ambient temperature / control cabinet cooling.

For bit 05:

A ground fault / inter-phase short-circuit was detected in the power cables or in the motor windings. Check the power cables (connection). Check the motor.

For bit 06:

The motor was operated outside the permissible limits (temperature, current, torque, ...). Check the duty cycles and limits that have been set. Check the ambient temperature / motor cooling.

For bit 07:

Communications to the higher-level control is faulted or interrupted. Check the state of the higher-level control system. Check the communication connection/wiring. Check the bus configuration / clock cycles.

For bit 08:

A safety operation monitoring function (Safety) has detected an error.

For bit 09:

When evaluating the encoder signals (track signals, zero marks, absolute values, ...) an illegal signal state was detected. Check the encoder / state of the encoder signals. Observe the maximum frequencies.

For bit 10:

The internal communication between the SINAMICS components is faulted or interrupted. Check the DRIVE-CLiQ wiring. Ensure an EMC-compliant design. Observe the maximum permissible quantity structure / clock cycles.

For bit 11:

The infeed is faulted or has failed. Check the infeed and the surroundings (line supply, filter, reactors, fuses, ...). Check the closed-loop infeed control.

For bit 15:

Group fault. Determine the precise cause of the fault using the commissioning tool.

p3117 Change safety message type / Chg SI msg type

Data type: Unsigned32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Safety Integrated, Faults / alarms	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	1	0

Description: Sets the re-parameterization of all safety messages for faults and alarms.
The relevant message type during changeover is selected by the firmware.
0: Safety messages are not reparameterized (safety message buffer)
1: Safety messages are reparameterized (no safety message buffer)

Note
When online safety commissioning has been completed, a change results in an automatic restart.

r3120[0...63] Component fault / Comp fault

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Faults / alarms
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the component of the fault which has occurred.
Dependency: See also: r0945, r0947, r0948, r0949, r2109, r2130, r2133, r2136, r3122

Note
Value = 0: Assignment to a component not possible.
The buffer parameters are cyclically updated in the background (refer to status signal in r2139).
The structure of the fault buffer and the assignment of the indices is shown in r0945.

r3121[0...63] Component alarm / Comp alarm

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Faults / alarms
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the component of the alarm which has occurred.
Dependency: See also: r2122, r2123, r2124, r2125, r2134, r2145, r2146, r3123

Note
Value = 0: Assignment to a component not possible.
The buffer parameters are cyclically updated in the background (refer to status signal in r2139).
The structure of the alarm buffer and the assignment of the indices is shown in r2122.

r3122[0...63].0...20 Diagnostic attribute fault / Diag_attr fault

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Faults / alarms
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the diagnostic attribute of the fault which has occurred.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Hardware replacement recommended	Yes	No
15	Message has gone	Yes	No
16	PROFIdrive fault class bit 0	High	Low
17	PROFIdrive fault class bit 1	High	Low
18	PROFIdrive fault class bit 2	High	Low

	19	PROFIdrive fault class bit 3	High	Low
	20	PROFIdrive fault class bit 4	High	Low

Dependency: See also: r0945, r0947, r0948, r0949, r2109, r2130, r2133, r2136, r3120

Note
The buffer parameters are cyclically updated in the background (refer to status signal in r2139).
The structure of the fault buffer and the assignment of the indices is shown in r0945.
Bit 20, 19, 18, 17, 16 =
0, 0, 0, 0, 0 --> PROFIdrive message class 0: Not assigned
0, 0, 0, 0, 1 --> PROFIdrive message class 1: Hardware/software fault
0, 0, 0, 1, 0 --> PROFIdrive message class 2: Line fault
0, 0, 0, 1, 1 --> PROFIdrive message class 3: Supply voltage fault
0, 0, 1, 0, 0 --> PROFIdrive message class 4: DC link fault
0, 0, 1, 0, 1 --> PROFIdrive message class 5: Power electronics fault
0, 0, 1, 1, 0 --> PROFIdrive message class 6: Overtemperature, electronics component
0, 0, 1, 1, 1 --> PROFIdrive message class 7: Ground fault/interphase fault detected
0, 1, 0, 0, 0 --> PROFIdrive message class 8: Motor overload
0, 1, 0, 0, 1 --> PROFIdrive message class 9: Communications error to higher-level control
0, 1, 0, 1, 0 --> PROFIdrive message class 10: Safe monitoring channel has identified an error
0, 1, 0, 1, 1 --> PROFIdrive message class 11: Incorrect position actual value/speed actual value or not available
0, 1, 1, 0, 0 --> PROFIdrive message class 12: Internal communications error
0, 1, 1, 0, 1 --> PROFIdrive message class 13: Infeed faulted
0, 1, 1, 1, 0 --> PROFIdrive message class 14: Braking controller / Braking Module faulted
0, 1, 1, 1, 1 --> PROFIdrive message class 15: Line filter faulted
1, 0, 0, 0, 0 --> PROFIdrive message class 16: External measured value/signal state outside the permissible range
1, 0, 0, 0, 1 --> PROFIdrive message class 17: Application/technological function fault
1, 0, 0, 1, 0 --> PROFIdrive message class 18: Error in the parameterization/configuration/commissioning sequence
1, 0, 0, 1, 1 --> PROFIdrive message class 19: General drive fault
1, 0, 1, 0, 0 --> PROFIdrive message class 20: Auxiliary unit faulted

r3123[0...63].0...20 Diagnostic attribute alarm / Diag_attr alarm

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Faults / alarms
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the diagnostic attribute of the alarm which has occurred.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Hardware replacement recommended	Yes	No
11	Alarm class bit 0	High	Low
12	Alarm class bit 1	High	Low
13	Maintenance required	Yes	No
14	Maintenance urgently required	Yes	No
15	Message has gone	Yes	No
16	PROFIdrive fault class bit 0	High	Low
17	PROFIdrive fault class bit 1	High	Low
18	PROFIdrive fault class bit 2	High	Low
19	PROFIdrive fault class bit 3	High	Low
20	PROFIdrive fault class bit 4	High	Low

Dependency: See also: r2122, r2123, r2124, r2125, r2134, r2145, r2146, r3121

Note
The buffer parameters are cyclically updated in the background (refer to status signal in r2139).
The structure of the alarm buffer and the assignment of the indices is shown in r2122.
For bit 12, 11:
These status bits are used for the classification of internal alarm classes and are intended for diagnostic purposes only on certain automation systems with integrated SINAMICS functionality.
Bit 20, 19, 18, 17, 16 =
0, 0, 0, 0, 0 --> PROFIdrive message class 0: Not assigned
0, 0, 0, 0, 1 --> PROFIdrive message class 1: Hardware/software fault
0, 0, 0, 1, 0 --> PROFIdrive message class 2: Line fault
0, 0, 0, 1, 1 --> PROFIdrive message class 3: Supply voltage fault
0, 0, 1, 0, 0 --> PROFIdrive message class 4: DC link fault
0, 0, 1, 0, 1 --> PROFIdrive message class 5: Power electronics fault
0, 0, 1, 1, 0 --> PROFIdrive message class 6: Overtemperature, electronics component
0, 0, 1, 1, 1 --> PROFIdrive message class 7: Ground fault/interphase fault detected
0, 1, 0, 0, 0 --> PROFIdrive message class 8: Motor overload
0, 1, 0, 0, 1 --> PROFIdrive message class 9: Communications error to higher-level control
0, 1, 0, 1, 0 --> PROFIdrive message class 10: Safe monitoring channel has identified an error
0, 1, 0, 1, 1 --> PROFIdrive message class 11: Incorrect position actual value/speed actual value or not available
0, 1, 1, 0, 0 --> PROFIdrive message class 12: Internal communications error
0, 1, 1, 0, 1 --> PROFIdrive message class 13: Infeed faulted
0, 1, 1, 1, 0 --> PROFIdrive message class 14: Braking controller / Braking Module faulted
0, 1, 1, 1, 1 --> PROFIdrive message class 15: Line filter faulted
1, 0, 0, 0, 0 --> PROFIdrive message class 16: External measured value/signal state outside the permissible range
1, 0, 0, 0, 1 --> PROFIdrive message class 17: Application/technological function fault
1, 0, 0, 1, 0 --> PROFIdrive message class 18: Error in the parameterization/configuration/commissioning sequence
1, 0, 0, 1, 1 --> PROFIdrive message class 19: General drive fault
1, 0, 1, 0, 0 --> PROFIdrive message class 20: Auxiliary unit faulted

c3230[0...n] Load monitoring speed actual value / Load mon n_act

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Load torque monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: rpm	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** p2000
Factory interconnection:	Fixed value: 0.00 [rpm]	

Description: Signal for the speed actual value of the load monitoring.
Dependency: See also: r2169, p2181, p2192, p2193, p3231
See also: A07920, A07921, A07922, F07923, F07924, F07925

Note
The parameter is only effective for p2193 = 2.

p3231[0...n] Load monitoring speed deviation / Load mon n_dev

Data type: FloatingPoint32	**Visible in:** Extended display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications
Can be changed in the operating state:	Operation
Parameter group:	Load torque monitoring

Not relevant for motor type: -
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** -
Unit: rpm **Unit group:** 3_1 **Unit selection:** p0505
Min: 0.00 [rpm] **Max:** 210000.00 [rpm] **Factory setting:** 150.00 [rpm]

Description: Sets the permissible speed deviation during load monitoring (for p2193 = 2).

Dependency: See also: r2169, p2181, p2193, c3230
See also: A07920, A07921, A07922, F07923, F07924, F07925

c3232[0...n] Load monitoring failure detection (external) / Load mon fail_det

Data type: Unsigned8 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Load torque monitoring
Not relevant for motor type: -
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 1

Description: Signal for detecting a failure. The signal can also be sourced from external monitoring functions.

Dependency: See also: p2192, p2193
See also: F07936

Note
Monitoring is triggered with a 0 signal, as soon as the time in p2192 has expired.

p3233[0...n] Torque actual value filter time constant / M_act_filt Tc

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Load torque monitoring
Not relevant for motor type: -
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** -
Unit: ms **Unit group:** - **Unit selection:** -
Min: 0 [ms] **Max:** 1000000 [ms] **Factory setting:** 100 [ms]

Description: Sets the time constant for the PT1 element to smooth the torque actual value.
The smoothed torque actual value is compared with the threshold values and is only used for messages and signals.

p3235 Phase failure signal motor monitoring time / Ph_fail t_mon

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Messages / Monitoring
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -

Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [ms]	2000 [ms]	320 [ms]

Description: Sets the monitoring time for phase failure detection of the motor.

Note
For p3235 = 0 the function is deactivated.
The monitoring is automatically deactivated during a flying restart for a motor that is still rotating.
3-phase phase failures cannot be detected and are indicated by other messages (e.g. F07902).

p3236[0...n] Speed threshold value 7 / n_thr val 7

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Messages / Monitoring	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.00 [rpm]	3000.00 [rpm]	100.00 [rpm]

Description: Sets the speed threshold value for signal "Speed deviation model/external in tolerance" (r2199.7).

Dependency: See also: r1443, r2169, r2199, p3237

p3237[0...n] Hysteresis speed 7 / n_hysteresis 7

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Messages / Monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.00 [rpm]	200.00 [rpm]	2.00 [rpm]

Description: Sets the hysteresis speed for signal "Speed deviation model/external" (r2199.7).

Dependency: See also: r2199, p3236

p3238[0...n] OFF-delay n_act_motor model = n_act external / t_del n_a = n_ext

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Messages / Monitoring	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -

Min:	Max:	Factory setting:
0.0 [s]	100.0 [s]	3.0 [s]

Description: Sets the switch-off delay time for signal "Speed deviation model/external in tolerance" (r2199.7).
The smoothed actual speed of the motor model r2169 is compared with the externally measured speed r1443 (threshold value p3236).

Dependency: See also: p3236, p3237

p3290.0...5 Variable signaling function start / Var sig start

Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Variable signaling function	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-	-	0000 0010 bin

Description: Settings for start/stop and the comparison type for the variable signaling function.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Activate function 1	Active	Not active
01	Function 1 comparison with sign	With sign	Without sign
02	Activate function 2	Active	Not active
03	Function 2 comparison with sign	With sign	Without sign
04	Activate function 3	Active	Not active
05	Function 3 comparison with sign	With sign	Without sign

Dependency: See also: c3291, r3294, p3295, p3296, p3297, p3298, p3299
See also: A02085

NOTICE
The parameters of the variable message function are only checked and become effective when starting. Otherwise, an alarm is output.

Note
Activation is only possible if the signal source was defined.

c3291[0...2] Variable signaling function input signal / Var sig inp signal

Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Variable signaling function	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** -
Factory interconnection:	Fixed value: 0	

Description: Input signal of the variable message function.

Index: [0] = Function 1
[1] = Function 2
[2] = Function 3

Dependency: See also: p3290

NOTICE
This parameter is only checked and becomes effective when restarting the variable message function.

r3294.0...2 Variable signaling function output signal / Var sig outp_sig

Data type: Unsigned8 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Variable signaling function
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary **Scaling:** -

Description: Displays the output signal for the variable signaling function.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Function 1 output signal	High	Low
01	Function 2 output signal	High	Low
02	Function 3 output signal	High	Low

Dependency: See also: p3290, c3291, p3295, p3296, p3297, p3298

p3295[0...2] Variable signaling function threshold value / Var sig thr_val

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Variable signaling function
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
-3.4028235e+38	3.4028235e+38	0.000

Description: Sets the threshold value for the variable signaling function.

Index: [0] = Function 1
[1] = Function 2
[2] = Function 3

Dependency: See also: p3290

NOTICE
This parameter is only checked and becomes effective when restarting the variable message function.

p3296[0...2] Variable signaling function hysteresis / Var sig hyst

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Variable signaling function
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -

Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000	3.4028235e+38	0.000

Description: Sets the hysteresis for the variable signaling function.

Index: [0] = Function 1
[1] = Function 2
[2] = Function 3

Dependency: See also: p3290

NOTICE
This parameter is only checked and becomes effective when restarting the variable message function.

p3297[0...2] Variable signaling function pickup delay / Var sig t_pickup

Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Variable signaling function	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [ms]	10000 [ms]	0 [ms]

Description: Sets the pickup delay for the variable signaling function.

Index: [0] = Function 1
[1] = Function 2
[2] = Function 3

Dependency: See also: p3290

NOTICE
This parameter is only checked and becomes effective when restarting the variable message function. The following must apply for the value: Pickup delay (p3297[0...2]) >= sampling time (p3299[0...2])

Note
For a value of 0, the pickup delay is disabled.
The output signal is set if the condition for the 1 signal is fulfilled for longer than the selected time.

p3298[0...2] Variable signaling function dropout delay / Var sig t_dropout

Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Variable signaling function	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [ms]	10000 [ms]	0 [ms]

Description: Sets the dropout delay for the variable signaling function.

Index: [0] = Function 1
[1] = Function 2
[2] = Function 3

Dependency: See also: p3290

NOTICE
This parameter is only checked and becomes effective when restarting the variable message function. The following must apply for the value: Dropout delay (p3298[0...2]) >= sampling time (p3299[0...2])

Note
For a value of 0, the dropout delay is disabled.
The output signal is reset if the condition for the 0 signal is fulfilled for longer than the selected time.

p3299[0...2] Variable signaling function sampling time / Var sig t_samp

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Variable signaling function	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
1.000 [ms]	4.000 [ms]	4.000 [ms]

Description: Sets the sampling time for the variable signaling function.

Index: [0] = Function 1
[1] = Function 2
[2] = Function 3

Dependency: See also: p3290

NOTICE
This parameter is only checked and becomes effective when restarting the variable message function. The following must apply for the setting: Sampling time (p3299[0...2]) <= pickup delay (p3297[0...2]), dropout delay (p3298[0...2])

Note
Only the following values can be set:
1,000, 2,000, 3,000, 4,000

r3313 Efficiency optimization optimum flux / Optimum flux

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Flux setpoint, Power loss optimization	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -

Description: Displays the calculated, optimum flux.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p1401, p3315, p3316

Note
The function is activated via p1401.14 = 1.

p3315[0...n] Efficiency optimization minimum flux limit value / Min flux lim val

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Flux setpoint, Power loss optimization	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
10.0 [%]	200.0 [%]	70.0 [%]

Description: Sets the minimal limit value for the calculated optimum flux.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p1401, r3313, p3316

NOTICE
If closed-loop control oscillations occur when reaching the minimum limit value (see r3313), then the parameter value should be increased.

Note
The function is activated via p1401.14 = 1.

p3316[0...n] Efficiency optimization maximum flux limit value / Max flux lim val

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Flux setpoint, Power loss optimization	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
10.0 [%]	200.0 [%]	110.0 [%]

Description: Sets the maximum limit value for the calculated optimum flux.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p1401, r3313, p3315

Note
The function is activated via p1401.14 = 1.

c3330[0...n] 2/3 wire control command 1 / 2/3 wire cmd 1

Data type: Unsigned8	**Visible in:** Extended display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications
Parameter group:	Digital inputs, Relay outputs

Not relevant for motor type: -
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal for command 1 for the two-wire control/three-wire control.
Dependency: See also: c3331, c3332, r3333, p3334

c3331[0...n] 2/3 wire control command 2 / 2/3 wire cmd 2

Data type: Unsigned8 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Digital inputs, Relay outputs
Not relevant for motor type: -
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal for command 2 for the two-wire control/three-wire control.
Dependency: See also: c3330, c3332, r3333, p3334

c3332[0...n] 2/3 wire control command 3 / 2/3 wire cmd 3

Data type: Unsigned8 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Digital inputs, Relay outputs
Not relevant for motor type: -
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal for command 3 for the two-wire control/three-wire control.
Dependency: See also: c3330, c3331, r3333, p3334

r3333.0...3 2/3 wire control control word / 2/3 wire STW

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Digital inputs, Relay outputs
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Displays the control word for the two wire control/three wire control.
The control signals are dependent on the signal states at the digital inputs.

Bit array:

Bit	Signal name	1 signal	0 signal
00	ON	Yes	No
01	Reversing	Yes	No
02	ON inverted	Yes	No

03	Reversing inverted	Yes	No

Dependency: See also: c3330, c3331, c3332, p3334

p3334 2/3 wire control selection / 2/3 wire select

Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Digital inputs, Relay outputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	4	0

Description: Sets the two wire control/three wire control.

Value:

0: No wire control
1: Two wire control clockwise/counterclockwise 1
2: Two wire control clockwise/counterclockwise 2
3: Three wire control enable clockwise/counterclockwise
4: Three wire control enable ON/reversing

Dependency: See also: c3330, c3331, c3332, r3333

r3361[0...2] Pulse technique excitation actual / Pulse excit actual

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Motor model	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mVs	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** -

Description: Displays the currently active excitation amplitude of the pulse technique.
Index 0: actual amplitude of the specified setpoint
Index 1: direct axis component of the measured actual value
Index 2: quadrature axis component of the measured actual value

Index:
[0] = Excitation absolute setpoint value
[1] = Excitation actual value d
[2] = Excitation actual value q

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p1750, p3366

r3362[0...5] Pulse technique response / Pulse techniq resp

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Motor model	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: A	**Unit group:** 6_5	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2002

Description: Displays the measured response components of the pulse technique.
Indices 0 and 1: response pulse measured in stator coordinates
Indices 2 and 3: response pulse measured in rotor coordinates
Indices 4 and 5: value from index 2 and 3 after smoothing with p0045

Index: [0] = Measured value alpha
[1] = Measured value beta
[2] = Measured value d
[3] = Measured value q
[4] = Measured value smooth d
[5] = Measured value smooth q

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p1750, p3366

p3365[0...n].0...2 Pulse technique configuration word / Pulse techn config

Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor model	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-	-	0000 bin

Description: Sets the configuration of the pulse technique.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Select excitation adaptation	Yes	No
01	Select model correction	Yes	No
02	Filter test signal	Yes	No

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

p3366[0...n] Pulse technique excitation / Puls techniq excit

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor model	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: mVs	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000 [mVs]	20000.000 [mVs]	32.000 [mVs]

Description: Sets the excitation amplitude (voltage-time pulse) of the pulse technique.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p1750

Note
The currently active excitation amplitude is indicated in r3361.
A higher value in p3366 reduces the signal variance of the calculated speed r0063; however, at the same time it increases the pulse noise.

r3400.2...3 Infeed configuration word / INF config_word

Variant: G220 Clean Power
Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: DC link voltage controller, Mode signals / displays
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the configuration word of the infeed.

Bit array:

Bit	Signal name	1 signal	0 signal
02	Clean Power Mode	On	Off
03	Vdc controller	On	Off

Dependency: See also: p0210

r3402 Infeed internal state / INF status int

Variant: G220 Clean Power
Data type: Integer16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Control/status words, Mode signals / displays
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the internal status of the infeed module.

Value:

0: Initialization
1: Fault
2: No ON command
3: Offset measurement running
4: ON-delay active
5: Precharging running
6: Pulse enable missing
7: Synchronization PLL running
8: Voltage ramp-up active
9: Operation
10: Shutdown running
13: Reserved
14: Reserved

r3405.1...3 Infeed status word / Inf ZSW

Variant: G220 Clean Power
Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Control/status words, Mode signals / displays
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -

Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Displays the status word of the infeed.

Bit array:

Bit	Signal name	1 signal	0 signal
01	Vdc controller active	Yes	No
02	Phase failure detected	Yes	No
03	Current limit reached	Yes	No

Note
For bit 02:
The bit is set if alarm A06205 (phase failure), A06206 (current asymmetry) or A06208 (voltage asymmetry) is output.
The bit is reset for the following events:
- The infeed had again reached the normal operating state after a phase failure has been bypassed/buffered (r3402 = 9).
- The pulse enable is withdrawn due to a fault or switching off with OFF1/OFF2.
- Alarm A06206 is reset.
- Alarm A06208 is reset.

For bit 03:
The actual current limit is displayed in r13067.

p3409 Infeed automatic line frequency setting / INF f_line_mode

Variant: G220 Clean Power
Data type: Integer16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Ready for operation
Parameter group: Line data, Line supply PLL
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0	1	1

Description: Sets the mode to detect the line frequency.

Value:
0: Line frequency setting 50/60 Hz off
1: Line frequency setting 50/60 Hz on

Dependency: See also: p0211, p0284, p0285
See also: A06350, A06351, F06500

Note
For p3409 = 1, the following applies:
After operation has been enabled, the rated line frequency (p0211) is automatically set to a value of 50 Hz or 60 Hz corresponding to the currently measured frequency. This means that the parameter value of p0211 is, under certain circumstances, changed.
For p3409 = 0, the following applies:
The system does not change parameter p0211.

r3421 Infeed inductance / INF L

Variant: G220 Clean Power
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Infeed control
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -

Unit: mH **Unit group:** - **Unit selection:** -

Description: Displays the sum of the line supply inductance and inductance of the line reactor.
The parameter is pre-assigned depending on r0223, p0225 and r0228.

Dependency: See also: r0223, p0225, p3425

Note
The internal setting of the closed-loop current control is derived from r3421 and p3425[0].
For the inductance of the line reactor, the following applies: r3421 - r3424

r3422 Infeed DC link capacitance / INF C_DCL

Variant: G220 Clean Power
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Infeed control
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: mF **Unit group:** - **Unit selection:** -

Description: Displays the effective overall capacitance of the DC link.
This value is pre-assigned with p0240.

Dependency: See also: p0240, p3425

Note
The internal settings of the closed-loop Vdc control are derived from this value and p3425[1].

r3424 Infeed line supply inductance / INF L_line

Variant: G220 Clean Power
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Infeed control
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: mH **Unit group:** - **Unit selection:** -

Description: Displays the value for the line inductance, which is used to internally set the closed-loop current control and the line PLL.
This parameter is pre-assigned depending on p0225 and r0228.

Dependency: See also: r0223, p0225, p3425

Note
Parameter p0225 should only be set differently than the factory setting if the line inductance at the connection point is definitely known.

p3425[0...6] Infeed control loop parameter scaling / INF par scal

Variant: G220 Clean Power
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Ready for operation
Parameter group: Infeed control
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0.00 [%]	1000.00 [%]	[0...3] 100.00 [%] [4] 50.00 [%] [5] 50.00 [%] [6] 50.00 [%]

Description: Sets the scaling factors for controller parameters r3421, r3422, r3424, p3562, p3603 and p3617.

Index:
[0] = Inductance value for closed-loop control
[1] = Capacitance value for closed-loop control
[2] = Inductance value for decoupling
[3] = Inductance value for line model
[4] = Integral time current control
[5] = Integral time Vdc control
[6] = Precontrol current control

Dependency: See also: r3421, r3422, r3424, p3603, p3614

Note
For index [0]:
The scaled inductance p3425[0] * r3421 is active for the closed-loop control.
As a consequence, the closed-loop current control gain factor is defined by the scaling p3425[0] * p3615.
For index [1]:
The scaled capacitance p3425[1] * r3422 is active for the closed-loop control.
As a consequence, the closed-loop Vdc control gain factor is defined by the scaling p3425[1] * p3560.
For index [2]:
Sets the inductance value, which is used for the calculations in the decoupling block of the closed-loop current control.
A value of 100% corresponds to inductance r3421 * p3425[0].
Setting values between 100 % and 200 % are recommended for fluctuating line fault levels.
For index [3]:
Sets the value for the line inductance, which is used for the calculations in the line (grid) model of the PLL.
A value of 100 % corresponds to inductance r3424.
Setting values of up to 4x of r0223 are recommended for fluctuating line fault levels.
For index [4]:
The dynamic performance of the current control is defined by the scaling p3425[4] * p3617.
For index [5]:
The dynamic performance of the Vdc control is defined by the scaling p3425[5] * p3562.
For index [6]:
The precontrol of the current control is defined by the scaling p3425[6] * p3603.

r3452 Infeed PLL status / INF PLL status

Variant:	G220 Clean Power	
Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Control/status words, Line supply PLL	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Description: Displays the status of the line supply PLL.

Value:
0: Initialization running
1: Error when synchronizing
2: Line analysis
3: Calculation line data
4: Pulse enable missing
5: PLL calculation
6: Final state controlled

7: Reserved

p3458[0...1] Infeed PLL smoothing time / INF PLL t_smth

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Line supply PLL	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
1.0 [ms]	1000.0 [ms]	[0] 23.1 [ms] [1] 9.1 [ms]

Description: Sets the smoothing time for the line supply PLL.

Index: [0] = Filter voltage from the model
[1] = Filter voltage from the measurement

Note
It may be necessary to reduce the smoothing time for weak line supplies with high frequency fluctuations. Otherwise, there is a risk of brief orientation errors and the infeed could trip (fault trip).

r3460 Infeed PLL system deviation / INF PLL SysDev

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Line supply PLL	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °	**Unit group:** -	**Unit selection:** -

Description: Displays the PLL system deviation.

r3461 Infeed PLL system deviation after filtering / INF PLL SysDev sm

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Line supply PLL	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °	**Unit group:** -	**Unit selection:** -

Description: Displays the PLL system deviation after filtering.

Dependency: See also: p3458

p3462[0...2] Infeed phase failure detection times / INF ph_fail_det t

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	

Can be changed in the operating state:	Ready for operation	
Parameter group:	Line supply PLL	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [s]	10000.00 [s]	[0] 0.00 [s] [1] 3.00 [s] [2] 60.00 [s]

Description: Sets the time values for phase failure detection and current symmetry monitoring.

Index: [0] = Line fault maximum duration
[1] = Current symmetry rms value smoothing time
[2] = Current symmetry fault delay time

Dependency: See also: p3465, r3466
See also: F06200, A06205, A06206, F06207

Note
For index [0]:
Sets the maximum permissible wait time for the line supply to return after identifying a line fault.
This parameter is used to define how long alarm A06205 may be continuously present. Fault F06200 is output after the wait time has expired.
For p3462[0] = 0, the following applies:
The time monitoring is deactivated. Fault F06200 is only output, if in addition to A06205, an additional message is initiated with a stop response.
For index [1]:
Sets the smoothing time to calculate the rms phase current values (r3466) for the current symmetry monitoring (p3465).
The smoothing time is internally limited to 30 s.
For index [2]:
Sets the delay time between the Alarm A06206 being permanently active until Fault F06207 is output for the current symmetry monitoring (p3465).

p3463 Infeed phase failure detection line supply angle change / INF ph_fail phi

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Line supply PLL	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [°]	180.0 [°]	15.0 [°]

Description: If the line supply angle changes by more than this value, then a phase failure is assumed. The pulses are then inhibited for 10 ms.

Dependency: See also: A06205

p3465[0...5] Infeed current symmetry monitoring thresholds / INF I_sym thr

Variant:	G220 Clean Power
Data type: FloatingPoint32	**Visible in:** Extended display

Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Messages / Monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [%]	200.0 [%]	[0] 60.0 [%] [1] 100.0 [%] [2] 25.0 [%] [3] 90.0 [%] [4] 100.0 [%] [5] 12.5 [%]

Description: Sets scaling values for monitoring the symmetry between the phase currents (r3466).
The monitoring serves to identify continuous line phase failures in regular operation.
The monitoring for the current-controlled mode is deactivated if one of the indices 0, 1, 2 is set to zero.

Index: [0] = Closed-loop control activation minimum current
[1] = Closed-loop control activation maximum current
[2] = Closed-loop control alarm asymmetry
[3] = Reserved
[4] = Reserved
[5] = Reserved

Dependency: See also: p3462, r3466
See also: A06205, F06207

NOTICE
The negative phase sequence system control (p3640) controls the current asymmetry - and includes an additional symmetry monitoring of the output voltage (p3647).

Note
The smoothing time constant for the phase current rms values r3466[0, 1, 2] can be set with p3462[1].
For index [0, 1]:
Sets the current thresholds for activating symmetry monitoring in current-controlled operation.
Monitoring is active if at least one rms phase current value (r3466) is greater than p3465[0] * r13207 - and at least one rms phase current value is less than p3465[1] * r13207.
For index [2]:
Sets the alarm threshold for the symmetry of the phase currents in the current-controlled mode.
The ratio between the lowest and highest rms phase current is monitored (r3466). The thus defined symmetry relationship decreases with increasing asymmetry – and always lies in the range of 0 ... 100 %.
In operation (r3452 >= 4) the following applies:
If the symmetry relationship is less than threshold p3465[2], then alarm A06206 is output and status bit r3405.2 = 1 is set.
If the alarm threshold is permanently exceeded for the time p3462[2], then the device is switched off with fault F06207.

r3466[0...2] Infeed phase current rms value smoothed / INF I_ph rms smth

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Power unit, Mode signals / displays	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -

	Unit: Arms	**Unit group:** 6_2	**Unit selection:** p0505
	Type of signal interconnection:	Source numeric	**Scaling:** p2002
Description:	Displays the smoothed rms values of the measured phase currents.		
Index:	[0] = Phase U [1] = Phase V [2] = Phase W		
Dependency:	See also: p3462, p3465 See also: A06206, F06207		

Note
The smoothed rms values are used to monitor the symmetry of the phase currents (p3465).
The smoothing time constant is set with p3462[1].

r3467[0...3] Infeed current alpha/beta / INF I a/b

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Current controller, Power unit	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: A	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** -

Description: Display and numerical signal source for the line current in alpha/beta components.

Index:
[0] = Line filter alpha
[1] = Line filter beta
[2] = Power unit alpha
[3] = Power unit beta

Note
For index [0, 1]:
Displays the line current at the input terminals of the line filter.
For index [2, 3]:
Displays the line current at the input terminals of the power unit.

r3468[0...5] Infeed voltage alpha/beta / INF U a/b

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Current controller, Power unit	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: V	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** -

Description: Display and numerical signal source for the line voltage at the input terminals of the line filter in alpha/beta components.

Index:
[0] = Line filter alpha
[1] = Line filter beta
[2] = Power unit alpha
[3] = Power unit beta
[4] = Line model alpha
[5] = Line model beta

Note
For index [0, 1]:
The voltage measured values of the line filter, transformed into the alpha/beta system, are indicated in r3468.
For index [2, 3]:
The basic fundamental amplitudes of the pulsed converter voltages are displayed.
The values are only valid when operation is enabled.
For index [4, 5]:
The basic fundamental amplitudes of the voltage source calculated using a line model are displayed.
The values are only valid when operation is enabled.

r3471 Infeed reactive current filter / INF I_react filt

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Line filter, Reactive current controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Arms	**Unit group:** 6_2	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2002

Description: Displays the reactive current requirement due to the line filter.

Dependency: See also: r0038, r0221, r13075, r13076

Note
With respect to the line supply, the sum of the reactive currents of the power unit (r0076) and line filter (r3471) are effective.
The reactive current requirement of the line filter is taken into account when calculating the power factor (r0038).
If the line phases are interchanged and the line voltage therefore has a negative orientation (r0066 < 0), it should be noted that the sign of the reactive current is reversed.

p3472[0...4] Infeed PLL line voltage smoothing time / INF PLL U_l t_sm

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Line supply PLL	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
1.0 [ms]	30000.0 [ms]	[0] 200.0 [ms] [1] 100.0 [ms] [2] 5000.0 [ms] [3] 8.0 [ms] [4] 8.0 [ms]

Description: Sets the smoothing time of the line voltage for the line supply PLL.

Index: [0] = Model line voltage smoothing time
[1] = Measurement line voltage smoothing time
[2] = Detection line undervoltage smoothing time
[3] = Detection line overvoltage smoothing time
[4] = Detection line voltage step smoothing time

Dependency: See also: r3400

Note
For the precontrol of the line voltage, a smoothed value of the line voltage is used in the closed-loop control.
For index [0]:
Sets the PT1 time constant to smooth the line voltage for operation with filter voltage model.
For index [1]:
Sets the PT1 time constant to smooth the line voltage for operation with filter voltage measurement.
For index [2]:
Sets the smoothing time constant to slowly detect a line undervoltage (F06100).
For index [3]:
Sets the smoothing time constant to quickly detect line overvoltages for phase failure (A06205).
For index [4]:
Sets the smoothing time constant to quickly adapt the line precontrol for line voltage steps.

p3480 Infeed modulation depth limit / INF mod_depth lim

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Modulation depth controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
50.0 [%]	110.0 [%]	98.0 [%]

Description: Sets the maximum steady-state modulation depth.
When this limit is reached, the DC link voltage is boosted to maintain the control margin. This means that the control reserve is maintained.

Dependency: See also: p3481, r3485

p3481 Infeed standby controller integral time / INF stndby_ctrl Tn

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Modulation depth controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [ms]	1000.0 [ms]	7.5 [ms]

Description: Sets the integral time of the standby controller for the modulation depth.
As the integral time increases, the response of the DC link voltage tracking becomes slower.

Dependency: See also: p3480, r3485

r3485 Infeed standby controller output / INF res_ctrl outp

Variant:	G220 Clean Power	

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Modulation depth controller
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: V **Unit group:** - **Unit selection:** -

Description: Displays the reserve controller output for the modulation depth.
The DC link voltage is increased by this voltage value, and the summed setpoint for the DC link voltage is output in r13088.
The summed setpoint is limited to the maximum steady-state DC link voltage (p0280).

Dependency: See also: p3480, p3481

p3490 Infeed delay time OFF1 command / INF t_del OFF1

Variant: G220 Clean Power
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Ready for operation
Parameter group: Control logic, Enable logic
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: ms **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0.0 [ms]	1000000.0 [ms]	0.0 [ms]

Description: Sets the delay time for the ON/OFF1 command of the infeed.
After ON/OFF1 = 0 the infeed remains in operation for the specified time

Dependency: See also: c13840

NOTICE
The ON/OFF1 command of the infeed can be interrupted.

Note
This parameter is only relevant if a motor-inverter and the line infeed are controlled using the same OFF command. In this case, the delay time and the stop ramp time of the motor can be coordinated with one another.

p3491 Infeed I-offset measurement monitoring time / INF I_offs t_mon

Variant: G220 Clean Power
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Ready for operation
Parameter group: Messages / Monitoring
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: ms **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0 [ms]	65000 [ms]	2000 [ms]

Description: Sets the monitoring time for the current-offset measurement of the power unit.
The time is started with the normal end of the measurement. If the measurement is invalid and if no valid measurement can be taken within the monitoring period (phase currents too high), an appropriate message is generated.

Note
Set this parameter to 0 to allow variations in the delay when running-up.

p3492 Infeed, line undervoltage delay time / INF U_line t_del

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Messages / Monitoring	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [s]	300 [s]	0 [s]

Description: Sets the delay time for shutdown due to a line undervoltage condition (F06100).
After the line undervoltage is detected, the power unit is tripped (shut down) after this delay time has expired.
If, during this delay time, the line undervoltage is no longer detected, then the power unit is not shut down.
While the closed-loop control is being synchronized to the line supply (r3402 = 7) the delay time p3492 is not effective.

Dependency: See also: p0283
See also: F06100

Note
The degree of ruggedness of the infeed with respect to fluctuations in the line voltage can be increased by parameterizing this delay value.
However, the following should be noted:
- The infeed power decreases proportionally (linearly) with the line voltage.
- When other components are connected, for low line voltage, operating faults or damage can occur. In this case, the specifications of the connected electrical components should always be carefully observed.

p3510 Infeed DC link voltage setpoint / INF Vdc set

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	DC link voltage controller, Line data/operating mode	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: V	**Unit group:** 5_2	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
100.00 [V]	1600.00 [V]	600.00 [V]

Description: Sets the setpoint for the DC link voltage.

Recommendation: The DC voltage setpoint is automatically preassigned the recommended value and should not be changed:
p3510 = 1.5 * p0210.

Dependency: See also: p0210, p0280, r3400

⚠ WARNING
The warning notes for p0210 and p0280 must be carefully observed.

NOTICE
Setting values p3510 > 1.5 * p0210 cause an increased power loss and can therefore result in derating.

Note
The following applies for the permissible setting range of the DC setpoint:
p3510 >= 1.48 * p0210 and
p3510 <= 1.60 * p0210 and
p3510 <= p0280.

c3519[0...3] Infeed power precontrol / INF prectrl P

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Current controller, DC link voltage controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: kW	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** r2004
Factory interconnection:	Fixed value: 0.00 [kW]	

Description: Signal for power precontrol.

Dependency: See also: p3521

Note
Closed-loop control of the DC link voltage is improved by precontrolling the power required for the other components.

p3521[0...3] Infeed precontrol power scaling / INF prectrl P scal

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Current controller, DC link voltage controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-100000.00000 [%]	100000.00000 [%]	100.00000 [%]

Description: Sets the scaling factor for the power precontrol.

r3522 Infeed precontrol power display / INF prectrl P_disp

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Current controller, DC link voltage controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -

Unit: kW | **Unit group:** - | **Unit selection:** -
Type of signal interconnection: Source numeric | **Scaling:** -

Description: Display and numerical signal source for the sum of the precontrol powers.

Dependency: See also: c3519, p3521

Note
This display is used to set the correct scaling for the precontrol.

r3554[0...1] Infeed Vdc controller output / INF Vdc_ctrl outp

Variant: G220 Clean Power
Data type: FloatingPoint32 | **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: DC link voltage controller
Not relevant for motor type: -
Dyn. index [0...n]: - | **Calculated:** -
Unit: Arms | **Unit group:** 6_2 | **Unit selection:** p0505

Description: Display of the Vdc controller output for the infeed.

Index: [0] = I output
[1] = PI output

Note
For index 1:
The value corresponds to a DC current setpoint.

p3560 Infeed Vdc controller proportional gain / INF Vdc_ctrl Kp

Variant: G220 Clean Power
Data type: FloatingPoint32 | **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: DC link voltage controller
Not relevant for motor type: -
Dyn. index [0...n]: - | **Calculated:** -
Unit: % | **Unit group:** - | **Unit selection:** -

Min:	Max:	Factory setting:
0.01 [%]	1000.00 [%]	100.00 [%]

Description: Sets the scaled proportional gain for the DC link voltage controller (Vdc controller).

Note
A value of 100 % corresponds to the basic setting derived from loop control parameters (r3421, r3422).

p3562 Infeed Vdc controller dynamic response / INF Vdc_ctrl dyn

Variant: G220 Clean Power
Data type: FloatingPoint32 | **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: DC link voltage controller
Not relevant for motor type: -
Dyn. index [0...n]: - | **Calculated:** -

Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.10 [%]	100000.00 [%]	100.00 [%]

Description: Sets the scaled dynamic response for the DC link voltage controller (Vdc).

Note
A value of 100 % corresponds to the basic setting derived from loop control parameters (r3421, r3422).
The dynamic response factor is proportional to the reciprocal of the integral time.
Example: Doubling p3562 corresponds to halving the integral time.

p3566 Infeed Vdc ramp duration / INF Vdc t_ramp

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	DC link voltage controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
2 [ms]	1000 [ms]	20 [ms]

Description: Sets the ramp time for the DC link voltage (Vdc) when switching on and switching off.

NOTICE
For operating behavior and possible termination of the ramp when switching off:
The line inverter is not capable of energy recovery. As a consequence, a ramp to reduce the DC link voltage is only possible under the precondition that a motor load is connected to the DC link.
Generally, this load should already be deactivated in the DC link, and the no-load state reached before the infeed is switched off. In this normal case, when switching off the infeed, the switch-off ramp is canceled and the DC link passively discharges itself; it does this relatively slowly with the discharge time constant of the inverter system.

Note
Switching on (enable pulses, r13898.3 = 1):
During this time, the DC link voltage is increased from the rectified value after precharging up to the voltage setpoint (p3510). The voltage setpoint is increased, when necessary, so that the modulation depth reserve (p3481) is maintained.
Switching off (inhibit pulses, r13898.3 = 0):
During this time, the DC link voltage is reduced to the rectified value (sqrt(2) * line voltage).

r3602 Infeed control status / INF ctrl status

Variant:	G220 Clean Power	
Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Control/status words, Mode signals / displays	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Description: Displays the status of the closed-loop infeed control.

Value:
0: Initialization running
1: Pulse enable missing
2: Ramp-up DC link voltage

3: Reserved
4: Shutdown running
5: Check status
6: Operation
7: Reserved

p3603 Infeed current precontrol factor D component / INF I_ctrl D comp

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Current controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [%]	500.00 [%]	100.00 [%]

Description: The D component of the current precontrol is determined from the device data of the filter. p3603 can be used to weigh the precalculated D component. If no dynamic precontrol is to be used, set the factor to zero.

Dependency: The precontrol of the current control is defined by the scaling p3425[6] * p3603.

r3606 Infeed active current controller system deviation / INF I_act ctrl dev

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Active current controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Arms	**Unit group:** 6_2	**Unit selection:** p0505

Description: Displays the system deviation of the active current controller.

r3608 Infeed reactive current controller system deviation / INF I_reactCtrlDev

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Reactive current controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Arms	**Unit group:** 6_2	**Unit selection:** p0505

Description: Displays the system deviation of the reactive current controller.

p3614[0...3] Infeed current actual value filter smoothing time / INF I_ActV t_smth

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	

	Can be changed in the operating state:	Operation	
	Parameter group:	Current controller, Digital filters	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	**Calculated:** -
	Unit: ms	**Unit group:** -	**Unit selection:** -
	Min:	**Max:**	**Factory setting:**
	0.000 [ms]	2.000 [ms]	0.000 [ms]

Description: Sets the time constant for the PT1 filtering of the active current actual value and reactive current actual value.

Index: [0] = Current actual value smoothing with dead time
[1] = Current actual value smoothing without dead time
[2] = System deviation smoothing without dead time
[3] = Reserved

Dependency: When fast closed-loop current control (p1810.11 = 1) is active, this filtering is not effective for the P component of the current controller.

Note
The current actual value filter is deactivated with p3614[0, 1, 2] = 0.
For index [0]:
The PT1 filter with a clock cycle dead time can be used to stabilize the closed-loop current control for extremely weak line supplies (with higher relative short-circuit voltage uk)
For index [1]:
The PT1 filter without dead time can be used to optimize the closed-loop current control.
For index [2]:
The PT1 filter without dead time for the system deviation (r3606, r3608) can be used to stabilize the closed-current control for weak line supplies (with low line fault rating).

p3615 Infeed current controller P gain / INF I_ctrl Kp

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Current controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [%]	1000.00 [%]	100.00 [%]

Description: Sets the scaled P gain for closed-loop current control of the infeed.

Note
A value of 100 % corresponds to the basic setting derived from loop control parameters (r3421, r3422).

p3617 Infeed current controller dynamic response / INF I_ctrl dyn

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Current controller	

Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0.10 [%]	100000.00 [%]	100.00 [%]

Description: Sets the scaled dynamic response for the infeed current controller.

Note
A value of 100 % corresponds to the basic setting derived from loop control parameters (r3421, r3422).
The dynamic response factor is proportional to the reciprocal of the integral time.
Example: Doubling p3562 corresponds to halving the integral time.

r3618 Infeed active current controller integral component / INF I_act_ctrl Tn

Variant: G220 Clean Power
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Active current controller
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: Vrms **Unit group:** 5_1 **Unit selection:** p0505

Description: Displays the integral component of the active current controller.

r3619 Infeed reactive current controller integral component / INF I_react_ctrlTn

Variant: G220 Clean Power
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Reactive current controller
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: Vrms **Unit group:** 5_1 **Unit selection:** p0505

Description: Displays the integral action component of the reactive current controller.

r3624[0...1] Infeed harmonics controller order / INF harm_ctr order

Variant: G220 Clean Power
Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Harmonics controller
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the order of the line harmonics for the current harmonics controller.
r3624[0]: Order of the line harmonics for the first harmonics controller.
r3624[1]: Order of the line harmonics for the second harmonics controller.

Dependency: See also: p3625, r3626

Note
Harmonics in the line voltage can cause harmonics in the converter current. These types of current harmonics can be reduced by activating additional controller modules.
Example:
For a 50 Hz line supply, harmonics at 250 Hz in the phase currents can be reduced by activating a harmonic controller with an Order of 5 (r3624[0] = 5).

p3625[0...1] Infeed harmonics controller scaling / INF harm_ctrl scal

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Harmonics controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [%]	300.0 [%]	100.0 [%]

Description: Sets the gain of the harmonics controller.
p3625[0]: Gain of the first harmonics controller
p3625[1]: Gain of the second harmonics controller
0 %: Controller is deactivated
100 %: Controller is activated with default gain setting

Dependency: See also: r3624, r3626

Note
The harmonics controller corrects the power unit voltages so that the line-side current harmonics are reduced.
The order of a current harmonic, which is to be dampened using a harmonics controller, is defined using r3624.

r3626[0...1] Infeed harmonics control output / INF harm_ctrl outp

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Harmonics controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Vrms	**Unit group:** 5_1	**Unit selection:** p0505

Description: Displays the output voltages of the harmonics controller.
The harmonics controller corrects the power unit voltages so that the line-side current harmonics are reduced.
For r3626[0]:
rms value of the output voltage of the 1st harmonic controller.
For r3626[1]:
Rms value of the output voltage of the 2nd harmonic controller.

Dependency: See also: r3624, p3625

r3632 Infeed setpoint voltage Usd (active component) / INF U_set Usd

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Current controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Vrms	**Unit group:** 5_1	**Unit selection:** p0505

Description: Displays the voltage Vsd (active component) at the 3-phase line supply input of the power unit.

r3633 Infeed setpoint voltage Usq (reactive component) / INF U_set Usq

Variant: G220 Clean Power
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Current controller
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: Vrms **Unit group:** 5_1 **Unit selection:** p0505

Description: Displays the voltage Vsq (reactive component) at the 3-phase line supply input of the power unit.

r3635[0...1] Infeed input voltage angle / INF U_inp angle

Variant: G220 Clean Power
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Current controller
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: ° **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** -

Description: Display and numerical signal source for the angle of the input voltage.
Index: [0] = Setpoint voltage angle relative to the line phase angle
[1] = Absolute angle of the setpoint voltage

r3638[0...3] Negative phase-sequence system controller current actual value / Neg_seq ctr I_act

Variant: G220 Clean Power
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Negative phase-sequence system controller
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: Arms **Unit group:** 6_2 **Unit selection:** p0505
Type of signal interconnection: Source numeric **Scaling:** p2002

Description: Displays the current actual values of the negative phase-sequence system controller.
The setpoint for the positive phase-sequence system current is compensated in the displayed negative-phase sequence system current.
The setpoint for the negative phase-sequence system current is compensated in the displayed positive-phase sequence system current.
Index: [0] = Negative phase-sequence system component active current
[1] = Negative phase-sequence system component reactive current
[2] = Positive phase-sequence system component active current
[3] = Positive phase-sequence system component reactive current

Note
The total active current actual value in the positive phase-sequence system coordinates is displayed in r0078.
The total reactive current actual value in the positive phase-sequence system coordinates is displayed in r0076.

p3639[0...3] Negative phase-sequence system controller scaling values / Neg_sys_ctrl scal

Variant: G220 Clean Power
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages

Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Negative phase-sequence system controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [%]	300.00 [%]	[0] 100.00 [%] [1] 0.10 [%] [2] 200.00 [%] [3] 1.00 [%]

Description: Sets the scaling values for the negative phase-sequence system controller.

Index: [0] = Integral time
[1] = Integrator feedback coupling
[2] = DC link voltage extrapolation
[3] = DC link voltage filter

Note

For index [0]:
The value 100% corresponds to the integral time, which is active for the regular positive phase-sequence system current controller (p3617).
With p3639[0] = 0, the integral component of the negative phase sequence system controller is deactivated.
For index [1]:
Sets an integrator feedback loop, which, for values greater than 0, results in a PT1 response. In the control, instead of an integrator, a 1st order delay element is active. This allows the negative phase-sequence system controller stability range to be extended.
Internally, the setting value is limited to 10 %.
We only recommend that this parameter is changed if stability problems are encountered. Typical setting values are in the range of 1%.
For index [2]:
Sets the extrapolation width for the actual value of the DC link voltage to compensate for Vdc oscillation. A value of 100% corresponds to an extrapolation of one current controller sampling time.
The extrapolated value is displayed in r3643[1].
For index [3]:
Sets the scaling factor for the Vdc actual value filter.
At twice the line frequency, this component of the Vdc oscillation can pass through the bandstop and causes the Vdc controller to respond. As a consequence, the stability of the overall closed-loop control can be improved.
The setting values are internally limited to 100%.

p3640.0...2 Negative phase-sequence system controller configuration / Neg_sys ctr config

Variant:	G220 Clean Power	
Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Negative phase-sequence system controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-	-	0011 bin

Description: Sets the configuration for the negative phase-sequence system current controller.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Negative phase-sequence system current controller activated	Yes	No
01	Asymmetry monitoring activated	Yes	No
02	Output limiting activated	Yes	No

Note

For bit 00:

The negative phase-sequence system controller controls negative phase-sequence components in the line current.

For asymmetry in the line supply, this means that current harmonics with 2x the line frequency can be compensated.

For bit 01:

Only effective for bit 00 = 1.

For bit 01 = 1, the following applies:

The smoothed amplitude of the controller output is monitored, and when a threshold is exceeded (p3647[1]) an alarm is output (A06208) - and the signal bit for phase failure is set (r3405.2 = 1).

When compared to passive monitoring, this negative phase-sequence system control represents active phase failure detection; even under no load conditions, it can be guaranteed that single-phase, high-ohmic line supply faults are detected.

For bit 02:

Only effective for bit 00 = 1.

For bit 02 = 1, the following applies:

In the case of high-ohmic line supply faults (e.g. phase failure), the line asymmetry that occurs can result in a significant increase in the controller integral components, and as a consequence in a fault shutdown (e.g. fault F06200).

If these types of line supply faults are to be ridden through without shutdown (as far as is possible), then the controller output voltage limiting must be activated (threshold p3647[0]).

r3642[0...1] Negative phase-sequence system controller manipulated variable / NegSeqCtr ManipVar

Variant: G220 Clean Power

Data type: FloatingPoint32 **Visible in:** Extended display

Read permission: Read drive data or acknowledge messages

Parameter group: Negative phase-sequence system controller

Not relevant for motor type: -

Dyn. index [0...n]: - **Calculated:** -

Unit: V **Unit group:** - **Unit selection:** -

Type of signal interconnection: Source numeric **Scaling:** -

Description: Display for the manipulated variable (output voltage) of the negative phase-sequence system current controller.

The manipulated variable is displayed in alpha/beta coordinates.

Index: [0] = Alpha

[1] = Beta

r3643[0...1] Neg phase-sequence system controller DC link voltage correction / NegSeqCtr Vdc corr

Variant: G220 Clean Power

Data type: FloatingPoint32 **Visible in:** Extended display

Read permission: Read drive data or acknowledge messages

Parameter group: Negative phase-sequence system controller

Not relevant for motor type: -

Dyn. index [0...n]: - **Calculated:** -

Unit: V **Unit group:** - **Unit selection:** -

Description: Displays the correction value for the DC link voltage setpoint.

This value is added to the DC link voltage setpoint, and in the case of a negative phase-sequence system setpoint not equal to 0, compensates any Vdc oscillation.

Index: [0] = Correction value

[1] = Correction value extrapolated

Note
For index [0]:
The corrected DC link voltage setpoint (r13088) is active for the voltage controller.
For index [1]:
For Vdc compensation, the extrapolated correction value (also see p3639[2]) is used to take into account the current controller dead times – and to avoid current harmonics in the case of a negative phase-sequence system setpoint other than 0.

p3645 Neg phase-seq system controller Vdc actual value filter damping / NegSysCtr FiltDamp

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Negative phase-sequence system controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000	10.000	0.300

Description: Sets the denominator damping for the bandstop filter of the Vdc actual value for twice the line frequency.

Note
The bandstop filter is deactivated with p3645 = 0.

r3646[0...1] Negative phase-sequence system controller integral component / neg_sys_ctrl int

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Negative phase-sequence system controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Vrms	**Unit group:** 5_1	**Unit selection:** p0505

Description: Displays the integral components of the negative phase-sequence system controller.
Index: [0] = Active
[1] = Reactive

p3647[0...2] Negative phase-sequence system controller phase asymmetry / Neg_seq ctrl asym

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Negative phase-sequence system controller	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -

Min:	Max:	Factory setting:
0.00 [%]	300.00 [%]	[0] 15.00 [%] [1] 10.00 [%] [2] 50.00 [%]

Description: Sets the threshold limits and monitoring thresholds for the negative phase-sequence system controller.

Index: [0] = Threshold limit
[1] = Signaling threshold
[2] = Smoothing time

Note
For index [0]:
Sets the limit threshold for the output amplitude of the negative phase-sequence system control.
The value of 100 % corresponds to the smoothed line voltage (r0072[4]).
For p3640.2 = 1, the following applies:
The negative phase-sequence system integral components (p3645) are reduced if the set threshold is exceeded.
For index [1]:
Sets the signaling threshold for the output amplitude of the negative phase-sequence system control.
The negative phase-sequence system output amplitude corresponds to the asymmetry of the line voltage.
The value of 100 % corresponds to the smoothed line voltage (r0072[4]).
The setting value is internally limited to a maximum of 0.9 * p3647[0].
For p3640.1 = 1, the following applies:
A06208 is output and r3405.2 is set = 1 if the set threshold is exceeded. This allows line asymmetry monitoring or phase failure detection to be implemented.
For index [2]:
Sets the smoothing time for identifying the asymmetry described under index 1.
The 100% value corresponds to 1 second.

p3660[0] VSM input line voltage voltage scaler / VSM inp U_scaler

Variant:	G220	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	VSM	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [%]	100000.00 [%]	0.00 [%]

Description: Sets the voltage scaler for the Voltage Sensing Module (VSM).

Note
When the 690 V input is used (X522) without voltage scaler, 0 % should be entered.
When the 100 V input (X521) is used with voltage scaler to measure medium voltages, the dividing (scaling) factor multiplied by 100% should be entered.
Example:
1000 V grid voltage, voltage scaling, 10:1
--> voltage at the VSM input is 100 V
--> p3660 = 10 * 100 % = 1000 %

r3661[0] VSM input line voltage u1 - u2 / VSM inp u1-u2

Variant:	G220
Data type: FloatingPoint32	**Visible in:** Extended display

Read permission: Read drive data or acknowledge messages
Parameter group: VSM
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: V **Unit group:** 5_3 **Unit selection:** p0505
Type of signal interconnection: Source numeric **Scaling:** p2001

Description: Displays the input voltage between phases L1 and L2 for the Voltage Sensing Module (VSM).

Dependency: See also: p3660

Note
X521.1 or X522.1: Connection of L1
X521.2 or X522.2: Connection of L2
X521.3 or X522.3: Connection of L3

r3662[0] VSM input line voltage u2 - u3 / VSM inp u2-u3

Variant: G220
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: VSM
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: V **Unit group:** 5_3 **Unit selection:** p0505
Type of signal interconnection: Source numeric **Scaling:** p2001

Description: Displays the input voltage between phases L2 and L3 for the Voltage Sensing Module (VSM).

Dependency: See also: p3660

Note
X521.1 or X522.1: Connection of L1
X521.2 or X522.2: Connection of L2
X521.3 or X522.3: Connection of L3

r3664[0].0...1 VSM temperature evaluation status / VSM temp status

Variant: G220
Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Messages / Monitoring, VSM
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** -

Description: Displays the status of the temperature evaluation using the Voltage Sensing Module (VSM).
This displays whether the temperature actual value has exceeded the alarm/fault threshold.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Alarm is present	Yes	No
01	Fault is present	Yes	No

Dependency: See also: p3665, r3666, p3667, p3668

p3665[0] VSM temperature evaluation sensor type / VSM temp sens type

Variant: G220
Data type: Integer16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages

Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Ready for operation
Parameter group: Messages / Monitoring, VSM
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0	6	0

Description: Sets the temperature sensor for the Voltage Sensing Module (VSM).
The temperature sensor is connected to terminals X520.5 and X520.6 of the VSM.

Value:
0: No sensor
1: PTC
2: KTY84
6: Pt1000

r3666[0] VSM temperature actual value / VSM Temp_ActV

Variant: G220
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Messages / Monitoring, VSM
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: °C **Unit group:** 21_1 **Unit selection:** p0505
Type of signal interconnection: Source numeric **Scaling:** p2006

Description: Displays the temperature actual value of a temperature sensor connected to the Voltage Sensing Module (VSM).
Prerequisite:
A KTY/ Pt1000 temperature sensor is connected, and correspondingly p3665 is set = 2, 6.

Dependency: See also: p3665

Note
If value r3666 exceeds threshold value p3667 or p3668, then alarm A34211 or fault F34207 is output.
For sensor type PTC (p3665 = 1), the following applies:
- Below the nominal response temperature, r3666 = -50°C.
- Above the nominal response temperature, r3666 = 250 °C.

p3667[0] VSM overtemperature alarm threshold / VSM T A thr

Variant: G220
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Ready for operation
Parameter group: Messages / Monitoring, VSM
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: °C **Unit group:** 21_1 **Unit selection:** p0505

Min:	Max:	Factory setting:
-100.00 [°C]	301.00 [°C]	150.00 [°C]

Description: Sets the alarm threshold for the temperature sensor of the Voltage Sensing Module (VSM).
Prerequisite:
A KTY/Pt1000 temperature sensor is connected, and correspondingly p3665 is set = 2, 6.

Dependency: See also: p3665

Note
For sensor type KTY (p3665 = 2) or Pt1000 (p3665 = 6), values 181 ... 300 °C result in fault F06255.
The monitoring is deactivated for p3667 = 301.

p3668[0] VSM overtemperature shutdown threshold / VSM T F_thr

Variant:	G220	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Messages / Monitoring, VSM	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °C	**Unit group:** 21_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
-100.00 [°C]	301.00 [°C]	180.00 [°C]

Description: Sets the shutdown threshold for the temperature sensor of the VSM.
Prerequisite:
A KTY/Pt1000 temperature sensor is connected, and correspondingly p3665 is set = 2, 6.

Dependency: See also: p3665, p3667

Note
For sensor type KTY/Pt1000 (p3665 = 2, 6), values 181 ... 300 °C result in fault F06255.
Other temperature limits (see F06255) are applicable for liquid-cooled Active Interface Modules (AIM).
The monitoring is deactivated for p3668 = 301.

p3669[0] VSM overtemperature hysteresis / VSM T hyst

Variant:	G220	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Messages / Monitoring, VSM	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: K	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
1.00 [K]	50.00 [K]	3.00 [K]

Description: Sets the hysteresis for the alarm threshold/fault threshold value of the Voltage Sensing Module (VSM).

Dependency: See also: p3667

p3670[0] VSM 10 V input current controller gain / VSM CT_gain

Variant:	G220
Data type: FloatingPoint32	**Visible in:** Extended display

Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	VSM	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: A	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000 [A]	1000.000 [A]	1.000 [A]

Description: Sets CT gain of the CT connected at the 10 V input of the Voltage Sensing Module (VSM).
The parameter specifies the current magnitude in [A] referred to the input voltage at the VSM in [V].
Example:
CT with 1 V per 200 A.
--> p3670 = 200

Dependency: See also: r3671, r3672

Note
The CT for phase 1 is connected at terminals X520.1 and X520.2 of the VSM.
The CT for phase 2 is connected at terminals X520.3 and X520.4 of the VSM.

r3671[0] VSM 10 V input CT 1 actual value / VSM CT 1 I_ActV

Variant:	G220	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	VSM	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: A	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** p2002

Description: Displays the current actual value from current transducer (CT) 1 at the 10 V input of the Voltage Sensing Module (VSM).

Dependency: See also: p3670

Note
The CT for phase 1 is connected at terminals X520.1 and X520.2 of the VSM.

r3672[0] VSM 10 V input CT 2 actual value / VSM CT 2 I_ActV

Variant:	G220	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	VSM	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: A	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** p2002

Description: Displays the current actual value from current transducer (CT) 2 at the 10 V input of the Voltage Sensing Module (VSM).

Dependency: See also: p3670

Note
The CT for phase 2 is connected at terminals X520.3 and X520.4 of the VSM.

r3673[0] VSM 10 V input 1 actual value / VSM inp 1 U_ActV

Variant:	G220	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	VSM	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: V	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** p2001

Description: Displays the actual value of the voltage measured at the 10 V input 1 of the Voltage Sensing Module (VSM).

Dependency: See also: p3670

Note
10 V input 1: Terminals X520.1 and X520.2

r3674[0] VSM 10 V input 2 actual value / VSM inp 2 U_ActV

Variant:	G220	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	VSM	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: V	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** p2001

Description: Displays the actual value of the voltage measured at the 10 V input 2 of the Voltage Sensing Module (VSM).

Dependency: See also: p3670

Note
10 V input 2: Terminals X520.3 and X520.4

p3800[0...n] Sync-line-drive activation / Sync act

Variant:	G220	
Available when function is active:	Bypass with synchronization	
Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Synchronization of line and drive	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	1	0

Description: Setting to activate line - drive synchronization.

Value:
0: Sync-line-drive deactivated
1: Sync-line-drive activated VSM-INT

Dependency: See also: c3802

NOTICE
For G220, for the line synchronization of the motor, a VSM to sense the line voltage is required.

Note
When the ground-fault monitoring detects a fault with overlapping synchronization, the threshold value p0287[1] and possibly the threshold value of the infeed p13287[1] must be set appropriately high (e.g. p0287[1] = 100 %).
For p3800 = 1, the following applies:
The INTERNAL voltage actual values are used for synchronization. The effects that a (sinusoidal) filter - that is connected between the converter motor terminals and motor - has on the voltage actual values are taken into account (theoretically) by appropriately selecting p0230.
VSM: Voltage Sensing Module

p3800[0...n] Sync-line-drive activation / Sync act

Variant:	G220 Clean Power	
Available when function is active:	Bypass with synchronization	
Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Synchronization of line and drive	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	1	0

Description: Setting to activate line - drive synchronization.

Value:
0: Sync-line-drive deactivated
1: Sync-line-drive activated VSM-INT

Dependency: See also: c3802

NOTICE
For G220 Clean Power, for the line synchronization of the motor, a VSM to sense the line voltage is not required. In addition, p112 must be set to 3 or 5; or p112 must be set to 0 when p115 = 250.0µs.

Note
When the ground-fault monitoring detects a fault with overlapping synchronization, the threshold value p0287[1] and possibly the threshold value of the infeed p13287[1] must be set appropriately high (e.g. p0287[1] = 100 %).
For p3800 = 1, the following applies:
The INTERNAL voltage actual values are used for synchronization. The effects that a (sinusoidal) filter - that is connected between the converter motor terminals and motor - has on the voltage actual values are taken into account (theoretically) by appropriately selecting p0230.
VSM: Voltage Sensing Module

c3802[0...n] Sync-line-drive enable / Sync enable

Variant:	G220, G220 Clean Power
Available when function is active:	Bypass with synchronization
Data type: Unsigned8	**Visible in:** Extended display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications
Parameter group:	Synchronization of line and drive
Not relevant for motor type:	-

Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Parameter: 1261.2

Description: Signal to activate/deactivate line - drive synchronization.
c3802 = 1 signal:
Line - drive synchronization is activated.

Dependency: See also: p3800

r3803.0 Sync-line-drive control word / Sync STW

Variant: G220, G220 Clean Power
Available when function is active: Bypass with synchronization
Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Synchronization of line and drive
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Displays the control word for the line - drive synchronization.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Sync-line-drive selected	Yes	No

Note
For bit 00:
For a 1 signal, p3800 > 0 is set.

r3804 Sync-line-drive target frequency / Sync f_target

Variant: G220, G220 Clean Power
Available when function is active: Bypass with synchronization
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Synchronization of line and drive
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: Hz **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** p2000

Description: Displays the target frequency for line - drive synchronization.
The target frequency corresponds to the absolute value of the line frequency.

r3805 Sync-line-drive frequency difference / Sync f_diff

Variant: G220, G220 Clean Power
Available when function is active: Bypass with synchronization
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Synchronization of line and drive
Not relevant for motor type: -

Dyn. index [0...n]:	-	**Calculated:** -
Unit: Hz	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** p2000

Description: Displays the frequency difference between the measured target frequency and output frequency of the gating unit of the closed-loop control for line - drive synchronization.

p3806[0...n] Sync-line-drive frequency difference threshold value / Sync f_diff thr

Variant:	G220, G220 Clean Power	
Available when function is active:	Bypass with synchronization	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Synchronization of line and drive	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: Hz	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [Hz]	1.00 [Hz]	0.20 [Hz]

Description: Sets the threshold value of the frequency difference to activate the closed-loop phase control for line - drive synchronization.

The closed-loop phase control is activated (r3819.6 = 1), if the frequency difference is less that the threshold value.

r3808 Sync-line-drive phase difference / Sync phase diff

Variant:	G220, G220 Clean Power	
Available when function is active:	Bypass with synchronization	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Synchronization of line and drive	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** p2005

Description: Displays the phase difference between the measured target phase and phase of the gating unit of the closed-loop control for line - drive synchronization.

p3809[0...n] Sync-line-drive phase setpoint / Sync phase set

Variant:	G220, G220 Clean Power	
Available when function is active:	Bypass with synchronization	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Synchronization of line and drive	
Not relevant for motor type:	-	

Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: °	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-180.00 [°]	179.90 [°]	0.00 [°]

Description: Sets the phase setpoint for line - drive synchronization.

p3811[0...n] Sync-line-drive frequency limiting / Sync f_lim

Variant:	G220, G220 Clean Power	
Available when function is active:	Bypass with synchronization	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Synchronization of line and drive	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: Hz	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [Hz]	1.00 [Hz]	0.20 [Hz]

Description: Sets the frequency limiting of the phase controller output for line - drive synchronization.

r3812 Sync-line-drive correction frequency / Sync f_corr

Variant:	G220, G220 Clean Power	
Available when function is active:	Bypass with synchronization	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Synchronization of line and drive	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Hz	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** p2000

Description: Displays the correction frequency for line - drive synchronization.

p3813[0...n] Sync-line-drive phase synchronism threshold value / Sync Ph_sync thr

Variant:	G220, G220 Clean Power	
Available when function is active:	Bypass with synchronization	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Synchronization of line and drive	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: °	**Unit group:** -	**Unit selection:** -

Min:	Max:	Factory setting:
1.00 [°]	20.00 [°]	2.00 [°]

Description: Sets the threshold value of the phase synchronism for line - drive synchronization.
A prerequisite for synchronism is achieved if the phase difference is lower than the threshold value.

Note
Synchronism is reached (r3819.2 = 1), if the AND logic operation of the results from the phase measurement (p3813) and voltage measurement (p3815) is fulfilled.

r3814 Sync-line-drive voltage difference / Sync U_diff

Variant:	G220, G220 Clean Power	
Available when function is active:	Bypass with synchronization	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Synchronization of line and drive	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Vrms	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** p2001

Description: Display for the voltage difference between the measured target voltage and output voltage of the gating unit of the closed-loop control for line - drive synchronization.

p3815[0...n] Sync-line-drive voltage difference threshold value / Sync U_diff thr

Variant:	G220, G220 Clean Power	
Available when function is active:	Bypass with synchronization	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Synchronization of line and drive	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [%]	20.00 [%]	10.00 [%]

Description: Sets the threshold value of the voltage difference for line - drive synchronization.
A prerequisite for synchronism is reached if the voltage difference is less than the threshold value.

Note
Synchronism is reached (r3819.2 = 1), if the AND logic operation of the results from the phase measurement (p3813) and voltage measurement (p3815) is fulfilled.
For voltage manipulated quantity margin (reserve) of the drive converter, the amplitude difference (r3814) between the setpoint and actual value is controlled (corrected) to zero.
The parameter is referred to the voltage setpoint amplitude.

p3818[0...n] Sync-line-drive synchronization time limit / Sync time lim

Variant:	G220, G220 Clean Power
Available when function is active:	Bypass with synchronization

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Ready for operation
Parameter group: Synchronization of line and drive
Not relevant for motor type: -
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** -
Unit: s **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0 [s]	900 [s]	60 [s]

Description: Sets the time limit for achieving line-drive synchronism.

Note
For p3818 = 0, the time limit is deactivated.

r3819.0...7 Sync-line-drive status word / Sync ZSW

Variant: G220, G220 Clean Power
Available when function is active: Bypass with synchronization
Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Synchronization of line and drive
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Displays the status word for the line - drive synchronization.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Sync-line-drive enabled	Yes	No
01	Sync-line-drive external enabled	Yes	No
02	Sync-line-drive synchronism reached	Yes	No
03	Sync-line-drive synchronizing error	Yes	No
05	Sync-line-drive frequency measurement active	Yes	No
06	Sync-line-drive phase control active	Yes	No
07	Synchronize without drive	Yes	No

p3820[0...n] Friction characteristic value n0 / Friction n0

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Ready for operation
Parameter group: Friction characteristic
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** automatic
Unit: rpm **Unit group:** 3_1 **Unit selection:** p0505

Min:	Max:	Factory setting:
0.00 [rpm]	210000.00 [rpm]	15.00 [rpm]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the n coordinate of the 1st value pair of the friction characteristic.
Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p3830, p3845

p3821[0...n] Friction characteristic value n1 / Friction n1

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Friction characteristic	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.00 [rpm]	210000.00 [rpm]	30.00 [rpm]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the n coordinate of the 2nd value pair of the friction characteristic.
Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p3831, p3845

p3822[0...n] Friction characteristic value n2 / Friction n2

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Friction characteristic	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.00 [rpm]	210000.00 [rpm]	60.00 [rpm]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the n coordinate of the 3rd value pair of the friction characteristic.
Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p3832, p3845

p3823[0...n] Friction characteristic value n3 / Friction n3

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Friction characteristic	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505

Min:	Max:	Factory setting:
0.00 [rpm]	210000.00 [rpm]	120.00 [rpm]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the n coordinate of the 4th value pair of the friction characteristic.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p3833, p3845

p3824[0...n] Friction characteristic value n4 / Friction n4

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Friction characteristic	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.00 [rpm]	210000.00 [rpm]	150.00 [rpm]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the n coordinate of the 5th value pair of the friction characteristic.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p3834, p3845

p3825[0...n] Friction characteristic value n5 / Friction n5

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Friction characteristic	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.00 [rpm]	210000.00 [rpm]	300.00 [rpm]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the n coordinate of the 6th value pair of the friction characteristic.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p3835, p3845

p3826[0...n] Friction characteristic value n6 / Friction n6

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Friction characteristic	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic

Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.00 [rpm]	210000.00 [rpm]	600.00 [rpm]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the n coordinate of the 7th value pair of the friction characteristic.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p3836, p3845

p3827[0...n] Friction characteristic value n7 / Friction n7

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Friction characteristic	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.00 [rpm]	210000.00 [rpm]	1200.00 [rpm]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the n coordinate of the 8th value pair of the friction characteristic.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p3837, p3845

p3828[0...n] Friction characteristic value n8 / Friction n8

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Friction characteristic	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.00 [rpm]	210000.00 [rpm]	1500.00 [rpm]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the n coordinate of the 9th value pair of the friction characteristic.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p3838, p3845

p3829[0...n] Friction characteristic value n9 / Friction n9

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Friction characteristic	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	

Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.00 [rpm]	210000.00 [rpm]	3000.00 [rpm]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the n coordinate of the 10th value pair of the friction characteristic.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p3839, p3845

p3830[0...n] Friction characteristic value M0 / Friction M0

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Friction characteristic	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: Nm	**Unit group:** 7_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
-1000000.0000 [Nm]	1000000.0000 [Nm]	0.0000 [Nm]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the M coordinate of the 1st value pair of the friction characteristic.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p3820, p3845

p3831[0...n] Friction characteristic value M1 / Friction M1

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Friction characteristic	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: Nm	**Unit group:** 7_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
-1000000.0000 [Nm]	1000000.0000 [Nm]	0.0000 [Nm]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the M coordinate of the 2nd value pair of the friction characteristic.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p3821, p3845

p3832[0...n] Friction characteristic value M2 / Friction M2

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Friction characteristic	

Not relevant for motor type: Synchronous or reluctance motor with starting cage

Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: Nm	**Unit group:** 7_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
-1000000.0000 [Nm]	1000000.0000 [Nm]	0.0000 [Nm]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the M coordinate of the 3rd value pair of the friction characteristic.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p3822, p3845

p3833[0...n] Friction characteristic value M3 / Friction M3

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Friction characteristic	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: Nm	**Unit group:** 7_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
-1000000.0000 [Nm]	1000000.0000 [Nm]	0.0000 [Nm]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the M coordinate of the 4th value pair of the friction characteristic.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p3823, p3845

p3834[0...n] Friction characteristic value M4 / Friction M4

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Friction characteristic	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: Nm	**Unit group:** 7_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
-1000000.0000 [Nm]	1000000.0000 [Nm]	0.0000 [Nm]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the M coordinate of the 5th value pair of the friction characteristic.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p3824, p3845

p3835[0...n] Friction characteristic value M5 / Friction M5

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	

Parameter group:	Friction characteristic	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: Nm	**Unit group:** 7_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
-1000000.0000 [Nm]	1000000.0000 [Nm]	0.0000 [Nm]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the M coordinate of the 6th value pair of the friction characteristic.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p3825, p3845

p3836[0...n] Friction characteristic value M6 / Friction M6

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Friction characteristic	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: Nm	**Unit group:** 7_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
-1000000.0000 [Nm]	1000000.0000 [Nm]	0.0000 [Nm]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the M coordinate of the 7th value pair of the friction characteristic.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p3826, p3845

p3837[0...n] Friction characteristic value M7 / Friction M7

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Friction characteristic	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: Nm	**Unit group:** 7_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
-1000000.0000 [Nm]	1000000.0000 [Nm]	0.0000 [Nm]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the M coordinate of the 8th value pair of the friction characteristic.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p3827, p3845

p3838[0...n] Friction characteristic value M8 / Friction M8

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	

	Can be changed in the operating state:	Ready for operation	
	Parameter group:	Friction characteristic	
	Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
	Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
	Unit: Nm	**Unit group:** 7_1	**Unit selection:** p0505
	Min:	**Max:**	**Factory setting:**
	-1000000.0000 [Nm]	1000000.0000 [Nm]	0.0000 [Nm]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the M coordinate of the 9th value pair of the friction characteristic.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p3828, p3845

p3839[0...n] Friction characteristic value M9 / Friction M9

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Friction characteristic	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: Nm	**Unit group:** 7_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
-1000000.0000 [Nm]	1000000.0000 [Nm]	0.0000 [Nm]

Description: The friction characteristic is defined by 10 value pairs.
This parameter specifies the M coordinate of the 10th value pair of the friction characteristic.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p3829, p3845

r3840.0...9 Friction characteristic status word / Friction ZSW

Data type: Unsigned32	**Visible in:** Extended display		
Read permission:	Read drive data or acknowledge messages		
Parameter group:	Friction characteristic		
Not relevant for motor type:	Synchronous or reluctance motor with starting cage		
Dyn. index [0...n]:	-	**Calculated:** -	
Unit: -	**Unit group:** -	**Unit selection:** -	
Type of signal interconnection:	Source binary/numeric	**Scaling:** -	

Description: Displays the status word of the friction characteristic.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Friction characteristic OK	Yes	No
01	Record friction characteristic activated	Yes	No
02	Record friction characteristic completed	Yes	No
03	Record friction characteristic canceled	Yes	No
08	Friction characteristic positive direction	Yes	No
09	Friction torque model controlled status	Upper	Lower

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

Note
For bit 09:
For closed-control of an induction motors with encoder, the switchover between the current and observer model is displayed (see also r1751.19), if p3844 is > 0.
For bit 9 = 0 (observer model active), the following applies:
The frictional torque is calculated from the characteristic values from the characteristic point entered into p3844.
For bit 9 = 1 (current model active), the following applies:
The frictional torque is calculated from the characteristic values below the characteristic point entered into p3844.

r3841 Friction characteristic output / Frict outp

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Friction characteristic	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Nm	**Unit group:** 7_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2003

Description: Displays the torque of the friction characteristic dependent on the speed.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: c1569, p3842

p3842 Friction characteristic activation / Friction act

Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Friction characteristic	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	1	0

Description: Setting to activate and deactivate the friction characteristic.

Value:
0: Friction characteristic deactivated
1: Friction characteristic activated

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: c1569, r3841, p3845

NOTICE
In order that the friction characteristic can be activated, all friction characteristic values (p3820 ... p3839) of all existing drive data sets must be plausible.
For speed values the following applies:
0.0 < p3820 < p3821 < ... < p3829 <= p0322 or p1082, if p0322 = 0
For torque values, the following applies:
0 <= p3830, p3831 ... p3839 <= r0333

p3843[0...n] Friction characteristic frictional torque diff. smoothing time / Frict M_diff t_sm

Data type: FloatingPoint32	**Visible in:** Extended display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications

Can be changed in the operating state:	Operation	
Parameter group:	Friction characteristic	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [ms]	10000.00 [ms]	0.00 [ms]

Description: Sets the smoothing time constant (PT1) for the friction torque difference.
Smoothing is activated when switching over from status bit r3840.9.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p3844

p3844[0...n] Friction characteristic number changeover point upper / Frict no chg_pt up

Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Friction characteristic	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	4	0

Description: Selects the upper changeover point of the friction characteristic for the frictional torque input controlled by the motor model of the induction motor.
The speed of this changeover point is preassigned for the automatic calculation and should not be manually changed.

Dependency: p3844 is only activated for closed-loop control (p1300 = 21, 23) of induction motors with encoder. If an operating mode without encoder was previously set, then the points along the characteristic must be recalculated (p3845 = 9) and the friction characteristic recorded again.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p3843

NOTICE
If the switchover point is changed, then the model-controlled frictional torque input is automatically deactivated internally.

Note
For p3844 = 0, the model-controlled frictional torque changeover is deactivated. The frictional torque is then calculated the same as for the encoderless control by interpolating between the points along the friction characteristic.

p3845 Record friction characteristic activation / Frict record act

Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Friction characteristic	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -

Unit: -	Unit group: -	Unit selection: -
Min:	**Max:**	**Factory setting:**
0	9	0

Description: Setting for the friction characteristic record.

After the next switch-on command, the friction characteristic is automatically recorded.

Value:

0: Record friction characteristic deactivated

1: Record friction characteristic activated all directions

2: Record friction characteristic activated positive direction

3: Record friction characteristic activated negative direction

9: Calculating the friction characteristic speeds

Dependency: If the closed-loop control mode was switched between encoderless operation and operation with encoder, then the points along the friction characteristic must be recalculated (p3845 = 9) and the measurement performed again. Calculating the characteristic speeds is only possible if recording is deactivated (p3845 = 0).

When selecting the friction characteristic measurement, the drive data set changeover is suppressed.

Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

⚠ DANGER

For drives with a mechanical system that limit the distance moved, it must be ensured that during recording, the friction characteristic is not reached. If this is not the case, then it is not permissible that the measurement is carried out.

NOTICE

To permanently accept the determined settings they must be saved in a non-volatile fashion.

Note

When the friction characteristic recording is activated, it is not possible to save the parameters.

When the friction characteristic recording is active (p3845 > 0), it is not possible to change p3820 ... p3829, p3830 ... p3839 and p3842.

When recording the friction characteristic, in addition to the friction, the motor losses are also determined (e.g. iron losses, eddy current losses and re-magnetizing losses). A differentiation is not made between these individual loss components. We recommend that a motor temperature sensor is used because torque deviations can also be emulated/ mapped on the characteristic due to the thermal influence.

p3845 = 1:

If the measurement is performed in both directions of rotation, then as result, the mean value from both directions is calculated and parameterized.

p3845 = 3:

If the positive direction of rotation of the drive is inhibited, then just the measurement can be selected in the negative direction.

p3845 = 9:

The speed-characteristic values are recalculated. This is recommended for example, after changing the maximum speed p1082 or the switchover speed between various motor models, i.e. also after switching between encoderless closed-loop control and closed-loop control with encoder. The friction characteristic should then be recorded again.

p3846[0...n] Record friction characteristic ramp-up/ramp-down time / Frict rec t_RU/RD

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Friction characteristic	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000 [s]	999999.000 [s]	10.000 [s]

Description: Sets the ramp-up/ramp-down time of the ramp-up/ramp-down function generator to automatically Documenting the friction characteristic.
The drive is accelerated from standstill (setpoint = 0) up to the maximum speed/velocity (p1082) in this time.
Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p3845

p3847[0...n] Record friction characteristic time to warm up / Frict rec t_warm

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Friction characteristic	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000 [s]	3600.000 [s]	0.000 [s]

Description: Sets the warm-up time.
To start the automatic recording, the highest selected speed (p3829) is approached and this time is held. After this, the measurement is started with the highest speed.
Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p3829, p3845

c3848[0...n] Friction characteristic speed signal input / Friction n_in

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Friction characteristic	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: rpm	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** p2000
Factory interconnection:	Parameter: 63[0]	

Description: Speed input signal of the friction characteristic.
Recommendation: For operation with closed-loop speed control, where the speed actual value can always follow the setpoint, it is recommended that the setpoint speed (e.g. r0060) is used as input variable of the friction characteristic.
Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: r1443

NOTICE
The interconnected speed signal must be approximately the same as the real motor speed so that when the motor model is replaced, no significant settling operations occur.

p3849[0...n] Start friction characteristic scaling / Strt FricChar scal

Data type: FloatingPoint32	**Visible in:** Extended display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications
Can be changed in the operating state:	Operation
Parameter group:	Friction characteristic

Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.01	1000.00	1.00

Description: Sets the scaling to establish the friction characteristic when starting from standstill and when reversing the speed (reversing).

Scaling factor p3849 changes the integrator gain and therefore the speed with which the friction reverses when the drive reverses.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

See also: r3841

Note

For a value of 1000, establishing the friction is immediately reversed when the sign of the speed changes.

p3855[0...n].0...3 DC quantity controller configuration / Rect_ctrl config

Variant:	G220	
Data type: Unsigned32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Power unit	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-	-	0111 bin

Description: Sets the configuration for the DC quantity controller in the overmodulation range.

Bit array:

Bit	Signal name	1 signal	0 signal
00	DC quantity controller on	Yes	No
01	Bandwidth increased	Yes	No
02	7th harmonic reduced	Yes	No
03	Filter active	Yes	No

Dependency: The modulator mode p1802 must enable operation in the overmodulation range. In addition, the overmodulation limit p1803 must be greater than 103 %.

NOTICE

Motor identification must be carried out before activating the DC quantity control in the overmodulation range.

p3855[0...n].0...3 DC quantity controller configuration / Rect_ctrl config

Variant:	G220 Clean Power	
Data type: Unsigned32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Power unit	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: -	**Unit group:** -	**Unit selection:** -

Min:	Max:	Factory setting:
-	-	0110 bin

Description: Sets the configuration for the DC quantity controller in the overmodulation range.

Bit array:

Bit	Signal name	1 signal	0 signal
00	DC quantity controller on	Yes	No
01	Bandwidth increased	Yes	No
02	7th harmonic reduced	Yes	No
03	Filter active	Yes	No

Dependency: The modulator mode p1802 must enable operation in the overmodulation range. In addition, the overmodulation limit p1803 must be greater than 103 %.

NOTICE
Motor identification must be carried out before activating the DC quantity control in the overmodulation range.

p3856[0...n] Compound braking current / Compound I_brake

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Compound braking	
Not relevant for motor type:	Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [%]	250.00 [%]	0.00 [%]

Description: Sets the compound braking current. This defines the magnitude of the DC current, which is additionally generated to increase the braking effect when stopping the motor when operated with U/f control.

Compound braking is a superimposition of the DC braking function with regenerative braking (net braking along the ramp) after OFF1 or OFF3. This permits braking with controlled motor frequency and minimum power input into the motor.

Effective braking without using additional hardware components is obtained by optimizing the ramp down time and compound braking.

Dependency: The compound braking current is only activated if the DC link voltage exceeds the threshold value in r1282.

Compound braking does not operate in the following cases:

- DC braking activated (c1230, r1239).
- Motor is still not magnetized (e.g. for flying restart).
- Vector control parameterized (p1300 >= 20).
- Synchronous motor used (p0300 = 2xxx).

NOTICE
Generally, increasing the braking current improves the braking effect when stopping the motor. However, if the value is set too high, then the drive can be tripped (shut down) as a result of overcurrent or ground fault. Recommendation: p3856 < 100 % x (r0209 - r0331) / p0305 / 2 Compound braking generates a current in the motor with a ripple manifesting the rotational frequency. The higher the braking current is set, the higher the resulting ripple. This is especially the case if the Vdc_max controller is simultaneously active (see p1280).

Note

The parameter value is entered relative to the rated motor current (p0305).

Compound braking is deactivated with p3856 = 0%.

p3857[0...n] DC quantity controller P gain / DC_ctrl Kp

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Power unit
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** automatic
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0.000	100000.000	0.000

Description: Sets the proportional gain for the DC quantity controller in the overmodulation range.

p3858[0...n] DC quantity controller integral time / DC_ctrl Tn

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Power unit
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** automatic
Unit: ms **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0.00 [ms]	1000.00 [ms]	2.00 [ms]

Description: Sets the integral time for the DC quantity controller.

r3859.0...1 Compound braking/DC quantity control status word / Comp-br/DC_ctr ZSW

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Compound braking, Power unit
Not relevant for motor type: Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Display and numerical signal source for the status word of the compound braking and DC quantity control.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Compound braking active	Yes	No
01	DC quantity control active in the overmodulation range	Yes	No

Dependency: See also: p3856

r3879 ESM test mode utilization / ESM test mode util

Variant: G220, G220 Clean Power
Available when function is active: Essential service mode
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages

Parameter group: Essential service mode
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -

Description: Displays the utilization of the ESM test operation in %.

Dependency: See also: p3888

Note
The utilization of the test mode corresponds to the energy used when ESM is active.
The maximum utilization is derived from the rated power of the power unit.
Maximum utilization: 100% corresponds to r0206 * 24 h.
As long as the maximum utilization was not reached, the test mode can be set using p3888. An active test mode is indicated in r3889.12.
ESM: Essential Service Mode

c3880 ESM activation signal / ESM act signal

Variant: G220, G220 Clean Power
Available when function is active: Essential service mode
Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Essential service mode
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal to activate the essential service mode (ESM) via digital input.
Using this function, when required the motor can be operated for as long as possible (e.g. to extract smoke).
c3880 = 1 signal:
The essential service mode is activated.
c3880 = 0 signal:
The essential service mode is deactivated.

Dependency: If ESM is activated (c3880 > 0) and a motor encoder is parameterized (p0187, p0400), then fault response "Encoder fault results in encoderless operation and operation continues" is automatically activated (p0491 = 1).
See also: p3881, p3882, c3883, c3886, r3887, p3888, r3889

⚠ WARNING
When activating the essential service mode (c3880 = 1 signal), the motor immediately runs according to the selected setpoint source. When the essential service mode is activated, the motor cannot be stopped using the OFF commands.

Note
ESM: Essential Service Mode
Permissible signal sources:
- r0722.x (high active)
- r0723.x (low active), x = 0 ... 17, 20, 21

p3881 ESM setpoint selection / ESM setp_select

Variant: G220, G220 Clean Power
Available when function is active: Essential service mode
Data type: Integer16 **Visible in:** Standard display

Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Essential service mode	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	7	0

Description: Selects the setpoint used for the essential service mode (ESM).

Value:

0: Last known setpoint (r1078 smoothed)
1: Fixed speed setpoint 15 (p1015)
2: Analog input 0 (AI 0, r0755[0])
3: Fieldbus
4: Technology controller
5: OM-AIO analog input
6: Enable the response OFF1
7: Enable the response OFF2

⚠ WARNING

For p3881 = 4:
If the technology controller is used as setpoint source, then this must first be configured. p2251 must be set to 0.

Note

When the essential service mode is activated, the effective speed setpoint is displayed in r1114.
For p3881 = 0:
The last known setpoint value is only transmitted safely if it was present consistently for at least 30 s prior to activating the essential service mode. If this condition is not met, fixed speed setpoint 15 (p1015) is used.
For p3881 = 5: The signal source for the setpoint via analog input for OM-AIO is set using p3886.
For p3881 = 6:
n_act = 0: pulse suppression and switching on inhibited.
n_active > 0: braking along the ramp-function generator down ramp (p1121), pulse cancellation and switching on inhibited.
For p3881 = 7:
n_act = 0: pulse suppression and switching on inhibited.
n_act > 0: immediate pulse cancellation and switching on inhibited.
ESM: Essential Service Mode

p3882 ESM setpoint selection alternative / ESM setp_sel old

Variant:	G220, G220 Clean Power	
Available when function is active:	Essential service mode	
Data type: Integer16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Essential service mode	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Min:	Max:	Factory setting:
0	2	0

Description: Selects the alternative setpoint for the essential service mode (ESM). This setpoint is used when the setpoint set in p3881 is lost.

Value:
0: Last known setpoint (r1078 smoothed)
1: Fixed speed setpoint 15 (p1015)
2: Maximum speed (p1082)

Dependency: See also: p3881

Note
The alternative setpoint is only active for p3881 = 2, 3, 4.
ESM: Essential Service Mode

c3883 ESM direction of rotation signal / ESM dir of rot sig

Variant:	G220, G220 Clean Power	
Available when function is active:	Essential service mode	
Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Essential service mode	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal for the direction of rotation during the essential service mode (ESM).
c3883 = 1 signal:
Direction of rotation of the setpoint, parameterized for essential service mode, is reversed.
c3883 = 0 signal:
Direction of rotation of the setpoint parameterized for essential service mode is kept.

⚠ WARNING
The direction reversal is not taken into account if p3881 = 4 is set (technology controller) and the technology controller is also active as the setpoint source.

Note
ESM: Essential Service Mode

c3884 ESM setpoint technology controller / ESM set tec_ctrl

Variant:	G220, G220 Clean Power	
Available when function is active:	Essential service mode	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Essential service mode	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** PERCENT
Factory interconnection:	Fixed value: 0.00 [%]	

Description: Signal for the setpoint for p3881 = 4 (technology controller) in the essential service mode (ESM).
Dependency: See also: p3881

Note
ESM: Essential Service Mode
For c3884 = 0.00:
The technology controller uses the setpoint from c2253.

c3886 ESM setpoint OM-AIO analog input / ESM setp OM-AIO

Variant:	G220, G220 Clean Power	
Available when function is active:	Essential service mode	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Essential service mode	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** p2000
Factory interconnection:	Fixed value: 0.00 [rpm]	

Description: Signal for the setpoint for p3881 = 5 (OM-AIO analog input) in the essential service mode (ESM).
Dependency: See also: p3881

Note
ESM: Essential Service Mode

r3887[0...1] ESM number of activations/faults / ESM act/fault qty

Variant:	G220, G220 Clean Power	
Available when function is active:	Essential service mode	
Data type: Unsigned16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Essential service mode	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Description: Displays the number of activations and faults that have occurred for the essential service mode (ESM).
Index: [0] = Activation of the essential service mode
[1] = Faults during the essential service mode
Dependency: See also: p3888

Note
When the test mode is active (r3889.12), then both values are not counted.
ESM: Essential Service Mode

p3888 ESM test mode activation / ESM test mode act

Variant:	G220, G220 Clean Power	
Available when function is active:	Essential service mode	
Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	

Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Essential service mode	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	1	1

Description: Sets the ESM test mode.
1: Activate
0: Deactivate

Dependency: See also: r3879, r3889

Note
The test mode can only be set if the essential service mode is not active (r3889.0 = 0) and if the maximum utilization level has still not been reached (r3879 < 100 %). The test mode can No longer be activated if the maximum utilization has been reached. The state of the test mode is indicated in r3889.12.
ESM: Essential Service Mode

r3889.0...12 ESM status word / ESM ZSW

Variant:	G220, G220 Clean Power	
Available when function is active:	Essential service mode	
Data type: Unsigned32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Essential service mode	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source binary/numeric	**Scaling:** -

Description: Display for the status word of the essential service mode (ESM).

Bit array:

Bit	Signal name	1 signal	0 signal
00	Essential service mode (ESM) activated	Yes	No
01	Direction of rotation inverted	Yes	No
02	Setpoint signal lost	Yes	No
03	Technology controller actual value (p2264) lost	Yes	No
04	Bypass active	Yes	No
05	Setpoint technology controller parameterized (p3884)	Yes	No
06	Technology controller during essential service mode active	Yes	No
09	Response OFF1/OFF2 activated	Yes	No
10	Automatic restart interrupted (F07320)	Yes	No
11	Ramp-function generator bypassed	Yes	No
12	Essential service mode (ESM) test mode active	Yes	No

Note
ESM: Essential Service Mode

r3925[0...n].0...25 Commissioning status / Commission status

Data type: Unsigned32	**Visible in:** Extended display
Read permission:	Read drive data or acknowledge messages

Parameter group: Control/status words, Motor data identification routine, Rotating measurement/ speed controller optimization
Not relevant for motor type: -
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** automatic
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the commissioning steps that have been carried out.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Motor/control parameters calculated	Yes	No
02	Motor data identification carried out at standstill	Yes	No
03	Rotating measurement performed	Yes	No
04	Mot encoder adjustment performed	Yes	No
08	Identified motor data are automatically backed up	Yes	No
10	Automatic parameterization only for U/f control	Yes	No
11	Automatic calculation for Standard Drive Control	Yes	No
12	Automatic calculation for Dynamic Drive Control	Yes	No
13	Automatic calculation as Standard Drive Control extended	Yes	No
14	First motor commissioning	Yes	No
15	Equivalent circuit diagram parameters changed	Yes	No
16	Cable resistance measured	Yes	No
17	Saturation measurement performed	Yes	No
18	Circle identification executed	Yes	No
19	Results of the rotating measurement can be reset	Yes	No
20	Calculate all	Yes	No
21	Calculate equivalent circuit diagram data	Yes	No
22	Calculate closed-loop control parameters	Yes	No
23	Calculate controller parameters	Yes	No
25	Commissioning with virtual drive	Yes	No

Note
The individual bits are only set if the appropriate action has been initiated and successfully completed.
The identification final display is reset when changing the type plate parameters.

r3927[0...n].0...28 Motor data identification control word / MotID STW

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Control/status words, Motor data identification routine
Not relevant for motor type: -
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** automatic
Unit: - **Unit group:** - **Unit selection:** -

Description: Successfully completed component of the last motor data identification carried out.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Stator inductance estimate no measurement	Yes	No
02	Rotor time constant estimate no measurement	Yes	No
03	Leakage inductance estimate no measurement	Yes	No
05	Determine Tr and Lsig evaluation in the time range	Yes	No
06	Activate vibration damping	Yes	No
07	Deactivate vibration detection	Yes	No
11	Deactivate saturation measurement pole Id	Yes	No
12	Deactivate rotor resistance Rr measurement	Yes	No
14	Deactivate valve interlocking time measurement	Yes	No

15	Determine only stator resistance, valve voltage fault, dead time	Yes	No
16	Short motor identification (lower quality)	Yes	No
17	Measurement without control parameter calculation	Yes	No
18	After motID direct transition into operation	Yes	No
19	After MotID automatically save results	Yes	No
20	Estimate cable resistance	Yes	No
21	Calibrate output voltage measurement	Yes	No
22	Only identify circle	Yes	No
23	Deactivate circle identification	Yes	No
26	Measure with long cable	Yes	No
27	Deactivate saturation characteristic identification	Yes	No
28	Pulse inhibit for current 0 A	Yes	No

Dependency: See also: r3925

Note
The parameter is a copy of p1909.

r3928[0...n].0...14 Rotating measurement configuration / Rot meas config

Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Rotating measurement/speed controller optimization
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** automatic
Unit: - **Unit group:** - **Unit selection:** -

Description: Successfully completed component of the last rotating measurement carried out.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Encoder test active	Yes	No
01	Saturation characteristic identification	Yes	No
02	Moment of inertia identification	Yes	No
03	Re-calculates the speed controller parameters	Yes	No
04	Speed controller optimization (vibration test)	Yes	No
05	q leakage inductance ident. (for current controller adaptation)	Yes	No
11	Do not change the controller parameters during the measurement	Yes	No
12	Measurement shortened	Yes	No
13	After measurement direct transition into operation	Yes	No
14	Calculate actual speed smoothing time	Yes	No

Dependency: See also: r3925

Note
The parameter is a copy of p1959.

p3941[0...n] Motor code number 2 / Motor code No. 2

Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Commissioning
Parameter group: Motor data, Quick commissioning
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: MDS n defined by: p0130 **Calculated:** -

	Unit: -	**Unit group:** -	**Unit selection:** -
	Min:	**Max:**	**Factory setting:**
	0	99999999	0
Description:	Sets the second motor code number.		
Dependency:	See also: p0301		

r3962[0...2] Actual value sensing time information / ActV time info

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:		
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -

Description: Displays time information of the actual value sensing.

Index:
[0] = Measurement duration
[1] = Measurement latency
[2] = Distance next pulse frequency acceptance

r3963[0...3] Current actual values pulse technique / Current ActV_TP

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:		
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: A	**Unit group:** 6_5	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2002

Description: Displays the current actual values for the pulse technique.

Index:
[0] = Center value alpha
[1] = Center value beta
[2] = End value alpha
[3] = End value beta

r3964[0...1] Voltage-time areas actual values pulse technique / VT_TP_actual value

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:		
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mVs	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** -

Description: Displays the measured modulated voltage-time areas for the pulse technique

Index:
[0] = Alpha
[1] = Beta

r3965[0...1] Voltage-time areas setpoints pulse technique / VT_TP_setp

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:		
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	

Dyn. index [0...n]:	-	**Calculated:** -
Unit: mVs	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** -

Description: Displays the setpoints of the modulated voltage-time areas for the pulse technique

Index: [0] = Alpha
[1] = Beta

r3987[0...n].0...15 Parameter screen form status display / Par_scr stat_disp

Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Commissioning, Status parameters	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Description: Displays the actual screen form to suppress parameters (separated, according to the Drive Data Sets DDS).

Bit array:

Bit	Signal name	1 signal	0 signal
00	NEMA motor	NEMA motor	No NEMA Motor
01	IEC motor	IEC motor	No IEC Motor
02	Synchronous motor (SM)	Synchr motor (SM)	No synchr motor
03	Induction motor (ASM)	ASM	No ASM
04	Standard drive control (old)	Yes	No
05	Dynamic drive control	Yes	No
09	Standard drive control	Yes	No
10	General access	Access	No access
11	Quick commissioning	Quick com	No quick com
12	Synchronous/reluctance motor with starting cage	Yes	No
14	No speed encoder	No speed encoder	Speed encoder
15	Reluctance motor controlled	Rel_motor ctrl	No rel_mot ctrl

NOTICE
Only for internal Siemens use and fault diagnostics.

r3988 Final boot state / Boot_state

Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	System identification	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Description: Displays the final boot states.
001 - Software error
200 - Carry out first commissioning
250 - Topology error (check the connected hardware)
800 - Ready
The following options are available to reach the "Ready" state:
- Check the project and load again.
- Restore factory setting.
- Check the hardware.
- Carry out a POWER ON (switch-off/switch-on).

r4021.0...3 OM-DIO digital inputs terminal actual value / DI actual value

Variant: G220, G220 Clean Power
Available for module: Option Module NAMUR Digital I/O
Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Programmable digital inputs/outputs
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the actual value at the digital inputs.
This means that the actual input signal can be checked at terminal DI/DO x prior to switching from the simulation mode (p4095.x = 1) to the terminal mode (p4095.x = 0).

Bit array:

Bit	Signal name	1 signal	0 signal
00	DI/DO 0 (X235.4)	High	Low
01	DI/DO 1 (X235.5)	High	Low
02	DI/DO 2 (X235.6)	High	Low
03	DI/DO 3 (X235.7)	High	Low

Note
DI/DO: Bidirectional Digital Input/Output

r4022.0...3 OM-DIO digital inputs status / DI status

Variant: G220, G220 Clean Power
Available for module: Option Module NAMUR Digital I/O
Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Programmable digital inputs/outputs
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Displays the status of the digital inputs of Option Module Digital I/O.

Bit array:

Bit	Signal name	1 signal	0 signal
00	DI/DO 0 (X235.4)	High	Low
01	DI/DO 1 (X235.5)	High	Low
02	DI/DO 2 (X235.6)	High	Low
03	DI/DO 3 (X235.7)	High	Low

Dependency: See also: r4023

Note
DI/DO: Parameterizable digital input/output

r4023.0...3 OM-DIO digital inputs status inverted / DI status inv

Variant: G220, G220 Clean Power
Available for module: Option Module NAMUR Digital I/O
Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Programmable digital inputs/outputs
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -

Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary **Scaling:** -

Description: Displays the inverted status of the digital inputs of Option Module Digital I/O.

Bit array:

Bit	Signal name	1 signal	0 signal
00	DI/DO 0 (X235.4)	High	Low
01	DI/DO 1 (X235.5)	High	Low
02	DI/DO 2 (X235.6)	High	Low
03	DI/DO 3 (X235.7)	High	Low

Dependency: See also: r4022

Note
DI/DO: Parameterizable digital input/output

p4028.0...3 Set OM-DIO input or output / DI or DO

Variant: G220, G220 Clean Power
Available for module: Option Module NAMUR Digital I/O
Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Ready for operation
Parameter group: Programmable digital inputs/outputs
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
-	-	0000 bin

Description: Sets the parameterizable digital inputs/outputs as input or output on the Option Module Digital I/O.

Bit array:

Bit	Signal name	1 signal	0 signal
00	DI/DO 0 (X235.4)	High	Low
01	DI/DO 1 (X235.5)	High	Low
02	DI/DO 2 (X235.6)	High	Low
03	DI/DO 3 (X235.7)	High	Low

Note
DI/DO: Parameterizable digital input/output

c4030 OM-DIO signal for terminal DI/DO 0 / Signal DI/DO 0

Variant: G220, G220 Clean Power
Available for module: Option Module NAMUR Digital I/O
Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Programmable digital inputs/outputs
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal for digital output DI/DO 0 (X235.4) of Option Module Digital I/O.

Note
Precondition: The DI/DO must be set as an output (p4028.0 = 1).
DI/DO: Parameterizable digital input/output

c4031 OM-DIO signal for terminal DI/DO 1 / Signal DI/DO 1

Variant:	G220, G220 Clean Power	
Available for module:	Option Module NAMUR Digital I/O	
Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Programmable digital inputs/outputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal for digital output DI/DO 1 (X235.5) of Option Module Digital I/O.

Note
Precondition: The DI/DO must be set as an output (p4028.1 = 1).
DI/DO: Parameterizable digital input/output

c4032 OM-DIO signal for terminal DI/DO 2 / Signal DI/DO 2

Variant:	G220, G220 Clean Power	
Available for module:	Option Module NAMUR Digital I/O	
Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Programmable digital inputs/outputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal for digital output DI/DO 2 (X235.6) of Option Module Digital I/O.

Note
Precondition: The DI/DO must be set as output (p4028.2 = 1).
DI/DO: Parameterizable digital input/output

c4033 OM-DIO signal for terminal DI/DO 3 / Signal DI/DO 3

Variant:	G220, G220 Clean Power	
Available for module:	Option Module NAMUR Digital I/O	
Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Programmable digital inputs/outputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal for digital output DI/DO 3 (X235.7) of Option Module Digital I/O.

Note
Precondition: The DI/DO must be set as output (p4028.3 = 1).
DI/DO: Bidirectional Digital Input/Output

c4034 OM-DIO signal for terminal DO 4 / Signal DO 4

Variant: G220, G220 Clean Power
Available for module: Option Module NAMUR Digital I/O
Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Relay outputs
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal for digital output DO 4 (X237.1, X237.2, X237.3) of Option Module Digital I/O.
Digital output 4 is a relay output.
If the signal at c4034 is low, then terminal DO4 COM (X237.3) is connected with DO4 NC (X237.1). This connection also matches the mechanical quiescent setting of the relay.
If the signal at c4034 is high, then terminal DO4 COM (X237.3) is connected with DO4 NO contact (X237.2).

Note
DO: Digital Output
NC: Normally Closed contact
NO: Normally Open contact

c4035 OM-DIO signal for terminal DO 5 / Signal DO 5

Variant: G220, G220 Clean Power
Available for module: Option Module NAMUR Digital I/O
Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Relay outputs
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal for digital output DO 5 (X236.1, X236.2) of Option Module Digital I/O.
Digital output 5 is a relay output.
If the signal at c4035 is high, then terminal DO5 COM (X236.2) is connected with DO5 NO contact (X236.1).

Note
DO: Digital Output
NO: Normally Open contact

c4036 OM-DIO signal for terminal DO 6 / Signal DI/DO 6

Variant: G220, G220 Clean Power
Available for module: Option Module NAMUR Digital I/O
Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Relay outputs
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal for digital output DO 6 (X236.3, X236.4) of Option Module Digital I/O.
Digital output 6 is a relay output.
If the signal at c4036 is high, then terminal DO6 COM (X236.4) is connected with DO6 NO contact (X236.3).

Note
DO: Digital Output
NO: Normally Open contact

r4047.0...6 OM-DIO digital outputs status / DO status

Variant: G220, G220 Clean Power
Available for module: Option Module NAMUR Digital I/O
Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Relay outputs, Programmable digital inputs/outputs
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the status of the digital outputs of Option Module Digital I/O.

Bit array:

Bit	Signal name	1 signal	0 signal
00	DI/DO 0 (X235.4)	High	Low
01	DI/DO 1 (X235.5)	High	Low
02	DI/DO 2 (X235.6)	High	Low
03	DI/DO 3 (X235.7)	High	Low
04	DO 4 (X237.1, X237.2, X237.3)	High	Low
05	DO 5 (X236.1, X236.2)	High	Low
06	DO 6 (X236.3, X236.4)	High	Low

Dependency: See also: p4048

Note
Inversion using p4048 has been taken into account.
The setting of the DI/DO as either input or output is of no significance (p4028).
DO: Digital output
DI/DO: Parameterizable digital input/output

p4048.0...6 Invert OM-DIO digital outputs / Invert DO

Variant: G220, G220 Clean Power
Available for module: Option Module NAMUR Digital I/O
Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages

Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Relay outputs, Programmable digital inputs/outputs
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
-	-	0000 0000 bin

Description: Setting to invert the signals at the digital outputs of Option Module Digital I/O.

Bit array:

Bit	Signal name	1 signal	0 signal
00	DI/DO 0 (X235.4)	Inverted	Not inverted
01	DI/DO 1 (X235.5)	Inverted	Not inverted
02	DI/DO 2 (X235.6)	Inverted	Not inverted
03	DI/DO 3 (X235.7)	Inverted	Not inverted
04	DO 4 (X237.1, X237.2, X237.3)	Inverted	Not inverted
05	DO 5 (X236.1, X236.2)	Inverted	Not inverted
06	DO 6 (X236.3, X236.4)	Inverted	Not inverted

Note
DO: Digital Output
DI/DO: Parameterizable digital input/output

r4052[0...2] OM-AIO analog inputs actual input voltage / AI U_input actual

Variant: G220, G220 Clean Power
Available for module: Option Module NAMUR Analog I/O
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Analog inputs
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: V **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** -

Description: Displays the actual input voltage at the analog inputs for Option Module Analog I/O.
Note:
For p4056[x] = 3 (unipolar current input monitored (+4 mA ... +20 mA)) the following applies:
A current less than 4 mA is not displayed in r4052[x] - but instead r4052[x] = 4 mA is output.

Index: [0] = AI 0 (X233.1/X233.2)
[1] = AI 1 (X233.3/X233.4)
[2] = AI 2 (X233.5/X233.6)

Note
AI: Analog Input

p4053[0...2] OM-AIO analog inputs smoothing time constant / AI T_smoothing

Variant: G220, G220 Clean Power
Available for module: Option Module NAMUR Analog I/O
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications

Can be changed in the operating state:	Operation	
Parameter group:	Analog inputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [ms]	1000.0 [ms]	0.0 [ms]

Description: Sets the smoothing time constant of the 1st order lowpass filter for the analog inputs of the Option Module Analog I/O

Index:
[0] = AI 0 (X233.1/X233.2)
[1] = AI 1 (X233.3/X233.4)
[2] = AI 2 (X233.5/X233.6)

Note
AI: Analog Input

r4055[0...2] OM-AIO analog inputs, actual value in percent / AI value in %

Variant:	G220, G220 Clean Power	
Available for module:	Option Module NAMUR Analog I/O	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Analog inputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** PERCENT

Description: Displays the currently referred input value of the analog inputs of Option Module Analog I/O.
When interconnected, the signals are referred to the reference quantity p200x.

Index:
[0] = AI 0 (X233.1/X233.2)
[1] = AI 1 (X233.3/X233.4)
[2] = AI 2 (X233.5/X233.6)

Note
AI: Analog Input

p4056[0...2] OM-AIO analog inputs type / AI type

Variant:	G220, G220 Clean Power	
Available for module:	Option Module NAMUR Analog I/O	
Data type: Integer16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Analog inputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	4	4

Description: Sets the type of analog inputs of Option Module Analog I/O.
p4056[x] = 0, 4 corresponds to a voltage input (r4052, p4057, p4059 are displayed in V).
p4056[x] = 2, 3 corresponds to a current input (r4052, p4057, p4059 are displayed in mA).

Value:
0: Unipolar voltage input (0 V ... +10 V)
2: Unipolar current input (0 mA ... +20 mA)
3: Unipolar current input monitored (+4 mA ... +20 mA)
4: Bipolar voltage input (-10 V ... +10 V)

Index: [0] = AI 0 (X233.1/X233.2)
[1] = AI 1 (X233.3/X233.4)
[2] = AI 2 (X233.5/X233.6)

Note
When changing p4056, the parameters of the scaling characteristic (p4057, p4058, p4059, p4060) are overwritten with the following default values:
For p4056 = 0, 4, p4057 is set to 0.0 V, p4058 to 0.0 %, p4059 to 10.0 V and p4060 to 100.0 %.
For p4056 = 2, p4057 is set to 0.0 mA, p4058 to 0.0 %, p4059 to 20.0 mA and p4060 to 100.0 %.
For p4056 = 3, p4057 is set to 4.0 mA, p4058 to 0.0 %, p4059 to 20.0 mA and p4060 to 100.0 %.

p4057[0...2] OM-AIO analog inputs characteristic value x1 / AI char x1

Variant:	G220, G220 Clean Power	
Available for module:	Option Module NAMUR Analog I/O	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Analog inputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: V	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-11.000 [V]	11.000 [V]	0.000 [V]

Description: Sets the scaling characteristic for the analog inputs of Option Module Analog I/O.
The scaling characteristic for the analog inputs is defined using 2 points.
This parameter specifies the x coordinate (input voltage in V) of the 1st value pair of the characteristic.

Index: [0] = AI 0 (X233.1/X233.2)
[1] = AI 1 (X233.3/X233.4)
[2] = AI 2 (X233.5/X233.6)

Note
The parameters for the characteristic do not have a limiting effect.

p4058[0...2] OM-AIO analog inputs characteristic value y1 / AI char y1

Variant:	G220, G220 Clean Power
Available for module:	Option Module NAMUR Analog I/O
Data type: FloatingPoint32	**Visible in:** Standard display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications
Can be changed in the operating state:	Operation
Parameter group:	Analog inputs
Not relevant for motor type:	-

Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-1000.00 [%]	1000.00 [%]	0.00 [%]

Description: Sets the scaling characteristic for the analog inputs of Option Module Analog I/O.
The scaling characteristic for the analog inputs is defined using 2 points.
This parameter specifies the y coordinate (percentage) of the 1st value pair of the characteristic.

Index: [0] = AI 0 (X233.1/X233.2)
[1] = AI 1 (X233.3/X233.4)
[2] = AI 2 (X233.5/X233.6)

Note
The parameters for the characteristic do not have a limiting effect.

p4059[0...2] OM-AIO analog inputs characteristic value x2 / AI char x2

Variant:	G220, G220 Clean Power	
Available for module:	Option Module NAMUR Analog I/O	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Analog inputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: V	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-11.000 [V]	11.000 [V]	10.000 [V]

Description: Sets the scaling characteristic for the analog inputs of Option Module Analog I/O.
The scaling characteristic for the analog inputs is defined using 2 points.
This parameter specifies the x coordinate (input voltage in V) of the 2nd value pair of the characteristic.

Index: [0] = AI 0 (X233.1/X233.2)
[1] = AI 1 (X233.3/X233.4)
[2] = AI 2 (X233.5/X233.6)

Note
The parameters for the characteristic do not have a limiting effect.

p4060[0...2] OM AIO analog inputs characteristic value y2 / AI char y2

Variant:	G220, G220 Clean Power	
Available for module:	Option Module NAMUR Analog I/O	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Analog inputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -

Min:	Max:	Factory setting:
-1000.00 [%]	1000.00 [%]	100.00 [%]

Description: Sets the scaling characteristic for the analog inputs of Option Modules (OM AIO).
The scaling characteristic for the analog inputs is defined using 2 points.
This parameter specifies the y coordinate (percentage) of the 2nd value pair of the characteristic.

Index: [0] = AI 0 (X233.1/X233.2)
[1] = AI 1 (X233.3/X233.4)
[2] = AI 2 (X233.5/X233.6)

Note
The parameters for the characteristic do not have a limiting effect.

p4061[0...2] OM-AIO analog inputs wire-break monitoring response threshold / AI wire brk thr

Variant:	G220, G220 Clean Power	
Available for module:	Option Module NAMUR Analog I/O	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Analog inputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mA	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [mA]	20.00 [mA]	4.00 [mA]

Description: Sets the response threshold for wire-break monitoring of the analog inputs of Option Module Analog I/O.

Index: [0] = AI 0 (X233.1/X233.2)
[1] = AI 1 (X233.3/X233.4)
[2] = AI 2 (X233.5/X233.6)

Dependency: For the following analog input type, the wire breakage monitoring is active:
p4056[x] = 3 (unipolar current input monitored (+4 mA ... +20 mA))
See also: p4056

p4062[0...2] OM-AIO analog inputs wire-break monitoring delay time / AI wire brk t_del

Variant:	G220, G220 Clean Power	
Available for module:	Option Module NAMUR Analog I/O	
Data type: Unsigned16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Analog inputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [ms]	1000 [ms]	100 [ms]

Description: Sets the delay time for wire-break monitoring of the analog inputs of Option Module Analog I/O.

Index: [0] = AI 0 (X233.1/X233.2)
[1] = AI 1 (X233.3/X233.4)
[2] = AI 2 (X233.5/X233.6)

p4063[0...2] OM-AIO analog inputs offset / AI offset

Variant:	G220, G220 Clean Power	
Available for module:	Option Module NAMUR Analog I/O	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Analog inputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: V	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-20.000 [V]	20.000 [V]	0.000 [V]

Description: Sets the offset for the analog inputs of Option Module Analog I/O.
The offset is added to the input signal before the scaling characteristic.

Index: [0] = AI 0 (X233.1/X233.2)
[1] = AI 1 (X233.3/X233.4)
[2] = AI 2 (X233.5/X233.6)

p4066[0...2] OM-AIO analog inputs activate absolute value generation / AI AbsV act

Variant:	G220, G220 Clean Power	
Available for module:	Option Module NAMUR Analog I/O	
Data type: Integer16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Analog inputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	1	0

Description: Activates the absolute value generation for the analog input signals of the Option Module Analog I/O.

Value:
0: No absolute value generation
1: Absolute value generation switched in

Index: [0] = AI 0 (X233.1/X233.2)
[1] = AI 1 (X233.3/X233.4)
[2] = AI 2 (X233.5/X233.6)

c4067[0...2] OM-AIO analog inputs inversion signal / AI inv signal

Variant:	G220, G220 Clean Power
Available for module:	Option Module NAMUR Analog I/O
Data type: Unsigned8	**Visible in:** Standard display

Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Analog inputs
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal to invert the analog inputs of the Option Module Analog I/O.

Index: [0] = AI 0 (X233.1/X233.2)
[1] = AI 1 (X233.3/X233.4)
[2] = AI 2 (X233.5/X233.6)

p4068[0...2] OM-AIO analog inputs noise suppression window / AI window

Variant: G220, G220 Clean Power
Available for module: Option Module NAMUR Analog I/O
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Analog inputs
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0.00 [%]	20.00 [%]	0.00 [%]

Description: Sets the noise suppression window of the analog inputs for Option Module Analog I/O.
Changes less than the window are suppressed.

Index: [0] = AI 0 (X233.1/X233.2)
[1] = AI 1 (X233.3/X233.4)
[2] = AI 2 (X233.5/X233.6)

Note
AI: Analog Input

c4069[0...2] OM-AIO analog inputs signal for enable / AI enable

Variant: G220, G220 Clean Power
Available for module: Option Module NAMUR Analog I/O
Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Analog inputs
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 1

Description: Signal to enable the analog inputs of Option Module Analog I/O.

Index: [0] = AI 0 (X233.1/X233.2)
[1] = AI 1 (X233.3/X233.4)
[2] = AI 2 (X233.5/X233.6)

c4071[0...1] OM-AIO analog outputs signal / AO signal

Variant:	G220, G220 Clean Power	
Available for module:	Option Module NAMUR Analog I/O	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Analog outputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** PERCENT
Factory interconnection:	Fixed value: 0.00 [%]	

Description: Signal for the analog outputs of Option Module Analog I/O.

Index: [0] = AO 0 (X234.1/X234.2)
[1] = AO 1 (X234.3/X234.4)

Note
AO: Analog Output

r4072[0...1] OM-AIO analog outputs output value currently referred / AO outp_val

Variant:	G220, G220 Clean Power	
Available for module:	Option Module NAMUR Analog I/O	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Analog outputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -

Description: Displays the currently referred output value of the analog outputs of the Option Module Analog I/O.

Index: [0] = AO 0 (X234.1/X234.2)
[1] = AO 1 (X234.3/X234.4)

p4073[0...1] OM-AIO analog outputs smoothing time constant / AO T_smoothing

Variant:	G220, G220 Clean Power	
Available for module:	Option Module NAMUR Analog I/O	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Analog outputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [ms]	1000.0 [ms]	0.0 [ms]

Description: Sets the smoothing time constant of the 1st order lowpass filter for the analog outputs of the Option Module Analog I/O.
Index: [0] = AO 0 (X234.1/X234.2)
[1] = AO 1 (X234.3/X234.4)

r4074[0...1] OM-AIO analog outputs actual output voltage / AO U_outp

Variant: G220, G220 Clean Power
Available for module: Option Module NAMUR Analog I/O
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Analog outputs
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: V **Unit group:** - **Unit selection:** -

Description: Displays the actual output voltage at the analog outputs of the Option Module Analog I/O.
Index: [0] = AO 0 (X234.1/X234.2)
[1] = AO 1 (X234.3/X234.4)

p4075[0...1] OM-AIO analog outputs activate absolute value generation / AO AbsV act

Variant: G220, G220 Clean Power
Available for module: Option Module NAMUR Analog I/O
Data type: Integer16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Ready for operation
Parameter group: Analog outputs
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0	1	0

Description: Activates the absolute value generation for the analog outputs of the Option Module Analog I/O.
Value:
0: No absolute value generation
1: Absolute value generation switched in
Index: [0] = AO 0 (X234.1/X234.2)
[1] = AO 1 (X234.3/X234.4)

p4076[0...1] OM AIO analog outputs type / OM AIO AO type

Variant: G220, G220 Clean Power
Available for module: Option Module NAMUR Analog I/O
Data type: Integer16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Analog outputs
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -

	Unit: -	**Unit group:** -	**Unit selection:** -
	Min:	**Max:**	**Factory setting:**
	0	2	1

Description: Sets the type of analog outputs of Option Module (OM AIO).
p4076[x] = 1 corresponds to a voltage output (r4074, p4078, p4080, p4083 are displayed in V).
p4076[x] = 0, 2 corresponds to a current output (r4074, p4078, p4080, p4083 are displayed in mA).

Value:
0: Current output (0 mA ... +20 mA)
1: Voltage output (0 V ... +10 V)
2: Current output (+4 mA ... +20 mA)

Index: [0] = AO 0 (X234.1/X234.2)
[1] = AO 1 (X234.3/X234.4)

Dependency: See also: p4077, p4078, p4079, p4080

Note
When changing p4076, the parameters of the scaling characteristic (p4077, p4078, p4079, p4080) are overwritten with the following default values:
For p4076 = 0, p4077 is set to 0.0 %, p4078 to 0.0 mA, p4079 to 100.0 % and p4080 to 20.0 mA.
For p4076 = 1, p4077 is set to 0.0 %, p4078 to 0.0 V, p4079 to 100.0 % and p4080 to 10.0 V.
For p4076 = 2, p4077 is set to 0.0 %, p4078 to 4.0 mA, p4079 to 100.0 % and p4080 to 20.0 mA.

p4077[0...1] OM-AIO analog outputs characteristic value x1 / AO char x1

Variant:	G220, G220 Clean Power	
Available for module:	Option Module NAMUR Analog I/O	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Analog outputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-1000.00 [%]	1000.00 [%]	0.00 [%]

Description: Sets the scaling characteristic for the analog outputs of Option Module Analog I/O.
The scaling characteristic for the analog outputs is defined using 2 points.
This parameter specifies the x coordinate (percentage) of the 1st value pair of the characteristic.

Index: [0] = AO 0 (X234.1/X234.2)
[1] = AO 1 (X234.3/X234.4)

Note
The parameters for the characteristic do not have a limiting effect.

p4078[0...1] OM-AIO analog outputs characteristic value y1 / AO char y1

Variant:	G220, G220 Clean Power
Available for module:	Option Module NAMUR Analog I/O
Data type: FloatingPoint32	**Visible in:** Standard display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications
Can be changed in the operating state:	Operation
Parameter group:	Analog outputs

Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: V **Unit group:** - **Unit selection:** -
Min: **Max:** **Factory setting:**
-11.000 [V] 11.000 [V] 0.000 [V]

Description: Sets the scaling characteristic for the analog outputs of Option Module Analog I/O.
The scaling characteristic for the analog outputs is defined using 2 points.
This parameter specifies the y coordinate (output voltage in V) of the 1st value pair of the characteristic.

Index: [0] = AO 0 (X234.1/X234.2)
[1] = AO 1 (X234.3/X234.4)

Note
The parameters for the characteristic do not have a limiting effect.

p4079[0...1] OM-AIO analog outputs characteristic value x2 / AO char x2

Variant: G220, G220 Clean Power
Available for module: Option Module NAMUR Analog I/O
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Analog outputs
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -
Min: **Max:** **Factory setting:**
-1000.00 [%] 1000.00 [%] 100.00 [%]

Description: Sets the scaling characteristic for the analog outputs of Option Module Analog I/O.
The scaling characteristic for the analog outputs is defined using 2 points.
This parameter specifies the x coordinate (percentage) of the 2nd value pair of the characteristic.

Index: [0] = AO 0 (X234.1/X234.2)
[1] = AO 1 (X234.3/X234.4)

Note
The parameters for the characteristic do not have a limiting effect.

p4080[0...1] OM-AIO analog outputs characteristic value y2 / AO char y2

Variant: G220, G220 Clean Power
Available for module: Option Module NAMUR Analog I/O
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Analog outputs
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: V **Unit group:** - **Unit selection:** -
Min: **Max:** **Factory setting:**
-11.000 [V] 11.000 [V] 10.000 [V]

Description: Sets the scaling characteristic for the analog outputs of Option Module Analog I/O.
The scaling characteristic for the analog outputs is defined using 2 points.
This parameter specifies the y coordinate (output voltage in V) of the 2nd value pair of the characteristic.

Index: [0] = AO 0 (X234.1/X234.2)
[1] = AO 1 (X234.3/X234.4)

Note
The parameters for the characteristic do not have a limiting effect.

c4082[0...1] OM-AIO analog outputs inversion signal / AO inv signal

Variant: G220, G220 Clean Power
Available for module: Option Module NAMUR Analog I/O
Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Analog outputs
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal to invert the analog output signals of Option Module Analog I/O.

Index: [0] = AO 0 (X234.1/X234.2)
[1] = AO 1 (X234.3/X234.4)

p4083[0...1] OM-AIO analog outputs offset / AO offset

Variant: G220, G220 Clean Power
Available for module: Option Module NAMUR Analog I/O
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Analog outputs
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
-10.000	10.000	0.000

Description: Sets the offset for the analog outputs of Option Module Analog I/O.
The offset is added to the output signal after the scaling characteristic.

Index: [0] = AO 0 (X234.1/X234.2)
[1] = AO 1 (X234.3/X234.4)

p4095.0...3 OM-AIO digital inputs simulation mode / DI sim_mode

Variant: G220, G220 Clean Power
Available for module: Option Module NAMUR Digital I/O
Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications

Can be changed in the operating state:	Operation		
Parameter group:	Programmable digital inputs/outputs		
Not relevant for motor type:	-		
Dyn. index [0...n]:	-	**Calculated:** -	
Unit: -	**Unit group:** -	**Unit selection:** -	
Min:	**Max:**	**Factory setting:**	
-	-	0000 bin	

Description: Sets the simulation mode for digital inputs of the Option Module Digital I/O

Bit array:

Bit	Signal name	1 signal	0 signal
00	DI/DO 0 (X235.4)	Simulation	Terminal eval
01	DI/DO 1 (X235.5)	Simulation	Terminal eval
02	DI/DO 2 (X235.6)	Simulation	Terminal eval
03	DI/DO 3 (X235.7)	Simulation	Terminal eval

Dependency: The setpoint for the input signals is specified using p4096.
See also: p4096

⚠ WARNING

A drive that is moved by simulating the inputs of a Terminal Module is brought to a standstill while the Terminal Module is being activated or deactivated.

Note
This parameter is not saved when backing up data (p0977).
DI/DO: Parameterizable digital input/output

p4096.0...3 OM-DIO digital inputs simulation mode setpoint / DI sim setpoint

Variant:	G220, G220 Clean Power		
Available for module:	Option Module NAMUR Digital I/O		
Data type: Unsigned32	**Visible in:** Standard display		
Read permission:	Read drive data or acknowledge messages		
Write permission:	Edit device configuration or drive applications		
Can be changed in the operating state:	Operation		
Parameter group:	Programmable digital inputs/outputs		
Not relevant for motor type:	-		
Dyn. index [0...n]:	-	**Calculated:** -	
Unit: -	**Unit group:** -	**Unit selection:** -	
Min:	**Max:**	**Factory setting:**	
-	-	0000 bin	

Description: Sets the setpoint for the input signals in the simulation mode of the digital inputs of the Option Module Digital I/O.

Bit array:

Bit	Signal name	1 signal	0 signal
00	DI/DO 0 (X235.4)	High	Low
01	DI/DO 1 (X235.5)	High	Low
02	DI/DO 2 (X235.6)	High	Low
03	DI/DO 3 (X235.7)	High	Low

Dependency: The simulation of a digital input is selected using p4095.
See also: p4095

Note
This parameter is not saved when backing up data (p0977).
DI/DO: Parameterizable digital input/output

p4097[0...2] OM-AIO analog inputs simulation mode / AI simulation mode

Variant:	G220, G220 Clean Power	
Available for module:	Option Module NAMUR Analog I/O	
Data type: Integer16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Analog inputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	1	0

Description: Sets the simulation mode for the analog inputs of the Option Module Analog I/O.

Value:
0: Terminal evaluation for analog input x
1: Simulation for analog input x

Index:
[0] = AI 0 (X233.1/X233.2)
[1] = AI 1 (X233.3/X233.4)
[2] = AI 2 (X233.5/X233.6)

Dependency: The setpoint for the input voltage is specified via p4098.
See also: p4098

Note
This parameter is not saved when backing up data (p0977).
AI: Analog Input

p4098[0...2] OM-AIO analog inputs simulation mode setpoint / AI sim setpoint

Variant:	G220, G220 Clean Power	
Available for module:	Option Module NAMUR Analog I/O	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Analog inputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: V	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-11.000 [V]	11.000 [V]	0.000 [V]

Description: Sets the setpoint for the input voltage in the simulation mode of the analog inputs of Option Module Analog I/O

Index:
[0] = AI 0 (X233.1/X233.2)
[1] = AI 1 (X233.3/X233.4)
[2] = AI 2 (X233.5/X233.6)

Dependency: The simulation of an analog input is selected using p4097.
See also: p4097

Note
This parameter is not saved when backing up data (p0977).
AI: Analog Input

c4441[0...15] IIoT signals / IIoT signals

Variant: G220, G220 Clean Power
Available for module: Option Module IIoT
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: IIoT
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink numeric **Scaling:** -
Factory interconnection:
[0] Parameter: 1:37[4]
[1] Parameter: 1:35
[2] Parameter: 1:63[0]
[3] Parameter: 1:62
[4] Parameter: 1:80[0]
[5] Parameter: 1:68[0]
[6] Parameter: 1:70
[7] Parameter: 1:66
[8] Parameter: 1:72
[9] Parameter: 1:755[0]
[10] Parameter: 1:36[0]
[11] Parameter: 1:64
[12] Parameter: 1:69[6]
[13] Parameter: 1:78[0]
[14] Parameter: 1:1801[0]
[15] Fixed value: 0.00

Description: Signals for transfer via DRIVE-CLiQ to Option Module IIoT.
Index:
[0] = IIoT signal 0
[1] = IIoT signal 1
[2] = IIoT signal 2
[3] = IIoT signal 3
[4] = IIoT signal 4
[5] = IIoT signal 5
[6] = IIoT signal 6
[7] = IIoT signal 7
[8] = IIoT signal 8
[9] = IIoT signal 9
[10] = IIoT signal 10
[11] = IIoT signal 11
[12] = IIoT signal 12
[13] = IIoT signal 13
[14] = IIoT signal 14
[15] = IIoT signal 15

r4446.0...17 IIoT status / IIoT status

Variant: G220, G220 Clean Power
Available for module: Option Module IIoT
Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: IIoT
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -

Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the status of Option Module IIoT.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Cyclic communications to Siemens Industrial Edge active	Yes	No
16	SFTP access active	Yes	No
17	Valid key	Yes	No

Note
IIoT: Industrial Internet of Things

p4447.0 IIoT configuration / IIoT config

Variant: G220, G220 Clean Power
Available for module: Option Module IIoT
Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Ready for operation
Parameter group: IIoT
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
-	-	0001 bin

Description: Sets the configuration for Option Module IIoT.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Activate cyclic communications to Siemens Industrial Edge	Yes	No

p4448 IIoT sampling time cyclic signal transfer / IIoT sampling time

Variant: G220, G220 Clean Power
Available for module: Option Module IIoT
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Ready for operation
Parameter group: IIoT
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: µs **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
125.00 [µs]	5000.00 [µs]	250.00 [µs]

Description: Sets the sampling time of Option Module IIoT. Data is transferred from the IIoT to the edge box with the sampling time.
The sampling time of the IIoT module is normally set to the sampling time of the current controller.

Dependency: See also: p0115

p4610[0...n] Motor temperature sensor 1 sensor type / Temp sens 1 type

Data type: Integer16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications

Can be changed in the operating state:	Operation		
Parameter group:	System identification		
Not relevant for motor type:	-		
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -	
Unit: -	**Unit group:** -	**Unit selection:** -	
Min:	**Max:**	**Factory setting:**	
0	60	10	

Description: Sets the sensor type of the first temperature sensor for monitoring the motor temperature.

Value:

0:	No sensor
10:	PTC fault
11:	PTC alarm
12:	PTC alarm & timer
20:	KTY84
30:	Bimetallic NC contact fault
31:	Bimetallic NC contact alarm
32:	Bimetallic NC contact alarm & timer
60:	Pt1000

Dependency: See also: r0458, p0600, p0601

Note
This parameter is active only when p0601 = 10.
PTC thermistor: Tripping resistance = 1650 Ohm
Information on using temperature sensors is provided in the product documentation.

p4611[0...n] Motor temperature sensor 2 sensor type / Temp sens 2 type

Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	System identification	
Not relevant for motor type:	-	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	60	10

Description: Sets the sensor type of the second temperature sensor for the motor temperature monitoring.

Value:

0:	No sensor
10:	PTC fault
11:	PTC alarm
12:	PTC alarm & timer
20:	KTY84
30:	Bimetallic NC contact fault
31:	Bimetallic NC contact alarm
32:	Bimetallic NC contact alarm & timer
60:	Pt1000

Dependency: See also: r0458, p0600, p0601

Note
This parameter is active only when p0601 = 10.
PTC thermistor: Tripping resistance = 1650 Ohm
Information on using temperature sensors is provided in the product documentation.

p4618 Motor Module temperature sensor type / MM temp_sens type

Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Temperature sensor	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	6	0

Description: Sets the type of temperature sensor connected to the Motor Module.
The temperature actual value is displayed in r4619.

Value:
0: No sensor
2: KTY84
5: Pt100
6: Pt1000

Dependency: The parameter can only be set if the motor temperature sensor is not connected to the Motor Module (p0600 = 11, X21, X22).
See also: r4619

NOTICE
Users must evaluate the temperature actual value from r4619.

r4619 Motor Module temperature sensor actual value / MM temp_sens actV

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Temperature sensor	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °C	**Unit group:** 21_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2006

Description: Display for the temperature sensor connected to the Motor Module

Dependency: See also: p4618

Note
For r4619 equal to -200.0 °C, the following applies:
This temperature display is not valid (temperature sensor error).

r4640[0...95] Encoder diagnostics state machine / Enc diag stat_ma

Data type: Unsigned32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Diagnostics	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -

Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the encoder diagnostics for the PROFIdrive interface.

p4641[0...2] OEM encoder diagnostic signal selection / OEM enc diag sel

Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Encoder evaluation
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0	65535	0

Description: Sets the trace functionality for OEM encoder manufacturers.

Index: [0] = Motor encoder
[1] = Encoder 2
[2] = Reserved

p4642[0...2] Encoder fault test function / Encoder fault test

Data type: Unsigned8 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Encoder evaluation
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0	255	0

Description: Test function to initiate an encoder fault
For p4642 = 1:
When setting, an encoder fault is output once at the currently used motor encoder. Depending on the configuration in p0491, the drive switches over to encoderless operation This means that encoderless motor stopping can be tested.
For p4642 = 2:
When setting, an encoder fault is output once at the currently used motor encoder. For braking, the drive still uses the commutation position of the encoder. This means that a faster motor stopping with encoder can be tested (only functions with SMx modules, otherwise the same response as for p4642 = 1).
The following generally applies:
After acknowledgment, the encoder fault that was issued is cleared and p4642 is set = 0.

Index: [0] = Motor encoder
[1] = Encoder 2
[2] = Reserved

NOTICE
It is not permissible that a data set is switched over between an encoder fault being issued and its deletion.

p4644.0...2 Simulated motor encoder configuration / Sim mot_enc config

Data type: Unsigned16 **Visible in:** Standard display

Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Encoder evaluation	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-	-	0010 bin

Description: Sets the configuration for the simulated motor encoder.

Using these configuration bits, the response of the encoder status bit "Parking encoder active" (r0481.14) can be set for a pulse inhibit.

For bit 00:

When the bit is set, after a pulse inhibit, encoder status bit "Parking encoder active" (r0481.14) is temporarily set and then withdrawn.

When r0481.14 = 1 is set, the higher-level control system is signaled that the position must be homed again.

When r0481.14 = 0 is reset, then the higher-level control system can switch the system on again.

For bit 01:

When the bit is set, a brake is being used (p1215 = 3) and the pulses are canceled for absolute speeds less than the standstill speed (2 * p1226), then the encoder status bit "Parking encoder active" (r0481.14) is not set. This means that the position is not re-homed after switching on again.

For bit 02:

This bit can be used for diagnostics.

When the bit is set, encoder status bit "Parking encoder active" (r0481.14) is not set as a result of the pulse inhibit.

Bit array:

Bit	Signal name	1 signal	0 signal
00	For a pulse inhibit, temporarily set bit r0481.14	Yes	No
01	Bit r0481.14 = 0 for pulse inhibit at standstill with brake	Yes	No
02	For a pulse inhibit, do not set bit r0481.14	Yes	No

⚠ DANGER

For bit 02 = 1:

If it cannot be excluded that the motor shaft turns while the pulses are inhibited, then after the pulse enable, the position calculated by the simulated motor encoder can be offset and not detected using encoder status bit "Parking encoder active" (r0481.14). Hazardous operating states can subsequently occur.

Note

Function "Simulated motor encoder" is activated using p0400 = 9010.

For bit 00, 01, 02 = 0, the following applies:

For a pulse inhibit, encoder status bit "Parking encoder active" (r0481.14) is set. The system must be homed after switching on again.

For bit 02 = 1, the following applies:

This bit has priority over the other bits.

r4648.0 Encoder status word / Enc status word

Data type: Unsigned32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Encoder evaluation	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source binary/numeric	**Scaling:** -

Description: Displays the encoder status word.
For bit 00:
The bit is a group message for all encoders of the axis, and is set for the following alarms:
A3x407: "Function limit reached"
A3x415: "Signal level track A or B out of tolerance (alarm)"
A3x419: "Track A or B out of tolerance"
A3x442: "Battery voltage alarm threshold reached"
x = encoder 1, 2, 3

Bit array:

Bit	Signal name	1 signal	0 signal
00	Encoder maintenance required	Yes	No

NOTICE
The encoder may require maintenance work.

Note
For bit 00:
For test purposes, the bit can be set using p4642 = 3 and reset using p4642 = 0.

p4649[0...n] Encoder function reserve amplitude limit incremental signals / Enc fct amp inc

Data type: Unsigned16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Commissioning
Parameter group: Encoder evaluation
Not relevant for motor type: -
Dyn. index [0...n]: EDS n defined by: p0140 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0	500	0

Description: Amplitude threshold of the incremental signals for the function reserve.
If the set amplitude threshold on the incremental signals is fallen below, then alarm A3x407 "Encoder x; function limit reached " is output.

Note
An amplitude threshold of 230 mV can be used as default value.

p4650 Encoder function reserve data set number / Enc fct_res EDS

Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Diagnostics
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0	99	99

Description: Selects the Encoder Data Set (EDS).
Dependency: See also: r4651

r4651[0...3] Encoder function reserve / Enc fct_reserve

Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Diagnostics
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -

Description: Displays the functional reserve of the encoder selected via p4650.
0 ... 25 %:
The function limit has been reached. A service is recommended.
26 ... 100 %:
The encoder is working in the specified range.

Index: [0] = Function reserve 1
[1] = Function reserve 2
[2] = Function reserve 3
[3] = Function reserve 4

Dependency: See also: p4650

Note
Value = 999 means:
- The component specified in p4650 is not connected
- The encoder does not support the display of the functional reserve

p4652[0...2] XIST1_ERW reset mode / XIST1_ERW res mode

Data type: Integer16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Commissioning
Parameter group: Encoder evaluation
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0	3	0

Description: Sets the mode to reset the actual value XIST_ERW via signal source r4653.

Value:
0: Inactive
1: Reset with zero mark
2: Reset with signal interconnection
3: Reset with selected zero mark

Index: [0] = Motor encoder
[1] = Encoder 2
[2] = Reserved

Dependency: See also: r4653, r4654, c4655

Note
The absolute value is only valid after passing the zero mark.
For value = 1:
The value in XIST1_ERW is reset when passing every zero mark.
For value = 2:
The value in XIST1_ERW is reset with a 0/1 edge via the binary signal sink c4655.
For value = 3:
The value in XIST1_ERW is reset after a 0/1 edge via binary signal sink c4655 when passing the next zero mark.

r4653[0...2] XIST1_ERW actual value / XIST1_ERW ActV

Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Encoder evaluation
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** -

Description: Display of actual value XIST1_ERW.

Index: [0] = Motor encoder
[1] = Encoder 2
[2] = Reserved

Dependency: See also: p4652, r4654, c4655

r4654.0...8 XIST1_ERW status / XIST1_ERW stat

Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Encoder evaluation
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Display for the reset of XIST1_ERW.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Motor encoder XIST1_ERW reset	High	Low
08	Encoder 2 XIST1_ERW reset	High	Low

Dependency: See also: p4652, r4653, c4655

Note
The reset of XIST1_ERW is initiated via binary signal sink c4655.
For a 0 signal of signal sink c4655, binary signal source r4654 is again reset.

c4655[0...2] Reset XIST1_ERW / XIST1_ERW res

Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Encoder evaluation
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal to reset XIST1_ERW (r4653).

Index: [0] = Motor encoder
[1] = Encoder 2
[2] = Reserved

Dependency: See also: p4652, r4653, r4654

Note
The reset of XIST1_ERW depends on the selected mode (p4652).

p4660[0...n] Sensor Module filter bandwidth / SM Filt_bandw

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Commissioning
Parameter group: Encoder evaluation
Not relevant for motor type: -
Dyn. index [0...n]: EDS n defined by: p0140 **Calculated:** -
Unit: kHz **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0.00 [kHz]	20000.00 [kHz]	0.00 [kHz]

Description: Sets the filter bandwidth for Sensor Module SMx10 (resolver) and SMx20 (sin/cos).
The value set on the Sensor Module is displayed in r4661.
Currently, the Sensor Module hardware only supports the following values:
- 0: The Sensor Module default setting is used.
- 50 kHz
- 170 kHz
- 500 kHz
- Unlimited: Only the bandwidth of the operational amplifier is effective.

Dependency: See also: r4661

Note
A value of zero is displayed if an encoder is not present.

r4661[0...2] Sensor Module filter bandwidth display / SM Filt_bandw disp

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Encoder evaluation
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: kHz **Unit group:** - **Unit selection:** -

Description: Displays the effective filter bandwidth for Sensor Module SMx10 (resolver) and SMx20 (sin/cos).
The bandwidth of the filter is set using p4660.

Index: [0] = Motor encoder
[1] = Encoder 2
[2] = Reserved

Dependency: See also: p4660

Note
A value of zero is displayed if an encoder is not present.

p4680[0...n] Zero mark monitoring tolerance permissible / ZM_mon tol perm

Data type: Unsigned32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Encoder evaluation	
Not relevant for motor type:	-	
Dyn. index [0...n]:	EDS n defined by: p0140	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	1000	4

Description: Sets the permissible tolerance in encoder pulses for the zero mark distance in the context of zero mark monitoring.
Causes fault F3x100 to appear less frequently.

Dependency: See also: F31100

p4681[0...n] Zero mark monitoring tolerance window limit 1 positive / ZM tol lim 1 pos

Data type: Unsigned32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Encoder evaluation	
Not relevant for motor type:	-	
Dyn. index [0...n]:	EDS n defined by: p0140	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	1000	2

Description: Sets the positive tolerance window in encoder pulses for limit 1 for the zero mark monitoring.
The pulse number is corrected if the deviation is less than this limit. If it is higher than this limit, fault F3x131 is triggered.
If fault F3x131 is re-parameterized to an alarm (A) or no message (N), then the encoder pulses that are not corrected are transferred to the accumulator (p4688). The accumulator can be deactivated using p0437.7.

Dependency: See also: p0437, p4688
See also: F31131

Note
This monitoring is activated by setting p0437.2 = 1 (position actual value correction).
The positive limit describes additional pulses due to EMC.

p4682[0...n] Zero mark monitoring tolerance window limit 1 negative / ZM tol lim 1 neg

Data type: Integer32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Encoder evaluation	
Not relevant for motor type:	-	
Dyn. index [0...n]:	EDS n defined by: p0140	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-1001	0	-1001

Description: Sets the negative tolerance window in encoder pulses for limit 1 for the zero mark monitoring.
The pulse number is corrected if the deviation is less than this limit. If it is higher than this limit, fault F3x131 is triggered.
If fault F3x131 is re-parameterized to an alarm (A) or no message (N), then the encoder pulses that are not corrected are transferred to the accumulator (p4688). The accumulator can be deactivated using p0437.7.

Dependency: See also: p0437, p4681, p4688
See also: F31131

Note
This monitoring is activated by setting p0437.2 = 1 (position actual value correction).
For a set value = -1001, the negated value of p4681 becomes active.
The negative limit describes the pulses lost due to a covered glass panel in the incremental encoder.

p4683[0...n] Zero mark monitoring tolerance window alarm threshold positive / ZM tol A_thr pos

Data type: Unsigned32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Encoder evaluation	
Not relevant for motor type:	-	
Dyn. index [0...n]:	EDS n defined by: p0140	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	100000	0

Description: Sets the positive tolerance window in encoder pulses for limit 2 for the zero mark monitoring.
Accumulator (p4688) is compared with this parameter, and where relevant, alarm A3x422 is output for 5 seconds.

Dependency: See also: p0437, p4681, p4682, p4688
See also: F31131, A31422

Note
Zero mark monitoring is activated by setting p0437.2 = 1 (position actual value correction).

p4684[0...n] Zero mark monitoring tolerance window alarm threshold negative / ZM tol A_thr neg

Data type: Integer32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Encoder evaluation	
Not relevant for motor type:	-	
Dyn. index [0...n]:	EDS n defined by: p0140	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-100001	0	-100001

Description: Sets the negative tolerance window in encoder pulses for limit 2 for the zero mark monitoring.
Accumulator (p4688) is compared with this parameter, and where relevant, alarm A3x422 is output for 5 seconds.

Dependency: See also: p0437, p4683, p4688
See also: F31131, A31422

Note
Zero mark monitoring is activated by setting p0437.2 = 1 (position actual value correction).
For a set value = -100001, the negated value of p4683 is effective.

p4685[0...n] Speed actual value average value generation / n_act mean val

Data type: Unsigned32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Encoder evaluation	
Not relevant for motor type:	-	
Dyn. index [0...n]:	EDS n defined by: p0140	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	20	0

Description: Sets the number of current controller sampling times for average value generation of the speed actual value for a square-wave encoder.

Note
Value = 0, 1: No average value generation.
Higher values also mean higher dead times for the speed actual value.

p4686[0...n] Zero mark minimum length / ZM min length

Data type: Unsigned32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning	
Parameter group:	Encoder evaluation	
Not relevant for motor type:	-	
Dyn. index [0...n]:	EDS n defined by: p0140	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	10	1

Description: Sets the minimum length for the zero mark in 1/4 encoder pulses.

Dependency: See also: p0425, p0437

Note
The minimum length of the zero mark must be less than the zero mark distance (p4686 < p0425).
The parameter is activated using p0437.1 = 1 (zero mark edge detection).

p4688[0...2] Zero mark monitoring differential pulse count / ZM diff_puls qty

Data type: Integer32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Encoder evaluation	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** -
Min:	**Max:**	**Factory setting:**
-2147483648	2147483647	0

Description: Displays the detected missing pulses in lines.
Also see p0437.7 (do not accumulate number of incorrect pulses).
Index: [0] = Motor encoder
[1] = Encoder 2
[2] = Reserved
Dependency: See also: p0437, p4681, p4682, p4683, p4684

Note
The display can only be reset to zero.

r4689[0...2] Square-wave encoder diagnostics / Sq wave enc diag

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Encoder evaluation
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** -

Description: Displays the encoder status according to PROFIdrive for a square-wave encoder.
Index: [0] = Motor encoder
[1] = Encoder 2
[2] = Reserved
Dependency: See also: A31422

Note
After alarm A3x422 is output, this parameter is set for 100 ms.

r4818 Function generator output signal / FG outp_sig

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Trace
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** PERCENT

Description: Displays the output signal for the function generator.

Note
The value is displayed independently of the function generator mode.

p5271[0...n].2...6 Moment of inertia estimator configuration / J estimator config

Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Ready for operation
Parameter group:
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
-	-	0000 0000 bin

Description: Sets the configuration for the moment of inertia estimator.

Bit array:

Bit	Signal name	1 signal	0 signal
02	Load adaptation Kp	Yes	No
06	Do not change Kp	Yes	No

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

Note
For bit 02:
The estimated load moment of inertia is taken into account for the speed controller gain.
For bit 06:
The speed controller gain set in p1460 is not changed when calculating the controller data.

p5310[0...n].0...1 Moment of inertia precontrol configuration / J_est config

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group:
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
-	-	0000 bin

Description: Configuration of the moment of inertia precontrol when the moment of inertia estimator is active (p1400.18 = 1 signal).

Bit array:

Bit	Signal name	1 signal	0 signal
00	Activating calculations	Yes	No
01	Activating the moment of inertia precontrol	Yes	No

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: r5311, p5312, p5313, p5314, p5315

Note
Possible bit combinations:
Bit 1, 0
= 0, 0 --> function not active
= 0, 1 --> cyclic calculation of the coefficients without moment of inertia precontrol (commissioning)
= 1, 0 --> moment of inertia precontrol activated (without cyclic calculation of the coefficients)
= 1, 1 --> moment of inertia precontrol activated (with cyclic calculation of the coefficients)
For bit 00:
Calculation for the constant and linear coefficients of the moment of inertia precontrol is activated. The results are written to parameters (p5312, p5313, p5314, p5315).
For bit 01:
The moment of inertia precontrol is activated.
The moment of inertia is calculated from the currently measured load torque and the saved coefficients (p5312, p5313, p5314, p5315).

r5311[0...n].0...5 Moment of inertia precontrol status word / J_prectrl ZSW

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group:
Not relevant for motor type: Synchronous or reluctance motor with starting cage

Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the status word for the moment of inertia precontrol.

Bit array:

Bit	Signal name	1 signal	0 signal
00	New measuring points are available	Yes	No
01	New parameters being calculated	Yes	No
02	Moment of inertia precontrol active	Yes	No
03	Calculation of positive coefficients completed	Yes	No
04	Calculation of negative coefficients completed	Yes	No
05	Results are being written to parameter	Yes	No

Dependency: The "Moment of inertia estimator" function must be activated for the "Moment of inertia precontrol" function.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p5310, p5312, p5313, p5314, p5315

p5312[0...n] Moment of inertia precontrol linear positive / J_est lin pos

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group:
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** automatic
Unit: s^2 **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
-1e+10 [s^2]	1e+10 [s^2]	0.000000 [s^2]

Description: Sets the linear coefficients for moment of inertia precontrol in the positive direction when the moment of inertia estimator is active.
The estimated moment of inertia is obtained according to the following formula:
Moment of inertia (J) = linear coefficient (p5312) * load torque + constant coefficient (p5313)

Dependency: The "Moment of inertia estimator" function must be activated for the "Moment of inertia precontrol" function.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p5310, r5311, p5313, p5314, p5315

p5313[0...n] Moment of inertia precontrol constant positive / J_est cons pos

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group:
Not relevant for motor type: Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: DDS n defined by: p0180 **Calculated:** automatic
Unit: kgm^2 **Unit group:** 25_1 **Unit selection:** p0100

Min:	Max:	Factory setting:
-1e+10 [kgm^2]	1e+10 [kgm^2]	0.000000 [kgm^2]

Description: Sets of the constant coefficients for moment of inertia precontrol in the positive direction when the moment of inertia estimator is active.
The estimated moment of inertia is obtained according to the following formula:
Moment of inertia (J) = linear coefficient (p5312) * load torque + constant coefficient (p5313)

Dependency: The "Moment of inertia estimator" function must be activated for the "Moment of inertia precontrol" function.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p5310, r5311, p5312, p5314, p5315

p5314[0...n] Moment of inertia precontrol linear negative / J_est lin neg

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:		
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: s^2	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-1e+10 [s^2]	1e+10 [s^2]	0.000000 [s^2]

Description: Sets the linear coefficients for moment of inertia precontrol in the negative direction when the moment of inertia estimator is active.
The estimated moment of inertia is obtained according to the following formula:
Moment of inertia (J) = linear coefficient (p5314) * load torque + constant coefficient (p5315)

Dependency: The "Moment of inertia estimator" function must be activated for the "Moment of inertia precontrol" function.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p5310, r5311, p5312, p5313, p5315

p5315[0...n] Moment of inertia precontrol constant negative / J_est cons neg

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:		
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** automatic
Unit: kgm^2	**Unit group:** 25_1	**Unit selection:** p0100
Min:	**Max:**	**Factory setting:**
-1e+10 [kgm^2]	1e+10 [kgm^2]	0.000000 [kgm^2]

Description: Sets the constant coefficients for moment of inertia precontrol in the negative direction when the moment of inertia estimator is active.
The estimated moment of inertia is obtained according to the following formula:
Moment of inertia (J) = linear coefficient (p5314) * load torque + constant coefficient (p5315)

Dependency: The "Moment of inertia estimator" function must be activated for the "Moment of inertia precontrol" function.
Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p5310, r5311, p5312, p5313, p5314

p5316[0...n] Moment of inertia precontrol change time moment of inertia / J_prectrl t_chg J

Data type: FloatingPoint32	**Visible in:** Extended display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications
Can be changed in the operating state:	Operation

Parameter group:
Not relevant for motor type: Synchronous or reluctance motor with starting cage

Dyn. index [0...n]:	DDS n defined by: p0180	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
10.00 [ms]	5000.00 [ms]	500.00 [ms]

Description: Sets the change time for the moment of inertia for the moment of inertia precontrol.
Lower values mean that faster changes are possible.
For a higher value, this estimated value is smoothed more significantly.

Dependency: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)
See also: p1400, p1560, p1562

p5350[0...n] Mot_temp_mod 1/3 boost factor at standstill / Standst boost_fact

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor temperature	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
1.0000	2.0000	2.0000

Description: Sets the boost factor for the copper losses at standstill for motor temperature models 1 and 3.
The entered factor is active for speed n = 0 [rpm].
This factor is linearly reduced down to 1 between speeds n = 0 ... 1 [rpm].
The following values are required to calculate the boost factor:
- Stall current (I_0, p0318, catalog value)
- Thermal stall current (I_th0, catalog value)
The boost factor is calculated as follows:
- p5350 = (I_0 / I_th0)^2

Dependency: See also: p0318, p0351, p0612, p5390, p5391, r5395
See also: F07011, A07012, F07013, A07014

NOTICE
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write-protected. Information in p0300 should be carefully observed when removing write protection.

p5351[0...n] Mot_temp_mod 3 stator power loss offset / Stat P_loss_offs

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor temperature	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: W	**Unit group:** 14_2	**Unit selection:** p0100
Min:	**Max:**	**Factory setting:**
0 [W]	100000 [W]	10000 [W]

Description: Sets the constant power loss offset of the stator for motor temperature model 3.
Example:
Power loss of the brake.

Dependency: See also: p0612, p1215, p5352, p5353, p5354, p5355, p5390, p5391, r5395
See also: F07011, A07012, F07013, A07014

NOTICE
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write-protected. Information in p0300 should be carefully observed when removing write protection.

p5352[0...n] Mot_temp_mod 3 stator power loss linear n-dependent / Stat P_loss lin n

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor temperature	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: W min/1000	**Unit group:** 14_14	**Unit selection:** p0100
Min:	**Max:**	**Factory setting:**
-100000.0000 [W min/1000]	100000.0000 [W min/1000]	10000.0000 [W min/1000]

Description: Sets the linear speed-dependent power loss coefficients of the stator for motor temperature model 3.

Dependency: See also: p0612, p5351, p5353, p5354, p5355, p5390, p5391, r5395
See also: F07011, A07012, F07013, A07014

NOTICE
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write-protected. Information in p0300 should be carefully observed when removing write protection.

p5353[0...n] Mot_temp_mod 3 stator power loss square law n-dependent / Stat P_loss sq n

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor temperature	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: W min²/1000²	**Unit group:** 14_16	**Unit selection:** p0100
Min:	**Max:**	**Factory setting:**
-100000.0000 [W min²/1000²]	100000.0000 [W min²/1000²]	10000.0000 [W min²/1000²]

Description: Sets the square law speed-dependent power loss coefficients of the stator for motor temperature model 3.

Dependency: See also: p0612, p5351, p5352, p5354, p5355, p5390, p5391, r5395
See also: F07011, A07012, F07013, A07014

NOTICE
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write-protected. Information in p0300 should be carefully observed when removing write protection.

p5354[0...n] Mot_temp_mod 3 stator power loss stator linear n-dependent / Stat P_loss lin I

Data type: FloatingPoint32	**Visible in:** Extended display

Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor temperature	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: W/A	**Unit group:** 14_13	**Unit selection:** p0100
Min:	**Max:**	**Factory setting:**
-100000.0000 [W/A]	100000.0000 [W/A]	10000.0000 [W/A]

Description: Sets the linear current-dependent power loss coefficients of the stator for motor temperature model 3.

Dependency: See also: p0612, p5351, p5352, p5353, p5355, p5390, p5391, r5395
See also: F07011, A07012, F07013, A07014

NOTICE
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write-protected.
Information in p0300 should be carefully observed when removing write protection.

p5355[0...n] Mot_temp_mod 3 stator power loss stator square law I-dependent / Stat P_loss sq I

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor temperature	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: W/A^2	**Unit group:** 14_15	**Unit selection:** p0100
Min:	**Max:**	**Factory setting:**
-100000.0000 [W/A^2]	100000.0000 [W/A^2]	10000.0000 [W/A^2]

Description: Sets the square law current-dependent power loss coefficients of the stator for motor temperature model 3.

Dependency: See also: p0612, p5351, p5352, p5353, p5354, p5390, p5391, r5395
See also: F07011, A07012, F07013, A07014

NOTICE
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write-protected.
Information in p0300 should be carefully observed when removing write protection.

p5370[0...n] Mot_temp_mod 3 stator thermal capacity / Stat therm cap

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor temperature	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: kW sec/K	**Unit group:** 47_1	**Unit selection:** p0100
Min:	**Max:**	**Factory setting:**
0.000 [kW sec/K]	10000.000 [kW sec/K]	0.001 [kW sec/K]

Description: Sets the thermal capacity of the stator for motor temperature model 3.

Dependency: See also: p0612, p5371, p5372, p5390, p5391, r5395
See also: F07011, A07012, F07013, A07014

NOTICE
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write-protected. Information in p0300 should be carefully observed when removing write protection.

p5371[0...n] Mot_temp_mod 3 stator winding thermal capacity / Stat_windTherm cap

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Motor temperature
Not relevant for motor type: Induction motor, Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: MDS n defined by: p0130 **Calculated:** -
Unit: kW sec/K **Unit group:** 47_1 **Unit selection:** p0100

Min:	Max:	Factory setting:
0.000 [kW sec/K]	10000.000 [kW sec/K]	0.001 [kW sec/K]

Description: Sets the thermal capacity of the stator winding for motor temperature model 3.
Dependency: See also: p0612, p5370, p5372, p5390, p5391, r5395
See also: F07011, A07012, F07013, A07014

NOTICE
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write-protected. Information in p0300 should be carefully observed when removing write protection.

p5372[0...n] Mot_temp_mod 3 rotor thermal capacity / Rot therm capacity

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Motor temperature
Not relevant for motor type: Induction motor, Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: MDS n defined by: p0130 **Calculated:** -
Unit: kW sec/K **Unit group:** 47_1 **Unit selection:** p0100

Min:	Max:	Factory setting:
0.000 [kW sec/K]	10000.000 [kW sec/K]	0.001 [kW sec/K]

Description: Sets the thermal capacity of the rotor for motor temperature model 3.
Dependency: See also: p0612, p5370, p5371, p5390, p5391, r5395
See also: F07011, A07012, F07013, A07014

NOTICE
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write-protected. Information in p0300 should be carefully observed when removing write protection.

p5375[0...n].0...1 Additional motor overload protection configuration / AddMotOvProtConf

Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications

Can be changed in the operating state:	Operation		
Parameter group:	Motor temperature		
Not relevant for motor type:	-		
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -	
Unit: -	**Unit group:** -	**Unit selection:** -	
Min:	**Max:**	**Factory setting:**	
-	-	0000 bin	

Description: Sets the configuration for additional motor overload protection.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Activate monitoring	Yes	No
01	Activation of speed dependency	Yes	No

Note

To comply with standard UL 61800-5-1 Ed. 2, bit 0 and bit 1 must be set.
These bits activate electronic motor overload protection according to IEC 61800-5-1 Ed. 3 / UL 61800-5-1 Ed. 2, with the emulation of an electronic overload relay, Class 20 and the speed sensitivity.
For bit 00:
This bit activates electronic motor overload protection with emulation of an electronic overload relay, Class 20.
For bit 01:
This bit activates the speed dependency of the electronic motor overload protection. Not active, if bit 00 is also set.

p5380[0...n] Mot_temp_mod 3 stator/ambient thermal conductivity (standstill) / Stat/amb ThermCond

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor temperature	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: W/K	**Unit group:** 48_1	**Unit selection:** p0100
Min:	**Max:**	**Factory setting:**
0.00000 [W/K]	10000.00000 [W/K]	0.00100 [W/K]

Description: Sets the coefficient of thermal conductivity between the stator and the surroundings at standstill for motor temperature model 3.

Dependency: See also: p0612, p5381, p5382, p5383, p5384, p5390, p5391, r5395
See also: F07011, A07012, F07013, A07014

NOTICE

When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write-protected.
Information in p0300 should be carefully observed when removing write protection.

p5381[0...n] Mot_temp_mod 3 stator/stator winding therm. conduct. coefficient / StatWind thm cond

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor temperature	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -

Unit: W/K	**Unit group:** 48_1	**Unit selection:** p0100
Min:	**Max:**	**Factory setting:**
0.001 [W/K]	10000.000 [W/K]	1000.000 [W/K]

Description: Sets the coefficient of thermal conductivity between the stator and the stator winding for motor temperature model 3.

Dependency: See also: p5382, p5383, p5384, p5390, p5391
See also: F07011, A07012, F07013, A07014

NOTICE
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write-protected. Information in p0300 should be carefully observed when removing write protection.

p5382[0...n] Mot_temp_mod 3 stator/rotor coefficient of thermal conductivity / StatRot therm cond

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor temperature	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: W/K	**Unit group:** 48_1	**Unit selection:** p0100
Min:	**Max:**	**Factory setting:**
0.001 [W/K]	10000.000 [W/K]	1000.000 [W/K]

Description: Sets the coefficient of thermal conductivity between the stator and the rotor for motor temperature model 3.

Dependency: See also: p0612, p5380, p5381, p5383, p5384, p5390, p5391
See also: F07011, A07012, F07013, A07014

NOTICE
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write-protected. Information in p0300 should be carefully observed when removing write protection.

p5383[0...n] Mot_temp_mod 3 stator/surrounding therm. cond. coeff. lin. n-dep / StatSurr lin n

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor temperature	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: W min/(1000 K)	**Unit group:** 48_2	**Unit selection:** p0100
Min:	**Max:**	**Factory setting:**
-10000.0000 [W min/(1000 K)]	10000.0000 [W min/(1000 K)]	0.0000 [W min/(1000 K)]

Description: Sets the linear, speed-dependent coefficient of thermal conductivity between the stator and the surroundings for motor temperature model 3.

Dependency: See also: p0612, p5380, p5381, p5382, p5384, p5390, p5391
See also: F07011, A07012, F07013, A07014

NOTICE
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write-protected. Information in p0300 should be carefully observed when removing write protection.

p5384[0...n] Mot_temp_mod 3 stator/surrounding therm cond. coeff sq-law n-dep / StatSurr sq n

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Motor temperature
Not relevant for motor type: Induction motor, Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: MDS n defined by: p0130 **Calculated:** -
Unit: W min²/(1000² K) **Unit group:** 48_3 **Unit selection:** p0100

Min:	Max:	Factory setting:
-10000.0000 [W min²/(1000² K)]	10000.0000 [W min²/(1000² K)]	0.0000 [W min²/(1000² K)]

Description: Sets the square law, speed-dependent thermal conductivity coefficients between the stator and the surroundings for motor temperature model 3.

Dependency: See also: p0612, p5380, p5381, p5382, p5383, p5390, p5391
See also: F07011, A07012, F07013, A07014

NOTICE
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write-protected. Information in p0300 should be carefully observed when removing write protection.

p5385[0...n] Mot temp mod 1 current limit characteristic gradient / Curr lim gradient

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Motor temperature
Not relevant for motor type: Induction motor, Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: MDS n defined by: p0130 **Calculated:** -
Unit: Arms min **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
-10.000000 [Arms min]	10.000000 [Arms min]	0.000000 [Arms min]

Description: Current limit gradient (speed) characteristic for thermal motor model 1.

Dependency: See also: p0305, p0311, p0318

Note
The gradient is automatically calculated during commissioning: (p0305-p0318)/p0311

r5386[0...5] Mot_temp remaining time until fault / t_remain to fault

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Motor temperature
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: s **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** -

Description: Display for the remaining time until a fault is output due to motor overtemperature.
With the motor load remaining the same, the values specify the time remaining until a fault is output.
For index [0]:
The active time remaining up to when a fault is output.
This value is the minimum from indices [1] to [4]; whereby, value -1 is not taken into account.
For index [1]:
The time remaining up to when a fault is output calculated by the motor temperature model.
For index [2]:
The time remaining until a fault is output (p0605, r5387) after an alarm has been output from the motor temperature model.
For index [3]:
The time remaining up to when a fault is output is calculated from the motor temperature measurement.
For index [4]:
The time remaining until a fault is output (p0606) after an alarm has been output from the motor temperature measurement.
For index [5]:
The time remaining up to when a fault is output (p5375) calculated by the motor overload protection.

Index: [0] = Active time
[1] = Calculated remaining time from the model
[2] = Calculated remaining time after the alarm from the model
[3] = Calculated remaining time from the measurement
[4] = Calculated remaining time after alarm from the measurement
[5] = Calculated remaining time from additional motor overload prot.

Note
Value = 120 s means that there is no thermal restriction.
Value = -1 s means that a prediction is not possible.

r5387[0...n] Mot_temp_mod 3 timer / Mod 3 timer

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Motor temperature
Not relevant for motor type: Induction motor, Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: MDS n defined by: p0130 **Calculated:** -
Unit: s **Unit group:** - **Unit selection:** -

Description: Displays the timer for monitoring the motor temperature for motor temperature model 3.
This timer is started when the temperature alarm threshold (p5390) is exceeded. If the timer has expired and the alarm threshold has, in the meantime, not been fallen below, then fault F07011 is output. If the temperature fault threshold (p5391) is prematurely exceeded before the timer has expired, then fault F07011 is immediately output.

Dependency: See also: p5371, p5381

c5388 Motor temperature inhibit current reduction / I_red inhibit

Data type: Unsigned8 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Motor temperature
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal to inhibit current reduction for thermal overload (p0610 = 1).
c5388 = 1 signal:
Current reduction is inhibited.
c5388 = 0 signal:
Current reduction is enabled.

Dependency: This parameter is only active for p0610 = 1 (messages, reducing I_max).
See also: p0604, p0605, p0610, p5390

r5389.0...8 Mot_temp status word faults/alarms / Mot_temp ZSW F/A

Data type: Unsigned16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Status parameters, Motor temperature, Faults / alarms
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Display for faults and alarms of the motor temperature monitoring.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Motor temperature measurement fault present	Yes	No
01	Motor temperature model fault present	Yes	No
02	Encoder temperature measurement fault present	Yes	No
03	Motor overload protection fault active	Yes	No
04	Motor temperature measurement alarm active	Yes	No
05	Motor temperature model alarm active	Yes	No
07	Motor overload protection alarm active	Yes	No
08	Current reduction active	Yes	No

Dependency: See also: r0034, p0612, r0632
See also: F07011, A07012, A07910

Note
For bit 00:
The motor temperature is measured using a temperature sensor (p0600, p0601). When the bit is set, an excessively high temperature is identified and a corresponding signal is also output.
For bit 01:
The motor temperature is monitored based on a temperature model (p0612). When the bit is set, an excessively high temperature is identified and a corresponding signal is also output.
For bit 02:
The encoder temperature is measured using a temperature sensor. When the bit is set, an excessively high temperature is identified and a corresponding signal is also output.
For bit 03:
The motor load is monitored using the additional motor overload protection (p5375). When the bit is set, an excessive load has been identified and a corresponding signal is also output.
For bit 04:
The motor temperature is measured using a temperature sensor (p0600, p0601). When the bit is set, an excessively high temperature is identified and a corresponding signal is also output.
For bit 05:
The motor temperature is monitored based on a temperature model (p0612). When the bit is set, an excessively high temperature is identified and a corresponding signal is also output.
For bit 07:
The motor load is monitored using the additional motor overload protection (p5375). When the bit is set, an excessive load has been identified and a corresponding signal is also output.
For bit 08:
When reaching the motor temperature alarm threshold, reduction of the maximum current is set as response (p0610 = 1). When the bit is set, reduction of the maximum current is active.

p5390[0...n] Mot_temp_mod 1/3 alarm threshold / Alarm thresh

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor temperature	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: °C	**Unit group:** 21_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.0 [°C]	200.0 [°C]	110.0 [°C]

Description: Sets the alarm threshold for monitoring the motor temperature for motor temperature models 1 and 3.
The stator winding temperature (r0632) is used to initiate the signal.
The following applies for temperature model 1 (I2t):
- Alarm A07012 is output after the alarm threshold is exceeded.
- When commissioning a catalog motor for the first time, the threshold value is copied from p0605 to p5390.

The following applies for temperature model 3:
- After the alarm threshold is exceeded, alarm A07012 is output and a calculated delay time is started.
- If the delay time has expired and the alarm threshold has, in the meantime, not been fallen below, then fault F07011 is output.

Dependency: See also: r0034, p0605, p0612, r0632, p5391
See also: F07011, A07012, F07013, A07014

NOTICE
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write-protected. Information in p0300 should be carefully observed when removing write protection.

Note
The hysteresis is 2 K.

p5391[0...n] Mot_temp_mod 1/3 fault threshold / Fault thresh

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor temperature	
Not relevant for motor type:	Induction motor, Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: °C	**Unit group:** 21_1	**Unit selection:** p0505
Min:	**Max:**	**Factory setting:**
0.0 [°C]	200.0 [°C]	120.0 [°C]

Description: Sets the fault threshold for monitoring the motor temperature for motor temperature model 1 (I2t) and 3.
Fault F07011 is output after the fault threshold is exceeded.
The stator winding temperature (r0632) is used to initiate the signal.

Dependency: See also: r0034, p0612, r0632, p5390
See also: F07011, F07013, A07014

NOTICE
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write-protected. Information in p0300 should be carefully observed when removing write protection.

Note
The hysteresis is 2 K.

r5392[0...2] Mot_temp_mod 2 thermal resistance adaptation / Temp_mod 2 R adpt

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Motor temperature
Not relevant for motor type: Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage, Synchronous reluctance motor
Dyn. index [0...n]: - **Calculated:** -
Unit: K/W **Unit group:** 50_1 **Unit selection:** p0100

Description: Displays the adaptation of the thermal resistances for motor temperature model 2.

Index: [0] = Thermal resistance stator/environment
[1] = Thermal resistance winding/stator
[2] = Thermal resistance rotor/stator

Dependency: See also: p0625, p0626, p0627, p0628

Note
The values are only valid when the motor temperature model 2 is activated (p0612.1 = 1).

r5393[0...2] Mot_temp_mod 3 thermal conductivity adaptation / Temp_mod 3 L adpt

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Motor temperature
Not relevant for motor type: Induction motor, Synchronous or reluctance motor with starting cage
Dyn. index [0...n]: - **Calculated:** -
Unit: W/K **Unit group:** 48_1 **Unit selection:** p0100

Description: Displays the adaptation of the thermal conductivity for motor temperature model 3.

Index: [0] = Thermal conductivity stator/environment
[1] = Thermal conductivity winding/stator
[2] = Thermal conductivity rotor/stator

Dependency: See also: p5350, p5351, p5352, p5353, p5354, p5355, p5370, p5371, p5372, p5380, p5381, p5382, p5383, p5384

Note
The values are only valid when the motor temperature model 3 is activated (p0612.2 = 1).

r5395[0...7] Mot_temp_mod 2/3 power losses calculated / Temp_mod 2/3 Pcalc

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Motor temperature
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: kW **Unit group:** 14_6 **Unit selection:** p0100

Description: Displays the calculated power losses for motor temperature models 2 and 3.

Index: [0] = Stator
[1] = Stator winding
[2] = Rotor
[3] = Supplement
[4] = Modulation
[5] = Hysteresis
[6] = Eddy current
[7] = Total

Dependency: See also: p5350, p5351, p5352, p5353, p5354, p5355, p5390, p5391

Note
For index [2...7]:
The values are only valid for motor temperature model 2 (p0612.1 = 1).

p5398[0...n] Mot_temp_mod current reduction factor / Temp_mod IRedFact

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor temperature	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
20.00 [%]	100.00 [%]	75.00 [%]

Description: Sets the current reduction factor when function "Messages, reduction of I_max" is activated (p0610 = 1).
The value is referred to the maximum current.

Dependency: See also: A07012

p5399[0...n].0 Mot_temp_mod configuration / Mot_temp_mod conf

Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Motor temperature	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	MDS n defined by: p0130	**Calculated:** automatic
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-	-	0000 bin

Description: Configuration of the motor temperature model

Bit array:

Bit	Signal name	1 signal	0 signal
00	Suppression of temperature measurement at low speeds	Yes	No

Note
For bit 00:
When this bit is set, motor temperature model 1 operates at low speeds (|n| < 1 [rpm]) independent of the motor temperature measurement.

r5600 PROFIenergy energy-saving mode ID / Pe mode ID

Data type: Integer16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group:
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the PROFIenergy mode ID of the effective energy-saving mode.

Value:

0:	POWER OFF
2:	Energy-saving mode 2
240:	Operation
255:	Ready

p5611.0...2 PROFIenergy energy-saving properties general / Pe properties gen

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Ready for operation
Parameter group:
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
-	-	0000 bin

Description: Sets the general properties for energy-saving.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Inhibit PROFIenergy control commands	Yes	No
01	Drive initiates OFF1 when transitioning to energy-saving mode	Yes	No
02	Trans to energy-saving mode from PROFIdrive state S3/4 poss	Yes	No

Note
PROFIenergy is a profile for energy management in production systems.
PROFIdrive state S3: ready
PROFIdrive state S4: operation

r5613.0...1 PROFIenergy energy saving active/inactive / Pe save act/inact

Data type: Unsigned8 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group:
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Status display, PROFIenergy energy saving active or inactive.

Bit array:

Bit	Signal name	1 signal	0 signal
00	PROFIenergy active	Yes	No
01	PROFIenergy inactive	Yes	No

Note
Bit 00 and bit 01 are inverse with respect to one another.

r6319[0...1] Infeed line supply voltage phase-to-phase / INF U ph-to-ph

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Mode signals / displays	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: V	**Unit group:** 5_3	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2001

Description: Display and numerical signal source for the line-to-line voltages at the input terminals of the line filter.

Index: [0] = Line filter u1 - u2
[1] = Line filter u2 - u3

Dependency: See also: p3660

Note
For index [0, 1]:
The input terminals of the line filter form, for infeeds, the connection point to measure the line voltage.
For operation with VSM (r3451.5 = 1), internal measured value (r3451.7 = 1) or measured value via AIM (r3451.6 = 1): Voltage measured values are indicated in r6319.
For encoderless operation without VSM (r3451.5 = 0) and without internal measured value (r3451.7 = 0) or measured value via AIM (r3451.6 = 0), the following applies:
The estimated values of the line-to-line voltages from the line model of the PLL are indicated in r6319.

p6450 Center potential controller mode / MP mod

Variant:	G220 Clean Power	
Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Mean potential control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	3	2

Description: Sets the mode of the center potential controller.
For value = 2:
The center potential control with FLBM/FTBM is activated.
For value = 3:
The center potential control with current impression is activated. The P current setpoint is increased proportional to the voltage asymmetry using factor p6475.

Value:
0: No symmetrization
1: Symmetrization with zero system
2: Symmetrization with FLBM/FTBM
3: Symmetrization by impressing current

Note
FLBM: fixed lowside bias modulation
FTBM: fixed top side bias modulation

p6451.0...2 Center potential controller configuration / CPC config

Variant: G220 Clean Power
Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Operation
Parameter group: Mean potential control
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Min: **Max:** **Factory setting:**
- - 0001 bin

Description: Sets the configuration of the center potential controller.
For bit 00:
- When the bit is not set, then voltage asymmetry is filtered using a PT1 filter.
- When the bit is set, voltage asymmetry is filtered using a notch filter.
For bit 01:
- When the bit is not set, losses of different magnitudes can occur in the phases.
- When the bit is set, losses are uniformly distributed between the phases.
For bit 02:
- When the bit is set, a harmonic is added to the voltage setpoint. This means that voltage symmetrization is supported at low load levels.

Bit array:

Bit	Signal name	1 signal	0 signal
00	DC link voltage filter	Notch filter	PT1 filter
01	Uniformly distribute losses between the phases	Yes	No
02	Activate additional harmonics	Yes	No

r6452.0...6 Center potential controller status / CPC int status

Variant: G220 Clean Power
Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Mean potential control
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Display and signal source of the states of the center potential controller.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Sign filtered active power	Neg/generating	Pos/motoring
01	Controller stopped due to minimum active power	Yes	No
02	Symmetrizing controller at limit	Yes	No
03	FLBM/FTBM lower voltage limit reached	Yes	No
04	FLBM/FTBM hysteresis active	Yes	No
05	FLBM/FTBM upper voltage limit reached	Yes	No
06	Current injection (impression) active	Yes	No

p6460 Center potential controller voltage asymmetry limit / CPC_U_asym_lim

Variant: G220 Clean Power

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Mean potential control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: V	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [V]	10000.0 [V]	5.0 [V]

Description: Sets the voltage limit of the symmetrization.

p6461[0...3] Center potential controller smoothing times / MP t filt

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Mean potential control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [ms]	10000.00 [ms]	[0] 0.00 [ms] [1] 0.00 [ms] [2] 5.00 [ms] [3] 16.66 [ms]

Description: Sets the smoothing times for the center potential control. The filter is deactivated if the smoothing time is 0.

Index: [0] = Smoothing time partial DC link voltage negative
[1] = Smoothing time partial DC link voltage positive
[2] = Smoothing time active power
[3] = Smoothing time voltage asymmetry.

r6464[0...2] Center potential controller partial DC link voltage actual value / PartVdc actual val

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Mean potential control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: V	**Unit group:** 5_2	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2001

Description: Display and numerical signal source for the measured actual value of the DC link voltage.

Index: [0] = VdcN partial DC link voltage negative
[1] = VdcP partial DC link voltage positive
[2] = Delta partial DC link voltage

r6465[0...2] Center potential controller partial voltages VdcN, VdcP smoothed / CPC VdcN/P smooth

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Mean potential control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: V	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** p2001

Description: Display and numerical signal source of the smoothed partial DC link voltages (VdcN,VdcP).
The value is smoothed using p6461[0] or p6461[1].

Index: [0] = VdcN partial DC link voltage negative
[1] = VdcP partial DC link voltage positive
[2] = Delta partial DC link voltage

r6466[0...3] Center potential controller system deviation / CPC sys_dev

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Mean potential control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: V	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** p2001

Description: Display and numerical signal source of the system deviation of the center potential controller.
The value indicates the asymmetry of the partial DC link voltages VdcP and VdcN.

Index: [0] = Voltage asymmetry
[1] = Voltage asymmetry filtered
[2] = Voltage asymmetry limited
[3] = Voltage asymmetry adapted

Note
For index [0]:
Original signal
For index [1]:
Depending on the configuration of the center potential controller (p6451.0), the signal is filtered using a PT1 filter or a notch filter.
For index [2]:
For low voltages, the signal filtered from 6466[1] is set to 0; for higher voltages, the output voltage is reduced.
For index [3]:
Signal from 6466[2] is adapted for low voltages.

r6467 Center potential controller active power smoothed / CPC P_act smooth

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Mean potential control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: W	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** r2004

Description: Display and numerical signal source of the smoothed active power of the center potential controller.
The signal is smoothed using p6461[2].

p6470 Center potential controller FLBM/FTBM hysteresis / CPC FLBM/FTBM hyst

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Mean potential control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: V	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [V]	1000.00 [V]	5.00 [V]

Description: Sets the hysteresis when switching over between FLBM/FTBM modulation.
The modulation type is switched over if the DC link voltage asymmetry exceeds the set value.

Note
FLBM: Flat lowside bias modulation
FTBM: Flat topside bias modulation

p6471[0...1] Center potential controller angle limit / CPC_angle_lim_I_0

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Mean potential control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0 [°]	30.0 [°]	5.0 [°]

Description: Sets the limit for angle-dependent modulation.
For index 0:
FMM is activated if the +/-30° converted line angle is greater than (30° - p6471[0]).
For index 1:
FMM is activated if the +-30° converted line angle is less than this value.

Index: [0] = Angle limit sector center
[1] = Angle limit sector limit

Note
FMM: flat middle modulation

p6472 Center potential ctrl modulation depth limit for symmetrization / MinFLBFTBsym

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	

Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Mean potential control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [%]	110.00 [%]	70.00 [%]

Description: Sets the modulation depth threshold. Depending on the threshold, the symmetrization type is briefly switched over.
If FLBM/FTBM symmetrization (p6450 = 2) is active, and the modulation depth is less than this threshold, then the center potential symmetrization is switched over to current injection (impression) for at least 100 msec.

Note
FLBM: fixed lowside bias modulation
FTBM: fixed top side bias modulation

p6475 Center potential controller Kp current setpoint / CP Kp Iset

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Mean potential control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: A/V	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-1000.00000 [A/V]	1000.00000 [A/V]	1.00000 [A/V]

Description: Sets the proportional gain (Kp) of the center potential controller with current setpoint. The value is applicable for the current impression controller (p6450=3).

r6476 Center potential controller current setpoint factor / CPC Iset factor

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Mean potential control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: A	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** p2002

Description: Display and numerical signal source for the current setpoint factor. The factor is applicable for the current impression controller (p6450=3).

r7671[0...3] IIoT IP address actual / IIoT IP addr act

Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:		
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -

Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the actual IP address for the IIoT interface (X128) on the converter.

r7700[0...63] Hash value for the integrity of UMAC data / Integrity UMAC

Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group:
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Display of the hash value for the integrity of UMAC data in the ASCII format (Base64 Encoding)

Note
The index contains the value at the corresponding position in the string

r7727[0...n] Power unit heat sink fan wear counter / PU fan wear_count

Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Power unit
Not relevant for motor type: -
Dyn. index [0...n]: PDS n defined by: p0120 **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -

Description: Displays the wear counter of the heat sink fan in the power unit.
Dependency: See also: A30042

r7737[0...n] Power unit auxiliary fan 1 wear counter / PU fan1 wear_count

Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Power unit
Not relevant for motor type: -
Dyn. index [0...n]: PDS n defined by: p0120 **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -

Description: Displays the wear counter of auxiliary fan 1 in the power unit.
Dependency: See also: A30042

p7830 Telegram diagnostics selection / Tel diag sel

Data type: Integer16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Ready for operation
Parameter group: Diagnostics
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0	3	0

Description: Selects a telegram whose contents should be shown in r7831 ... r7836.
Value: 0: Reserved

1: First cyclic receive telegram sensor 1
2: First cyclic receive telegram sensor 2
3: First cyclic receive telegram sensor 3

Dependency: See also: r7831, r7832, r7833, r7834, r7835, r7836

r7831[0...23] Telegram diagnostics signals / Tel diag sig

Data type: Integer16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Diagnostics
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the signals contained in the selected telegram (p7830).

Value:

0: UNUSED
1: UNKNOWN
102: SAPAR_ID_DSA_ALARM
110: SAPAR_ALARMBITS_FLOAT_0
111: SAPAR_ALARMBITS_FLOAT_1
112: SAPAR_ALARMBITS_FLOAT_2
113: SAPAR_ALARMBITS_FLOAT_3
114: SAPAR_ALARMBITS_FLOAT_4
115: SAPAR_ALARMBITS_FLOAT_5
10500: ENC_ID_TIME_PRETRIGGER
10501: ENC_ID_TIME_SEND_TELEG_1
10502: ENC_ID_TIME_CYCLE_FINISHED
10503: ENC_ID_TIME_DELTA_FUNMAN
10504: ENC_ID_SUBTRACE_CALCTIMES
10505: ENC_ID_SYNO_PERIOD
10515: ENC_ID_AB_SQUARE_SUM
10516: ENC_ID_ADC_TRACK_A
10517: ENC_ID_ADC_TRACK_B
10518: ENC_ID_ADC_TRACK_C
10519: ENC_ID_ADC_TRACK_D
10520: ENC_ID_ADC_TRACK_A_SAFETY
10521: ENC_ID_ADC_TRACK_B_SAFETY
10523: ENC_ID_ADC_TEMP_1
10524: ENC_ID_SUBTRACE_TRACK_A
10525: ENC_ID_SUBTRACE_TRACK_B
10526: ENC_ID_ADC_TRACK_R
10532: ENC_ID_TRACK_AB_X
10533: ENC_ID_TRACK_AB_Y
10534: ENC_ID_OFFSET_CORR_AB_X
10535: ENC_ID_OFFSET_CORR_AB_Y
10536: ENC_ID_AB_ABS_VALUE
10537: ENC_ID_TRACK_CD_X
10538: ENC_ID_TRACK_CD_Y
10539: ENC_ID_TRACK_CD_ABS
10542: ENC_ID_AB_RAND_X
10543: ENC_ID_AB_RAND_Y

10544: ENC_ID_AB_RAND_ABS_VALUE
10545: ENC_ID_SUBTRACE_ABS_ARRAY
10546: ENC_ID_PROC_OFFSET_0
10547: ENC_ID_PROC_OFFSET_4
10550: ENC_ID_SUBTRACE_AMPL
10563: ENC_ID_ENCODER_TEMP
10564: ENC_SELFTEMP_ACT
10565: ENC_ID_MOTOR_TEMP_TOP
10566: ENC_ID_MOTOR_TEMP_1
10567: ENC_ID_MOTOR_TEMP_1_COD
10569: ENC_ID_MOTOR_TEMP_2_COD
10571: ENC_ID_MOTOR_TEMP_3_COD
10580: ENC_ID_RESISTANCE_1
10590: ENC_ID_ANA_CHAN_A
10591: ENC_ID_ANA_CHAN_B
10592: ENC_ID_ANA_CHAN_X
10593: ENC_ID_ANA_CHAN_Y
10596: ENC_ID_AB_ANGLE
10597: ENC_ID_CD_ANGLE
10598: ENC_ID_MECH_ANGLE_HI
10599: ENC_ID_RM_POS_PHI_COMMU
10600: ENC_ID_PHI_COMMU
10601: ENC_ID_SUBTRACE_ANGLE
10612: ENC_ID_DIFF_CD_INC
10613: ENC_ID_RM_POS_PHI_COMMU_RFG
10628: ENC_ID_MECH_ANGLE
10629: ENC_ID_MECH_RM_POS
10644: ENC_ID_INIT_VECTOR
10645: FEAT_INIT_VECTOR
10660: ENC_ID_SENSOR_STATE
10661: ENC_ID_BASIC_SYSTEM
10662: ENC_ID_REFMARK_STATUS
10663: ENC_ID_DSA_STATUS1_SENSOR
10664: ENC_ID_DSA_RMSTAT_HANDSHAKE
10665: ENC_ID_DSA_CONTROL1_SENSOR
10667: ENC_ID_SAFETY
10669: ENC_ID_SUB_STATE
10676: ENC_ID_COUNTCORR_SAW_VALUE
10677: ENC_ID_COUNTCORR_ABS_VALUE
10678: ENC_ID_SAWTOOTH_CORR
10680: ENC_ID_SM_XIST1_CORRECTED_QUADRANTS
10692: ENC_ID_RESISTANCE_CALIB_INSTANT
10693: ENC_ID_SERPROT_POS
10700: ENC_ID_AB_VIOL_COUNT
10701: ENC_ID_SUBTRACE_TRACK_A_TRIG
10702: ENC_ID_SUBTRACE_TRACK_B_TRIG
10723: ENC_ID_ACT_STATEMACHINE_FUNCTION
10724: ENC_ID_ACT_FUNMAN_FUNCTION
10725: ENC_ID_SAFETY_COUNTER_CRC

10728: ENC_ID_SUBTRACE_AREA
10740: ENC_ID_POS_ABSOLUTE
10741: ENC_ID_POS_REFMARK
10742: ENC_ID_SAWTOOTH
10743: ENC_ID_SAFETY_PULSE_COUNTER
10745: ENC_ID_EIU_ZEROCTRL
10756: ENC_ID_DSA_ACTUAL_SPEED
10757: ENC_ID_SPEED_DEV_ABS
10772: ENC_ID_DSA_POS_XIST1
10788: ENC_ID_AB_CROSS_CORR
10789: ENC_ID_AB_GAIN_Y_CORR
10790: ENC_ID_AB_PEAK_CORR
11825: ENC_ID_RES_TRANSITION_RATIO
11826: ENC_ID_RES_PHASE_SHIFT
12088: ENC_ID_SM_DIFF_PULSE_ACCU
15150: ENC_ID_SPINDLE_S1_RAW
15151: ENC_ID_SPINDLE_S4_RAW
15152: ENC_ID_SPINDLE_S5_RAW
15155: ENC_ID_SPINDLE_S1_CAL
15156: ENC_ID_SPINDLE_S4_CAL
15157: ENC_ID_SPINDLE_S5_CAL

r7832[0...23] Telegram diagnostics numerical format / Tel diag format

Data type: Integer16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Diagnostics
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the original numerical format of the signals contained in the telegram.
The associated signal number is represented in the appropriate index of r7831.

Value:
-1: Unknown
0: Boolean
1: Signed 1 byte
2: Signed 2 byte
3: Signed 4 byte
4: Signed 8 byte
5: Unsigned 1 byte
6: Unsigned 2 byte
7: Unsigned 4 byte
8: Unsigned 8 byte
9: Float 4 byte
10: Double 8 byte
11: mm dd yy HH MM SS MS DOW
12: ASCII string
13: SINUMERIK frame type
14: SINUMERIK axis type

Dependency: See also: r7831

r7833[0...23] Telegram diagnostics unsigned / Tel diag unsign

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Diagnostics
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Parameter to display a DSA signal in the unsigned-integer format.
The associated signal number is represented at the appropriate index in r7831.

r7834[0...23] Telegram diagnostics signed / Tel diag sign

Data type: Integer32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Diagnostics
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Parameter to display a DSA signal in the signed-integer format.
The associated signal number is represented at the appropriate index in r7831.

r7835[0...23] Telegram diagnostics real / Tel diag real

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Diagnostics
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Parameter to display a DSA signal in the float format.
The associated signal number is represented at the appropriate index in r7831.

r7836[0...23] Telegram diagnostics unit / Tel diag unit

Data type: Integer16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Diagnostics
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the units of a DSA signal.
The associated signal number is represented at the appropriate index in r7831.

Value:
-1: Unknown
0: None
1: Millimeter or degrees
2: Millimeter
3: degrees
4: mm/min or RPM
5: Millimeter / min
6: Revolutions / min
7: m/sec^2 or U/sec^2

8: m/sec^2
9: U/sec^2
10: m/sec^3 or U/sec^3
11: m/sec^3
12: U/sec^3
13: sec
14: 16.667 / sec
15: mm/revolution
16: Unit for temperature compensation values
18: Newton
19: Kilogram
20: Kilogram meter^2
21: Percent
22: Hertz
23: Volt peak-to-peak
24: Amps peak-to-peak
25: Degrees Celsius
26: degrees
28: Millimeter or degrees
29: Meters / minute
30: Meters / second
31: ohm
32: Millihenry
33: Newton meter
34: Newton meter/Ampere
35: Volt/Ampere
36: Newton meter second / rad
38: 31.25 microseconds
39: Microseconds
40: Milliseconds
42: Kilowatt
43: Micro amps peak-to-peak
44: Volt seconds
45: Microvolt seconds
46: Micro newton meters
47: Amps / volt seconds
48: Per mille
49: Hertz / second
53: Micrometer or millidegrees
54: Micrometer
55: Millidegrees
59: Nanometer
61: Newton/Amps
62: Volt seconds/meter
63: Newton seconds/meter
64: Micronewton
65: Liters / minute
66: Bar
67: Cubic centimeters

68: Millimeter / volt minute
69: Newton/Volt
80: Millivolts peak-to-peak
81: Volt rms
82: Millivolts rms
83: Amps rms
84: Micro amps rms
85: Micrometers / revolution
90: Tenths of a second
91: Hundredths of a second
92: 10 microseconds
93: Pulses
94: 256 pulses
95: Tenths of a pulse
96: Revolutions
97: 100 revolutions / minute
98: 10 revolutions / minute
99: 0.1 revolutions / minute
100: Thousandth revolution / minute
101: Pulses / second
102: 100 pulses / second
103: 10 revolutions / (minute x seconds)
104: 10000 pulses/second^2
105: 0.1 Hertz
106: 0.01 Hertz
107: 0.1 / seconds
108: Factor 0.1
109: Factor 0.01
110: Factor 0.001
111: Factor 0.0001
112: 0.1 Volt peak-to-peak
113: 0.1 Volt peak-to-peak
114: 0.1 amps peak-to-peak
115: Watt
116: 100 Watt
117: 10 Watt
118: 0.01 percent
119: 1/second^3
120: 0.01 percent/millisecond
121: Pulses / revolution
122: Microfarads
123: Milliohm
124: 0.01 Newton meter
125: Kilogram millimeter^2
126: Rad / (seconds newton meter)
127: Henry
128: Kelvin
129: Hours
130: Kilohertz

131: Milliamperes peak-to-peak
132: Millifarads
133: Meter
135: Kilowatt hours
136: Percent
137: Amps / Volt
138: Volt
139: Millivolts
140: Microvolts
141: Amps
142: Milliamperes
143: Micro amps
144: Milliamperes rms
145: Millimeter
146: Nanometer
147: Joules

r8400[0...2] Date / Date

Data type: Unsigned16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Diagnostics general
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the actual date in year, month and day.

Index: [0] = Year (YYYY)
[1] = Month (1 ... 12)
[2] = Day (1 ... 31)

Note
The time in r8400 and r8401 is used to display the fault and alarm times.
Possible date/time setting:
- Web server (manually)
- NTP (Network Time Protocol)
The date and time are stored in the internal clock block of the converter and are continually updated for up to 5 days even if the supply voltage is interrupted.

r8401[0...2] Time / Time

Data type: Unsigned16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Diagnostics general
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the current time in hours, minutes and seconds.

Index: [0] = Hour (0 ... 23)
[1] = Minute (0 ... 59)
[2] = Second (0 ... 59)

Note
The time in r8400 and r8401 is used to display the fault and alarm times.
The time is displayed in the 24-hour format.
Possible date/time setting:
- Web server (manually)
- NTP (Network Time Protocol)
The date/time are stored in the internal clock block of the converter and continue to run even if the supply voltage is interrupted (for approx. 5 days).

r8540.0...15 STW1 in manual operation / STW1 manual

Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Commissioning interface
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary **Scaling:** -

Description: Displays the specified control word 1 (STW1) in manual operation with operating unit or web server.

Bit array:

Bit	Signal name	1 signal	0 signal
00	ON/OFF1	ON	OFF1
01	No coast-down / coast-down (OFF2)	No OFF2	OFF2
02	No Quick Stop / Quick Stop (OFF3)	No OFF3	OFF3
03	Reserved	Yes	No
04	Reserved	Yes	No
05	Reserved	Yes	No
06	Reserved	Yes	No
07	Acknowledge fault	Yes	No
08	Jog 1 ON/jog 1 OFF	ON	OFF
09	Jog 2 ON/jog 2 OFF	ON	OFF
10	Reserved	Yes	No
11	Direction reversal (setpoint)	Yes	No
12	Reserved	Yes	No
13	Reserved	Yes	No
14	Reserved	Yes	No
15	Reserved	Yes	No

r8541 Speed setpoint in manual operation / N_set man

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Commissioning interface
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: rpm **Unit group:** 3_1 **Unit selection:** p0505
Type of signal interconnection: Source numeric **Scaling:** p2000

Description: Displays the specified speed setpoint in manual operation with operating unit or web server.

c8542[0...15] Active STW1 in manual operation / STW1 active manual

Data type: Unsigned8 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages

Write permission: Edit device configuration or drive applications
Parameter group: Commissioning interface
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection:
[0] Parameter: 8540.0
[1] Parameter: 8540.1
[2] Parameter: 8540.2
[3] Parameter: 8540.3
[4] Parameter: 8540.4
[5] Parameter: 8540.5
[6] Parameter: 8540.6
[7] Parameter: 8540.7
[8] Parameter: 8540.8
[9] Parameter: 8540.9
[10] Parameter: 8540.10
[11] Parameter: 8540.11
[12] Parameter: 8540.12
[13] Parameter: 8540.13
[14] Parameter: 8540.14
[15] Parameter: 8540.15

Description: Signal for the active control word 1 (STW1) in manual operation with operating unit or web server.

Index:
[0] = ON/OFF1
[1] = No coast-down / coast-down (OFF2)
[2] = No Quick Stop / Quick Stop (OFF3)
[3] = Enable operation
[4] = Enable ramp-function generator
[5] = Continue ramp-function generator
[6] = Enable speed setpoint
[7] = Acknowledge fault
[8] = Jog 1 ON/jog 1 OFF
[9] = Jog 2 ON/jog 2 OFF
[10] = Control by PLC
[11] = Direction reversal (setpoint)
[12] = Enable speed controller
[13] = Motorized potentiometer raise
[14] = Motorized potentiometer lower
[15] = CDS bit 0

Note
For index [0...2], [8...9]:
The expression before the slash corresponds to a 1 signal.
The expression after the slash corresponds to a 0 signal.

c8543 Active speed setpoint in manual operation / N_set active man

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Commissioning interface
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: rpm **Unit group:** - **Unit selection:** -

Type of signal interconnection:	Sink numeric	**Scaling:** p2000
Factory interconnection:	Parameter: 8541	

Description: Signal for the active speed setpoint in manual operation with operating unit or web server.

c8558 Signal to switch over between manual/automatic operation / Signal man/auto

Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Commissioning interface	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signal for switching over between manual and automatic operation.

r8600[0...30] PROFIdrive PZD receive Float32 / PZD recv F32

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Receive direction	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** -

Description: Display and numerical signal source to interconnect PZD (setpoints) with Float32 format received from the fieldbus controller.

Index: [0] = PZD 1 + 2
[1] = PZD 2 + 3
[2] = PZD 3 + 4
[3] = PZD 4 + 5
[4] = PZD 5 + 6
[5] = PZD 6 + 7
[6] = PZD 7 + 8
[7] = PZD 8 + 9
[8] = PZD 9 + 10
[9] = PZD 10 + 11
[10] = PZD 11 + 12
[11] = PZD 12 + 13
[12] = PZD 13 + 14
[13] = PZD 14 + 15
[14] = PZD 15 + 16
[15] = PZD 16 + 17
[16] = PZD 17 + 18
[17] = PZD 18 + 19
[18] = PZD 19 + 20
[19] = PZD 20 + 21
[20] = PZD 21 + 22
[21] = PZD 22 + 23
[22] = PZD 23 + 24
[23] = PZD 24 + 25
[24] = PZD 25 + 26
[25] = PZD 26 + 27
[26] = PZD 27 + 28
[27] = PZD 28 + 29
[28] = PZD 29 + 30
[29] = PZD 30 + 31
[30] = PZD 31 + 32

NOTICE
A signal interconnection of a single PZD can only take place either on r2050, r2060 or r8600. A maximum of 4 indices of the "trace" function can be used.

c8601[0...30] PROFIdrive PZD send Float32 / PZD send F32

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Send direction	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** -
Factory interconnection:	Fixed value: 0.00	

Description: Signal of the PZD (actual values) in the Float32 format that are sent to the fieldbus controller.

Index:
[0] = PZD 1 + 2
[1] = PZD 2 + 3
[2] = PZD 3 + 4
[3] = PZD 4 + 5
[4] = PZD 5 + 6
[5] = PZD 6 + 7
[6] = PZD 7 + 8
[7] = PZD 8 + 9
[8] = PZD 9 + 10
[9] = PZD 10 + 11
[10] = PZD 11 + 12
[11] = PZD 12 + 13
[12] = PZD 13 + 14
[13] = PZD 14 + 15
[14] = PZD 15 + 16
[15] = PZD 16 + 17
[16] = PZD 17 + 18
[17] = PZD 18 + 19
[18] = PZD 19 + 20
[19] = PZD 20 + 21
[20] = PZD 21 + 22
[21] = PZD 22 + 23
[22] = PZD 23 + 24
[23] = PZD 24 + 25
[24] = PZD 25 + 26
[25] = PZD 26 + 27
[26] = PZD 27 + 28
[27] = PZD 28 + 29
[28] = PZD 29 + 30
[29] = PZD 30 + 31
[30] = PZD 31 + 32

NOTICE
A signal interconnection of an individual PZD is only possible either with c2053, c2063 or c8601. It is possible that the interconnection is locked as a result of a set PROFIdrive telegram. A maximum of 4 indices of the "trace" function can be used.

r8602[0...28] PROFIdrive PZD receive Float64 / PZD recv F64

Data type: FloatingPoint64	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Receive direction	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** -

Description: Display and numerical signal source to interconnect PZD (setpoints) with Float64 format received from the fieldbus controller.

Index: [0] = PZD 1...4
[1] = PZD 2...5
[2] = PZD 3...6
[3] = PZD 4...7
[4] = PZD 5...8
[5] = PZD 6...9
[6] = PZD 7...10
[7] = PZD 8...11
[8] = PZD 9...12
[9] = PZD 10...13
[10] = PZD 11...14
[11] = PZD 12...15
[12] = PZD 13...16
[13] = PZD 14...17
[14] = PZD 15...18
[15] = PZD 16...19
[16] = PZD 17...20
[17] = PZD 18...21
[18] = PZD 19...22
[19] = PZD 20...23
[20] = PZD 21...24
[21] = PZD 22...25
[22] = PZD 23...26
[23] = PZD 24...27
[24] = PZD 25...28
[25] = PZD 26...29
[26] = PZD 27...30
[27] = PZD 28...31
[28] = PZD 29...32

NOTICE
A signal interconnection of a single PZD can only take place either on r2050, r2060, r8600 or r8602. A maximum of 4 indices of the "trace" function can be used.

c8603[0...28] PROFIdrive PZD send Float64 / PZD send F64

Data type: FloatingPoint64	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Send direction	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink numeric	**Scaling:** -
Factory interconnection:	Fixed value: 0.00	

Description: Signals of the PZD (actual values) in the Float64 format that are sent to the fieldbus controller.

Index: [0] = PZD 1...4
[1] = PZD 2...5
[2] = PZD 3...6
[3] = PZD 4...7
[4] = PZD 5...8
[5] = PZD 6...9
[6] = PZD 7...10
[7] = PZD 8...11
[8] = PZD 9...12
[9] = PZD 10...13
[10] = PZD 11...14
[11] = PZD 12...15
[12] = PZD 13...16
[13] = PZD 14...17
[14] = PZD 15...18
[15] = PZD 16...19
[16] = PZD 17...20
[17] = PZD 18...21
[18] = PZD 19...22
[19] = PZD 20...23
[20] = PZD 21...24
[21] = PZD 22...25
[22] = PZD 23...26
[23] = PZD 24...27
[24] = PZD 25...28
[25] = PZD 26...29
[26] = PZD 27...30
[27] = PZD 28...31
[28] = PZD 29...32

NOTICE
A signal interconnection of an individual PZD is only possible with either c2053, c2063, c8601 or c8603. It is possible that the interconnection is locked as a result of a set PROFIdrive telegram. A maximum of 4 indices of the "trace" function can be used.

r8936[0...1] PN cyclic connection state / PN cyc conn state

Variant: G220, G220 Clean Power
Available for module: Communication Module PROFINET/EtherNet
Data type: Integer16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group:
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the status of the cyclic PROFINET connection.

Value:
0: Canceled
1: Not connected
2: Connection starts to be established
3: Module information expected
4: Module information received
5: Module address expected

6: Module address received
7: Parameterization data expected
8: Parameterization data received
9: Evaluate parameterization data
10: Connection being established completion expected
11: System redundancy backup
12: Configured controller STOP
13: Configured controller RUN

Index: [0] = Controller 1
[1] = Controller 2

Dependency: See also: r8961

Note
The parameter is active when the "PROFINET Device" protocol is selected.
For two connections (Shared Device or system redundancy) the display in the index depends on the sequence in which the connections are established.
The following states are displayed for system redundancy:
Primary controller: r8936[x] = 13
Backup controller: r8936[x] = 11
For value = 10:
If the connection remains in this state, then when using PROFINET IRT the following can apply:
- Topology error (incorrect port assignment).
- Synchronization missing.

r8937[0...5] PN cyclic connection diagnostics / PN cycl conn diag

Variant: G220, G220 Clean Power
Available for module: Communication Module PROFINET/EtherNet
Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group:
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Display to diagnose the cyclic PROFINET connection.

Index: [0] = Number of cyclic connections
[1] = Number of send subslots of all connections
[2] = Number of send net data (bytes) of all connections
[3] = Number of receive subslots of all connections
[4] = Number of receive net data (bytes) of all connections
[5] = Connection type (RT, IRT)

Note
The parameter is active for protocol selection "PROFINET Device" and "EtherNet/IP".
For PROFINET, the following applies:
For index [5]:
Bit 0 = 1: there is at least one RT connection.
Bit 1 = 1: there is an IRT connection.
For EtherNet/IP, the following applies:
For index [1, 3, 5]:
These indices are not relevant.

r8961[0...3] PN controller IP address / PN Ctrl IP Addr

Variant: G220, G220 Clean Power

Available for module: Communication Module PROFINET/EtherNet
Data type: Unsigned8 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Configuration
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the IP address of the PROFINET controller.

Note
For a shared device, the IP address of the automation controller is displayed.
For system redundancy, the IP address of the active controller is displayed.

c8995[0...3] Ethernet X127 enable / Eth X127 enable

Data type: Unsigned8 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: -
Parameter group: Configuration
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: [0] Fixed value: 1
[1] Fixed value: 1
[2] Fixed value: 0
[3] Fixed value: 0

Description: Signal to enable the Ethernet interface X127 for applications.

Index: [0] = Secure S7 Protocol Startdrive
[1] = Web server HTTPS
[2] = S7 protocol PCS7
[3] = Web server HTTP

Note
The parameter influences the access from applications.
1 signal:
Ethernet interface X127 is enabled for access.
0 signal:
Ethernet interface X127 is blocked and cannot be accessed.
The signal is not influenced by restoring the factory settings.

c8997[0...3] PROFINET X150 enable / PN X150 enable

Variant: G220, G220 Clean Power
Available for module: Communication Module PROFINET/EtherNet
Data type: Unsigned8 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: -
Parameter group: Configuration
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Type of signal interconnection: Sink binary

Factory interconnection:
[0] Fixed value: 1
[1] Fixed value: 1
[2] Fixed value: 0
[3] Fixed value: 0

Description: Signal to enable PROFINET interface X150 for applications.

Index:
[0] = Secure S7 Protocol Startdrive
[1] = Web server HTTPS
[2] = S7 protocol PCS7
[3] = Data set protocol for commands and configuration

Note
The parameter influences the access from applications.
1 signal:
PROFINET interface X150 is enabled for access.
0 signal:
PROFINET interface X150 is inhibited for access.
The signal is not influenced by restoring the factory settings.

c8999[0...1] PROFIBUS X126 enable / PB X126 enable

Variant: G220, G220 Clean Power

Available for module: PROFIBUS Communication Module

Data type: Unsigned8 **Visible in:** Extended display

Read permission: Read drive data or acknowledge messages

Write permission: -

Parameter group: Configuration

Not relevant for motor type: -

Dyn. index [0...n]: - **Calculated:** -

Unit: - **Unit group:** - **Unit selection:** -

Type of signal interconnection: Sink binary

Factory interconnection:
[0] Fixed value: 0
[1] Fixed value: 0

Description: Signal to enable PROFIBUS interface X126 for applications.

Index:
[0] = S7 protocol PCS7
[1] = Data set protocol for commands and configuration

Note
The parameter influences the access from applications.
1 signal:
PROFIBUS interface X126 is enabled for access.
0 signal:
PROFIBUS interface X126 is inhibited for access.
The signal is not influenced by restoring the factory settings.

r9280[0...n] CDS name / CDS name

Data type: Unsigned8 **Visible in:** Extended display

Read permission: Read drive data or acknowledge messages

Parameter group: Command data sets CDS

Not relevant for motor type: -

Dyn. index [0...n]: n defined by: r9282 **Calculated:** -

Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the names of all command data sets (CDS).

r9281[0...n] **DDS name / DDS name**

Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Drive data sets DDS	
Not relevant for motor type:	-	
Dyn. index [0...n]:	n defined by: r9283	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Description: Displays the names of all drive data sets (DDS).

r9282 **CDS name total length / CDS name length**

Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Command data sets CDS	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Description: Displays the length of the CDS name.

r9283 **DDS name total length / DDS name length**

Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Drive data sets DDS	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Description: Displays the length of the DDS (Drive Data Set) name.

p9500 **SI monitoring clock cycle / SI cycle**

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Safety Integrated	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
1.00000 [ms]	12.00000 [ms]	4.00000 [ms]

Description: Sets the monitoring clock cycle for safe motion monitoring.

Dependency: See also: p9511
See also: C01652

Note
When online safety commissioning has been completed, a change results in an automatic restart.
The monitoring cycle must be a multiple of the actual value sensing clock cycle (p9511).

r9502 **SI axis type / SI axis type**

Data type: Integer16	**Visible in:** Standard display

Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the axis type (linear axis or rotary axis/spindle).

Value:
0: Linear axis
1: Rotary axis/spindle

Note
The axis type is set in the commissioning tool.
Safety parameters whose units are dependent on the axis type change after switching over the axis type.

p9507.8...9 SI function configuration / SI Config

Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit Safety Integrated application
Can be changed in the operating state: Commissioning (Safety Integrated)
Parameter group: Extended functions
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Min: **Max:** **Factory setting:**
- - 0000 0000 0000 0000 bin

Description: Sets the function configuration for the safe motion monitoring functions.

Bit array:

Bit	Signal name	1 signal	0 signal
08	No STO after encoder fault for 1-encoder safety	Yes	No
09	Status bit 'SSM below the limit' initial value when running up	SSM status=0	SSM status=1

Dependency: See also: C01711

Note
For bit 08:
When the function is activated, after an encoder fault for 1-encoder safety and when a safety function is selected, an STO (Safe Torque Off) is not triggered.
For bit 09:
When the function is activated, the status signal for SSM (Safety Speed Monitoring) is initialized with "0" when running up.
When the function is deactivated, the status signal for SSM is initialized with "1" when running up.

p9511 SI actual value sensing cycle / SI act cycle

Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit Safety Integrated application
Can be changed in the operating state: Commissioning (Safety Integrated)
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: ms **Unit group:** - **Unit selection:** -
Min: **Max:** **Factory setting:**
1.00000 [ms] 8.00000 [ms] 1.00000 [ms]

Description: Sets the clock cycle time of the actual value sensing for safe motion monitoring.
Setting criteria if the motion monitoring functions are executed with an encoder.
- A slower cycle time reduces the maximum permissible speed; however, it ensures a lower system utilization level.
- The maximum permissible velocity, which, when exceeded, can mean that errors occur in the safe actual value sensing, is displayed in r9730.

Dependency: See also: C01652

Note
The monitoring clock cycle from p9500 must be an integer multiple of this parameter.
For motion monitoring functions with encoder, the cycle time of the actual value sensing must be an integer multiple of the current controller cycle.
When online safety commissioning has been completed, a change results in an automatic restart.

p9516.1 SI encoder configuration, safety functions / SI enc_config

Data type: Unsigned16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-	-	0000 bin

Description: Sets the configuration for the position actual value.
The encoder that is used for the safe motion monitoring function must be parameterized in this parameter.

Bit array:

Bit	Signal name	1 signal	0 signal
01	Position actual value sign change	Yes	No

Dependency: See also: p0404, p0410
See also: C01671

Note
In the standard case, p9516.1 should be set equal to p0410.1.

p9520 SI leadscrew pitch / SI leadscrew_pitch

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.1000 [mm]	8388.0000 [mm]	10.0000 [mm]

Description: Sets the gear ratio between SI encoder 1 and load in mm/revolution for a linear axis with rotary encoder.

NOTICE
The fourth decimal point can be rounded-off depending on the size of the entered number (from 3 places before the decimal point).

p9521[0...7] SI gearbox encoder (motor)/load denominator / SI grbx denom

Data type: Unsigned32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
1	2147000000	1

Description: Sets the denominator for the selected gearbox between SI encoder 1 and the load.

Index: [0] = Gearbox 1
[1...7] = Reserved

Dependency: See also: p9522

Note
The gearbox ratio is obtained from p9522 / p9521.

p9522[0...7] SI gearbox encoder (motor)/load numerator / SI grbx numerator

Data type: Unsigned32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
1	2147000000	1

Description: Sets the numerator for the selected gearbox between SI encoder 1 and the load.

Index: [0] = Gearbox 1
[1...7] = Reserved

Dependency: See also: p9521

Note
The gearbox ratio is obtained from p9522 / p9521.

p9530 SI SOS standstill tolerance / SI standst_tol

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm	**Unit group:** -	**Unit selection:** -

	Min:	Max:	Factory setting:
	0.000 [mm]	100.000 [mm]	1.000 [mm]

Description: Sets the tolerance for function SOS (Safe Operating Stop).

Dependency: See also: C01707

p9530 SI SOS standstill tolerance / SI standst_tol

Variant:	G220, G220 Clean Power	
Values for:	Safety rotary axis	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000 [°]	100.000 [°]	1.000 [°]

Description: Sets the tolerance for function SOS (Safe Operating Stop).

Dependency: See also: C01707

p9531[0...3] SI SLS limit values / SI SLS limit

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm/min	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [mm/min]	1000000.00 [mm/min]	2000.00 [mm/min]

Description: Sets the limit values for function SLS (Safely-Limited Speed).

Index: [0] = Limit value SLS1
[1] = Limit value SLS2
[2] = Limit value SLS3
[3] = Limit value SLS4

Dependency: See also: p9563
See also: C01714

p9531[0...3] SI SLS limit values / SI SLS limit

Variant:	G220, G220 Clean Power	
Values for:	Safety rotary axis	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	

Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [rpm]	1000000.00 [rpm]	2000.00 [rpm]

Description: Sets the limit values for function SLS (Safely-Limited Speed).

Index:
[0] = Limit value SLS1
[1] = Limit value SLS2
[2] = Limit value SLS3
[3] = Limit value SLS4

Dependency: See also: p9563
See also: C01714

p9533 SI SLS setpoint speed limiting / SI SLS set_lim

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000 [%]	100.000 [%]	80.000 [%]

Description: Sets the evaluation factor to define the setpoint limit from the selected actual velocity limit.
The active SLS (Safely-Limited Speed) limit value is evaluated with this factor and is made available as setpoint limit in r9733.
For a value = 0, the setpoint velocity limiting is inactive.

Dependency: r9733[0] = p9531[x] x p9533 (converted from the load side to the encoder side)
r9733[1] = p9531[x] x p9533 (converted from the load side to the encoder side)
[x] = selected SLS limit value
Conversion factor from the encoder side to the load side:
- Motor type = rotary and axis type = linear: p9522 / (p9521 x p9520)
- Otherwise: p9522 / p9521
See also: p9531

Note
The active actual velocity limit is selected via safety-relevant inputs (SGE).
When selecting a safety function, where standstill is reached or required (e.g. STO, SS1), then setpoint 0 is specified in r9733.

p9539[0...7] SI gearbox rotation reversal / SI grbx reversal

Data type: Integer16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	

	Dyn. index [0...n]:	-	**Calculated:** -
	Unit: -	**Unit group:** -	**Unit selection:** -
	Min:	**Max:**	**Factory setting:**
	0	1	0

Description: Sets the direction of rotation reversal for the gearbox.

Value:
0: No direction of rotation reversal
1: Direction of rotation reversal

Index:
[0] = Gearbox 1
[1...7] = Reserved

Dependency: See also: p9521

p9545 SI SSM filter time / SI SSM filt

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [ms]	500.00 [ms]	0.00 [ms]

Description: Sets the filter time for the feedback signal SSM (Safe Speed Monitor) to detect standstill.

Note
The filter time is only active if the function is enabled (p9604.12 = 1).

p9546 SI SSM velocity limit / SI SSM v_lim

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm/min	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.002 [mm/min]	1000000.000 [mm/min]	60.000 [mm/min]

Description: Sets the velocity limit for the feedback signal SSM (Safe Speed Monitor) to detect standstill.
When this limit value is undershot (take into account the parameterized hysteresis), signal "SSM feedback signal active" is set.

p9546 SI SSM velocity limit / SI SSM v_lim

Variant:	G220, G220 Clean Power
Values for:	Safety rotary axis
Data type: FloatingPoint32	**Visible in:** Standard display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit Safety Integrated application

Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.002 [rpm]	1000000.000 [rpm]	60.000 [rpm]

Description: Sets the velocity limit for the feedback signal SSM (Safe Speed Monitor) to detect standstill.
When this limit value is undershot (take into account the parameterized hysteresis), signal "SSM feedback signal active" is set.

p9547 SI SSM velocity hysteresis / SI SSM hyst

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm/min	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0010 [mm/min]	500.0000 [mm/min]	30.0000 [mm/min]

Description: Sets the speed hysteresis for the feedback signal SSM (Safe Speed Monitor) to detect standstill (n < nx).

Dependency: See also: C01711

Note
The following applies when parameterizing the hysteresis:
- Set parameters p9546 and p9547 according to the following rule: p9546 * 0.75 >= p9547

p9547 SI SSM velocity hysteresis / SI SSM hyst

Variant:	G220, G220 Clean Power	
Values for:	Safety rotary axis	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.0010 [rpm]	500.0000 [rpm]	30.0000 [rpm]

Description: Sets the speed hysteresis for the feedback signal SSM (Safe Speed Monitor) to detect standstill (n < nx).

Dependency: See also: C01711

Note
The following applies when parameterizing the hysteresis:
- Set parameters p9546 and p9547 according to the following rule: p9546 * 0.75 >= p9547

p9548 SI SAM velocity tolerance / SI SAM vel tol

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm/min	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [mm/min]	120000.00 [mm/min]	300.00 [mm/min]

Description: Sets the velocity tolerance for function SAM (Safe Acceleration Monitor).
If the drive velocity increases during the down ramp by more than this tolerance, then SAM identifies this and STO (Safe Torque Off) is initiated.

Dependency: See also: C01706

p9548 SI SAM velocity tolerance / SI SAM vel tol

Variant:	G220, G220 Clean Power	
Values for:	Safety rotary axis	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [rpm]	120000.00 [rpm]	300.00 [rpm]

Description: Sets the velocity tolerance for function SAM (Safe Acceleration Monitor).
If the drive velocity increases during the down ramp by more than this tolerance, then SAM identifies this and STO (Safe Torque Off) is initiated.

Dependency: See also: C01706

p9551 SI SLS delay time for limit value change / SI SLS t_del

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [ms]	600000.00 [ms]	100.00 [ms]

Description: Sets the delay time for the limit value change for function SLS (Safely-Limited Speed).
When transitioning from a higher to a lower safely-limited velocity/speed stage, within this delay time, the "old" velocity stage remains active.
Even if SLS is activated from the state "SLS inactive", then this delay time is still applied.

Note
The set time is rounded internally to an integer multiple of the monitoring clock cycle.

p9552 SI transition time SS2 to SOS / SI t SS2->SOS

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [ms]	600000.00 [ms]	100.00 [ms]

Description: Sets the transition time from SS2 (Safe Stop 2) to SOS (Safe Operating Stop).

Note
The set time is rounded internally to an integer multiple of the monitoring clock cycle.

p9553 SI transition time SS2E to SOS / SI t SS2E->SOS

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [ms]	600000.00 [ms]	100.00 [ms]

Description: Sets the transition time from SS2E (Safe Stop 2 External) to SOS (Safe Operating Stop).

Note
The set time is rounded internally to an integer multiple of the monitoring clock cycle.

p9555 SI transition time SCF to SS1/SS1E / SI t SCF->SS1/SS1E

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Basic functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -

Min:	Max:	Factory setting:
0.00 [ms]	600000.00 [ms]	0.00 [ms]

Description: Sets the transition time from SCF (Safety Channel Failure) to SS1 (Safe Stop 1) / SS1E (Safe Stop 1 with external Stop).

Dependency: See also: p9561
See also: C01701, C01702, C01711

Note
The set time is rounded internally to an integer multiple of the monitoring clock cycle.

p9556 SI transition time SS1 to STO / SI t SS1->STO

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Basic functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [ms]	3.6e+06 [ms]	100.00 [ms]

Description: Sets the transition time from SS1 (Safe Stop 1) to STO (Safe Torque Off).
The parameter has no effect for motion monitoring functions with safe brake ramp monitoring (p9606 = 2).

Dependency: See also: p9560
See also: C01701

Note
The set time is rounded internally to an integer multiple of the monitoring clock cycle.

p9560 SI STO shutdown velocity / SI STO v_shutdown

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Basic functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm/min	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [mm/min]	6000.00 [mm/min]	0.00 [mm/min]

Description: Sets the shutdown velocity for activating STO (Safe Torque Off).
Below this velocity, "standstill" is assumed, and for SS1/SS1E (Safe Stop 1/Safe Stop 1 External), STO is initiated.
For motion monitoring functions with safe brake ramp monitoring (p9606 = 2) the parameter must be > 0, as it is the only cancel criterion for the safe brake ramp monitoring.

Dependency: See also: p9556

Note
The shutdown velocity has no effect for a value = 0.

p9560 SI STO shutdown velocity / SI STO v_shutdown

Variant: G220, G220 Clean Power

Values for:	Safety rotary axis	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Basic functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [rpm]	6000.00 [rpm]	0.00 [rpm]

Description: Sets the shutdown velocity for activating STO (Safe Torque Off).

Below this velocity, "standstill" is assumed, and for SS1/SS1E (Safe Stop 1/Safe Stop 1 External), STO is initiated.

For motion monitoring functions with safe brake ramp monitoring (p9606 = 2) the parameter must be > 0, as it is the only cancel criterion for the safe brake ramp monitoring.

Dependency: See also: p9556

Note
The shutdown velocity has no effect for a value = 0.

p9561 SI SCF stop response / SI SCF stop

Data type: Integer16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
1	2	1

Description: Sets the stop response after SCF (Safety Channel Failure).

Value:
1: SS1 (Safe Stop 1)
2: SS1E (Safe Stop 1 External)

Dependency: See also: p9555
See also: C01701, C01702, C01711

Note
SI: Safety Integrated
SS1: Safe Stop 1
SS1E: Safe Stop 1 External (Safe Stop 1 with external stop)

p9563[0...3] SI SLS stop response / SI SLS stop

Data type: Integer16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	

Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	4	1

Description: Sets the specific stop response for the SLS function.
These settings apply to the individual limit values for SLS.

Value:
0: STO (Safe Torque Off)
1: SS1 (Safe Stop 1)
2: SS1E (Safe Stop 1 External)
3: SS2 (Safe Stop 2)
4: SS2E (Safe Stop 2 External)

Index:
[0] = Limit value SLS1
[1] = Limit value SLS2
[2] = Limit value SLS3
[3] = Limit value SLS4

Dependency: See also: p9531, p9561

Note
SI: Safety Integrated
SLS: Safely-Limited Speed
SS1: Safe Stop 1
SS1E: Safe Stop 1 External (Safe Stop 1 with external Stop)
SS2: Safe Stop 2
SS2E: Safe Stop 2 External
STO: Safe Torque Off

p9564 SI SDI tolerance / SI SDI tol

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.001 [mm]	360.000 [mm]	12.000 [mm]

Description: Sets the tolerance for function SDI (Safe Direction).
This motion in the monitored direction is still permissible without a stop response occurring and safety message C01716 being output.

Dependency: See also: p9565, p9566
See also: C01716

p9564 SI SDI tolerance / SI SDI tol

Variant:	G220, G220 Clean Power
Values for:	Safety rotary axis
Data type: FloatingPoint32	**Visible in:** Standard display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit Safety Integrated application

Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.001 [°]	360.000 [°]	12.000 [°]

Description: Sets the tolerance for function SDI (Safe Direction).
This motion in the monitored direction is still permissible without a stop response occurring and safety message C01716 being output.

Dependency: See also: p9565, p9566
See also: C01716

p9565 SI SDI delay time / SI SDI t

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [ms]	600000.00 [ms]	100.00 [ms]

Description: Sets the delay time for function SDI (Safe Direction).
After selecting the SDI function, motion in the monitored direction is permissible for a maximum of this time. This time can therefore be used for braking any motion.

Dependency: See also: p9564, p9566
See also: C01716

Note
The set time is rounded internally to an integer multiple of the monitoring clock cycle.

p9566 SI SDI stop response / SI SDI stop

Data type: Integer16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	4	1

Description: Sets the stop response for the SDI function (Safe Direction).
This setting applies to both directions of motion.

Value:
0: STO (Safe Torque Off)
1: SS1 (Safe Stop 1)

2: SS1E (Safe Stop 1 External)
3: SS2 (Safe Stop 2)
4: SS2E (Safe Stop 2 External)

Dependency: See also: p9564, p9565
See also: C01716

p9568 SI SAM velocity limit / SI SAM v_lim

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm/min	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [mm/min]	1000.00 [mm/min]	0.00 [mm/min]

Description: Sets the velocity limit for function SAM (Safe Acceleration Monitor).
The SAM limit value is limited downward to this value.

p9568 SI SAM velocity limit / SI SAM v_lim

Variant:	G220, G220 Clean Power	
Values for:	Safety rotary axis	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [rpm]	1000.00 [rpm]	0.00 [rpm]

Description: Sets the velocity limit for function SAM (Safe Acceleration Monitor).
The SAM limit value is limited downward to this value.

p9576 SI SLA filter time / SI SLA filt

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -

Min:	Max:	Factory setting:
0.00 [ms]	500.00 [ms]	0.00 [ms]

Description: Sets the filter time for the acceleration monitoring with a fine resolution of the acceleration.

Note
The filter time is only active after the function has been enabled (p9604.13 = 1).
SLA: Safely-Limited Acceleration

p9578 SI SLA acceleration limit / SI SLA limit

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: m/s²	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [m/s²]	1000.00 [m/s²]	1.00 [m/s²]

Description: Sets the acceleration limit for function SLA (Safely-Limited Acceleration).

Dependency: See also: p9579
See also: C01717

p9578 SI SLA acceleration limit / SI SLA limit

Variant:	G220, G220 Clean Power	
Values for:	Safety rotary axis	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rev/s²	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [rev/s²]	1000.00 [rev/s²]	1.00 [rev/s²]

Description: Sets the acceleration limit for function SLA (Safely-Limited Acceleration).

Dependency: See also: p9579
See also: C01717

p9579 SI SLA stop response / SI SLA stop

Data type: Integer16	**Visible in:** Standard display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit Safety Integrated application
Can be changed in the operating state:	Commissioning (Safety Integrated)
Parameter group:	Extended functions
Not relevant for motor type:	-

	Dyn. index [0...n]:	-	**Calculated:** -
	Unit: -	**Unit group:** -	**Unit selection:** -
	Min:	**Max:**	**Factory setting:**
	0	4	1

Description: Sets the stop response for function SLA.

Value:
0: STO (Safe Torque Off)
1: SS1 (Safe Stop 1)
2: SS1E (Safe Stop 1 External)
3: SS2 (Safe Stop 2)
4: SS2E (Safe Stop 2 External)

Dependency: See also: p9578
See also: C01717

Note
SI: Safety Integrated
SLA: Safely-Limited Acceleration
SS1: Safe Stop 1
SS1E: Safe Stop 1 External (Safe Stop 1 with external stop)
SS2: Safe Stop 2
SS2E: Safe Stop 2 External (Safe Stop 2 with external stop)
STO: Safe Torque Off

p9581 SI SBR reference velocity for SS1 and SS2 / SI SBR vRef

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm/min	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
600.0000 [mm/min]	1000000.0000 [mm/min]	1500.0000 [mm/min]

Description: Sets the reference velocity for monitoring SBR (Safe Brake Ramp) for SS1 (Safe Stop 1) and SS2 (Safe Stop 2).

Dependency: The SBR brake ramp gradient depends on p9581 (reference velocity) and p9583 (reference time).
See also: p9582, p9583

p9581 SI SBR reference velocity for SS1 and SS2 / SI SBR vRef

Variant:	G220, G220 Clean Power	
Values for:	Safety rotary axis	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** -	**Unit selection:** -

Min:	Max:	Factory setting:
600.0000 [rpm]	1000000.0000 [rpm]	1500.0000 [rpm]

Description: Sets the reference velocity for monitoring SBR (Safe Brake Ramp) for SS1 (Safe Stop 1) and SS2 (Safe Stop 2).

Dependency: The SBR brake ramp gradient depends on p9581 (reference velocity) and p9583 (reference time).
See also: p9582, p9583

p9582 SI SAM/SBR delay time for SS1 and SS2 / SI SAM_SBR t_del

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
10.00 [ms]	99000.00 [ms]	50.00 [ms]

Description: Sets the delay time for monitoring SAM (Safe Acceleration Monitor) / SBR (Safe Brake Ramp) for SS1 (Safe Stop 1) and SS2 (Safe Stop 2).
The SAM/SBR monitoring is started once the delay time has expired.

Dependency: See also: p9581, p9583

Note
The set time is rounded internally to an integer multiple of the monitoring clock cycle.
Internally, the set time is limited downwards (lower limit) to two safety monitoring clock cycles (2 * p9500).

p9583 SI SBR reference time for SS1 and SS2 / SI SBR tRef

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.50 [s]	3600.00 [s]	10.00 [s]

Description: Sets the reference time for monitoring SBR (Safe Brake Ramp) for SS1 (Safe Stop 1) and SS2 (Safe Stop 2).

Dependency: The SBR brake ramp gradient depends on p9581 (reference velocity) and p9583 (reference time).
See also: p9581, p9582

Note
The set time is rounded internally to an integer multiple of the monitoring clock cycle.

p9584 SI SBR velocity limit / SI SBR v_lim

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	

Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm/min	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [mm/min]	1000.00 [mm/min]	0.00 [mm/min]

Description: Sets the velocity limit for monitoring SBR (Safe Brake Ramp).
The SBR lower limit value is limited to this value.

Dependency: See also: p9568

p9584 SI SBR velocity limit / SI SBR v_lim

Variant:	G220, G220 Clean Power	
Values for:	Safety rotary axis	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [rpm]	1000.00 [rpm]	0.00 [rpm]

Description: Sets the velocity limit for monitoring SBR (Safe Brake Ramp).
The SBR lower limit value is limited to this value.

Dependency: See also: p9568

p9591 SI SBR reference velocity for SS1E and SS2E / SI SBR vRef E

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm/min	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
600.0000 [mm/min]	1000000.0000 [mm/min]	1500.0000 [mm/min]

Description: Sets the reference velocity for monitoring SBR (Safe Brake Ramp) for SS1E (Safe Stop 1 External) and SS2E (Safe Stop 2 External).

Dependency: The gradient of the SBR braking ramp depends on p9591 (reference velocity) and p9593 (reference time).
See also: p9592, p9593

p9591 SI SBR reference velocity for SS1E and SS2E / SI SBR vRef E

Variant:	G220, G220 Clean Power	
Values for:	Safety rotary axis	

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
600.0000 [rpm]	1000000.0000 [rpm]	1500.0000 [rpm]

Description: Sets the reference velocity for monitoring SBR (Safe Brake Ramp) for SS1E (Safe Stop 1 External) and SS2E (Safe Stop 2 External).

Dependency: The gradient of the SBR braking ramp depends on p9591 (reference velocity) and p9593 (reference time).
See also: p9592, p9593

p9592 SI SAM/SBR delay time for SS1E and SS2E / SI SAM_SBR t_del E

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
10.00 [ms]	99000.00 [ms]	50.00 [ms]

Description: Sets the delay time for monitoring SAM (Safe Acceleration Monitor) / SBR (Safe Brake Ramp) for SS1E (Safe Stop 1 External) and SS2E (Safe Stop 2 External).
The SAM/SBR monitoring is started once the delay time has expired.

Dependency: See also: p9591, p9593

Note
The set time is rounded internally to an integer multiple of the monitoring clock cycle.
Internally, the set time is limited downwards (lower limit) to two safety monitoring clock cycles (2 * p9500).

p9593 SI SBR reference time for SS1E and SS2E / SI SBR tRef E

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.50 [s]	3600.00 [s]	10.00 [s]

Description: Sets the reference time for monitoring SBR (Safe Brake Ramp) for SS1E (Safe Stop 1 External) and SS2E (Safe Stop 2 External).

Dependency: The gradient of the SBR braking ramp depends on p9591 (reference velocity) and p9593 (reference time).
See also: p9591, p9592

Note
The set time is rounded internally to an integer multiple of the monitoring clock cycle.

p9594 SI transition time SS1E to STO / SI t SS1E->STO

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [ms]	3.6e+06 [ms]	100.00 [ms]

Description: Sets the transition time from SS1E (Safe Stop 1 External) to STO (Safe Torque Off).
The parameter has no effect for motion monitoring functions with safe brake ramp monitoring (p9607 = 2).

Dependency: See also: p9560
See also: C01702

Note
The set time is rounded internally to an integer multiple of the monitoring clock cycle.

p9595 SI SLA delay time / SI SLA t_delay

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [ms]	600000.00 [ms]	100.00 [ms]

Description: Sets the delay time for function SLA (Safely-Limited Acceleration).
SLA is activated from state "SLA inactive" with this delay time.

Note
The set time is rounded internally to an integer multiple of the monitoring clock cycle.

p9596 SI SOS delay time / SI SOS t_del

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	

Dyn. index [0...n]:	-	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.00 [ms]	600000.00 [ms]	100.00 [ms]

Description: Sets the delay time for the SOS function (Safe Operating Stop).
Activating SOS from state "SOS inactive" is always realized with this delay time.

Dependency: See also: p9530

Note
The set time is rounded internally to an integer multiple of the monitoring clock cycle.

p9603.0...1 SI control / SI control

Data type: Unsigned32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Safety Integrated	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-	-	0001 bin

Description: Sets the type of control for the safety functions integrated in the drive.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Control via F-DI	Enable	Inhibit
01	Control via PROFIsafe	Enable	Inhibit

Note
When online safety commissioning has been completed, a change results in an automatic restart.
If no bit is set, then Safety Integrated is inhibited for this drive.
When simultaneously controlled via terminal (bit 00 = 1 signal) and PROFIsafe (bit 01 = 1 signal), the following applies:
- It is only permissible that F-DI 0 is used
- Only STO / SS1 / SS1E may be interconnected

p9604.0...30 SI enable / SI enable

Data type: Unsigned32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Safety Integrated	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-	-	0000 0000 0000 0000 0000 0000 0000 0001 bin

Description: Sets the enable signal for the safety functions integrated in the drive.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Enable STO	Enable	Inhibit
02	Enable SS1	Enable	Inhibit

03	Enable SS1E	Enable	Inhibit
04	Enable SS2	Enable	Inhibit
05	Enable SS2E	Enable	Inhibit
07	Enable SOS	Enable	Inhibit
08	Enable SLS	Enable	Inhibit
09	Enable SLS dynamic	Enable	Inhibit
11	Enable SDI	Enable	Inhibit
12	Enable SSM	Enable	Inhibit
13	Enable SLA	Enable	Inhibit
22	Enable SMT	Enable	Inhibit
30	Enable F-DI in PROFIsafe telegram	Enable	Inhibit

p9606 SI SS1 function specification / SI SS1 fct spec

Data type: Integer16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit Safety Integrated application
Can be changed in the operating state: Commissioning (Safety Integrated)
Parameter group: Basic functions
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0	2	0

Description: Sets the function specification of the SS1 (Safe Stop 1) safety function integrated in the drive.

Value:
0: none
1: with SAM
2: with SBR

p9607 SI SS1E function specification / SI SS1E fct spec

Data type: Integer16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit Safety Integrated application
Can be changed in the operating state: Commissioning (Safety Integrated)
Parameter group: Basic functions
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0	2	0

Description: Sets the function specification of the SS1E (Safe Stop 1 External) safety function integrated in the drive.

Value:
0: none
1: with SAM
2: with SBR

p9608 SI SS2 function specification / SI SS2 fct spec

Data type: Integer16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages

Write permission: Edit Safety Integrated application
Can be changed in the operating state: Commissioning (Safety Integrated)
Parameter group: Extended functions
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0	2	0

Description: Sets the function specification of the SS2 (Safe Stop 2) safety function integrated in the drive.

Value:
0: none
1: with SAM
2: with SBR

p9609 SI SS2E function specification / SI SS2E fct spec

Data type: Integer16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit Safety Integrated application
Can be changed in the operating state: Commissioning (Safety Integrated)
Parameter group: Extended functions
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0	2	0

Description: Sets the function specification of the SS2E (Safe Stop 2 External) safety function integrated in the drive.

Value:
0: none
1: with SAM
2: with SBR

p9610 SI PROFIsafe destination address / SI PROFIsafe dest

Data type: Unsigned16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit Safety Integrated application
Can be changed in the operating state: Commissioning (Safety Integrated)
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0	65534	0

Description: Sets the PROFIsafe destination address (F_Dest_Add).

Note
When online safety commissioning has been completed, a change results in an automatic restart.

p9611 SI PROFIsafe telegram selection / SI PS tel

Data type: Unsigned16 **Visible in:** Standard display

Read permission:	Read drive data or acknowledge messages		
Write permission:	Edit Safety Integrated application		
Can be changed in the operating state:	Commissioning (Safety Integrated)		
Parameter group:	Safety Integrated		
Not relevant for motor type:	-		
Dyn. index [0...n]:	-	**Calculated:** -	
Unit: -	**Unit group:** -	**Unit selection:** -	
Min:	**Max:**	**Factory setting:**	
0	902	0	

Description: Sets the PROFIsafe telegram number.

Value:
0: No PROFIsafe telegram selected
30: PROFIsafe standard telegram 30, PZD-1/1
902: PROFIsafe SIEMENS telegram 902, PZD-3/6

Dependency: See also: r60022

p9612 SI stop response for failure or control fault / SI ctrl failure

Data type: Integer16	**Visible in:** Standard display		
Read permission:	Read drive data or acknowledge messages		
Write permission:	Edit Safety Integrated application		
Can be changed in the operating state:	Commissioning (Safety Integrated)		
Parameter group:	Safety Integrated		
Not relevant for motor type:	-		
Dyn. index [0...n]:	-	**Calculated:** -	
Unit: -	**Unit group:** -	**Unit selection:** -	
Min:	**Max:**	**Factory setting:**	
0	1	0	

Description: Sets the stop response for failure or control fault (e.g. PROFIsafe communication).

Value:
0: STO
1: SS1

Note
For p9612 = 0 (STO):
The drive safely switches off the motor, the motor coasts down.
For p9612 = 1 (SS1):
The drive brakes the motor with OFF3 ramp-down time until standstill is detected. A switchover is then made to STO.

p9613 SI PROFIsafe source address / SI PROFIsafe src

Data type: Unsigned16	**Visible in:** Standard display		
Read permission:	Read drive data or acknowledge messages		
Write permission:	Edit Safety Integrated application		
Can be changed in the operating state:	Commissioning (Safety Integrated)		
Parameter group:	Safety Integrated		
Not relevant for motor type:	-		
Dyn. index [0...n]:	-	**Calculated:** -	
Unit: -	**Unit group:** -	**Unit selection:** -	
Min:	**Max:**	**Factory setting:**	
0	65534	0	

Description: Sets the PROFIsafe source address (F_Source_Add).

Note
When online safety commissioning has been completed, a change results in an automatic restart.

p9614 SI PROFIsafe F_watchdog time / SI PROFIsafe WD

Data type: Unsigned16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Safety Integrated	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [ms]	65535 [ms]	0 [ms]

Description: Sets the PROFIsafe monitoring time (F_WD_Time).

p9630 SI safe maximum speed encoder (rotary) / SI n_max enc rot

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [rpm]	300000000 [rpm]	0 [rpm]

Description: Sets the safe maximum speed for the rotary encoder (encoder side).

p9631 SI safe position accuracy encoder (rotary) / SI pos gen enc rot

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0.000 [°]	360.000 [°]	0.000 [°]

Description: Sets the safe position accuracy for the rotary encoder (encoder side).

r9634 SI safe maximum speed encoder detected (rotary) / SI n_Max EncRotAct

Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Extended functions	

Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: rpm **Unit group:** - **Unit selection:** -

Description: Displays the safe maximum speed for the rotary encoder (encoder side) that was detected.

r9635 SI safe position accuracy encoder detected (rotary) / SI PosAccEncRotAct

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Extended functions
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: ° **Unit group:** - **Unit selection:** -

Description: Displays the safe position accuracy for the rotary encoder (encoder side) that was detected.

p9670 SI module identification drive / Module ID drv

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit Safety Integrated application
Can be changed in the operating state: Ready for operation
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0	4294967295	0

Description: Safety Integrated module identifier for the drive.
Replacement of the drive is identified when the safety functions are activated.

Dependency: See also: A01641

Note
After replacement, when the drive runs up, an alarm is output

p9671[0...n] SI module identifier drive power unit / Module ID PU

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit Safety Integrated application
Can be changed in the operating state: Ready for operation
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: PDS n defined by: p0120 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0	4294967295	0

Description: Safety Integrated module identifier for the drive power unit. Replacement of the power unit is identified when the safety functions are enabled.

Note
An alarm is output after replacement and the supply voltage is switched on.

p9673 SI module identifier OM-SMT / Module ID OM-SMT

Data type: Unsigned32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Safety Integrated	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	4294967295	0

Description: Module identifier for the Option Module Safe Motor Temperature (OM-SMT).

p9674 SI module identifier Sensor Module / Module ID SM

Data type: Unsigned32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Safety Integrated	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	4294967295	0

Description: Module identifier of the Sensor Module.

p9675 SI module identifier encoder / Module ID encoder

Data type: Unsigned32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Safety Integrated	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	4294967295	0

Description: Module identifier of the encoder.

Note
The value = 0 when using an encoder without its own serial number.

p9676 SI identifier encoder properties / No encoder

Data type: Unsigned32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	

Can be changed in the operating state:	Ready for operation	
Parameter group:	Safety Integrated	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	4294967295	0

Description: Identifier for the encoder properties.

p9677 SI offset POS1 POS2 encoder / SI offs POS1/2

Data type: Integer32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-2147483648	2147483647	0

Description: Sets the offset between encoder positions POS1 and POS2.
This value is used once only for a check (after powering up and unparking).

p9699 SI configuration alarm filtering / SI conf alarm filt

Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Safety Integrated	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	1	1

Description: Sets the enable for the "Alarm filtering" function.

Value:
0: Deactivate alarm filtering
1: Activate alarm filtering

Note
The parameter is active after a POWER ON
Only for internal Siemens use.

r9708 SI diagnostics safe position / SI safe pos

Data type: FloatingPoint32	**Visible in:** Standard display
Read permission:	Read drive data or acknowledge messages
Parameter group:	Extended functions
Not relevant for motor type:	-

Dyn. index [0...n]: - **Calculated:** -
Unit: mm **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** -

Description: Displays the actual load-side actual value.

Note
The display of the load-side position actual value is updated in the monitoring clock cycle.

r9708 SI diagnostics safe position / SI safe pos

Variant: G220, G220 Clean Power
Values for: Safety rotary axis
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Extended functions
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: ° **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** -

Description: Displays the actual load-side actual value.

Note
The display of the load-side position actual value is updated in the monitoring clock cycle.

r9714[0...7] SI diagnostics velocity / SI diag v

Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Extended functions
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: mm/min **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** -

Description: Displays the velocity actual values for motion monitoring functions.

Index:
[0] = Load side velocity actual value
[1] = SS1: Actual SAM/SBR velocity limit
[2] = Actual SLS velocity limit
[3] = Actual SLA velocity limit
[4] = Load side filtered velocity actual value
[5] = SS2: Actual SAM/SBR velocity limit
[6] = SS1E: Actual SAM/SBR velocity limit
[7] = SS2E: Actual SAM/SBR velocity limit

Dependency: See also: r9732

NOTICE
For index [2]:
This SLS velocity limit can, as a result of conversion into the internal monitoring format, deviate from the specified SLS velocity limit (see r9732).

Note
The display is updated in the SI monitoring clock cycle.

r9714[0...7] SI diagnostics velocity / SI diag v

Variant: G220, G220 Clean Power

Values for:	Safety rotary axis	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** -

Description: Displays the velocity actual values for motion monitoring functions.

Index:
[0] = Load side velocity actual value
[1] = SS1: Actual SAM/SBR velocity limit
[2] = Actual SLS velocity limit
[3] = Actual SLA velocity limit
[4] = Load side filtered velocity actual value
[5] = SS2: Actual SAM/SBR velocity limit
[6] = SS1E: Actual SAM/SBR velocity limit
[7] = SS2E: Actual SAM/SBR velocity limit

Dependency: See also: r9732

NOTICE

For index [2]:
This SLS velocity limit can, as a result of conversion into the internal monitoring format, deviate from the specified SLS velocity limit (see r9732).

Note
The display is updated in the SI monitoring clock cycle.

r9720.0...28 SI control word / SI STW

Data type: Unsigned32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Safety Integrated	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source binary/numeric	**Scaling:** -

Description: Control signals for safety functions integrated in the drive.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Deselect STO	Yes	No
01	Deselect SS1	Yes	No
02	Deselect SS2	Yes	No
03	Deselect SOS	Yes	No
04	Deselect SLS	Yes	No
07	Acknowledgment	Signal edge active	No
08	Deselect SLA	Yes	No
09	Select SLS bit 0	Set	Not set
10	Select SLS bit 1	Set	Not set
12	Deselect SDI positive	Yes	No
13	Deselect SDI negative	Yes	No
15	Deselect SSM	Yes	No
18	Deselect SS1E	Yes	No
28	Deselect SS2E	Yes	No

Note
Note: only the control signals of the available and enabled functions (see p9604) are updated. All others are 1 across the board.

r9722.0...28 SI status signals / SI status signals

Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Displays the status signals of the safety functions (synchronized signal).

Bit array:

Bit	Signal name	1 signal	0 signal
00	STO or safe pulse cancellation active	Yes	No
01	SS1 active	Yes	No
02	SS2 active	Yes	No
03	SOS active	Yes	No
04	SLS active	Yes	No
07	Internal event	No	Yes
08	SLA active	Yes	No
09	Active SLS limit value bit 0	Set	Not set
10	Active SLS limit value bit 1	Set	Not set
11	SOS selected	Yes	No
12	SDI positive active	Yes	No
13	SDI negative active	Yes	No
15	SSM (speed below limit value)	Yes	No
18	SS1E active	Yes	No
28	SS2E active	Yes	No

NOTICE
For bit 07:
An internal event is displayed if a stop function is active.
The signal state behaves in an opposite way to the PROFIsafe Standard.

Note
Only the status signals of the enabled functions (see p9604) are updated, all others are 0 across the board.
Bit 09 and bit 10 together determine the selected SLS limit value.

r9725[0...2] SI diagnostics data cross-check / SI diag KDV

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the diagnostics of the data cross-check.
For index [0]
Number of the data, which, for the data cross-check between the two monitoring channels, led to the SCF (Safety Channel Failure) on the drive.
For index [1]:
Displays the value from channel A for a KDV error.
For index [2]:
Displays the value from channel B for a KDV error.

Index: [0] = Message value for KDV
[1] = KDV actual value channel A
[2] = KDV actual value channel B

Dependency: See also: C01769

Note
KDV: Data cross-check

r9728 SI actual checksum configuration of the safety functions / SI act CRC FctConf

Data type: Unsigned32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Safety Integrated	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Description: Displays the checksum over the checked parameters used to configure safety functions (actual checksum).

Dependency: See also: p9729

p9729 SI reference checksum configuration of the safety functions / SI set CRC FctConf

Data type: Unsigned32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Safety Integrated	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0000 hex	FFFF FFFF hex	A1A1 A1A1 hex

Description: Sets the checksum over the checked parameters used to configure safety functions (reference checksum).

Dependency: See also: r9728

r9730 SI Safe maximum velocity / SI safe v_max

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm/min	**Unit group:** -	**Unit selection:** -

Description: Displays the safe maximum velocity (on the load side) that is permissible for the safe motion monitoring functions as a result of the actual value sensing.
This parameter indicates up to which load velocity the safe encoder actual values (redundant encoder coarse position) can still be correctly detected as a result of the particular encoder parameterization.
This parameter is only of significance for enabled Safety Integrated applications with encoder (otherwise "0").

r9730 SI Safe maximum velocity / SI safe v_max

Variant: G220, G220 Clean Power
Values for: Safety rotary axis
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Extended functions
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: rpm **Unit group:** - **Unit selection:** -

Description: Displays the safe maximum velocity (on the load side) that is permissible for the safe motion monitoring functions as a result of the actual value sensing.
This parameter indicates up to which load velocity the safe encoder actual values (redundant encoder coarse position) can still be correctly detected as a result of the particular encoder parameterization.
This parameter is only of significance for enabled Safety Integrated applications with encoder (otherwise "0").

r9731 SI safe position accuracy / SI pos_accuracy

Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Extended functions
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: mm **Unit group:** - **Unit selection:** -

Description: Displays the safe position accuracy (load side).
As a result of the actual value sensing for safe motion monitoring functions, this accuracy can be achieved as the maximum.
The parameter is only of significance for enabled Safety Integrated applications with encoder (otherwise "0").

r9731 SI safe position accuracy / SI pos_accuracy

Variant: G220, G220 Clean Power
Values for: Safety rotary axis
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Extended functions
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: ° **Unit group:** - **Unit selection:** -

Description: Displays the safe position accuracy (load side).
As a result of the actual value sensing for safe motion monitoring functions, this accuracy can be achieved as the maximum.
The parameter is only of significance for enabled Safety Integrated applications with encoder (otherwise "0").

r9732[0...1] SI velocity resolution / SI v_res

Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages

Parameter group: Extended functions
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: mm/min **Unit group:** - **Unit selection:** -

Description: Displays the velocity resolution for safety-relevant motion monitoring functions.
For index [0]:
Displays the safe velocity resolution (load side). Setpoints for velocity limits or parameter changes for velocities below this threshold have no effect.
For index [1]:
Displays the safe velocity resolution based on the safe encoder accuracy.

Index: [0] = Actual velocity resolution
[1] = Minimum velocity resolution

Note
For index [0]:
This parameter does not provide any information about the actual accuracy of the velocity sensing. This depends on the type of actual value sensing, the gear factors as well as the quality of the encoder being used.
Conversion of:
(internal fixed value / Tsi) to mm/min (linear) or rpm (rotary) with Tsi = p9500 (SI monitoring cycle).
Example:
For Tsi = 4 ms, r9732[0] = 15 mm/min (linear) or 1/24 rpm (rotary) is obtained.

For index [1]:
- Only takes into account the coarse encoder resolution and is an internal calculation, which also incorporates the factor for the motor-load side conversion, the gear ratio and the SI monitoring clock cycle.

r9732[0...1] SI velocity resolution / SI v_res

Variant: G220, G220 Clean Power
Values for: Safety rotary axis
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Extended functions
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: rpm **Unit group:** - **Unit selection:** -

Description: Displays the velocity resolution for safety-relevant motion monitoring functions.
For index [0]:
Displays the safe velocity resolution (load side). Setpoints for velocity limits or parameter changes for velocities below this threshold have no effect.
For index [1]:
Displays the safe velocity resolution based on the safe encoder accuracy.

Index: [0] = Actual velocity resolution
[1] = Minimum velocity resolution

Note

For index [0]:

This parameter does not provide any information about the actual accuracy of the velocity sensing. This depends on the type of actual value sensing, the gear factors as well as the quality of the encoder being used.

Conversion of:

(internal fixed value / Tsi) to mm/min (linear) or rpm (rotary) with Tsi = p9500 (SI monitoring cycle).

Example:

For Tsi = 4 ms, r9732[0] = 15 mm/min (linear) or 1/24 rpm (rotary) is obtained.

For index [1]:

- Only takes into account the coarse encoder resolution and is an internal calculation, which also incorporates the factor for the motor-load side conversion, the gear ratio and the SI monitoring clock cycle.

r9733[0...2] SI effective setpoint velocity limiting / SI setp_limit

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: rpm	**Unit group:** 3_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000

Description: Displays the necessary setpoint velocity limit as a result of the selected motion monitoring functions.

Contrary to the parameterization of the Safety Integrated limit values, this parameter specifies the motor-side limit value and not the load-side limit value.

Recommendation: For the ramp-function generator, by appropriately interconnecting the speed limits c1051 and c1052 with r9733[0, 1], drive-based setpoint velocity limiting can be realized.

- Interconnect c1051 with r9733[0]
- Interconnect c1052 with r9733[1]

Additional limiting can also be activated using numerical sinks c1085 and c1088.

Index: [0] = Setpoint limiting positive

[1] = Setpoint limiting negative

[2] = Setpoint limit absolute

Dependency: For SLS: r9733[0] = p9531[x] x p9533 (converted from the load side to the motor side)

For SDI negative: r9733[0] = 0

For SLS: r9733[1] = - p9531[x] x p9533 (converted from the load side to the motor side)

For SDI positive: r9733[1] = 0

[x] = selected SLS limit value

Conversion factor from the load side to the motor side:

- Motor type = rotary and axis type = linear: p9522 / (p9521 x p9520)
- Otherwise: p9522 / p9521

See also: p9531, p9533

NOTICE
If c1051 = r9733[0] is interconnected, c1052 = r9733[1] must also be interconnected and vice versa. If only the absolute value of the setpoint velocity limiting is required, r9733[2] must be interconnected.

Note

The unit changeover between linear and rotary axis is not implemented via the safety changeover (r9502) but by the linear motor changeover.

If the "SLS" or "SDI" function is not selected, r9733[0] shows p1082 and r9733[1] shows -p1082.

The display in r9733 can be delayed by up to one SI monitoring clock cycle as compared to the display in r9720 and r9722.

When selecting a safety function, where standstill is reached or required (e.g. STO, SS1), then setpoint 0 is specified in r9733.

r9734.0...15 SI Safety Information Channel status word S_ZSW1B / SIC S_ZSW1B

Data type: Unsigned16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Displays status word S_ZSW1B for the SIC (Safety Information Channel).

Bit array:

Bit	Signal name	1 signal	0 signal
00	STO selected or active	Yes	No
01	SS1 active	Yes	No
02	SS2 active	Yes	No
03	SOS active	Yes	No
04	SLS active	Yes	No
05	SOS selected	Yes	No
06	SLS selected	Yes	No
07	Internal event	Yes	No
08	SLA selected	Yes	No
09	Select SLS bit0	Yes	No
10	Select SLS bit1	Yes	No
12	SDI positive selected	Yes	No
13	SDI negative selected	Yes	No
14	ESR retract requested	Yes	No
15	Safety message present	Yes	No

Note
For bit 07:
An internal event is displayed if a stop function is active.

r9743.3...9 SI Safety Information Channel status word S_ZSW2B / SIC S_ZSW2B

Data type: Unsigned16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Displays status word S_ZSW2B for the SIC (Safety Information Channel).

Bit array:

Bit	Signal name	1 signal	0 signal
03	SS1E active	Yes	No
08	SDI positive selected	Yes	No
09	SDI negative selected	Yes	No

r9745[0...63] SI components / SI comp

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group:
Not relevant for motor type: -

Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the component of the safety message that has occurred.

Note
Value = 0: Assignment to a component not possible.

r9750[0...63].0...20 SI diagnostic attributes / SI diag_attr

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the diagnostic attributes of the safety messages that have occurred.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Hardware replacement recommended	Yes	No
15	Message has gone	Yes	No
16	PROFIdrive fault class bit 0	High	Low
17	PROFIdrive fault class bit 1	High	Low
18	PROFIdrive fault class bit 2	High	Low
19	PROFIdrive fault class bit 3	High	Low
20	PROFIdrive fault class bit 4	High	Low

Note
The buffer parameters are cyclically updated in the background (refer to status signal in r2139).
The structure of the safety message buffer and the assignment of the indices is shown in r60045.
Bit 20, 19, 18, 17, 16 =
0, 0, 0, 0, 0 --> PROFIdrive message class 0: Not assigned
0, 0, 0, 0, 1 --> PROFIdrive message class 1: Hardware/software fault
0, 0, 0, 1, 0 --> PROFIdrive message class 2: Line fault
0, 0, 0, 1, 1 --> PROFIdrive message class 3: Supply voltage fault
0, 0, 1, 0, 0 --> PROFIdrive message class 4: DC link fault
0, 0, 1, 0, 1 --> PROFIdrive message class 5: Power electronics fault
0, 0, 1, 1, 0 --> PROFIdrive message class 6: Overtemperature, electronics component
0, 0, 1, 1, 1 --> PROFIdrive message class 7: Ground fault/interphase fault detected
0, 1, 0, 0, 0 --> PROFIdrive message class 8: Motor overload
0, 1, 0, 0, 1 --> PROFIdrive message class 9: Communications error to higher-level control
0, 1, 0, 1, 0 --> PROFIdrive message class 10: Safe monitoring channel has identified an error
0, 1, 0, 1, 1 --> PROFIdrive message class 11: Incorrect position actual value/speed actual value or not available
0, 1, 1, 0, 0 --> PROFIdrive message class 12: Internal communications error
0, 1, 1, 0, 1 --> PROFIdrive message class 13: Infeed faulted
0, 1, 1, 1, 0 --> PROFIdrive message class 14: Braking controller / Braking Module faulted
0, 1, 1, 1, 1 --> PROFIdrive message class 15: Line filter faulted
1, 0, 0, 0, 0 --> PROFIdrive message class 16: External measured value/signal state outside the permissible range
1, 0, 0, 0, 1 --> PROFIdrive message class 17: Application/technological function fault
1, 0, 0, 1, 0 --> PROFIdrive message class 18: Error in the parameterization/configuration/commissioning sequence
1, 0, 0, 1, 1 --> PROFIdrive message class 19: General drive fault
1, 0, 1, 0, 0 --> PROFIdrive message class 20: Auxiliary unit faulted

r9753[0...63] SI message value for float values / SI msg_val float

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages

Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays additional information about the safety message that has occurred for float values.
Dependency: See also: r9754, r9755, r9756, r60044, r60045, r60048, r60049, p60052

r9754[0...63] SI message time received in days / SI t_msg recv days

Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the relative system runtime in days when the safety message occurred.
Dependency: See also: r9753, r9755, r9756, r60044, r60045, r60048, r60049, p60052

r9755[0...63] SI message time removed in milliseconds / SI t_msg rem ms

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: ms **Unit group:** - **Unit selection:** -

Description: Displays the relative system runtime in milliseconds when the safety message was removed.
Dependency: See also: r9753, r9754, r9756, r60044, r60045, r60048, r60049, p60052

r9756[0...63] SI message time removed in days / SI t_msg rem days

Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the relative system runtime in days when the safety message was removed.
Dependency: See also: r9753, r9754, r9755, r60044, r60045, r60048, r60049, p60052

r9768[0...8] Receive SI PROFIsafe control words / SI PS PZD recv

Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the received PROFIsafe telegram.

Index: [0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9

Dependency: See also: r9769

Note
The PROFIsafe trailer at the end of the telegram is displayed (5 bytes).

r9769[0...8] Send SI PROFIsafe status words / SI PS PZD send

Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the PROFIsafe telegram to be sent.

Index: [0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9

Dependency: See also: r9768

Note
The PROFIsafe trailer at the end of the telegram is displayed (5 bytes).

r9770[0...7] SI PROFIsafe configuration of the F-PLC / SI Config F-PLC

Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the configuration data received from the F-PLC (when control via PROFIsafe is enabled).

Index: [0] = Telegram number
[1] = Control telegram length from the F-PLC in bytes
[2] = Status telegram length to the F-PLC in bytes
[3] = F_PRM_FLAG1, F_PRM_FLAG2
[4] = F_Source_Add
[5] = F_Dest_Add
[6] = F_WD_Time
[7] = F_Par_CRC

r9771[0...43] SI PROFIsafe diagnostics information CRC error / SI PS diag CRC err

Data type: Unsigned8 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Diagnostics data for CRC error in the cyclic PROFIsafe communication. The information regarding the last signaled CRC error is always displayed.

Structure of the diagnostic information:
Bytes 0 to 1: diagnostic data structure version
Bytes 2 to 9: IncNo_1: used in the V2.6.1 mode
Bytes 10 to 17: IncNo_2: used in the V2.6.1 mode
Bytes 18 to 21: received telegram CRC
Bytes 22 to 25: expected telegram CRC
Bytes 26 to 29: VirtualConsecutiveNo: used in the V2.4 mode
Bytes 30 to 33: Code name: used in the V2.6.1 mode
Bytes 34 to 37: Modifier: used in the V2.6.1 mode
Bytes 38 to 41: CRC of the iParameters (not used)
Bytes 42 to 43: CRC of the F-parameters

r9776.0...4 SI diagnostics / SI diag

Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary **Scaling:** -

Description: Displays the operating state, referred to the safety functions. The parameter is used for diagnostics.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Safety parameter changed	Yes	No
01	Safety functions enabled	Yes	No
02	Safety component replaced and data save required	Yes	No
03	Safety component replaced and acknowledge/save required	Yes	No
04	Safety commissioning mode active	Yes	No

Note
For bit 00 = 1:
At least one safety parameter was changed. The change only becomes effective after a restart, which is automatically performed after exiting safety commissioning.
For bit 01 = 1:
Safety functions have been enabled and are active.
For bit 02 = 1:
A safety-relevant component was replaced. Saving required (p0977 = 1 or retentively save).
For bit 03 = 1:
A safety-relevant component was replaced. Acknowledgment using the commissioning tool (with CCI command SF_ACKNOWLEDGE_DATA) and saving (p0977 = 1 or retentively save) required.
For bit 04 = 1:
The safety commissioning mode is selected.

r9780[0...1] SI checksum to check changes / SI chg chksm

Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the checksum to track changes for Safety Integrated.
These are additional checksums that are created to track changes to relevant safety parameters (fingerprint for the "safety logbook" functionality).

Index: [0] = SI checksum to track functional changes
[1] = SI checksum to track hardware-specific changes

Dependency: See also: p9729, p9797

r9781[0...1] SI change control time stamp days / SI chg chksm days

Data type: Unsigned16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the day component of the time stamp for the checksums for tracking changes for Safety Integrated.
The time stamps are generated for the checksums (r9780[0...1]) (fingerprint for the "safety logbook" functionality)

Index: [0] = SI time stamp for checksum to track functional changes
[1] = SI time stamp for checksum to track hardware-specific changes

Dependency: See also: p9729, p9797, p9799
See also: C01690

Note
The time comprises r9781 (days) and r9782 (milliseconds).

r9782[0...1] SI change control time stamp milliseconds / SI chg t ms

Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: ms **Unit group:** - **Unit selection:** -

Description: Displays the millisecond component of the time stamp for the checksums for tracking changes for Safety Integrated.
The time stamps are generated for the checksums (r9780[0...1]) (fingerprint for the "safety logbook" functionality)

Index: [0] = SI time stamp for checksum to track functional changes
[1] = SI time stamp for checksum to track hardware-specific changes

Dependency: See also: p9729, p9797, p9799
See also: C01690

Note
The time comprises r9781 (days) and r9782 (milliseconds).

r9789[0...2] SI SLA acceleration diagnostics / SI SLA a diag

Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages

Parameter group: Extended functions
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: m/s² **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** -

Description: Display for the actual acceleration values and limit values for SLA (Safely-Limited Acceleration).

Index: [0] = Acceleration actual value on the load side
[1] = Lower acceleration limit
[2] = Upper acceleration limit

Note
The display is updated in the safety monitoring clock cycle.
Unit for linear axis: meters / (second * second)
Unit for rotary axis: revolution / (second * second)

r9789[0...2] SI SLA acceleration diagnostics / SI SLA a diag

Variant: G220, G220 Clean Power
Values for: Safety rotary axis
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Extended functions
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: rev/s² **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** -

Description: Display for the actual acceleration values and limit values for SLA (Safely-Limited Acceleration).

Index: [0] = Acceleration actual value on the load side
[1] = Lower acceleration limit
[2] = Upper acceleration limit

Note
The display is updated in the safety monitoring clock cycle.
Unit for linear axis: meters / (second * second)
Unit for rotary axis: revolution / (second * second)

r9790[0...1] SI SLA acceleration resolution / SI SLA a_res

Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Extended functions
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: m/s² **Unit group:** - **Unit selection:** -

Description: Displays the acceleration resolution (load side) for function SLA (Safely-Limited Acceleration).
Setpoints for acceleration limits or parameter changes for acceleration levels below this threshold have no effect.

Index: [0] = Coarse resolution
[1] = Fine resolution

Note
This parameter does not provide any information about the actual accuracy of the acceleration sensing. This depends on the type of actual value sensing, the gear factors as well as the quality of the encoder being used.
Conversion of:
(internal fixed value/ Tsi²) to m/s² (linear) or 1/s² (rotary) with Tsi = p9500 (SI monitoring clock cycle)
Example:
Coarse resolution: for Tsi = 4 ms, r9790[0] = 0.0625 m/s² (linear) or 0.173611 1/s² (rotary) is obtained.
Fine resolution: for Tsi = 4 ms, r9790[1] = 0.0000625 m/s² (linear) or 0.000173611 1/s² (rotary) is obtained.

r9790[0...1] SI SLA acceleration resolution / SI SLA a_res

Variant: G220, G220 Clean Power
Values for: Safety rotary axis
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Extended functions
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: rev/s² **Unit group:** - **Unit selection:** -

Description: Displays the acceleration resolution (load side) for function SLA (Safely-Limited Acceleration).
Setpoints for acceleration limits or parameter changes for acceleration levels below this threshold have no effect.

Index: [0] = Coarse resolution
[1] = Fine resolution

Note
This parameter does not provide any information about the actual accuracy of the acceleration sensing. This depends on the type of actual value sensing, the gear factors as well as the quality of the encoder being used.
Conversion of:
(internal fixed value/ Tsi²) to m/s² (linear) or 1/s² (rotary) with Tsi = p9500 (SI monitoring clock cycle)
Example:
Coarse resolution: for Tsi = 4 ms, r9790[0] = 0.0625 m/s² (linear) or 0.173611 1/s² (rotary) is obtained.
Fine resolution: for Tsi = 4 ms, r9790[1] = 0.0000625 m/s² (linear) or 0.000173611 1/s² (rotary) is obtained.

r9794 SI actual checksum safety enable / SI act CRC ENA

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the checksum over the parameters to enable the safety functions (actual checksum).

Dependency: See also: p9795

p9795 SI reference checksum safety enable / SI set CRC ENA

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit Safety Integrated application
Can be changed in the operating state: Commissioning (Safety Integrated)
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -

	Unit: -	**Unit group:** -	**Unit selection:** -
	Min:	**Max:**	**Factory setting:**
	0000 hex	FFFF FFFF hex	A1A1 A1A1 hex
Description:	Sets the checksum over the parameters for enabling the safety functions (reference checksum).		
Dependency:	See also: r9794		

r9796 SI actual checksum PROFIsafe addresses / SI act CRC PA

	Data type: Unsigned32	**Visible in:** Extended display	
	Read permission:	Read drive data or acknowledge messages	
	Parameter group:	Safety Integrated	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	**Calculated:** -
	Unit: -	**Unit group:** -	**Unit selection:** -
Description:	Displays the checksum over the parameters for the PROFIsafe addresses (actual checksum).		
Dependency:	See also: p9797		

p9797 SI reference checksum PROFIsafe addresses / SI set CRC PA

	Data type: Unsigned32	**Visible in:** Extended display	
	Read permission:	Read drive data or acknowledge messages	
	Write permission:	Edit Safety Integrated application	
	Can be changed in the operating state:	Commissioning (Safety Integrated)	
	Parameter group:	Safety Integrated	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	**Calculated:** -
	Unit: -	**Unit group:** -	**Unit selection:** -
	Min:	**Max:**	**Factory setting:**
	0000 hex	FFFF FFFF hex	A1A1 A1A1 hex
Description:	Sets the checksum over the parameters for the PROFIsafe addresses (reference checksum).		
Dependency:	See also: r9796		

r9798 SI actual checksum over the drive configuration / SI act CRC DOconf

	Data type: Unsigned32	**Visible in:** Extended display	
	Read permission:	Read drive data or acknowledge messages	
	Parameter group:	Safety Integrated	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	**Calculated:** -
	Unit: -	**Unit group:** -	**Unit selection:** -
Description:	Displays the checksum over the checksum-checked parameters to configure the drive (actual checksum).		
Dependency:	See also: p9799		

p9799 SI reference checksum over the configuration of the drive / SI ref CRC DOconf

	Data type: Unsigned32	**Visible in:** Extended display	
	Read permission:	Read drive data or acknowledge messages	
	Write permission:	Edit Safety Integrated application	
	Can be changed in the operating state:	Commissioning (Safety Integrated)	
	Parameter group:	Safety Integrated	
	Not relevant for motor type:	-	

Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0000 hex	FFFF FFFF hex	A1A1 A1A1 hex

Description: Sets the checksum over the checksum-checked parameters to configure the drive (reference checksum).

Dependency: See also: r9798

r9828 SI actual checksum configuration of safety functions channel B / SI act CRCfctConfB

Data type: Unsigned32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Safety Integrated	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Description: Displays the checksum over the checksum-checked parameters to configure safety functions (actual checksum) channel B.

Dependency: See also: p9829

p9829 SI reference checksum configuration of safety functions chan. B / SI set CRCfctConfB

Data type: Unsigned32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Safety Integrated	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0000 hex	FFFF FFFF hex	B2B2 B2B2 hex

Description: Sets the checksum over the checked parameters used to configure safety functions (reference checksum).

Dependency: See also: r9828

r9894 SI actual checksum safety enable channel B / SI act CRC ENA B

Data type: Unsigned32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Safety Integrated	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Description: Displays the checksum over the parameters to enable the safety functions (actual checksum) channel B.

Dependency: See also: p9895

p9895 SI reference checksum safety enable channel B / SI ref CRC ENA B

Data type: Unsigned32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	

Parameter group:	Safety Integrated	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0000 hex	FFFF FFFF hex	B2B2 B2B2 hex

Description: Sets the checksum over the parameters for enabling the safety functions (reference checksum) channel B.
Dependency: See also: r9894

r9896 SI actual checksum PROFIsafe addresses channel B / SI act CRC PA B

Data type: Unsigned32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Safety Integrated	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Description: Displays the checksum over the parameters for the PROFIsafe addresses (act checksum) chan B.
Dependency: See also: p9897

p9897 SI reference checksum PROFIsafe addresses channel B / SI set CRC PA B

Data type: Unsigned32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Safety Integrated	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0000 hex	FFFF FFFF hex	B2B2 B2B2 hex

Description: Sets the checksum over the parameters for the PROFIsafe addresses (reference checksum) channel B
Dependency: See also: r9896

r9898 SI actual checksum configuration of the drive, channel B / SI act CRC DOconfB

Data type: Unsigned32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Safety Integrated	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Description: Displays the checksum over the checksum-checked parameters to configure the drive (actual checksum) channel B.
Dependency: See also: p9899

p9899 SI reference checksum over the drive configuration, channel B / SI ref CRC DOconfB

Data type: Unsigned32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	

	Can be changed in the operating state:	Commissioning (Safety Integrated)	
	Parameter group:	Safety Integrated	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	**Calculated:** -
	Unit: -	**Unit group:** -	**Unit selection:** -
	Min:	**Max:**	**Factory setting:**
	0000 hex	FFFF FFFF hex	B2B2 B2B2 hex

Description: Sets the checksum over the checksum-checked parameters to configure the drive (reference checksum) channel B.

Dependency: See also: r9898

r9936[0...199] DRIVE-CLiQ diagnostic error counter connection / DQdiag err counter

Data type: Integer32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Diagnostics general	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Description: Displays the error counter for the individual DRIVE-CLiQ connections/cables.
r9936[0]: sum of the error counter for all connections
r9936[1]: not used
r9936[2]: error counter for the feeder cable to DRIVE-CLiQ components with component number 2
...
r9936[199]: error counter for the feeder cable to DRIVE-CLiQ components with component number 199
The feeder cable is the DRIVE-CLiQ cable that is connected to a component in the direction of the Control Unit.

Dependency: See also: p9937

p9937.0...8 DRIVE-CLiQ diagnostic configuration / DQ diag config

Data type: Unsigned16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Diagnostics general	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-	-	0000 0000 0000 0000 bin

Description: Sets the configuration for the DRIVE-CLiQ diagnostics (error counter r9936).
Using this function, connections and cables of DRIVE-CLiQ connections can be checked for transfer errors. The error counter is evaluated in the PHY blocks involved.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Alarm for connection error	Yes	No
08	Reset error counter	Yes	No

Dependency: See also: r9936
See also: A01839

Note
For bit 00:
After changing the error counter (r9936), an appropriate alarm is output.
The alarm is automatically deleted after 5 seconds.
For bit 08:
The error counters are reset with a 1 signal (r9936[0...199]), after this, the bit is automatically set to a 0 signal.

p10000.0...2 SI F-DI enable / SI F-DI enable

Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Safety Integrated	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-	-	0001 bin

Description: Sets the enable signal for the failsafe digital inputs.

Bit array:

Bit	Signal name	1 signal	0 signal
00	F-DI 0 (X130.2/3, X130.6/7)	Enabled	Not enabled
01	F-DI 1 (X131.1/4, X131.2/3)	Enabled	Not enabled
02	F-DI 2 (X131.5/4, X131.6/7)	Enabled	Not enabled

Note
- Digital inputs of F-DI that have not been enabled can be used as binary signal sources for non-safety-related functions.
- Only F-DI that have been enabled are monitored in a safety-relevant way. It is neither permissible that the associated DI are set to simulation nor used as non-safety-related functions, as they can be subject to test pulses.

p10002 SI F-DI changeover discrepancy time / SI F-DI chg t

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Safety Integrated	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
1.00 [ms]	2000.00 [ms]	500.00 [ms]

Description: Sets the discrepancy time for digital inputs.
The signal states at the two associated digital inputs (F-DI) must assume the same state within this discrepancy time.

Note
The time must be set longer than the SI monitoring clock cycle.

c10006 SI acknowledgment internal event F-DI / SI ackn int

Data type: Unsigned8	**Visible in:** Standard display
Read permission:	Read drive data or acknowledge messages

Write permission: Edit Safety Integrated application
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal for "acknowledge internal event" (internal fault) for a specific axis.
The rising edge of this signal resets status "internal event" in the converter and active discrepancy errors are acknowledged.

Note
F-DI: Failsafe Digital Input

p10017[0...2] SI digital inputs input filter / SI F-DI t_filt

Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit Safety Integrated application
Can be changed in the operating state: Commissioning (Safety Integrated)
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: ms **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
1.00 [ms]	100.00 [ms]	4.00 [ms]

Description: Setting the input filter for the digital inputs.
The input filter is rounded off to whole milliseconds and accepted.
The input filter acts on the following digital inputs:
- Failsafe digital inputs (F-DI).

Example:
Input filter = 1 ms: Fault pulses of 1 ms are filtered; only pulses longer than 2 ms are processed.
Input filter = 3 ms: Fault pulses of 3 ms are filtered; only pulses longer than 4 ms are processed.
The input filtering result can be read in r10051 and r10151.
The set input filter impacts the response time of the safety function.

Index: [0] = F-DI 0
[1] = F-DI 1
[2] = F-DI 2

NOTICE
If the cable connected at the digital input is longer than 30 m, to maintain the functional safety, the minimum debounce time must be set to 20 ms.

Note
If the self test is enabled using externally specified dark pulses (p10041 = 3) for at least one F-DI, then p10017 must be set longer than the maximum duration of the dark pulses + 2 ms. If the test pulses are specified using the switchable power supply (p10041 = 1 or p10041 = 2), then this means p10017 > p10018 + 2 ms.

p10018 SI F-DI self test length dark pulses VS1/VS2 / SI F-DI pulsLength

Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit Safety Integrated application

Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Safety Integrated	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0 [ms]	50 [ms]	0 [ms]

Description: Sets the dark pulse length of the switchable power supply for the self test using specified dark pulses (p10041) of the F-DI.

Value = 0: switchable power supply, permanently switched on.

Value > 0: dark pulse length for the switchable power supply. The test cycle is fixed at 5 s.

Note

The dark pulses from VS1 are enabled for:
- Self test using specified dark pulses with a switchable power supply (p10041 = 1)
- Self test using specified dark pulses with two switchable power supplies (p10041 = 2)

The dark pulses from VS2 are enabled for:
- Self test using specified dark pulses with two switchable power supplies (p10041 = 2)

The switchable power supplies are continuously switched on if another self test was set

p10019 SI F-DI self test external dark pulses wait time / SI F-DI ext puls_t

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Safety Integrated	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: s	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
10 [s]	3600 [s]	1020 [s]

Description: Sets the maximum wait time for the dark pulses for the F-DI self test using an externally specified test pulses.

Note

This parameter is only active for F-DIs that are tested using external test pulses (p10041[x] = 3).

p10020 SI F-DO self test dark pulses duration / SI F-DO pulses

Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Safety Integrated	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
4 [ms]	150 [ms]	4 [ms]

Description: Sets the duration of the dark pulses for the self test of the F-DO. The test cycle is fixed at 5 s.

Note
F-DO: Failsafe Digital Output.

c10022 SI STO input terminal / SI STO F-DI

Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit Safety Integrated application
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Parameter: 10071.0

Description: Signal for the axis-specific selection of function "STO (Safe Torque Off)" (control via F-DI).

Note
F-DI: Failsafe Digital Input

c10023 SI SS1 input terminal / SI SS1 F-DI

Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit Safety Integrated application
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 1

Description: Signal for selecting function "SS1 (Safe Stop 1)".

Note
F-DI: Failsafe Digital Input

c10024 SI SS2 input terminal / SI SS2 F-DI

Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit Safety Integrated application
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 1

Description: Signal for SI function "SS2 (Safe Stop 2)".

Note
F-DI: Failsafe Digital Input

c10025 SI SOS input terminal / SI SOS F-DI

Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages

Write permission: Edit Safety Integrated application
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 1

Description: Signal for selecting function "SOS (Safe Operating Stop)".

Note
F-DI: Failsafe Digital Input

c10026 SI SLS input terminal / SI SLS F-DI

Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit Safety Integrated application
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 1

Description: Signal for selecting function "SLS (Safely-Limited Speed)".

Note
If SLS is to be statically active, then the signal must be interconnected with a fixed value of "0".
F-DI: Failsafe Digital Input

c10027 SI SLS limit bit 0 input terminal / SI SLS lim 0 F-DI

Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit Safety Integrated application
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal for selecting limit value bit 0 of function "SLS (Safely-Limited Speed)".

Note
F-DI: Failsafe Digital Input

c10028 SI SLS limit bit 1 input terminal / SI SLS lim 1 F-DI

Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit Safety Integrated application
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Signal for selecting limit value bit 1 of function "SLS (Safely-Limited Speed)".

Note
F-DI: Failsafe Digital Input

c10030 SI SDI positive input terminal / SI SDI pos F-DI

Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit Safety Integrated application
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 1

Description: Signal for selecting function "SDI positive".

Note
If SDI positive should always be active, then c10030 must be interconnected with a 0 signal.
F-DI: Failsafe Digital Input
SDI: Safe Direction (safe motion direction)

c10031 SI SDI negative input terminal / SI SDI neg F-DI

Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit Safety Integrated application
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 1

Description: Signal for selecting function "SDI negative".

Note
If SDI negative should always be active, then c10031 must be interconnected with a 0 signal.
F-DI: Failsafe Digital Input
SDI: Safe Direction (safe motion direction)

c10035 SI SSM input terminal / SI SSM F-DI

Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit Safety Integrated application
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 1

Description: Signal to select function "SSM (Safe Speed Monitor)".

Note
If SSM should always be active, then c10035 must be interconnected with a 0 signal.
F-DI: Failsafe Digital Input

c10036 SI SLA input terminal / SI SLA F-DI

Data type: Unsigned8 | **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit Safety Integrated application
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - | **Calculated:** -
Unit: - | **Unit group:** - | **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 1

Description: Signal for function "SLA".

Note
If SLA is to be statically active, then the signal must be interconnected with a fixed value of "0".
F-DI: Failsafe Digital Input
SLA: Safely-Limited Acceleration

r10038 SI Safe State status / SI Safe State

Data type: Unsigned8 | **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - | **Calculated:** -
Unit: - | **Unit group:** - | **Unit selection:** -
Type of signal interconnection: Source binary/numeric | **Scaling:** -

Description: Display and signal source for "Safe State".

p10039.0...11 SI Safe State signal selection / SI Safe State sel

Data type: Unsigned32 | **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit Safety Integrated application
Can be changed in the operating state: Commissioning (Safety Integrated)
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - | **Calculated:** -
Unit: - | **Unit group:** - | **Unit selection:** -

Min:	Max:	Factory setting:
-	-	0000 0000 0000 0001 bin

Description: Sets the signals for "Safe State".

Bit array:

Bit	Signal name	1 signal	0 signal
00	STO active	Selected	Not selected
01	SS1 active	Selected	Not selected
02	SS1E active	Selected	Not selected
03	SS2 active	Selected	Not selected

04	SS2E active	Selected	Not selected
06	SOS active	Selected	Not selected
07	SLS active	Selected	Not selected
08	SDI positive active	Selected	Not selected
09	SDI negative active	Selected	Not selected
10	SSM (speed below limit value)	Selected	Not selected
11	SLA active	Selected	Not selected

Note
The signals are logically OR'ed.

p10040.0...2 SI F-DI input mode / SI F-DI InpModeChA

Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit Safety Integrated application
Can be changed in the operating state: Commissioning (Safety Integrated)
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
-	-	0000 bin

Description: Sets the input mode for the safety digital inputs (F-DI).

Bit array:

Bit	Signal name	1 signal	0 signal
00	F-DI 0, DI 22+ (X130.6/7)	NO contact	NC contact
01	F-DI 1, DI 1+ (X131.2/3)	NO contact	NC contact
02	F-DI 2, DI 3+ (X131.6/7)	NO contact	NC contact

Note
Only an NC contact can be connected for the safety digital inputs not listed.

p10041[0...2] SI F-DI self test mode selection / SI F-DI test mode

Data type: Integer16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit Safety Integrated application
Can be changed in the operating state: Commissioning (Safety Integrated)
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0	3	0

Description: Enable for the F-DI self test.

Value:

0: Self test using internal test signals
1: Self test using specified dark pulses (VS1)
2: Self test using specified dark pulses (VS1 and VS2)
3: Self test using externally specified dark pulses

Index: [0] = F-DI 0
[1] = F-DI 1
[2] = F-DI 2

Note
Modes 1 and 2:
A check is made whether p10017 is > p10018 + 2 ms and whether p10018 is set > 0.

c10042[0...5] SI F-DO 0 signals of the AND logic operation / SI F-DO 0 signals

Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Parameter group:	Safety Integrated	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 0	

Description: Signals for F-DO 0.
The 6 signals in c10042[0...5] are AND'ed and the result is output in F-DO 0.

Index: [0] = AND logic operation input 1
[1] = AND logic operation input 2
[2] = AND logic operation input 3
[3] = AND logic operation input 4
[4] = AND logic operation input 5
[5] = AND logic operation input 6

Note
Indices that are connected with a fixed value of 0 are not taken into account when forming the AND logic operation.
F-DO: Failsafe Digital Output

p10047 SI F-DO diagnostics mode selection / SI F-DO diag mode

Data type: Integer16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit Safety Integrated application	
Can be changed in the operating state:	Commissioning (Safety Integrated)	
Parameter group:	Safety Integrated	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	1	1

Description: Sets the enable signal for the integration of F-DO in the test.
For value = 0:
Diagnostics using internal feedback signals (F-DO dynamization is required).
For value = 1:
Self test using internal feedback signals and specified dark pulses.

Value: 0: Diagnostics using internal feedback signals
1: Self test using specified dark pulses

Note
F-DO: Failsafe Digital Output.

c10050[0...2] SI status F-DI via PROFIsafe / SI F-DI above PS

Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit Safety Integrated application
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: The state of the selected failsafe digital inputs F-DIs is transferred to the F-control via PROFIsafe.

Index:
[0] = F-DI via Profisafe status 1
[1] = F-DI via Profisafe status 2
[2] = F-DI via Profisafe status 3

Note
F-DI: Failsafe Digital Input

r10051.0...2 SI digital inputs status channel A / SI DI status chA

Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Display for the single-channel, logical and debounced status of the failsafe digital inputs of channel A.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Status of the DI 21+ (X130.2/3)	Logical 1	Logical 0
01	Status of DI 0+ (X131.1/4)	Logical 1	Logical 0
02	Status of the DI 2+ (X131.5/4)	Logical 1	Logical 0

Dependency: See also: p10017

Note
The relationship between the logic level and the external voltage level at the input is intended for the use of a safety function:
Normally closed contacts have for
- 0 V at the input, a logical signal level of "0".
- 24 V at the input, a logical signal level of "1".
As a consequence, for an NC/NC contact parameterization for
- 0 V at both inputs of the F-DI results in a status of the F-DI equal to "0" (safety function selected),
- 24 V at both inputs of the F-DI results in a status of the F-DI equal to "1" (safety function selected),

F-DI: Failsafe Digital Input

c10060 SI SS1E input terminal / SI SS1E F-DI

Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages

Write permission: Edit Safety Integrated application
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 1

Description: Signal for selecting function "SS1E (Safe Stop 1 External)".

Note
F-DI: Failsafe Digital Input

c10062 SI SS2E input terminal / SI SS2E F-DI

Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit Safety Integrated application
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 1

Description: Signal for selecting function "SS2E (Safe Stop 2 External)".

Note
F-DI: Failsafe Digital Input

r10071.0...2 SI F-DI status / SI F-DI status

Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Display for the status of the failsafe digital inputs.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Status of the F-DI 0	Logical 1	Logical 0
01	Status of the F-DI 1	Logical 1	Logical 0
02	Status of the F-DI 2	Logical 1	Logical 0

Note
If a safety function is interconnected to an input (e.g. via c10022), then the following applies:
- Logical "0": Safety function is selected
- Logical "1": safety function is deselected

F-DI: Failsafe Digital Input

r10072.0 SI F-DO status / SI F-DO status

Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages

Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Display and binary signal source for the status of the failsafe digital outputs.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Status of the F-DO 0	Logical 1	Logical 0

Note
F-DO: Failsafe Digital Output

r10075.0...28 SI PROFIsafe control word / SI S_STW2

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Displays the control signals for safety functions integrated in the drive only via PROFIsafe.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Deselect STO	Yes	No
01	Deselect SS1	Yes	No
02	Deselect SS2	Yes	No
03	Deselect SOS	Yes	No
04	Deselect SLS	Yes	No
07	Acknowledgment	Signal edge active	No
08	Deselect SLA	Yes	No
09	Select SLS bit 0	Set	Not set
10	Select SLS bit 1	Set	Not set
12	Deselect SDI positive	Yes	No
13	Deselect SDI negative	Yes	No
15	Deselect SSM	Yes	No
18	Deselect SS1E	Yes	No
28	Deselect SS2E	Yes	No

r10076 SI PROFIsafe SLS-LIMIT / SI S_SLS_LIM_A

Data type: Integer16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** -

Description: Scaling for limit value SLS1 via PROFIsafe telegram 901.
The value range 1 ... 32767 corresponds to 0.01 % ... 100 % of limit value SLS1.
An invalid value results in the stop response parameterized in p9563[0].

Also for scaled limit value SLS1, the SLS2, SLS3 and SLS4 limit values can be selected using r9720.9 and r9720.10.

r10080.0...28 SI status signals channel A / SI status chA

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Status signals (channel A) for safety-relevant motion monitoring functions integrated in the drive.

Bit array:

Bit	Signal name	1 signal	0 signal
00	STO or safe pulse cancellation active	Yes	No
01	SS1 active	Yes	No
02	SS2 active	Yes	No
03	SOS active	Yes	No
04	SLS active	Yes	No
07	Internal event	No	Yes
08	SLA active	Yes	No
09	Active SLS limit value bit 0	Set	Not set
10	Active SLS limit value bit 1	Set	Not set
11	SOS selected	Yes	No
12	SDI positive active	Yes	No
13	SDI negative active	Yes	No
15	SSM (speed below limit value)	Yes	No
18	SS1E active	Yes	No
28	SS2E active	Yes	No

NOTICE

For bit 07:
An internal event is displayed if a stop function is active.
The signal state behaves in an opposite way to the PROFIsafe Standard.

Note

Only the status signals of the available and enabled functions (see p9604) are updated. All others are 0 across the board.

r10098 SI actual checksum across device-specific parameters / SI act CRC DO conf

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the checksum over the checksum-checked parameters for the device-specific parameters of the drive system (actual checksum).

Dependency: See also: p10099

p10099 SI reference checksum across device-specific parameters / SI set CRC DO conf

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit Safety Integrated application

	Can be changed in the operating state:	Commissioning (Safety Integrated)	
	Parameter group:	Safety Integrated	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	**Calculated:** -
	Unit: -	**Unit group:** -	**Unit selection:** -
	Min:	**Max:**	**Factory setting:**
	0000 hex	FFFF FFFF hex	A1A1 A1A1 hex

Description: Displays the checksum over the checksum-checked parameters for the device-specific parameters of the drive system (reference checksum).

Dependency: See also: r10098

r10138 SI Safe State status channel B / SI Safe State chB

Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Safety Integrated	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Description: Display for the Safe Status.

r10151.0...2 SI digital inputs status channel B / SI DI status chB

Data type: Unsigned8	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Safety Integrated	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source binary/numeric	**Scaling:** -

Description: Display and signal source for the single-channel, logical and debounced status of the failsafe digital inputs of channel B.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Status of the DI 22+ (X130.6/7)	Logical 1	Logical 0
01	Status of the DI 1+ (X131.2/3)	Logical 1	Logical 0
02	Status of the DI 3+ (X131.6/7)	Logical 1	Logical 0

Dependency: See also: p10017, p10040

Note

The relationship between the logic level and the external voltage level at the input depends on the parameterization (see p10040) of the input as NC contact or NO contact, and is aligned to the use of a safety function:

With 24 V at the input, NC contacts have a logical "1" level, for 0 V at the input, a logical "0" level.

This means that an NC/NC contact parameterization of 0 V at both inputs of the F-DI leads to a status of the F-DI equal to "0" (safety function selected), for 24 V at both inputs of the F-DI, to a status of the F-DI equal to "1" (safety function deselected).

With 24 V at the input, NO contacts have a logical "0" level, for 0 V at the input, a logical "1" level. This means that for an NC/NO contact parameterization, the level 0 V/24 V leads to a status of the F-DI equal to "0" (safety function selected), the level 24 V/0 V leads to status of the F-DI equal to "1" (safety function deselected).

F-DI: Failsafe Digital Input

r10171.0...2 SI F-DI status channel B / SI F-DI status B

Data type: Unsigned8	**Visible in:** Extended display
Read permission:	Read drive data or acknowledge messages

Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Display for the status of the failsafe digital inputs.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Status of the F-DI 0	Logical 1	Logical 0
01	Status of the F-DI 1	Logical 1	Logical 0
02	Status of the F-DI 2	Logical 1	Logical 0

Note
If a safety function (e.g. via c10022) is controlled via an F-DI, then the following applies:
- Logical "0": Safety function is selected
- Logical "1": safety function is deselected
F-DI: Failsafe Digital Input

r10172.0 SI F-DO status channel B / SI F-DO status B

Data type: Unsigned8 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Display and binary signal source for the status of the failsafe digital outputs.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Status of the F-DO 0	Logical 1	Logical 0

Note
F-DO: Failsafe Digital Output

r10175.0...28 SI PROFIsafe control word channel B / SI S_STW2 B

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the control signals for safety-related motion monitoring functions integrated in the drive via PROFIsafe.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Deselect STO	Yes	No
01	Deselect SS1	Yes	No
02	Deselect SS2	Yes	No
03	Deselect SOS	Yes	No
04	Deselect SLS	Yes	No
07	Acknowledgment	Signal edge active	No
08	Deselect SLA	Yes	No
09	Select SLS bit 0	Set	Not set
10	Select SLS bit 1	Set	Not set
12	Deselect SDI positive	Yes	No
13	Deselect SDI negative	Yes	No

15	Deselect SSM	Yes	No
18	Deselect SS1E	Yes	No
28	Deselect SS2E	Yes	No

r10176 SI PROFIsafe S_SLS_LIMIT_A channel B / SI S_SLS_LIM B

Data type: Integer16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Dynamic limit value input for SLS (Safely-Limited Speed) via PROFIsafe.

r10180.0...28 SI status signals channel B / SI status chB

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Status signals (channel B) for safety-relevant motion monitoring functions integrated in the drive.

Bit array:

Bit	Signal name	1 signal	0 signal
00	STO or safe pulse cancellation active	Yes	No
01	SS1 active	Yes	No
02	SS2 active	Yes	No
03	SOS active	Yes	No
04	SLS active	Yes	No
07	Internal event	No	Yes
08	SLA active	Yes	No
09	Active SLS limit value bit 0	Set	Not set
10	Active SLS limit value bit 1	Set	Not set
11	SOS selected	Yes	No
12	SDI positive active	Yes	No
13	SDI negative active	Yes	No
15	SSM (speed below limit value)	Yes	No
18	SS1E active	Yes	No
28	SS2E active	Yes	No

NOTICE

For bit 07:
An internal event is displayed if a stop function is active.
The signal state behaves in an opposite way to the PROFIsafe Standard.

Note

Only the function status signals of the available and enabled functions (see p9604) are updated. All others are 0 across the board.

r10198 SI actual checksum across device-specific parameters channel B / SI act CRC DOconfB

Data type: Unsigned32 **Visible in:** Extended display

Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the checksum over the checksum-checked parameters for the device-specific parameters of the drive system (actual checksum) channel B.

Dependency: See also: p10199

p10199 SI reference checksum across device-specific parameters chan B / SI ref CRC DOconfB

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit Safety Integrated application
Can be changed in the operating state: Commissioning (Safety Integrated)
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0000 hex	FFFF FFFF hex	B2B2 B2B2 hex

Description: Displays the checksum over the checksum-checked parameters for the device-specific parameters of the drive system (reference checksum) channel B.

Dependency: See also: r10198

r10234.11...15 SI Safety Information Channel status word S_ZSW3B / SIC S_ZSW3B

Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Displays status word S_ZSW3B for the SIC (Safety Information Channel).

Bit array:

Bit	Signal name	1 signal	0 signal
11	SS2E active	Yes	No
15	Acceptance test mode selected	Yes	No

Note
SS2E: Safe Stop 2 External (Safe Stop 2 with external stop)

r10352.0...17 SI STO select cause / SI STO sel cause

Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Reason that STO (Safe Torque Off) function was selected.

Bit array:	Bit	Signal name	1 signal	0 signal
	00	Selection via F-DI	High	Low
	01	Selection via PROFIsafe	High	Low
	04	Safety commissioning mode active	High	Low
	05	Axis parking active / missing actual value	High	Low
	07	Response to SS1	High	Low
	08	Response to SS1E	High	Low
	09	Response to SS2	High	Low
	10	Response to SS2E	High	Low
	12	Stop response	High	Low
	14	Response to parameterization/configuration errors	High	Low
	15	Response to internal software error	High	Low
	16	No communication to OM-SMT	High	Low
	17	No communication via PROFIsafe	High	Low

r10353.0...17 SI SS1 select cause / SI SS1 sel cause

Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Reason for the selection of function SS1 (Safe Stop 1).

Bit array:	Bit	Signal name	1 signal	0 signal
	00	Selection via F-DI	High	Low
	01	Selection via PROFIsafe	High	Low
	12	Stop response	High	Low
	13	Selection when transitioning to following function	High	Low
	17	No communication via PROFIsafe	High	Low

r10354.0...13 SI SS2 selection cause / SI SS2 sel cause

Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Reason for the selection of function SS2 (Safe Stop 2).

Bit array:	Bit	Signal name	1 signal	0 signal
	00	Selection via F-DI	High	Low
	01	Selection via PROFIsafe	High	Low
	12	Stop response	High	Low
	13	Selection when transitioning to following function	High	Low

r10355.0...10 SI SOS selection cause / SI SOS sel cause

Data type: Unsigned32 **Visible in:** Standard display

Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Reason for the selection of function SOS (Safe Operating Stop).

Bit array:

Bit	Signal name	1 signal	0 signal
00	Selection via F-DI	High	Low
01	Selection via PROFIsafe	High	Low
09	Response to SS2	High	Low
10	Response to SS2E	High	Low

r10356.0...1 SI SLS select cause / SI SLS sel cause

Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Reason for the selection of function SLS (Safely-Limited Speed).

Bit array:

Bit	Signal name	1 signal	0 signal
00	Selection via F-DI	High	Low
01	Selection via PROFIsafe	High	Low

r10360.0...1 SI SDI positive select cause / SI SDIpos SelCause

Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Reason for the selection of SDI (Safe Direction) positive.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Selection via F-DI	High	Low
01	Selection via PROFIsafe	High	Low

r10361.0...1 SI SDI negative select cause / SI SDIneg SelCause

Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Reason for the selection of SDI (Safe Direction) negative.

Bit array:	Bit	Signal name	1 signal	0 signal
	00	Selection via F-DI	High	Low
	01	Selection via PROFIsafe	High	Low

r10365.0...1 SI SSM select cause / SI SSM sel cause

Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Reason for the selection of function SSM (Safe Speed Monitor).

Bit array:	Bit	Signal name	1 signal	0 signal
	00	Selection via F-DI	High	Low
	01	Selection via PROFIsafe	High	Low

r10366.0...1 SI SLA selection cause / SI SLA sel cause

Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Displays the reason for the selection of function SLA (Safely-Limited Acceleration).

Bit array:	Bit	Signal name	1 signal	0 signal
	00	Selection via F-DI	High	Low
	01	Selection via PROFIsafe	High	Low

r10370.0...13 SI SS1E selection cause / SI SS1E sel cause

Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Reason for the selection of function SS1E (Safe Stop 1 External).

Bit array:	Bit	Signal name	1 signal	0 signal
	00	Selection via F-DI	High	Low
	01	Selection via PROFIsafe	High	Low
	12	Stop response	High	Low
	13	Selection when transitioning to following function	High	Low

r10372.0...13 SI SS2E select cause / SI SS2E sel cause

Data type: Unsigned32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages

Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Reason for the selection of function SS2E (Safe Stop 2 External).

Bit array:

Bit	Signal name	1 signal	0 signal
00	Selection via F-DI	High	Low
01	Selection via PROFIsafe	High	Low
12	Stop response	High	Low
13	Selection when transitioning to following function	High	Low

r10452.0...17 SI STO select cause channel B / SI STO sel cause B

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Reason for the selection of function STO (Safe Torque Off) on channel B.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Selection via F-DI	High	Low
01	Selection via PROFIsafe	High	Low
04	Safety commissioning mode active	High	Low
05	Axis parking active / missing actual value	High	Low
07	Response to SS1	High	Low
08	Response to SS1E	High	Low
09	Response to SS2	High	Low
10	Response to SS2E	High	Low
12	Stop response	High	Low
14	Response to parameterization/configuration errors	High	Low
15	Response to internal software error	High	Low
16	No communication to OM-SMT	High	Low
17	No communication via PROFIsafe	High	Low

r10453.0...17 SI SS1 select cause channel B / SI SS1 sel cause B

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Reason for the selection of function SS1 (Safe Stop 1) on channel B.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Selection via F-DI	High	Low
01	Selection via PROFIsafe	High	Low
12	Stop response	High	Low
13	Selection when transitioning to following function	High	Low
17	No communication via PROFIsafe	High	Low

r10454.0...13 SI SS2 selection cause channel B / SI SS2 sel cause B

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Reason for the selection of function SS2 (Safe Stop 2) on channel B.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Selection via F-DI	High	Low
01	Selection via PROFIsafe	High	Low
12	Stop response	High	Low
13	Selection when transitioning to following function	High	Low

r10455.0...10 SI SOS select cause channel B / SI SOS sel cause B

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Reason for the selection of function SOS (Safe Operating Stop) on channel B.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Selection via F-DI	High	Low
01	Selection via PROFIsafe	High	Low
09	Response to SS2	High	Low
10	Response to SS2E	High	Low

r10456.0...1 SI SLS select cause channel B / SI SLS sel cause B

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Reason for the selection of function SLS (Safely-Limited Speed) on channel B.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Selection via F-DI	High	Low
01	Selection via PROFIsafe	High	Low

r10460.0...1 SI SDI positive select cause channel B / SI SDIposSelCauseB

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Reason for the selection of SDI (Safe Direction) positive on channel B.

Bit array:	Bit	Signal name	1 signal	0 signal
	00	Selection via F-DI	High	Low
	01	Selection via PROFIsafe	High	Low

r10461.0...1 SI SDI negative select cause channel B / SI SDInegSelCauseB

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Reason for the selection of SDI (Safe Direction) negative on channel B.

Bit array:	Bit	Signal name	1 signal	0 signal
	00	Selection via F-DI	High	Low
	01	Selection via PROFIsafe	High	Low

r10465.0...1 SI SSM select cause channel B / SI SSM sel cause B

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Reason for the selection of function SSM (Safe Speed Monitor) on channel B.

Bit array:	Bit	Signal name	1 signal	0 signal
	00	Selection via F-DI	High	Low
	01	Selection via PROFIsafe	High	Low

r10466.0...1 SI SLA select cause channel B / SI SLA sel cause B

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Reason for the selection of function SLA (Safely-Limited Acceleration) on channel B.

Bit array:	Bit	Signal name	1 signal	0 signal
	00	Selection via F-DI	High	Low
	01	Selection via PROFIsafe	High	Low

r10470.0...13 SI SS1E select cause channel B / SI SS1E SelCauseB

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Reason for the selection of function SS1E (Safe Stop 1 External) on channel B.

Bit array:	Bit	Signal name	1 signal	0 signal
	00	Selection via F-DI	High	Low
	01	Selection via PROFIsafe	High	Low
	12	Stop response	High	Low
	13	Selection when transitioning to following function	High	Low

r10472.0...13 SI SS2E select cause channel B / SI SS2E SelCauseB

Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Reason for the selection of function SS2E (Safe Stop 2 External) on channel B.

Bit array:	Bit	Signal name	1 signal	0 signal
	00	Selection via F-DI	High	Low
	01	Selection via PROFIsafe	High	Low
	12	Stop response	High	Low
	13	Selection when transitioning to following function	High	Low

c11500[0...3] LR initiate absolute encoder adjustment / Abs_enc_adj_start

Variant: G220, G220 Clean Power
Available when function is active: Position control
Data type: Unsigned8 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Position control
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 0

Description: Initiate adjustment for absolute encoder
A 0/1 signal starts the absolute encoder adjustment.

Index: [0] = Position control
[1] = Motor encoder
[2] = Encoder 2
[3] = Encoder 3

Dependency: See also: p2507, r2526, c2598, p2599

⚠ CAUTION

For rotating absolute encoders, when adjusting, a range is set up symmetrically around zero with half of the encoder range, within which the position must be re-established after switch-off/switch-on. In this range, it is only permissible that the encoder overflows.
After the adjustment has been completed, it must be guaranteed that the range is not exited. The reason for this is that outside the range, there is no clear reference any longer between the encoder actual value and mechanical system.
If the home position (c2598) lies in this range, then the position actual value is set when adjusting to the home position. Otherwise, adjustment is canceled with F07443.
There is no overflow for linear absolute encoders. This means that after the adjustment, the position can be re-established in the complete traversing range after switch-off/switch-on. When adjusting, the position actual value is set to the home position.

Note

The status of the absolute encoder adjustment is indicated via p2507 and in status word r2526.
To permanently accept the determined position offset, it must be retentively saved (p0977).
This adjustment can only be initiated for an absolute encoder.

p11550 EPOS active homing reference cam selection / Ref_cam selection

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: Integer16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Homing	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	1	0

Description: Signal to evaluate "Active homing reference cam".

Value:
0: Reference cam selection 1
1: Reference cam selection 2

Dependency: See also: p2607, c2612

c11560 EPOS direct setpoint input/MDI acceleration setpoint / MDI a_set

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Direct setpoint input (MDI)	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm/s^2	**Unit group:** 12_3	**Unit selection:** p2498
Type of signal interconnection:	Sink numeric	**Scaling:** -
Factory interconnection:	Parameter: 2572	

Description: Signal for the acceleration setpoint in mode "direct setpoint input/MDI".

Dependency: See also: c2649, c2650

NOTICE
The parameter may be protected as a result of r0922 and cannot be changed.

Note
Depending on c2649, the acceleration setpoint is either transferred continuously or edge-triggered.

c11560 EPOS direct setpoint input/MDI acceleration setpoint / MDI a_set

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Direct setpoint input (MDI)	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °/s²	**Unit group:** 12_4	**Unit selection:** p2498
Type of signal interconnection:	Sink numeric	**Scaling:** -
Factory interconnection:	Parameter: 2572	

Description: Signal for the acceleration setpoint in mode "direct setpoint input/MDI".

Dependency: See also: c2649, c2650

NOTICE
The parameter may be protected as a result of r0922 and cannot be changed.

Note
Depending on c2649, the acceleration setpoint is either transferred continuously or edge-triggered.

c11561 EPOS direct setpoint input/MDI deceleration setpoint / MDI -a_set

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Traversing blocks	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm/s²	**Unit group:** 12_3	**Unit selection:** p2498
Type of signal interconnection:	Sink numeric	**Scaling:** -
Factory interconnection:	Parameter: 2573	

Description: Signal for the deceleration setpoint in mode "direct setpoint input/MDI".

Dependency: See also: c2649, c2650

NOTICE
If, when calculating the traversing profile, it is identified that the target position with the programmed deceleration setpoint cannot be reached without reversing the direction, then when accepting the dynamic response values, the higher deceleration setpoint is accepted and becomes effective. The parameter may be protected as a result of r0922 and cannot be changed.

Note
Depending on c2649, the deceleration setpoint is either transferred continuously or edge-triggered.

c11561 EPOS direct setpoint input/MDI deceleration setpoint / MDI -a_set

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Values for:	Basic positioner for rotary motion	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Traversing blocks	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °/s²	**Unit group:** 12_4	**Unit selection:** p2498
Type of signal interconnection:	Sink numeric	**Scaling:** -
Factory interconnection:	Parameter: 2573	

Description: Signal for the deceleration setpoint in mode "direct setpoint input/MDI".

Dependency: See also: c2649, c2650

NOTICE

If, when calculating the traversing profile, it is identified that the target position with the programmed deceleration setpoint cannot be reached without reversing the direction, then when accepting the dynamic response values, the higher deceleration setpoint is accepted and becomes effective.
The parameter may be protected as a result of r0922 and cannot be changed.

Note

Depending on c2649, the deceleration setpoint is either transferred continuously or edge-triggered.

r11570 EPOS actual acceleration / a act

Variant:	G220, G220 Clean Power	
Available when function is active:	Basic positioner	
Data type: FloatingPoint32	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Jog, Traversing blocks, Direct setpoint input (MDI)	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: mm/s²	**Unit group:** 12_3	**Unit selection:** p2498
Type of signal interconnection:	Source numeric	**Scaling:** -

Description: Displays the acceleration value currently being processed.

Dependency: See also: p2572

Note

The maximum acceleration from p2572 is effective in operating mode "Jog" and "Active homing".

r11570 EPOS actual acceleration / a act

Variant:	G220, G220 Clean Power
Available when function is active:	Basic positioner
Values for:	Basic positioner for rotary motion
Data type: FloatingPoint32	**Visible in:** Standard display
Read permission:	Read drive data or acknowledge messages
Parameter group:	Jog, Traversing blocks, Direct setpoint input (MDI)
Not relevant for motor type:	-

Dyn. index [0...n]: - **Calculated:** -
Unit: °/s² **Unit group:** 12_4 **Unit selection:** p2498
Type of signal interconnection: Source numeric **Scaling:** -

Description: Displays the acceleration value currently being processed.

Dependency: See also: p2572

Note
The maximum acceleration from p2572 is effective in operating mode "Jog" and "Active homing".

r11571 EPOS actual deceleration / -a act

Variant: G220, G220 Clean Power
Available when function is active: Basic positioner
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Jog, Traversing blocks, Direct setpoint input (MDI)
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: mm/s² **Unit group:** 12_3 **Unit selection:** p2498
Type of signal interconnection: Source numeric **Scaling:** -

Description: Displays the deceleration value currently being processed.

Dependency: See also: p2573

Note
The maximum deceleration from p2573 is effective in operating mode "Jog" and "Active homing".

r11571 EPOS actual deceleration / -a act

Variant: G220, G220 Clean Power
Available when function is active: Basic positioner
Values for: Basic positioner for rotary motion
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Jog, Traversing blocks, Direct setpoint input (MDI)
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: °/s² **Unit group:** 12_4 **Unit selection:** p2498
Type of signal interconnection: Source numeric **Scaling:** -

Description: Displays the deceleration value currently being processed.

Dependency: See also: p2573

Note
The maximum deceleration from p2573 is effective in operating mode "Jog" and "Active homing".

r13002 Infeed operating display / INF op_display

Variant: G220 Clean Power
Data type: Integer16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Status parameters, Diagnostics general, Drive enable signals
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -

Unit: - **Unit group:** - **Unit selection:** -

Description: Operating display for the infeed.

Value:

0:	Operation - Everything enabled
21:	Ready for operation - Set "Enable operation" = "1" (c13852)
31:	Ready for switching on - Precharging running (p0857)
32:	Ready for switching on - Set "ON/OFF1" = "0/1" (c13840)
35:	Switching on inhibited - Carry out first commissioning
41:	Switching on inhibited - Set "ON/OFF1" = "0" (c13840)
42:	Switching on inhibited - Set "OFF2" = "1" (c13844, c13845)
45:	Switching on inhibited - Remove fault cause, acknowledge fault
46:	Switching on inhibited - Exit commissioning mode
60:	Infeed deactivated/not operational
70:	Initialization
200:	Wait for run-up/partial run-up
250:	Device signals a topology error

Dependency: See also: r13046

NOTICE

For several missing enable signals, the corresponding value with the highest number is displayed.

Note

OC: Operating condition
EP: Enable Pulses (pulse enable)
COMM: Commissioning

r13024 Infeed line frequency smoothed / Line freq smooth

Variant: G220 Clean Power
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Line supply PLL, Mode signals / displays
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: Hz **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** p2000

Description: Display and numerical signal source for the smoothed line frequency.

Dependency: See also: r13066

Note

Smoothing time constant = 300 ms
The signal is not suitable as a process quantity and may only be used as a display quantity.
The line frequency is available smoothed (r13024) and unsmoothed (r13066).
A positive sign of the frequency is obtained when the line phases U, V and W are connected with the correct phase sequence.
A negative sign of the frequency is obtained when the 3 line phases are interchanged therefore designating a negative direction of the rotating field of the 3-phase line voltage.
Scaling is carried out via p2008 (not via p2000).

r13025 Infeed input voltage smoothed / U_inp smth

Variant: G220 Clean Power
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Line supply PLL, Mode signals / displays

Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: Vrms **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** p2001

Description: Displays the smoothed absolute values of AC voltages.

Dependency: See also: r13072

NOTICE
This smoothed signal is not suitable for diagnostics or evaluation of dynamic operations. For this purpose, use r13072[1].

Note
Smoothing time constant = 300 ms
The signal is not suitable as a process quantity and may only be used as a display quantity.
The input voltage is available smoothed (r13025) and unsmoothed (r13072[1]).

r13027 Infeed absolute current actual value smoothed / I_act AbsV smth

Variant: G220 Clean Power
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Current controller, Power unit, Mode signals / displays
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: Arms **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** p2002

Description: Displays the smoothed absolute current actual value.

Dependency: See also: r0068

NOTICE
This smoothed signal is not suitable for diagnostics or evaluation of dynamic operations. In this case, the unsmoothed value should be used.

Note
Smoothing time constant = 300 ms
The signal is not suitable as a process quantity and may only be used as a display quantity.
The absolute current actual value is available smoothed (r13027) and unsmoothed (r13068).

r13029 Infeed reactive current actual value smoothed / I_react smooth

Variant: G220 Clean Power
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Reactive current controller, Power unit, Mode signals / displays
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: Arms **Unit group:** - **Unit selection:** -

Description: Displays the smoothed actual value of the reactive current component.

Note
Smoothing time constant = 300 ms
The signal is not suitable as a process quantity and may only be used as a display quantity.
The reactive current actual value is available smoothed (r13029) and unsmoothed (r13076).

r13030 Infeed current actual value smoothed / I_act smth

Variant: G220 Clean Power
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Active current controller, Power unit, Mode signals / displays
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: Arms **Unit group:** - **Unit selection:** -

Description: Displays the smoothed actual value of the active current components.

Dependency: See also: r13078

Note
Smoothing time constant = 300 ms
The signal is not suitable as a process quantity and may only be used as a display quantity.
The active current actual value is available smoothed (r13030) and unsmoothed (r13078).

r13032 Infeed active power actual value smoothed / Active power ActV

Variant: G220 Clean Power
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Power unit, Mode signals / displays
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: kW **Unit group:** 14_10 **Unit selection:** p0505
Type of signal interconnection: Source numeric **Scaling:** r2004

Description: Display and numerical signal source for the smoothed actual value of the active power.

Dependency: See also: r13082

NOTICE
This smoothed signal is not suitable for diagnostics or evaluation of dynamic operations. In this case, the unsmoothed value should be used.

Note
Smoothing time constant = 300 ms
Displays the active power imported from the line supply.
The power exported to the line supply is shown with a negative sign.
The active power is available smoothed and unsmoothed (r13082).

r13036 Infeed power unit overload I2t / PU overload I2t

Variant: G220 Clean Power
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Power unit, Mode signals / displays
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** PERCENT

Description: Displays the infeed overload determined using the I2t calculation.
A current reference value is defined for the I2t monitoring of the infeed. It represents the current that can be conducted by the infeed without any influence of the switching losses (e.g. the continuously permissible current of the capacitors, inductances, busbars, etc.).
If the I2t reference current of the infeed is not exceeded, then an overload (0 %) is not displayed.
In the other case, the degree of thermal overload is calculated, whereby 100% results in a trip.

Dependency: See also: F29005

r13037[0...10] Infeed power unit temperatures / PU temperatures

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Power unit, Mode signals / displays	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: °C	**Unit group:** 21_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2006

Description: Displays the temperatures in the power unit.

Index:
[0] = Infeed maximum value
[1] = Depletion layer maximum value
[2] = Reserved
[3] = Air intake
[4] = Interior of power unit
[5] = Cooling unit liquid intake
[6] = Capacitor air discharge
[7] = Depletion layer maximum value 1
[8] = Depletion layer maximum value 2
[9] = Depletion layer maximum value 3
[10] = Depletion layer maximum value 4

Note
The value of -200 indicates that there is no measuring signal.
r0037[0]: Maximum value of inverter temperatures (r0257[0...5]).
r0037[1]: Maximum value of junction temperatures (r0257[6...11]).
In the case of a fault, the particular shutdown threshold depends on the power unit, and cannot be read out.

r13038 Infeed power factor smoothed / Cos phi smooth

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Mode signals / displays	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Description: Displays the smoothed actual power factor.

NOTICE
For active powers < 25 % of the rated power, this does not provide any useful information.

Note
Smoothing time constant = 300 ms
The signal is not suitable as a process quantity and may only be used as a display quantity.
Meaning for the infeed:
- Power factor at the line connection point.

r13046.0...26 Infeed missing enable signals / Missing enable sig

Variant:	G220 Clean Power		
Data type: Unsigned32	**Visible in:** Extended display		
Read permission:	Read drive data or acknowledge messages		
Parameter group:	Control/status words, Drive enable signals		
Not relevant for motor type:	-		
Dyn. index [0...n]:	-	**Calculated:** -	
Unit: -	**Unit group:** -	**Unit selection:** -	
Type of signal interconnection:	Source binary/numeric	**Scaling:** -	

Description: Display for missing enable signals that are preventing the closed-loop infeed control from being commissioned.

Bit array:

Bit	Signal name	1 signal	0 signal
00	OFF1 enable missing	Yes	No
01	OFF2 enable missing	Yes	No
03	Operation enable missing	Yes	No
16	OFF1 enable internal missing	Yes	No
17	OFF2 enable internal missing	Yes	No
19	Pulse enable internal missing	Yes	No
26	Infeed inactive or not operational	Yes	No

Dependency: See also: r13002

Note
Value = 0 indicates that all enable signals for the infeed are present.

Bit 00 = 1 (enable signal missing), if:
- Signal sink c13840 has a 0 signal.
- Switching on inhibited is active.

Bit 01 = 1 (enable signal missing), if:
- Signal sink c13844 or c13845 has a 0 signal.

Bit 03 = 1 (enable signal missing), if:
- Signal sink c13852 has a 0 signal.

Bit 16 = 1 (enable signal missing), if:
- There is an OFF1 fault response. The system is only enabled if the fault is removed and was acknowledged and the "switching on inhibited" withdrawn with OFF1 = 0.

Bit 17 = 1 (enable signal missing), if:
- The commissioning mode is selected, there is an OFF2 fault response or the OFF1 signal sink (c13840) is changed.

Bit 19 = 1 (internal pulse enable missing), if:
- Synchronization is running between the basic clock cycle, DRIVE-CLiQ clock cycle and application clock cycle.

Bit 26 = 1 (enable signal missing), if:
- The infeed is inactive or not operational.

r13066[0...1] Infeed line frequency / f_line

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Line supply PLL	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Hz	**Unit group:** 2_1	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2000

Description: Display and numerical signal source for the line frequency.
For index [0]:
Displays the instantaneous value of the line supply PLL.
For index [1]:
Displays the values smoothed with a time constant of 50 ms to monitor the frequency.

Index: [0] = Unsmoothed
[1] = Smoothed

Dependency: See also: r13024

Note
The line frequency is also available with an adjustable smoothing (r13024).
A positive sign of the frequency is obtained when the line phases U, V, W are connected with the correct phase sequence.
A negative sign of the frequency is obtained when the 3 line phases are interchanged therefore designating a negative direction of the rotating field of the 3-phase line voltage.
Scaling is carried out via p2008 (not via p2000).

r13067[0...1] Infeed absolute current value permissible / Abs current perm

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Current limits, Power unit, Mode signals / displays	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Arms	**Unit group:** 6_2	**Unit selection:** p0505

Description: Displays the actual permissible absolute line-side current.

Index: [0] = Motoring mode
[1] = Generating mode

r13068 Absolute current actual value / I_act AbsV

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Current controller, Power unit	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Arms	**Unit group:** 6_2	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2002

Description: Displays actual absolute current.

Dependency: See also: r0027

NOTICE
The value is updated with the current controller sampling time.

Note
Absolute current value = sqrt(r13076^2 + r13078^2)
The absolute current actual value is available smoothed (r13027) and unsmoothed (r13068).

r13069[0...8] Infeed phase current actual value / I_phase ActV

Variant: G220 Clean Power
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Power unit
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: A **Unit group:** 6_5 **Unit selection:** p0505
Type of signal interconnection: Source numeric **Scaling:** p2002

Description: Display and numerical signal source for the measured actual phase currents as peak value.

Index:
[0] = Phase U
[1] = Phase V
[2] = Phase W
[3] = Phase U offset
[4] = Phase V offset
[5] = Phase W offset
[6] = Total U, V, W
[7] = Alpha component
[8] = Beta component

Note
In indices 3 ... 5, the offset currents of the 3 phases, which are added to correct the phase currents, are displayed.
The sum of the 3 corrected phase currents is displayed in index 6.
The line currents are indicated in indices 7 and 8 (according to the Clarke transformation).

r13070 Infeed DC link voltage actual value / Vdc act val

Variant: G220 Clean Power
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: DC link voltage controller, Power unit
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: V **Unit group:** 5_2 **Unit selection:** p0505
Type of signal interconnection: Source numeric **Scaling:** p2001

Description: Display for the measured actual value of the DC link voltage.

r13072[0...4] Infeed input voltage / U_inp

Variant: G220 Clean Power
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Line supply PLL, Power unit, Mode signals / displays
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: Vrms **Unit group:** 5_1 **Unit selection:** p0505
Type of signal interconnection: Source numeric **Scaling:** p2001

Description: Displays the actual input voltage of the power unit (infeed).

Index: [0] = Power unit input terminals
[1] = Line connection point
[2] = Line voltage source (model)
[3] = Line voltage source smoothed (model)
[4] = Line voltage source strongly smoothed (model)

Note
The input voltage at input terminals is available smoothed (r13025) and unsmoothed (r13072[1]).
For r13072[0]:
Displays the pulsed internal voltage for diagnostic purposes.
The value is calculated from the modulation depth (r13074) and is therefore only correct in the closed-loop controlled mode and when the pulses are enabled.
For r13072[1]:
Displays the absolute voltage at the input terminals of the device.
For r13072[2]:
Displays the estimated value for the voltage of the voltage source that is calculated in the voltage model of the line supply PLL.
The model takes into account the specification of a line inductance p0225.
For r13072[3]:
Displays the smoothed value for the source voltage in r13072[2].
The PT1 smoothing time constant is set in p3472[1].
For r13072[4]:
Displays the strongly smoothed value for the source voltage in r13072[2].
The PT1 smoothing time constant is set in p3472[2].

r13074 Infeed modulation depth / mod_depth

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Modulation depth controller, Power unit	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: %	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source numeric	**Scaling:** PERCENT

Description: Display for the actual modulation depth.

Note
For space vector modulation, 100% corresponds to the maximum output voltage without overcontrol.
Values above 100% indicate an overcontrol condition - values below 100% indicate no overcontrol.
The phase voltage (phase-to-phase, rms) is calculated as follows:(r13074 x r13070) / (sqrt(2) x 100 %).

r13075 Infeed reactive current setpoint / I_react_set

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Reactive current controller, Power unit	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Arms	**Unit group:** 6_2	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2002

Description: Display and numerical signal source for the reactive current setpoint.
Dependency: See also: r3471

Note
If the line phases are interchanged and the line voltage therefore has a negative orientation (r13066 < 0), it should be noted that the sign of the reactive current is reversed.

r13076 Infeed reactive current actual value / I_reactive_ActV

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Reactive current controller, Power unit	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Arms	**Unit group:** 6_2	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2002

Description: Display and numerical signal source for the reactive current actual value.

Dependency: See also: r13029, r13075

Note
The reactive current actual value is available smoothed (r13029) and unsmoothed (r13076).

r13077 Infeed active current setpoint / I_act_set

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Active current controller, Power unit	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Arms	**Unit group:** 6_2	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2002

Description: Displays the active current setpoint.

r13078 Infeed active current actual value / I_active_act

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Active current controller, Power unit	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: Arms	**Unit group:** 6_2	**Unit selection:** p0505
Type of signal interconnection:	Source numeric	**Scaling:** p2002

Description: Displays actual value of the active current.

Dependency: See also: r13030

Note
The active current actual value is available smoothed (r13030) and unsmoothed (r13078).

r13082 Infeed active power actual value / P_act

Variant:	G220 Clean Power	
Data type: FloatingPoint32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Power unit	

Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: kW **Unit group:** 14_7 **Unit selection:** p0505
Type of signal interconnection: Source numeric **Scaling:** r2004

Description: Displays the instantaneous active power.

Dependency: See also: r13032

Note
The active power is available smoothed (r13032) and unsmoothed (r13082).

r13088 Infeed DC link voltage setpoint / Vdc setpoint

Variant: G220 Clean Power
Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: DC link voltage controller, Mode signals / displays
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: V **Unit group:** 5_2 **Unit selection:** p0505
Type of signal interconnection: Source numeric **Scaling:** p2001

Description: Display and numerical signal source for the DC link voltage setpoint.

Note
The currently active setpoint for the DC link voltage is the sum of the fixed setpoint and the output of the reserve controller for the modulation depth.
The following applies: r13088 = p3510 + r3485.
The summed setpoint is limited to the maximum steady-state DC link voltage (p0280).

r13089[0...5] Infeed phase voltage actual value / U_phase U ActV

Variant: G220 Clean Power
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Power unit
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: V **Unit group:** 5_3 **Unit selection:** p0505

Description: Displays the actual phase voltage.

Index: [0] = Measurement phase U
[1] = Measurement phase V
[2] = Measurement phase W
[3] = Calculation phase U
[4] = Calculation phase V
[5] = Calc phase W

Note
For index [0, 1, 2]:
Displays the voltage measured values for the line terminals.
For index [3, 4, 5]:
Displays the calculated internal voltages of the infeed.
The values are determined from the transistor switch-on durations.

r13094 Infeed transformation angle / Transformat_angle

Variant: G220 Clean Power

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Line supply PLL
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: ° **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** p2005

Description: Displays the transformation angle.

Note
The transformation angle corresponds to the line supply angle.
The angle is used for the Park transformation in the coordinate system for active current and reactive current and/or active and reactive voltage.

r13192.0...26 Infeed firmware properties 1 / PU FW properties 1

Variant: G220 Clean Power
Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: System identification
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the properties supported by the line-side inverter firmware.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Support of optimized pulse patterns	Yes	No
01	Support of asynchronous pulse frequencies for vector/infeed	Yes	No
02	Support of measuring type "Moving average" wobbulation	Yes	No
08	Support of the simulation mode	Yes	No
09	Reserved	Yes	No
10	Reserved	Yes	No
16	Reserved	Yes	No
18	Reserved	Yes	No
19	Support of closed-loop current limiting control	Yes	No
20	Support of component status	Yes	No
22	Support of lower device supply voltage	Yes	No
23	Support of test pulse operation	Yes	No
26	Support of phase mode	Yes	No

Dependency: See also: r13193

NOTICE
The supported firmware properties of the line inverter do not reflect the actual hardware configuration available.

r13193.5...31 Infeed firmware properties 2 / PU FW properties 2

Variant: G220 Clean Power
Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: System identification
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the properties supported by the line-side inverter firmware.

Bit array:

Bit	Signal name	1 signal	0 signal
05	SW supports tolerant response to overvoltages	Yes	No
08	SW supports reduced undervoltage threshold while precharging	Yes	No
12	SW supports DC link forming	Yes	No
15	Reserved	Yes	No
24	Coprocessor zero-sequence system bit 0	Yes	No
25	Coprocessor zero-sequence system bit 1	Yes	No
26	Coprocessor zero-sequence system bit 2	Yes	No
27	Coprocessor zero-sequence system bit 3	Yes	No
28	Coprocessor zero-sequence system bit 4	Yes	No
29	Coprocessor zero-sequence system bit 5	Yes	No
30	Coprocessor zero-sequence system bit 6	Yes	No
31	Coprocessor zero-sequence system bit 7	Yes	No

Dependency: See also: r13192

r13200[0...n] Infeed power unit current code number / INF PU curr codeNo

Variant: G220 Clean Power
Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: System identification, Power unit
Not relevant for motor type: -
Dyn. index [0...n]: PDS n defined by: p0120 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the unique code number of the infeed.

Note
r13200 = 0: No infeed power unit found.

p13201[0...n] Infeed power unit code number / INF PU code no

Variant: G220 Clean Power
Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Commissioning
Parameter group: Power unit
Not relevant for motor type: -
Dyn. index [0...n]: PDS n defined by: p0120 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
0	65535	0

Description: Sets the infeed code number. This value is automatically entered when the drive is commissioned for the first time.

r13204[0...n].0...25 Infeed power unit hardware properties / INF PU HW prop

Variant: G220 Clean Power
Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: System identification, Power unit
Not relevant for motor type: -

Dyn. index [0...n]: PDS n defined by: p0120 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the properties supported by the hardware of the infeed.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Device type	AC/DC device	AC/AC device
01	internal EMC filter available	Yes	No
02	Active line infeed available	Yes	No
03	Smart line infeed available	Yes	No
08	Internal Braking Module	Yes	No
10	Internal voltage measurement	Yes	No
13	Safety Integrated supported	Yes	No
14	Internal LC output filter	Yes	No
16	Line infeed is capable of energy recovery	Yes	No
17	Line infeed with 3-level topology	Yes	No
19	Heat sink fan	Yes	No
20	Auxiliary fan 1	Yes	No
21	Auxiliary fan 2	Yes	No
24	Internal filter voltage	Yes	No
25	Capacitive precharging	Yes	No

r13206[0...1] Infeed power unit rated power / INF PU P_rated

Variant: G220 Clean Power
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: System identification, Power unit
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: kW **Unit group:** 14_6 **Unit selection:** p0100

Description: Displays the rated infeed power (rating plate).

Index: [0] = Voltage range 1
[1] = Voltage range 2

Dependency: IEC drives (p0100 = 0): Units kW
NEMA drives (p0100 = 1): Units hp
See also: p0100

r13207[0...1] Infeed power unit rated current / INF PU I_rated

Variant: G220 Clean Power
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: System identification, Power unit
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: Arms **Unit group:** - **Unit selection:** -

Description: Displays the rated current of the infeed (rating plate).

Index: [0] = Voltage range 1
[1] = Voltage range 2

r13208 Infeed rated power unit line voltage / INF PU U_rated

Variant: G220 Clean Power

	Data type: FloatingPoint32	**Visible in:** Extended display	
	Read permission:	Read drive data or acknowledge messages	
	Parameter group:	System identification, Power unit	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	**Calculated:** -
	Unit: Vrms	**Unit group:** -	**Unit selection:** -

Description: Displays the rated line voltage of the power unit.
r0208 = 400: 380 - 500 V +/-10 %
r0208 = 690: 525 - 690 V +/-10 %

r13209[0...1] Infeed power unit maximum current / INF PU I_max

	Variant:	G220 Clean Power	
	Data type: FloatingPoint32	**Visible in:** Extended display	
	Read permission:	Read drive data or acknowledge messages	
	Parameter group:	System identification, Power unit	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	**Calculated:** -
	Unit: Arms	**Unit group:** -	**Unit selection:** -

Description: Displays the maximum input current of the infeed.
Index: [0] = Voltage range 1
[1] = Voltage range 2

r13257[0...29] Infeed power unit individual temperatures / PU temperatures

	Variant:	G220 Clean Power	
	Data type: FloatingPoint32	**Visible in:** Extended display	
	Read permission:	Read drive data or acknowledge messages	
	Parameter group:	Power unit	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	**Calculated:** -
	Unit: °C	**Unit group:** 21_1	**Unit selection:** p0505
	Type of signal interconnection:	Source numeric	**Scaling:** p2006

Description: Display and numerical signal source for temperatures in the infeed.

Index:
[0] = Power unit 1
[1] = Power unit 2
[2] = Power unit 3
[3] = Power unit 4
[4] = Power unit 5
[5] = Power unit 6
[6] = Depletion layer 1
[7] = Depletion layer 2
[8] = Depletion layer 3
[9] = Depletion layer 4
[10] = Depletion layer 5
[11] = Depletion layer 6
[12] = Depletion layer 7
[13] = Depletion layer 8
[14] = Depletion layer 9
[15] = Depletion layer 10
[16] = Depletion layer 11
[17] = Depletion layer 12
[18] = Depletion layer 13
[19] = Depletion layer 14
[20] = Depletion layer 15
[21] = Depletion layer 16
[22] = Depletion layer 17
[23] = Depletion layer 18
[24] = Depletion layer 19
[25] = Depletion layer 20
[26] = Depletion layer 21
[27] = Depletion layer 22
[28] = Depletion layer 23
[29] = Depletion layer 24

NOTICE
Only for internal Siemens troubleshooting.

Note
The value of -200 indicates that there is no measuring signal.
In the case of a fault, the particular shutdown threshold depends on the power unit, and cannot be read out.

p13287[0...1] Infeed ground fault monitoring shutdown threshold / Gnd flt threshold

Variant: G220 Clean Power
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Ready for operation
Parameter group: Power unit, Messages / Monitoring
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: % **Unit group:** - **Unit selection:** -

Min:	**Max:**	**Factory setting:**
0.0 [%]	100.0 [%]	[0] 6.0 [%] [1] 16.0 [%]

Description: Sets the shutdown thresholds for the ground fault monitoring.
The setting is made as a percentage of the maximum current of the infeed (r13209).
Index: [0] = During precharging
[1] = Regular
Dependency: See also: F30021

r13801 Infeed actual pulse frequency / Pulse freq act

Variant: G220 Clean Power
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Power unit
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: kHz **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** p2000

Description: Displays the actual switching frequency of the infeed.

r13802 Infeed modulator mode / Modulator mode

Variant: G220 Clean Power
Data type: Integer16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Power unit
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** automatic
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the mode for the modulator.
Value:
1000: Space vector modulation 2
1002: Fixed lowside bias modulation
1004: Flat middle modulation
1005: Fixed topside bias modulation
1007: Space vector modulation 3
Dependency: See also: r0192, r3400

r13807[0...9] Infeed DC link voltage to calculate the modulation depth / VdcActValMod_depth

Variant: G220 Clean Power
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Power unit
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: V **Unit group:** 5_2 **Unit selection:** p0505

Description: Displays the DC link voltage that is used to convert the setpoint voltage into an equivalent modulation depth.

Index: [0] = Total voltage
[1] = Diagnostics 1
[2] = Diagnostics 2
[3] = Diagnostics 3
[4] = Diagnostics 4
[5] = Diagnostics 5
[6] = Diagnostics 6
[7] = Diagnostics 7
[8] = Diagnostics 8
[9] = Diagnostics 9

Note
For index [>= 1]:
Only for internal Siemens diagnostics.

p13810.0...11 Infeed modulator configuration / Modulator config

Variant:	G220 Clean Power	
Data type: Unsigned32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Power unit	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
-	-	0000 1000 0000 0110 bin

Description: Sets the configuration for the modulator.

Recommendation: It is recommended that settings bit 02 = 1 and bit 11 = 1 are kept. In individual cases, it may be necessary to deviate from this rule for special dynamic properties of the load or the line supply.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Compensate partial DC link voltages in the power unit	Yes	No
01	Compensate the DC link voltage in the power unit	Yes	No
02	Activate pulse frequency wobbulation	Yes	No
11	Increase current controller dynamic response	Yes	No

Dependency: The modulator configuration is overwritten when the power unit (p13201) or the line filter type (r0220) is changed.
It is possible that special settings required for the modulator must be newly set.

⚠ WARNING
For bit 02 = 0:
Pulse frequency wobbulation is deactivated.
The line harmonics of the converter are higher and it is no longer guaranteed that the line supply standards are complied with. This can result in a fault, or if the situation continues, it can also damage other components connected to the line supply!
However, in non-public grids and for special requirements, it may make sense (and it is also safe) to deactivate the wobbulation function on a case-for-case basis.

⚠ CAUTION

For bit 11 = 0:
The higher dynamic response of the closed-loop current control is deactivated.
However, if the load or resonance properties of the line supply or line supply faults demand a high dynamic response of the closed-loop current control, then the line current and/or the DC link voltage can manifest oscillations. These oscillations can lead to nuisance trips. Ongoing oscillations can damage the converter or loads in the vicinity connected to the same line supply.

NOTICE

For bit 02 = 0:
Deactivating wobbulation only becomes effective after saving the parameters and a 24V power on.

Note

For bit 00:
Bit 00 is only active for line infeeds utilizing multilevel topology (r13204.17 = 1) and if p1810.01 is set = 1.
- 0 signal:
No compensation of the partial DC link voltages in the power unit of the infeed.
- 1 signal:
Compensation of the partial DC link voltages in the power unit of the infeed.
The selection is only active if the center potential control is activated (p6450 > 0), otherwise, p1810.00 is set = 0.

For bit 01:
- 0 signal:
DC link voltage compensation in the current controller.
- 1 signal:
DC link voltage compensation in the power unit of the infeed.
The selection is only active if the following applies: p1810.11 = 1.

r13838.0...31 Gating unit status words 1 and 2 / Gating unit ZSW1/2

Variant: G220 Clean Power
Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Control/status words
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Displays status word 1 and 2 of the gating unit.
Bits 00..15: status word 1, bits 16..31: status word 2

Bit array:

Bit	Signal name	1 signal	0 signal
00	Fault time-critical	On	Off
01	Measured value ready	No	Yes
02	Pulse enable	On	Off
03	Upper switch-off signal path	Inactive	Active
04	Lower switch-off signal path	Inactive	Active
05	Test pulse operation active	Active	Not active
06	Test pulse measured values valid	Yes	No
07	Brake state	On	Off
08	Brake diagnostics	On	Off
09	Armature short-circuit braking	Active	Not active
10	Gating unit state bit 0	On	Off
11	Gating unit state bit 1	On	Off
12	Gating unit state bit 2	On	Off

13	Alarm status bit 0	On	Off
14	Alarm status bit 1	On	Off
15	Diagnostics 24 V	On	Off
16	Actual pulse frequency asynchronous (SVM)	Yes	No
17	Wobbulation active	Active	Not active
18	Even samples active	Active	Not active
19	Moving average active	Active	Not active
20	TLCC bit0	On	Off
21	TLCC bit1	On	Off
22	TLCC bit2	On	Off
23	DC link asymmetry alarm	Active	Not active
31	Fixed time active	Active	Not active

r13839.0...31 Gating unit control words 1 and 2 / Gating unit STW1/2

Variant: G220 Clean Power
Data type: Unsigned32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Control/status words
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays control word 1 and 2 of the gating unit.
Bits 00..15: control word 1, bits 16..31: control word 2

Bit array:

Bit	Signal name	1 signal	0 signal
00	Fault	On	Off
01	Activate current offset calculation	Active	Not active
02	Pulse enable	On	Off
03	Sign-of-life bit 0	On	Off
04	Sign-of-life bit 1	On	Off
06	Activate test pulses	Active	Not active
07	Select zero system	1	0
08	Main contactor control	On	Off
09	Armature short-circuit braking	Active	Not active
10	Acknowledge fault	On	Off
11	Synchronization bit 0	On	Off
12	Synchronization bit 1	On	Off
13	Zero system selection bit 0	1	0
14	Zero system selection bit 1	1	0
15	Zero system selection bit 2	1	0
16	Reserved	Yes	No
17	Activate wobbulation	Active	Not active
18	Reset modulator	Active	Not active
19	Activate PDM	Active	Not active
20	Activate event samples measuring configuration	Active	
21	Trigger wobbulation	Active	Not active
22	Modulator current limitation mode bit 0	1	0
23	Modulator current limitation mode bit 1	1	0
24	Modulator current limitation mode bit 2	Yes	No
25	Modulator current limitation mode bit 3	Active	Not active

26	Activate modulator direct mode	Active	
27	Copro zero system	Active	Not active
28	Zero system direction	1	0
29	Zero system list	Active	Not active
31	Activate measuring configuration Fixed Time	Active	Not active

c13840[0...n] Infeed ON/OFF (OFF1) / ON / OFF (OFF1)

Variant: G220 Clean Power
Data type: Unsigned8 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Drive enable signals, Enable logic
Not relevant for motor type: -
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Parameter: 863.1

Description: Signal for command "ON/OFF (OFF1)".
For the PROFIdrive profile, this command corresponds to control word 1 bit 0 (STW1.0).

Dependency: See also: p3490, c13844, c13852, r13863

⚠ CAUTION
When "master control from PC" is activated, then this binary signal sink is ineffective.

NOTICE
For 0 signal:
The switching on inhibited is acknowledged.
Only the signal source that originally switched on can also switch off again.

Note
The following applies:
- For 0 signal: OFF1 (pulse cancellation and precharging contactor/line contactor open)
- For a 0/1 signal edge: ON (close precharging contactor/line contactor, pulses can be enabled)

r0863.1 of a drive can also be selected as signal source.
Switching off can also be delayed with a wait time (p3490).

c13844[0...n] Infeed no coast-down / coast-down (OFF2) signal source 1 / OFF2 signal 1

Variant: G220 Clean Power
Data type: Unsigned8 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Parameter group: Drive enable signals, Enable logic
Not relevant for motor type: -
Dyn. index [0...n]: CDS n defined by: p0170 **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Sink binary
Factory interconnection: Fixed value: 1

Description: First signal for the command to instantaneously switch off the drive.
This corresponds to command "No coast-down / coast-down (OFF2)" for drives.
The following signals are AND'ed:
- c13844 "No coast-down / coast-down (OFF2) signal source 1"
- c13845 "No coast-down / coast-down (OFF2) signal source 2"
c13844 = 0 signal or c13845 = 0 signal
- OFF2 (immediate pulse cancellation and switching on inhibited)
c13844 = 1 signal or c13845 = 1 signal
- No OFF2 (enable is possible)

⚠ CAUTION
When "master control from PC" is activated, then this binary signal sink is ineffective.

c13845[0...n] Infeed no coast-down / coast-down (OFF2) signal source 2 / OFF2 signal 2

Variant:	G220 Clean Power	
Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Drive enable signals, Enable logic	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 1	

Description: Second signal for the command to instantaneously switch off.
This corresponds to command "No coast-down / coast-down (OFF2)" for drives.
The following signals are AND'ed:
- c13844 "No coast-down / coast-down (OFF2) signal source 1"
- c13845 "No coast-down / coast-down (OFF2) signal source 2"
c13844 = 0 signal or c13845 = 0 signal
- OFF2 (immediate pulse cancellation and switching on inhibited)
c13844 = 1 signal or c13845 = 1 signal
- No OFF2 (enable is possible)

⚠ CAUTION
This signal also remains active when "master control from PC" is activated.

c13852[0...n] Enable infeed operation/inhibit infeed operation / Enable operation

Variant:	G220 Clean Power	
Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Drive enable signals, Enable logic	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Fixed value: 1	

Description: Signal for command "Enable operation/inhibit operation".
For the PROFIdrive profile, this command corresponds to control word 1 bit 3 (STW1.3).
c13852 = 0 signal
Inhibit operation (cancel pulses).
c13852 = 1 signal
Enable operation (pulses can be enabled).

⚠ CAUTION
When "master control from PC" is activated, then this binary signal sink is ineffective.

c13854[0...n] Infeed control by PLC/no control by PLC / Control by PLC

Variant:	G220 Clean Power	
Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Drive enable signals, Configuration, Enable logic	
Not relevant for motor type:	-	
Dyn. index [0...n]:	CDS n defined by: p0170	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Sink binary	
Factory interconnection:	Parameter: 898.10	

Description: Signal for command "Control by PLC/no control by PLC".
For the PROFIdrive profile, this command corresponds to control word 1 bit 10 (STW1.10).
0 signal: No control by PLC.
1 signal: Control by PLC.

⚠ CAUTION
When "master control from PC" is activated, then this binary signal sink is ineffective.

Note
This bit is used to initiate a response for the drives when the control fails (F07220). If there is no control system available, then binary signal sink c13854 should be set = 1.
If a control is available, then STW1.10 must be set to 1 (PZD1) so that the received data is updated. This applies regardless of the setting in c13854 and also in the case of free telegram configuration (r0922 = 999).

r13863.0...2 Infeed drive coupling status word/control word / CoupleZSW/STW

Variant:	G220 Clean Power	
Data type: Unsigned16	**Visible in:** Standard display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Line contactor control, Line contactor control	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source binary/numeric	**Scaling:** -

Description: Displays the status and control words of the drive coupling.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Closed-loop control operation	Yes	No
01	Energize contactor	Yes	No
02	Infeed line supply failure	Yes	No

Dependency: See also: c0864

Note
For bit 00:
Bit 0 signals that the infeed is ready.
When the operating signal is transferred via the binary signal source r13863.0, then this allows several drives to start (run-up) staggered over time when they are simultaneously switched on.
The first drive only transfers the operating signal to the next drive after it has reached its ready condition.
For bit 01:
Bit 1 is used to control an external line contactor.
For bit 02:
This bit signals a power failure.

p13870 Voltage setpoint filter modulator type / Uset_filt mod type

Variant:	G220 Clean Power	
Data type: Integer16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Ready for operation	
Parameter group:	Digital filters	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Min:	**Max:**	**Factory setting:**
0	100	100

Description: Sets the voltage setpoint filter of the modulator.
For p13870 = 0: The filter is deactivated.
For p13870 >= 100: A preconfigured filter is parameterized.

Value:
0: Filter off
100: G220-CPD - filter

Dependency: The voltage setpoint filter of the modulator is only active when the fast current controller is activated (p13810.11).

r13898.0...10 Infeed control word sequence control / STW seq_ctrl INF

Variant:	G220 Clean Power	
Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Control/status words	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -
Type of signal interconnection:	Source binary/numeric	**Scaling:** -

Description: Display for the control word of the sequence control for the infeed.

Bit array:

Bit	Signal name	1 signal	0 signal
00	ON/OFF1	ON	OFF
01	No coast-down / coast-down (OFF2)	No OFF2	OFF2
03	Enable operation	Yes	No
10	Control by PLC	Yes	No

r13899.0...12 Infeed status word sequence control / ZSW seq_ctrl INF

Variant:	G220 Clean Power
Data type: Unsigned16	**Visible in:** Extended display

Read permission: Read drive data or acknowledge messages
Parameter group: Control/status words
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Display and signal source for the status word of the sequence control for the infeed.

Bit array:

Bit	Signal name	1 signal	0 signal
00	Ready for switching on	Yes	No
01	Ready	Yes	No
02	Operation enabled	Yes	No
04	No OFF2 active	OFF2 inactive	OFF2 active
06	Switching on inhibited	Yes	No
08	Switching-on operation active	Yes	No
09	Control requested	Yes	No
11	Precharging complete	Yes	No
12	Line contactor closed	Yes	No

r13962[0...2] Actual value sensing time information / ActV time info

Variant: G220 Clean Power
Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group:
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: ms **Unit group:** - **Unit selection:** -

Description: Displays time information of the actual value sensing.

Index: [0] = Measurement duration
[1] = Measurement latency
[2] = Distance next pulse frequency acceptance

p31585 VIBSUP frequency fd / Frequency fd

Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Write permission: Edit device configuration or drive applications
Can be changed in the operating state: Ready for operation
Parameter group: Technology functions
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: Hz **Unit group:** - **Unit selection:** -

Min:	Max:	Factory setting:
10.000 [Hz]	10000.000 [Hz]	10.000 [Hz]

Description: Sets the frequency of the damped natural vibration of the mechanical system.
This frequency can be determined by making the appropriate measurements.

Dependency: See also: r31613
See also: F53432

r31600.2...15 VIBSUP status word / ZSW

Data type: Unsigned16 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Technology functions
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Displays the status word of VIBSUP.

Bit array:

Bit	Signal name	1 signal	0 signal
02	"Filter ready" state	Yes	No
03	"Filter being activated" state	Yes	No
04	"Filter active" state	Yes	No
05	"Filter being deactivated" state	Yes	No
06	Axis moves forward	Yes	No
07	Axis moves backward	Yes	No
08	Setpoint fixed	Yes	No
12	Immediate coupling-in possible	Yes	No
13	Tracking active	Yes	No
14	Axis accelerating	Yes	No
15	Axis decelerating	Yes	No

Note
For bit 02:
The setpoint filter is ready and can be coupled in.
For bit 03:
The filter is being coupled into the setpoint channel.
For bit 04:
The setpoint filter is activated.
For bit 05:
The filter is being coupled out of the setpoint channel.
For bit 06:
The axis moves forward.
The filtered speed setpoint is used to determine the direction of travel.
For bit 07:
The axis moves backward.
The filtered speed setpoint is used to determine the direction of travel.
For bit 12:
The filter can be immediately coupled-in.
For bit 13:
Filter tracking mode is activated.
For bit 14:
The axis accelerates.
The filtered speed setpoint is used for the calculation.
For bit 15:
The axis brakes.
The filtered speed setpoint is used for the calculation.

r31613 VIBSUP frequency fd active / fd active

Data type: FloatingPoint32 **Visible in:** Standard display
Read permission: Read drive data or acknowledge messages
Parameter group: Technology functions
Not relevant for motor type: -

Dyn. index [0...n]: - **Calculated:** -
Unit: Hz **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** -

Description: Display and numerical signal source for the active frequency fd.

Dependency: See also: p31585

r60000 PROFIdrive reference speed reference frequency / PD n_ref f_ref

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group:
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** automatic
Unit: rpm **Unit group:** - **Unit selection:** -

Description: Displays the reference quantity for speed and frequency.
All speeds or frequencies specified as relative value are referred to this reference quantity.
The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

Dependency: See also: p2000

Note
Parameter r60000 is an image of parameter p2000 in conformance with PROFIdrive.

r60022 PROFIsafe telegram / Ps telegr

Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated, Configuration
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the PROFIsafe telegram.

Value:
0: No PROFIsafe telegram selected
30: PROFIsafe standard telegram 30, PZD-1/1
902: PROFIsafe SIEMENS telegram 902, PZD-3/6

Dependency: See also: p9611

Note
When reading the parameter via PROFIdrive, value 65534 is applicable for "No PROFIsafe telegram".

r60044 SI message buffer counter changes / SI msg_buffer chg

Data type: Unsigned16 **Visible in:** Extended display
Read permission: Read drive data or acknowledge messages
Parameter group: Safety Integrated
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -

Description: Displays the changes of the safety message buffer.
This counter is incremented every time that the safety message buffer changes.

Recommendation: This is used to check whether the safety message buffer has been read out consistently.

Dependency: See also: r9753, r9754, r9755, r9756, r60045, r60048, r60049, p60052

r60045[0...63] SI message code / SI msg_code

Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Safety Integrated	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Description: Displays the numbers of safety messages that have occurred.

Dependency: See also: r9753, r9754, r9755, r9756, r60044, r60048, r60049, p60052

Note

The messages type "safety message" (Cxxxxx) are entered in the message fault buffer.
Message buffer structure (principle):
r60045[0], r60048[0], r60049[0], r9753[0], r9754[0], r9755[0], r9756[0] --> safety message 1 (oldest active message) of the actual message case.
...
r60045[7], r60048[7], r60049[7], r9753[7], r9754[7], r9755[7], r9756[7] --> safety message 8 (latest active message) of the actual message case,

Safety messages that have gone are automatically acknowledged.
History of acknowledged messages:
r60045[8], r60048[8], r60049[8], r9753[8], r9754[8], r9755[8], r9756[8] --> safety message 1 of the 1st acknowledged message case,
...
r60045[16], r60048[16], r60049[16], r9753[16], r9754[16], r9755[16], r9756[16] --> safety message 1 of the 2nd acknowledged message case,
...
r60045[56], r60048[56], r60049[56], r9753[56], r9754[56], r9755[56], r9756[56] --> safety message 1 of the 7th acknowledged message case,
...
r60045[63], r60048[63], r60049[63], r9753[63], r9754[63], r9755[63], r9756[63] --> safety message 8 (oldest gone message) of the 7th acknowledged message case,

r60047[0...63] SI message number / SI mess_no

Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Safety Integrated	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Description: Displays the numbers of safety messages that have occurred.

Dependency: See also: r9753, r9754, r9755, r9756, r60044, r60048, r60049, p60052

Note

The messages type "safety message" (Cxxxxx) are entered in the message fault buffer.
Message buffer structure (principle):
r60045[0], r60048[0], r60049[0], r9753[0], r9754[0], r9755[0], r9756[0] --> safety message 1 (oldest active message) of the actual message case.
...
r60045[7], r60048[7], r60049[7], r9753[7], r9754[7], r9755[7], r9756[7] --> safety message 8 (latest active message) of the actual message case,

Safety messages that have gone are automatically acknowledged.
History of acknowledged messages:
r60045[8], r60048[8], r60049[8], r9753[8], r9754[8], r9755[8], r9756[8] --> safety message 1 of the 1st acknowledged message case,
...
r60045[16], r60048[16], r60049[16], r9753[16], r9754[16], r9755[16], r9756[16] --> safety message 1 of the 2nd acknowledged message case,
...
r60045[56], r60048[56], r60049[56], r9753[56], r9754[56], r9755[56], r9756[56] --> safety message 1 of the 7th acknowledged message case,
...
r60045[63], r60048[63], r60049[63], r9753[63], r9754[63], r9755[63], r9756[63] --> safety message 8 (oldest gone message) of the 7th acknowledged message case,

r60048[0...63] SI message time received in milliseconds / SI t_msg recv ms

Data type: Unsigned32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Safety Integrated	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: ms	**Unit group:** -	**Unit selection:** -

Description: Displays the relative system runtime in milliseconds when the safety message occurred.

Dependency: See also: r9753, r9754, r9755, r9756, r60044, r60045, r60049, p60052

r60049[0...63] SI message value / SI msg_value

Data type: Integer32	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Safety Integrated	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Description: Displays the additional information about the safety message that occurred (as integer number).

Dependency: See also: r9753, r9754, r9755, r9756, r60044, r60045, r60048, p60052

p60052 SI message cases counter / SI msg_cases count

Data type: Unsigned16	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
Can be changed in the operating state:	Operation	
Parameter group:	Safety Integrated	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -

	Unit: -	**Unit group:** -	**Unit selection:** -
	Min:	**Max:**	**Factory setting:**
	0	65535	0
Description:	Number of safety message cases that have occurred since the last reset.		
Dependency:	The safety message buffer is cleared by resetting the parameter to 0. See also: r9753, r9754, r9755, r9756, r60044, r60045, r60048, r60049		

r60100[0...4] PROFIdrive telegram display total / Pd telegr tot

	Data type: Unsigned16	**Visible in:** Extended display	
	Read permission:	Read drive data or acknowledge messages	
	Parameter group:	Configuration	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	**Calculated:** -
	Unit: -	**Unit group:** -	**Unit selection:** -
Description:	Displays the send and receive telegrams.		
Index:	[0] = Subslot 1: MAP [1] = Subslot 2: PROFIsafe [2] = Subslot 3: standard/SIEMENS [3] = Subslot 4: supplementary telegram [4] = Subslot 5: supplementary telegram		
Dependency:	See also: r0922, r60022, r60122		

Note
Value = 65534: No telegram
Value = 65535: MAP "Module Access Point"

r60122 PROFIdrive SIC/SCC telegram / SIC/SCC tel

	Data type: Unsigned16	**Visible in:** Extended display	
	Read permission:	Read drive data or acknowledge messages	
	Parameter group:	Safety Integrated, Configuration	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	**Calculated:** -
	Unit: -	**Unit group:** -	**Unit selection:** -
Description:	Displays the telegram for the Safety Information Channel (SIC) / Safety Control Channel (SCC).		
Value:	700: Supplementary telegram 700, PZD-0/3 32766: No telegram		

Note
When reading the parameter via PROFIdrive, value 65534 is applicable for "No telegram".

r61000[0...239] PROFINET NameOfStation / PN NameOfStation

	Variant:	G220, G220 Clean Power	
	Available for module:	Communication Module PROFINET/EtherNet	
	Data type: Unsigned8	**Visible in:** Extended display	
	Read permission:	Read drive data or acknowledge messages	
	Parameter group:	Configuration	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	**Calculated:** -
	Unit: -	**Unit group:** -	**Unit selection:** -
Description:	Displays "PROFINET NameOfStation". This is the device name of the PROFINET interface.		

r61001[0...3] **PROFINET IP of Station / PN IP of station**

Variant:	G220, G220 Clean Power	
Available for module:	Communication Module PROFINET/EtherNet	
Data type: Unsigned8	**Visible in:** Extended display	
Read permission:	Read drive data or acknowledge messages	
Parameter group:	Configuration	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	**Calculated:** -
Unit: -	**Unit group:** -	**Unit selection:** -

Description: Displays "PROFINET IP of Station". This is the IP address of the PROFINET interface.

Function diagrams

4

4.1 Explanations about the function diagrams

Overview

The following function diagrams explain the symbols and signal interconnections used in the function diagrams.

Function diagrams

1020 – Explanation of symbols (1) (Page 886)

1021 – Explanation of symbols (2) (Page 887)

1022 – Explanation of symbols (3) (Page 888)

Parameters

Symbol	Meaning
Name [Unit] rxxxx[*]	Monitoring parameter with unit [Unit] and index, index range or data set [*]
Name from ... to [Unit] pxxxx[*] (Def)	Setting parameter with min/max value and unit [Unit], factory setting (Def) and index, index range or data set [*]
Name [Unit] pxxxx[*] (Def)	Setting parameter with unit [Unit], factory setting (Def) and index, index range or data set [*]

Signal interconnection

Sink

Symbol	Meaning
Name cxxxx[*] (Def)	Numerical sink with index, index range or data set [*] and factory interconnection (Def) to a parameter or a fixed value
Name cxxxx[*] (Def)	Binary sink with index, index range or data set [*] and factory interconnection (Def) to a parameter or a fixed value

Source

Symbol	Meaning
Name [Unit] rxxxx[*]	Source numeric with unit [Unit] and index, index range or data set [*]
Name rxxxx.w	Source binary with bit or bit range w
Name rxxxx rxxxx.w	Source, binary/numerical with bit or bit range w (if only one bit of this source is to be displayed, then display as "binary source" is also possible)

Explanations of parameters, signal sinks and signal sources

Symbol	Meaning
Name	Parameter name, or for parameters with displayed bit or index: Bit or index name. The bit name is always referred to a "1 signal". The name can be omitted if, for example, a parameter occurs several times on a chart.
txxxx = txxxx[y..z] txxxx[y] txxxx[DS] txxxx[*].v..w txxxx[*].w	"t" stands for the parameter type: "r" = monitoring parameter. These parameters are read-only "p" = setting parameter. These parameters can be changed. "c" = signal sinks. These parameters can be interconnected. "xxxx" stands for the parameter number "[y…z]" specifies the index range "[y]" specifies the applicable index "DS" specifies the data set ".v…w" specifies the bit field ".w" specifies the applicable bit number
from ... to	Value range
[Unit]	Dimension unit
(Def)	Factory setting, or factory interconnection for signal sinks. For some parameters, the factory setting value is only calculated when commissioning, see parameter information "Calculated". Factory interconnections for signal sinks can either be other parameters (signal sources) or fixed values.

Data sets

Symbol	Meaning
pxxxx[C]	Parameter belongs to the Command Data Set (CDS).
pxxxx[D]	Parameter belongs to the Drive Data Set (DDS).
pxxxx[E]	Parameter belongs to the Encoder Data Set (EDS).
pxxxx[M]	Parameter belongs to the Motor Data Set (MDS).
pxxxx[P]	Parameter belongs to the Power unit Data Set (PDS).

Cross references between diagrams

Symbol	Meaning
[aaaa.b]	Diagram references for parameters that occur a multiple number of times. [Function diagram number, signal path]
1 … 8	The function diagrams are sub-divided into 8 signal paths in order to facilitate orientation.
Text → [aaaa.b]	Text = Unique signal designation or parameter aaaa = Signal goes to target diagram aaaa b = Signal goes to signal path b
[cccc.d] → Text	Text = Unique signal designation or parameter cccc = Signal comes from source diagram cccc d = Signal comes from signal path d
pxxxx rxxxx [aaaa.b] rxxxx.w	Cross references for control bits: pxxxx= Original parameter of signal aaaa.b = Signal comes from source diagram aaaa, signal path b

1	2	3	4	5	6	7	8
Explanations on the function diagrams						© Siemens	- 1020 -
Explanation of the symbols (part 1)						06.04	

Figure 4-1 1020 – Explanation of symbols (Part 1)

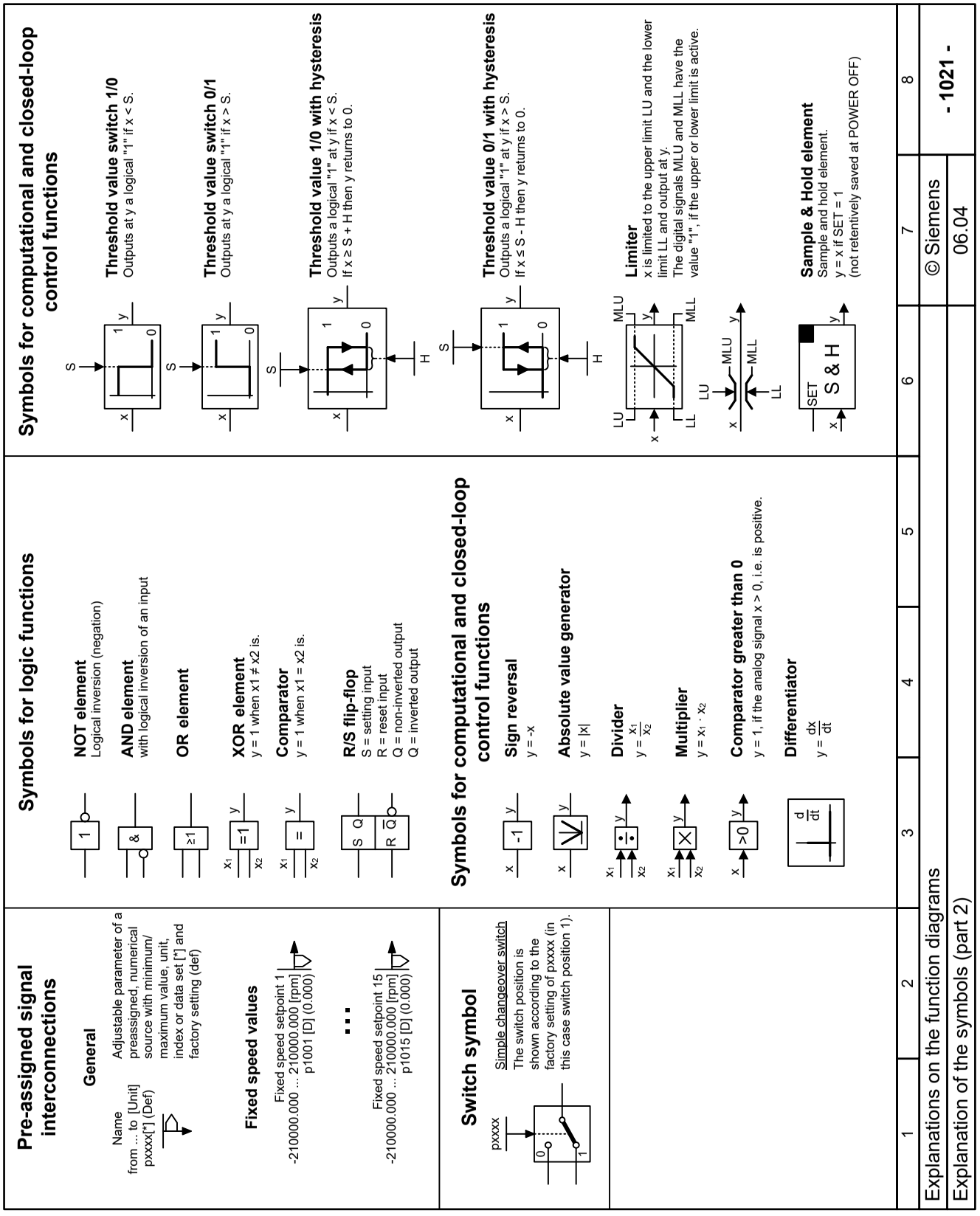
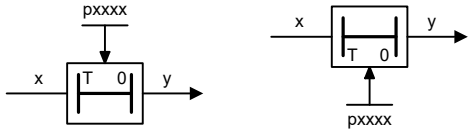
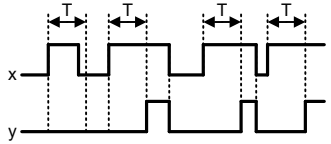


Figure 4-2 1021 – Explanation of symbols (Part 2)

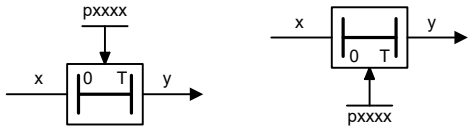
Switch-on delay



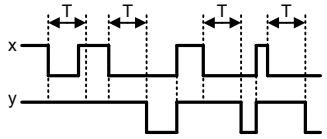
The digital signal x must have the value "1" without any interruption during the time T before output y changes to "1".



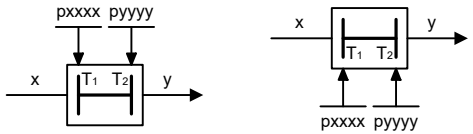
Switch-off delay



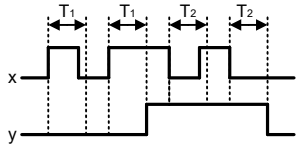
The digital signal x must have the value "0" without interruption during the time T before output y changes to "0".



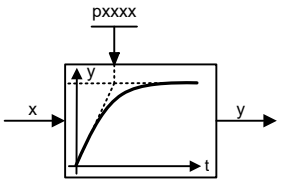
Delay (switch-on and switch-off)



The digital signal x must have the value "1" without interruption during time T1 or must have the value "0" during time T2 before output y changes its signal state.



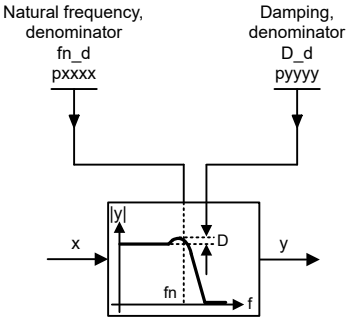
PT1 element



Delay element, first order.

pxxxx = time constant

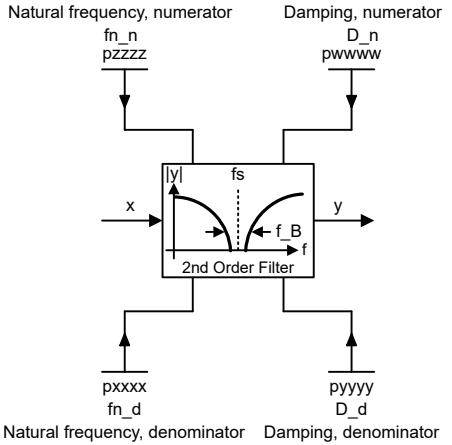
PT2 low pass



Transfer function

$$H(s) = \frac{1}{\left(\frac{s}{2\,\pi\,fn_d}\right)^2 + \frac{2\cdot D_d}{2\,\pi\,fn_d}\cdot s + 1}$$

2nd-order filter (bandstop/general filter)



Used as bandstop filter

- center frequency fs: fn_n = fs, fn_d = fs
- bandwidth f_B: D_n = 0, $D_d = \frac{f_B}{2\cdot fs}$

Transfer function when used as general filter

$$H(s) = \frac{\left(\frac{s}{2\,\pi\,fn_n}\right)^2 + \frac{2\cdot D_n}{2\,\pi\,fn_n}\cdot s + 1}{\left(\frac{s}{2\,\pi\,fn_d}\right)^2 + \frac{2\cdot D_d}{2\,\pi\,fn_d}\cdot s + 1}$$

1	2	3	4	5	6	7	8
Explanations on the function diagrams						© Siemens	- 1022 -
Explanation of the symbols (part 3)						06.04	

Figure 4-3 1022 – Explanation of symbols (Part 3)

4.2 Input/output terminals

Overview

The following function diagrams describe the input/output terminals.

Function diagrams

2201 – Connection overview (Page 890)
2221 – Digital inputs isolated (DI 0 ... DI 5, DI 21 ... DI 22) (Page 891)
2242 – Digital outputs (DO 0 ... DO 2) (Page 892)
2251 – Analog inputs 0 ... 1 (AI 0 ... AI 1) (Page 893)
2256 – Analog inputs as digital inputs (DI 11 ... DI 12) (Page 894)
2261 – Analog outputs 0 ... 1 (AO 0 ... AO 1) (Page 895)
2272 – 2-wire control (Page 896)
2273 – 3-wire control (Page 897)

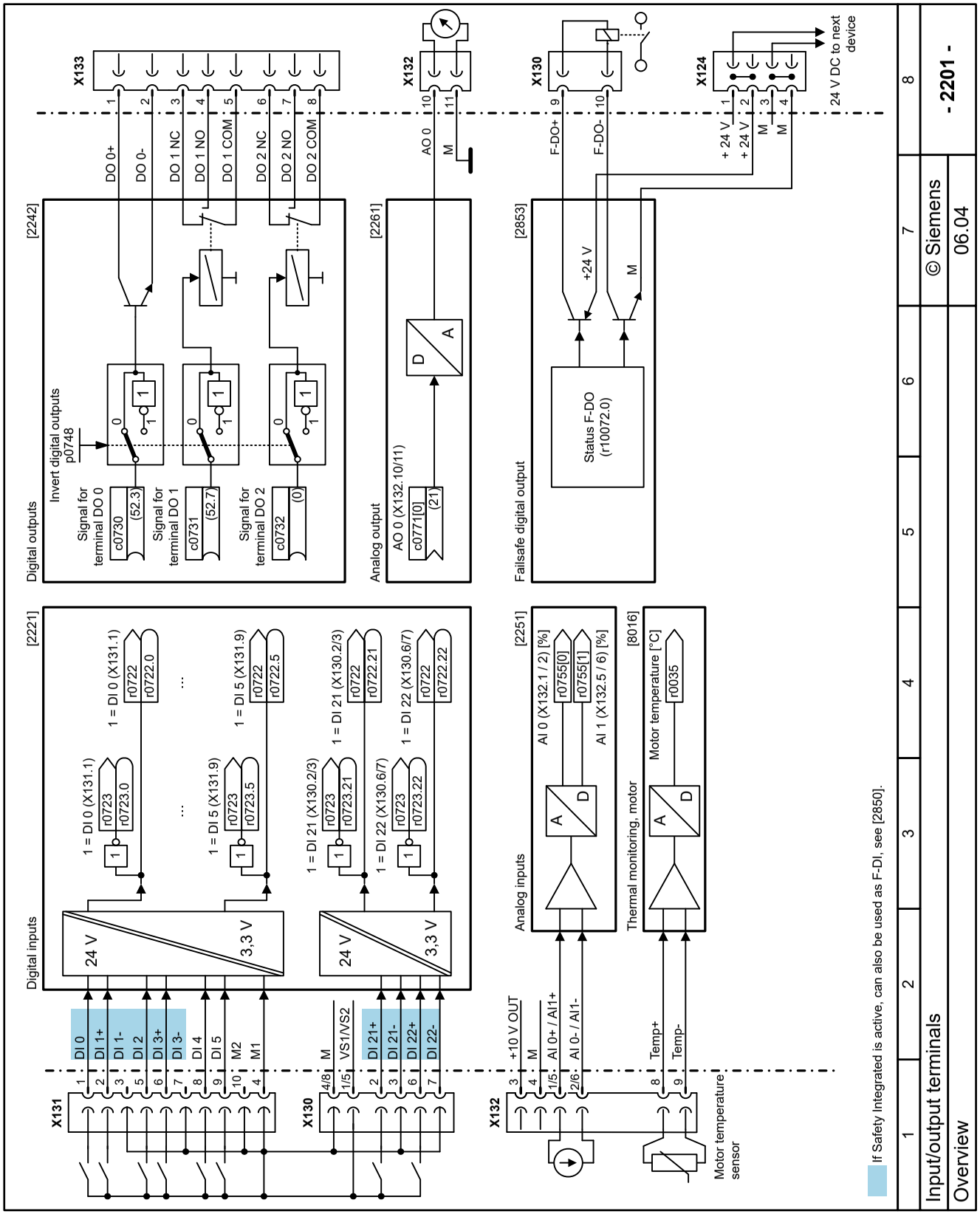


Figure 4-4 2201 – Connection overview

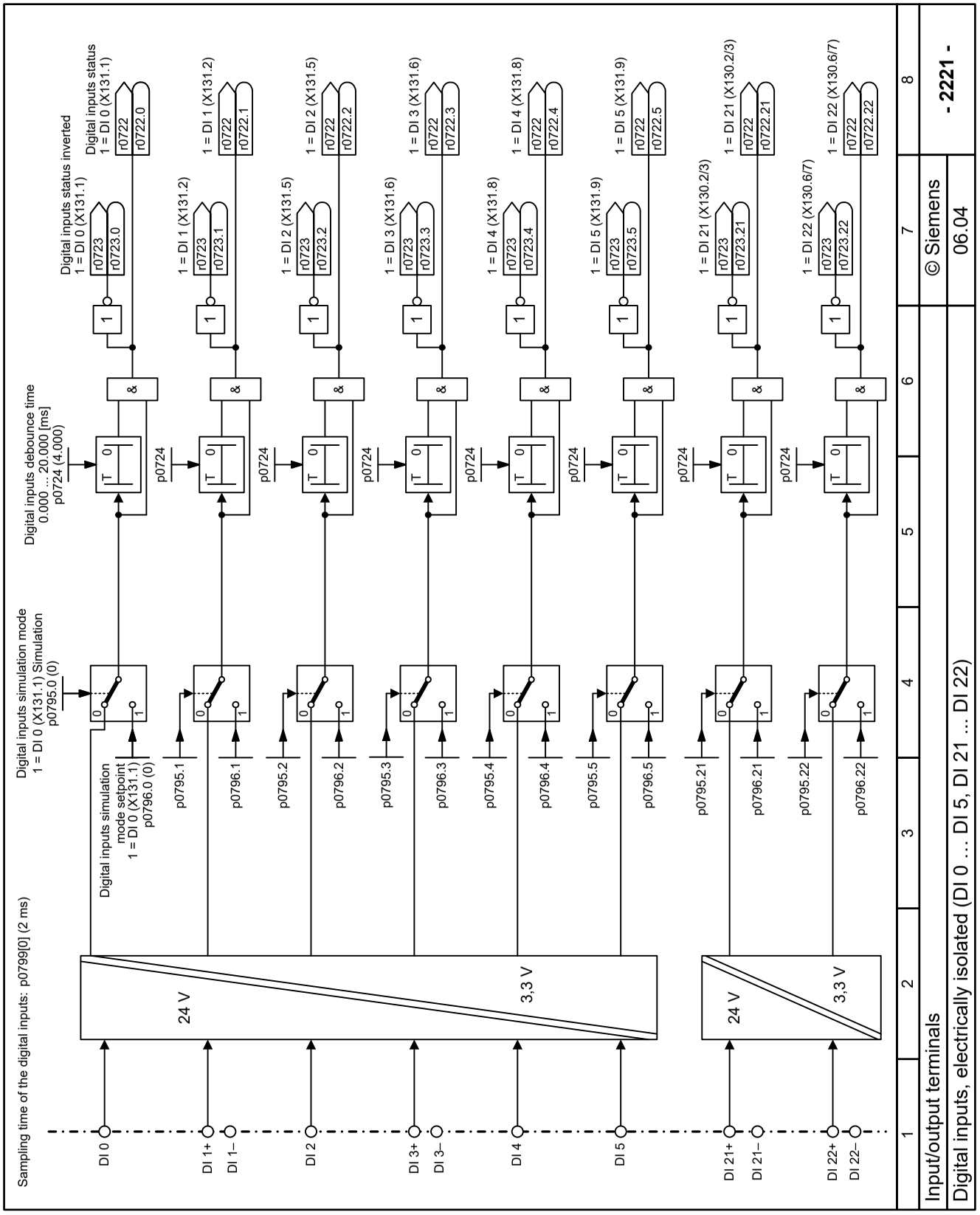


Figure 4-5 2221 – Digital inputs electrically isolated (DI 0 ... DI 5, DI 21 ... DI 22)

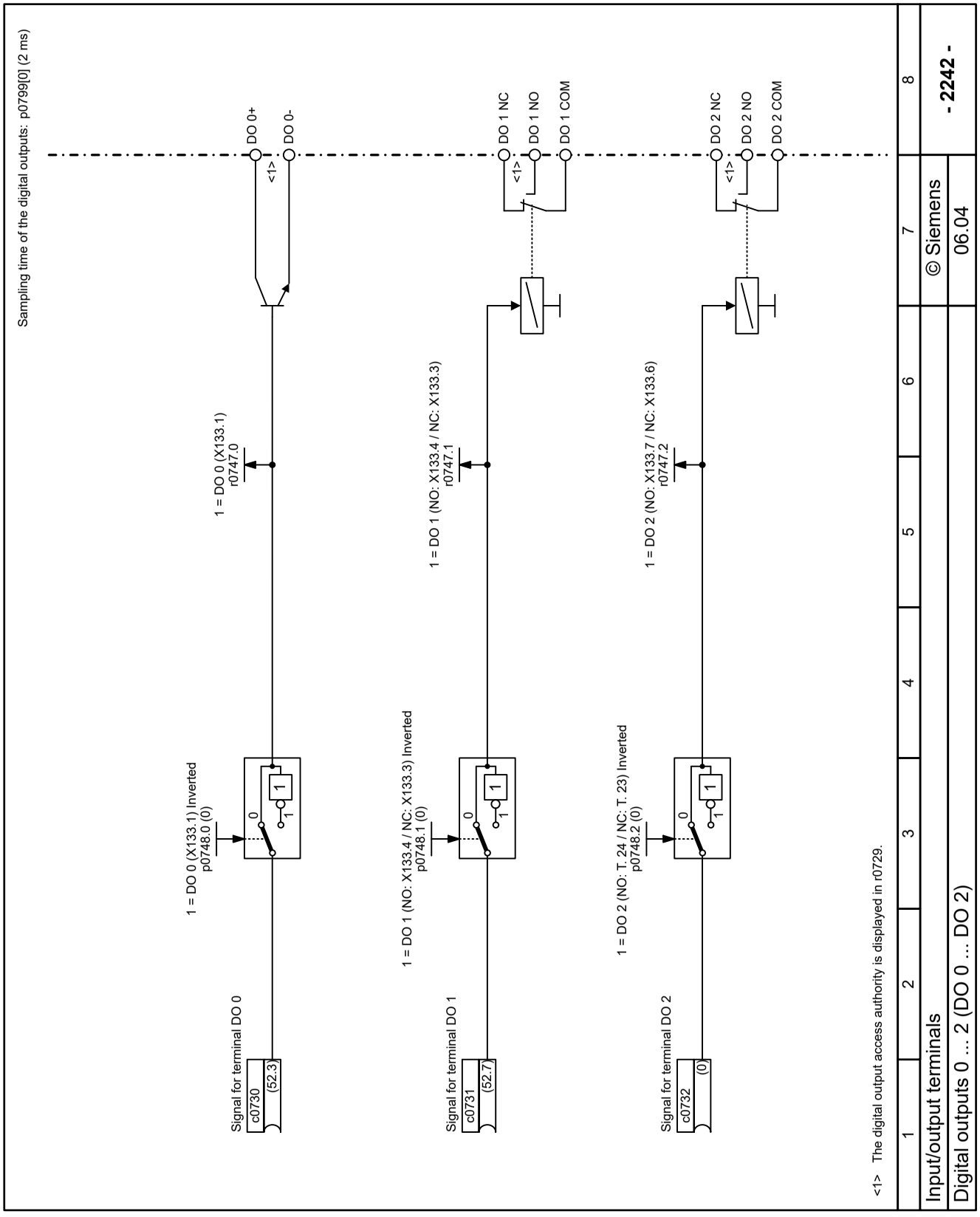


Figure 4-6 2242 - Digital outputs (DO0 ... DO2)

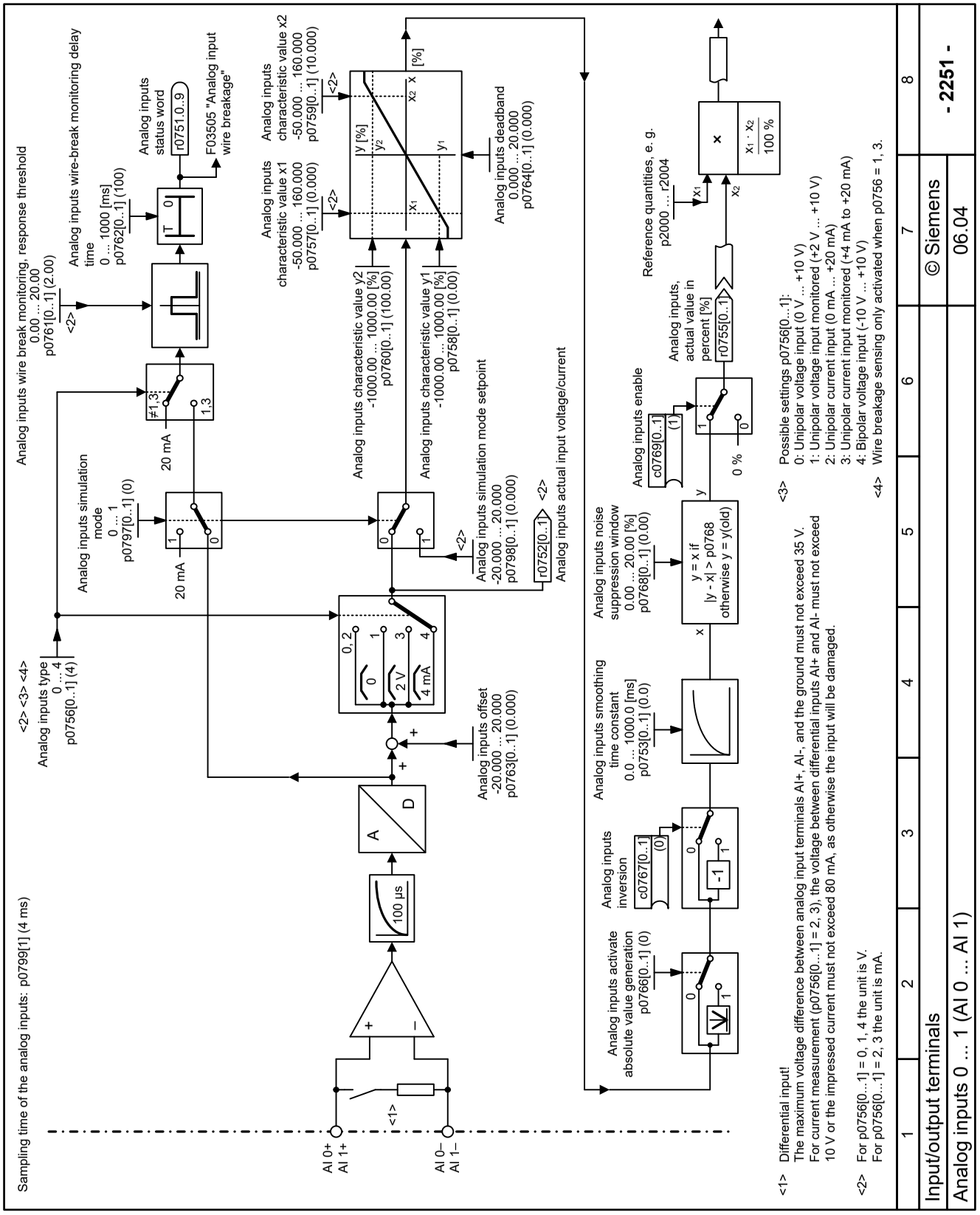


Figure 4-7 2251 - Analog inputs 0 ... 1 (AI 0 ... AI 1)

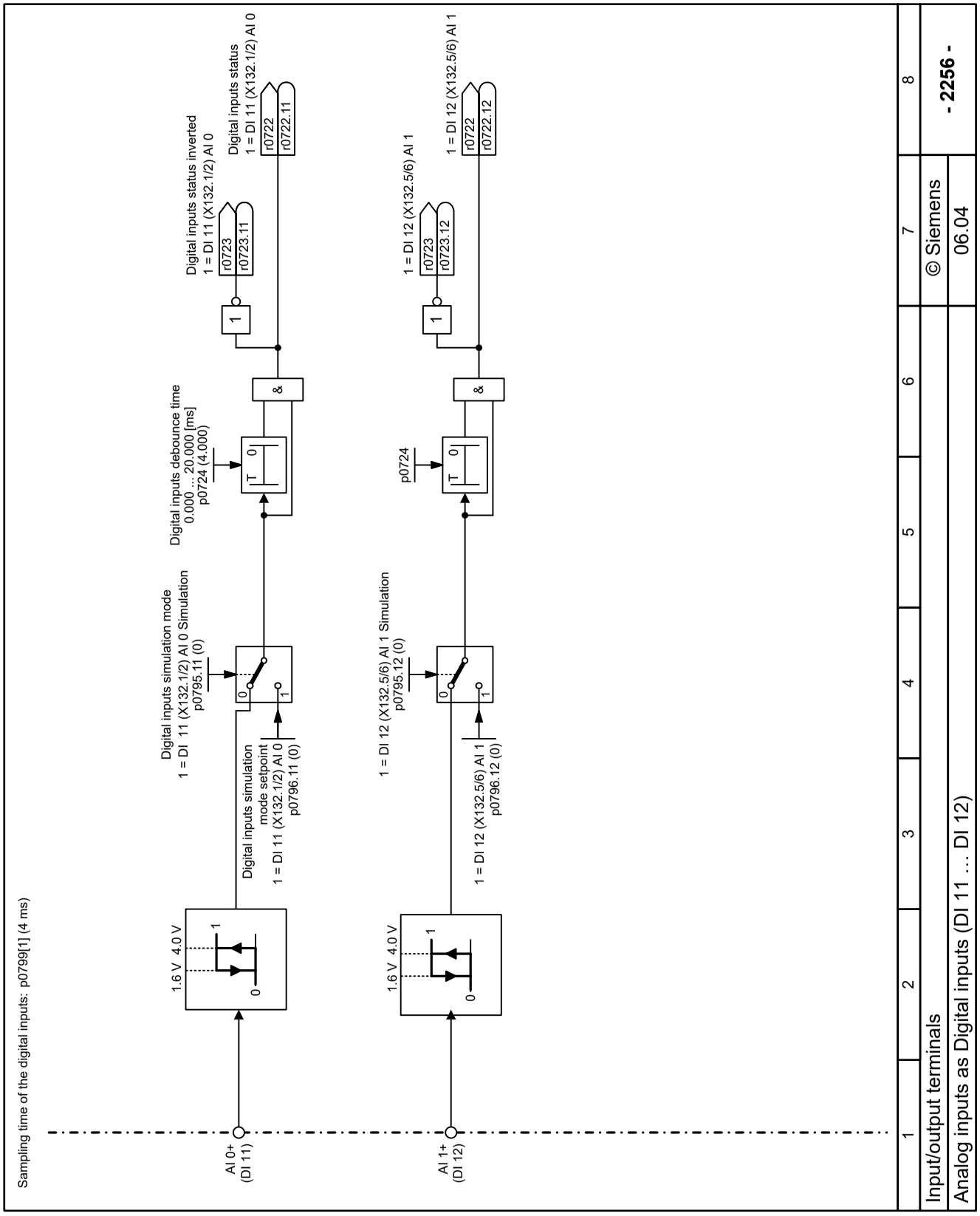


Figure 4-8 2256 - Analog inputs as digital inputs (DI 11 ... DI 12)

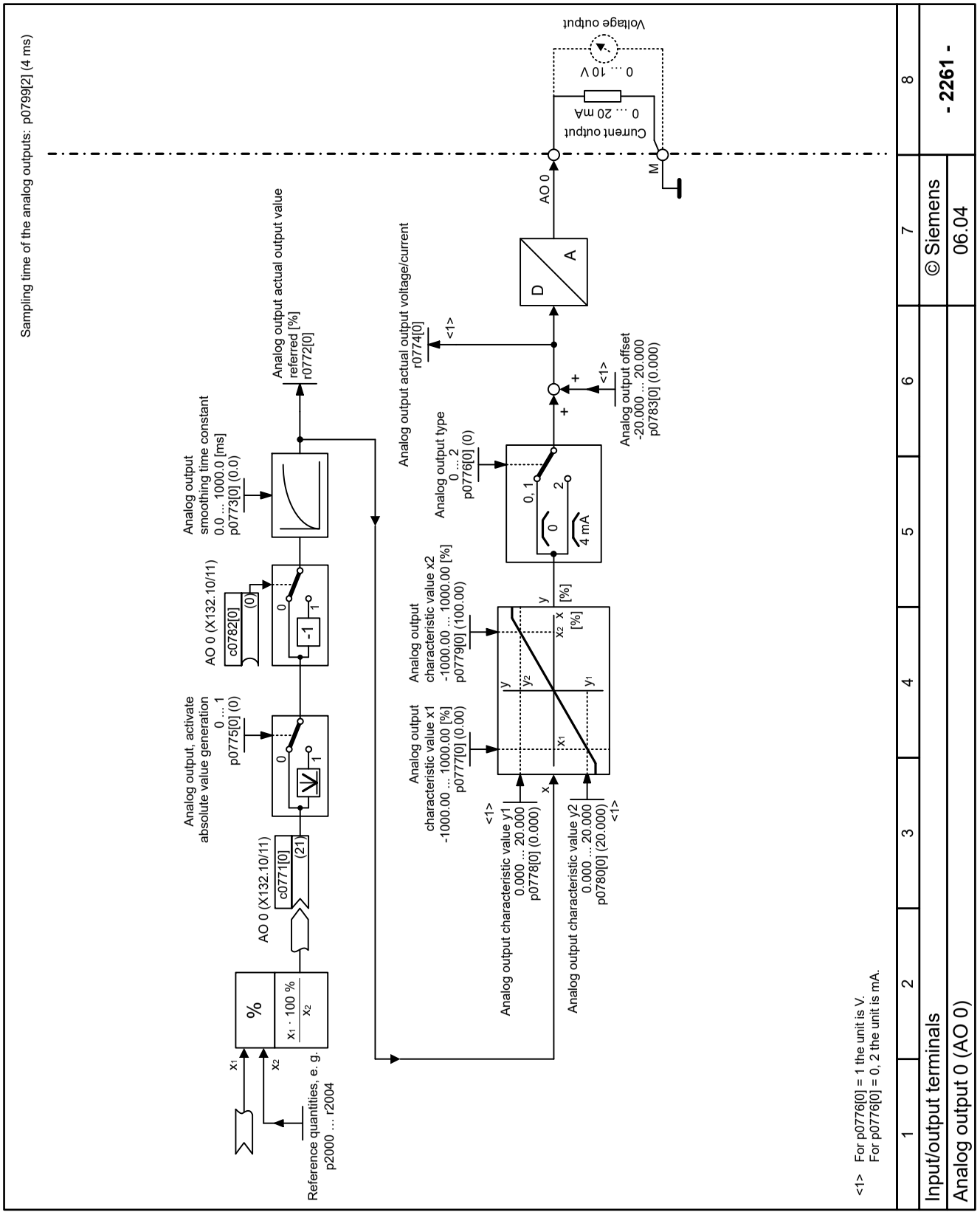
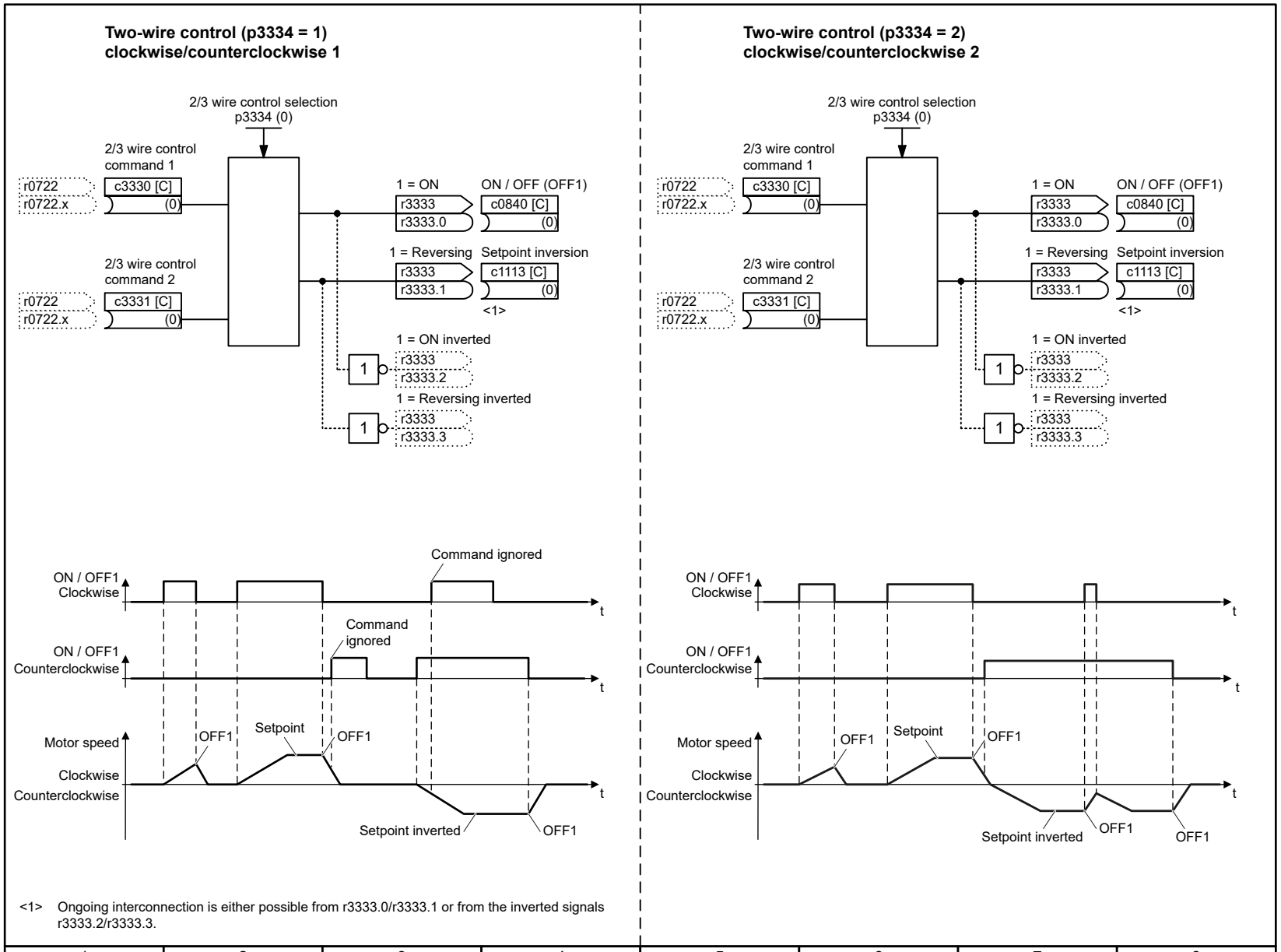


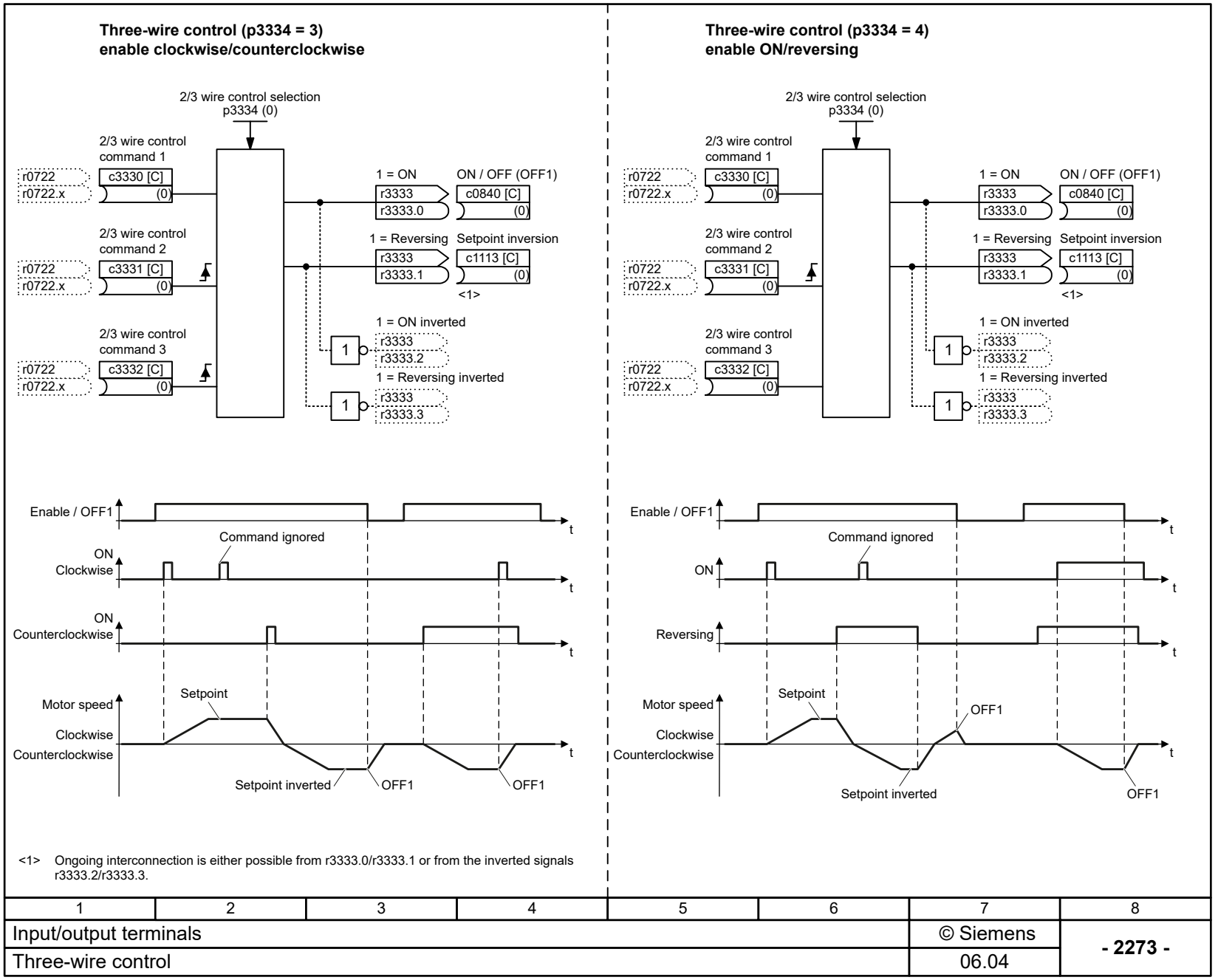
Figure 4-9 2261 – Analog outputs 0 ... 1 (AO 0 ... AO 1)



<1> Ongoing interconnection is either possible from r3333.0/r3333.1 or from the inverted signals r3333.2/r3333.3.

1	2	3	4	5	6	7	8
Input/output terminals						© Siemens	- 2272 -
Two-wire control						06.04	

Figure 4-10 2272 - 2-wire control



<1> Ongoing interconnection is either possible from r3333.0/r3333.1 or from the inverted signals r3333.2/r3333.3.

1	2	3	4	5	6	7	8
Input/output terminals						© Siemens	- 2273 -
Three-wire control						06.04	

Figure 4-11 2273 - 3-wire control

4.3 PROFIenergy

Overview

The following function diagrams describe the PROFIenergy function.

Function diagrams

2381 – Control commands and interrogation commands (Page 899)
2382 – States (Page 900)

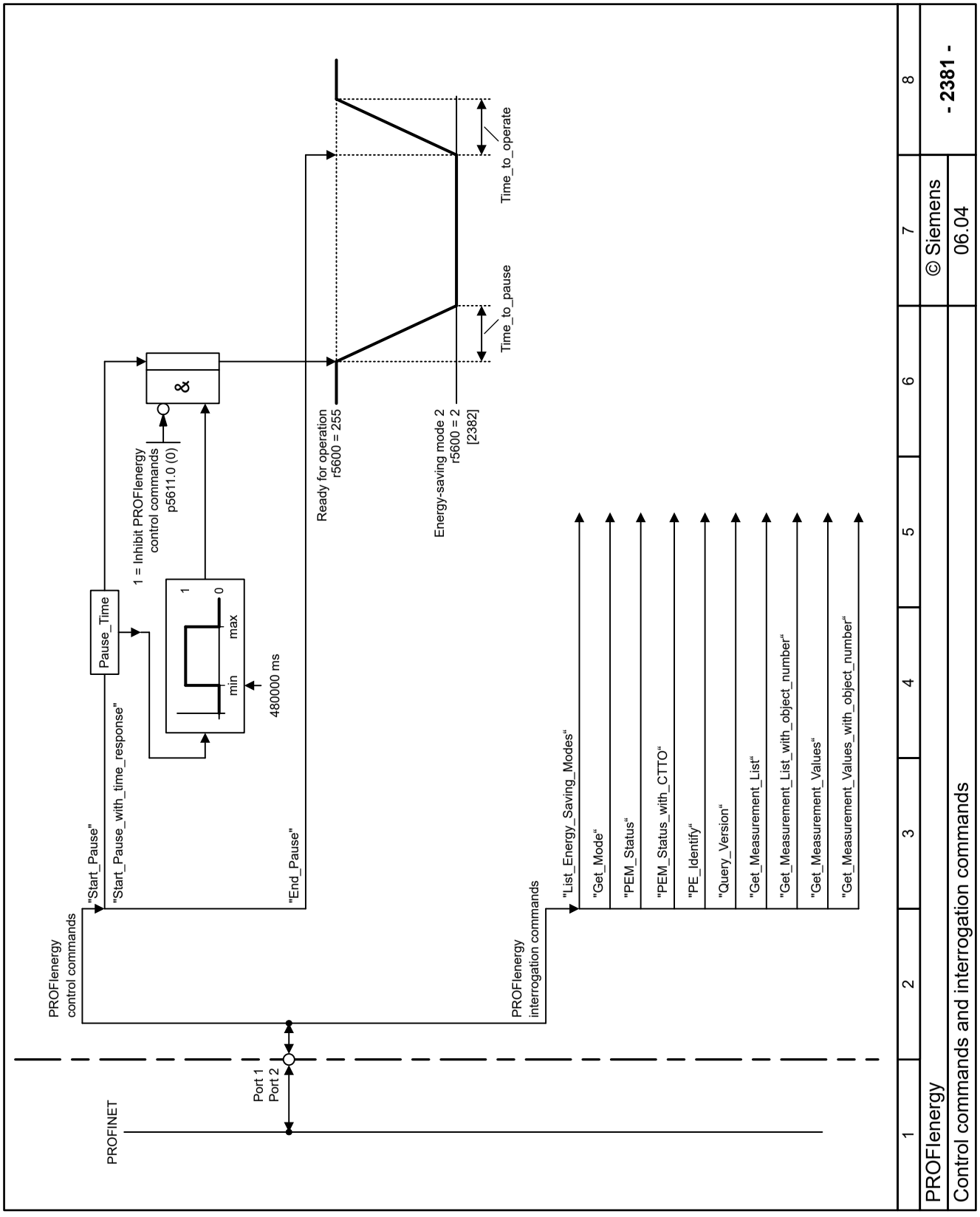


Figure 4-12 2381 - Control commands and interrogation commands

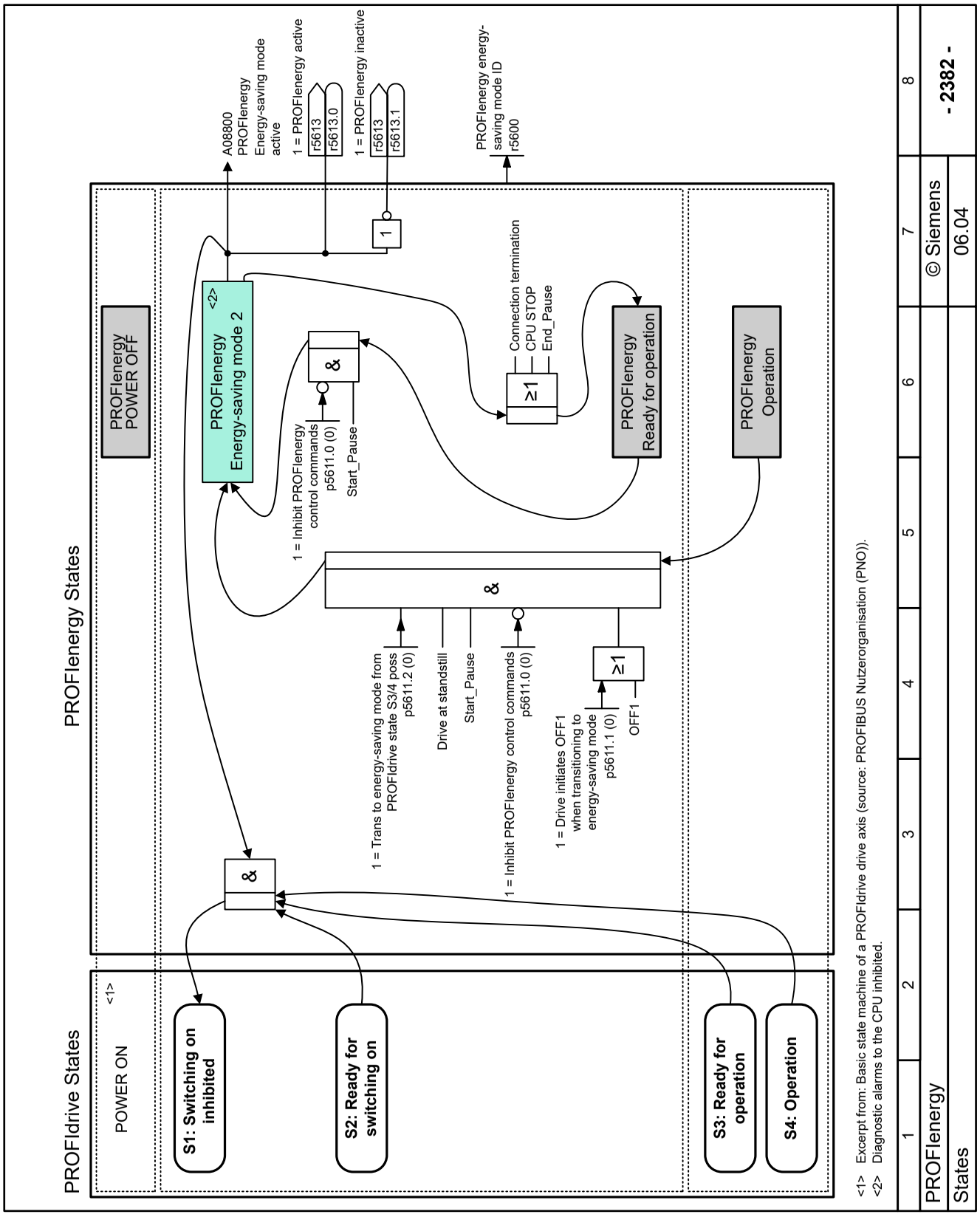


Figure 4-13 2382 - States

4.4 PROFIdrive

Overview

The following function diagrams describe the PROFIdrive function.

Function diagrams

2401 – Overview (Page 902)
2415 – Standard telegrams and process data (PZD) (Page 903)
2418 – Manufacturer-specific telegrams and process data (PZD) (Page 904)
2419 – Manufacturer-specific/free telegrams and process data (PZD) (Page 905)
2423 – Supplementary/free telegrams and process data (PZD) (Page 906)
2440 – PZD receive signals interconnection (Page 907)
2441 – STW1 control word interconnection in Interface Mode 3 (VIK/NAMUR) (Page 908)
2442 – STW1 control word interconnection in Interface Mode 1 (Page 909)
2443 – STW1 control word interconnection in Interface Mode 2 (Page 910)
2444 – STW2 control word interconnection in Interface Mode 1 and positioning mode (Page 911)
2445 – STW2 control word interconnection in Interface Mode 2 (Page 912)
2450 – PZD send signals interconnection (Page 913)
2451 – ZSW1 status word interconnection in Interface Mode 3 (VIK/NAMUR) (Page 914)
2452 – ZSW1 status word interconnection in Interface Mode 1 (Page 915)
2453 – ZSW1 status word interconnection in Interface Mode 2 (Page 916)
2454 – ZSW2 status word interconnection in Interface Mode 1 and positioning mode (Page 917)
2455 – ZSW2 status word interconnection in Interface Mode 2 (Page 918)
2456 – ZSW3 status word interconnection (Page 919)
2460 – MELDW status word interconnection (Page 920)
2463 – POS_STW1 positioning control word 1 interconnection (Page 921)
2464 – POS_STW2 positioning control word 2 interconnection (Page 922)
2466 – POS_ZSW1 positioning status word 1 interconnection (Page 923)
2467 – POS_ZSW2 positioning status word 2 interconnection (Page 924)
2468 – Receive telegram free interconnection (Page 925)
2470 – Send telegram free interconnection (Page 926)
2475 – STW1 control word interconnection (positioning mode) (Page 927)
2479 – ZSW1 status word interconnection (positioning mode) (Page 928)

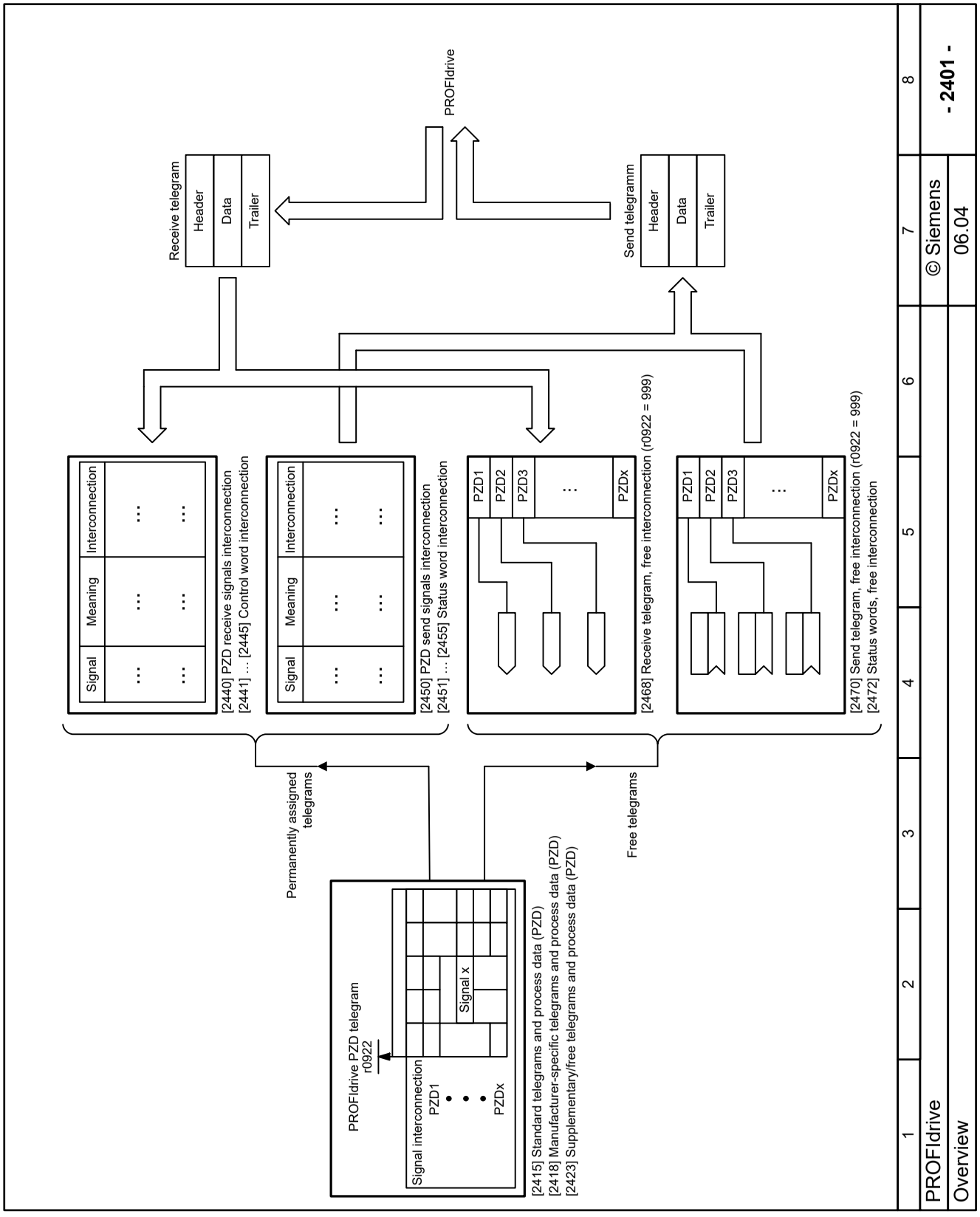


Figure 4-14 2401 – Overview

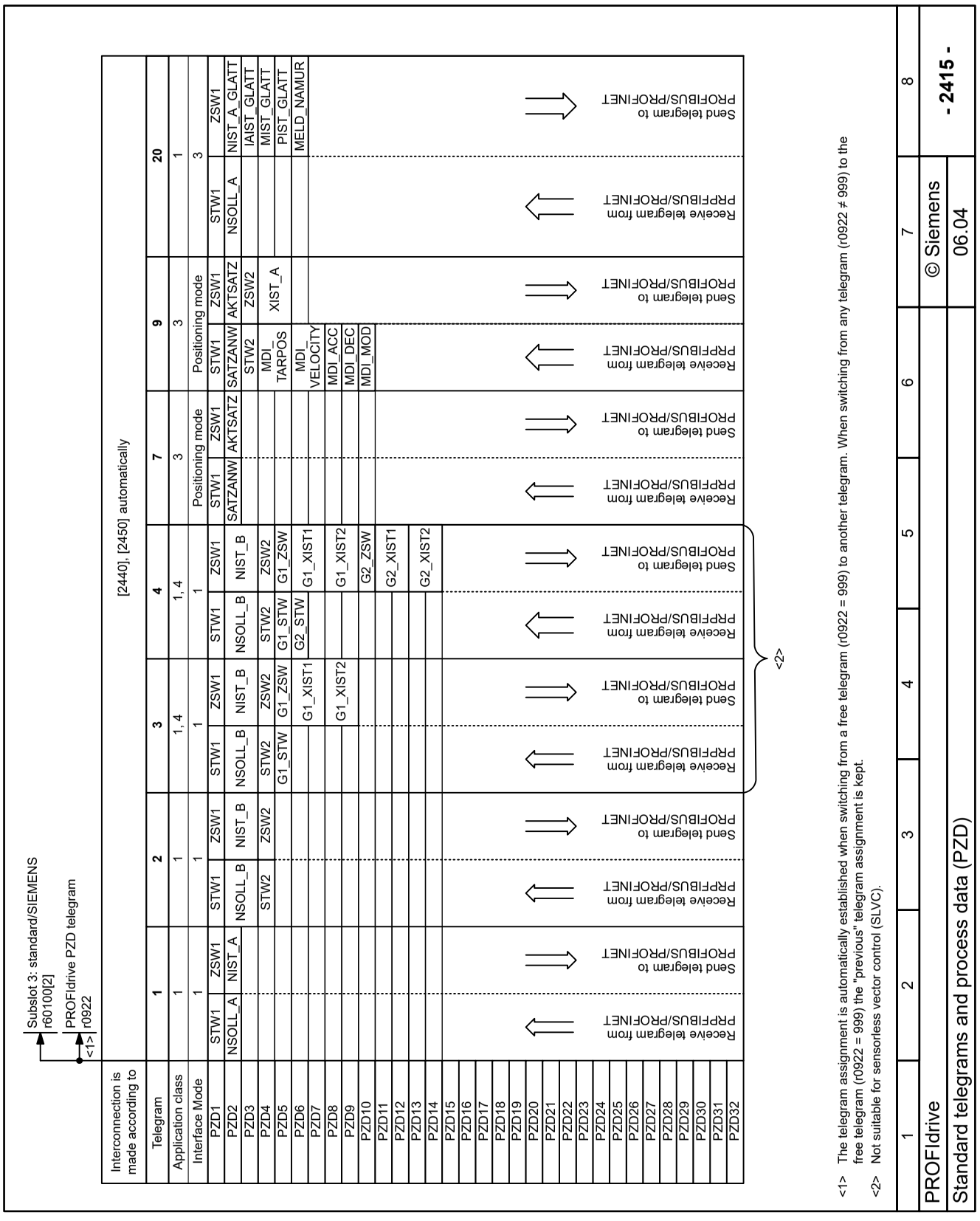


Figure 4-15 2415 - Standard telegrams and process data (PZD)

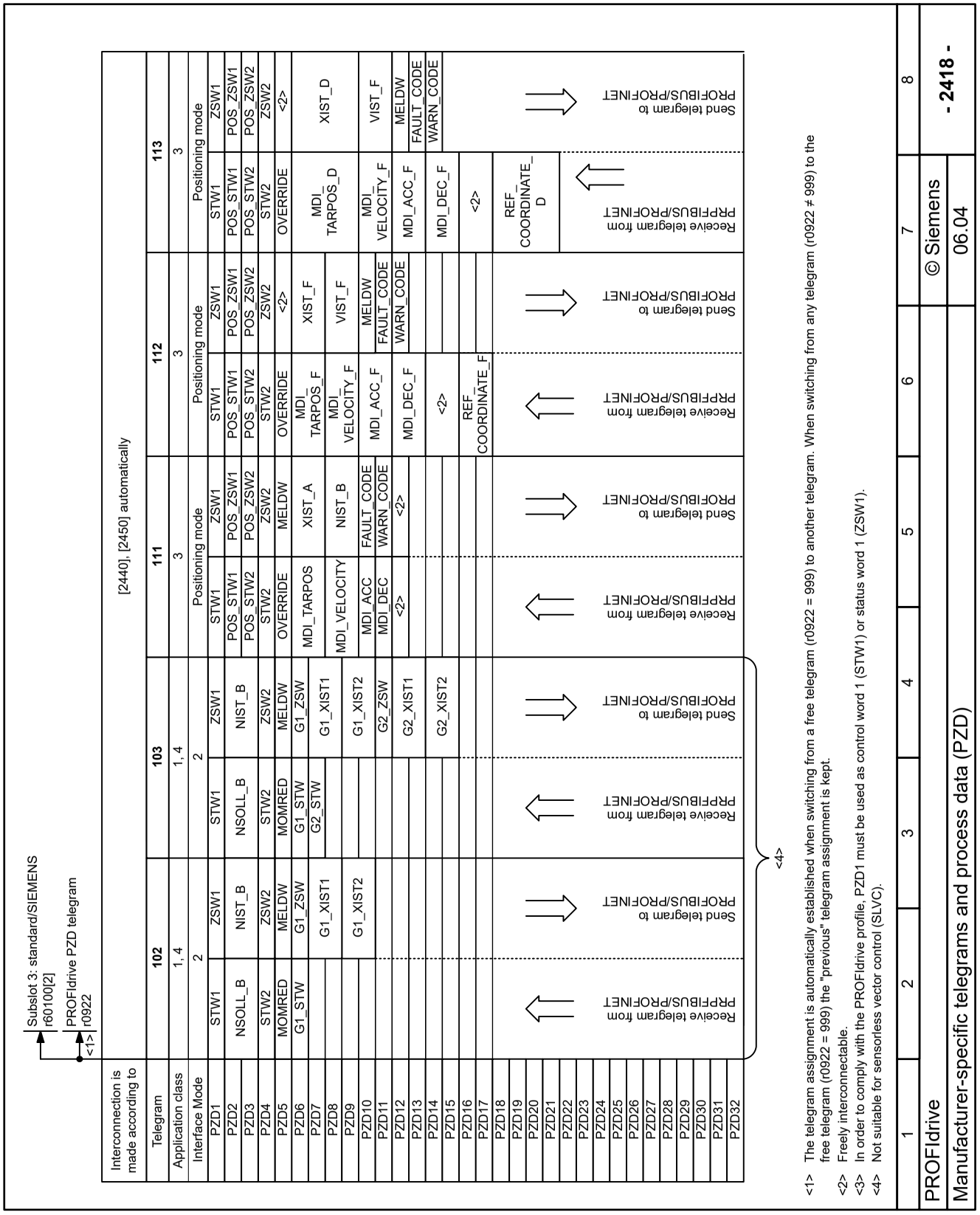


Figure 4-16 2418 – Manufacturer-specific telegrams and process data (PZD)

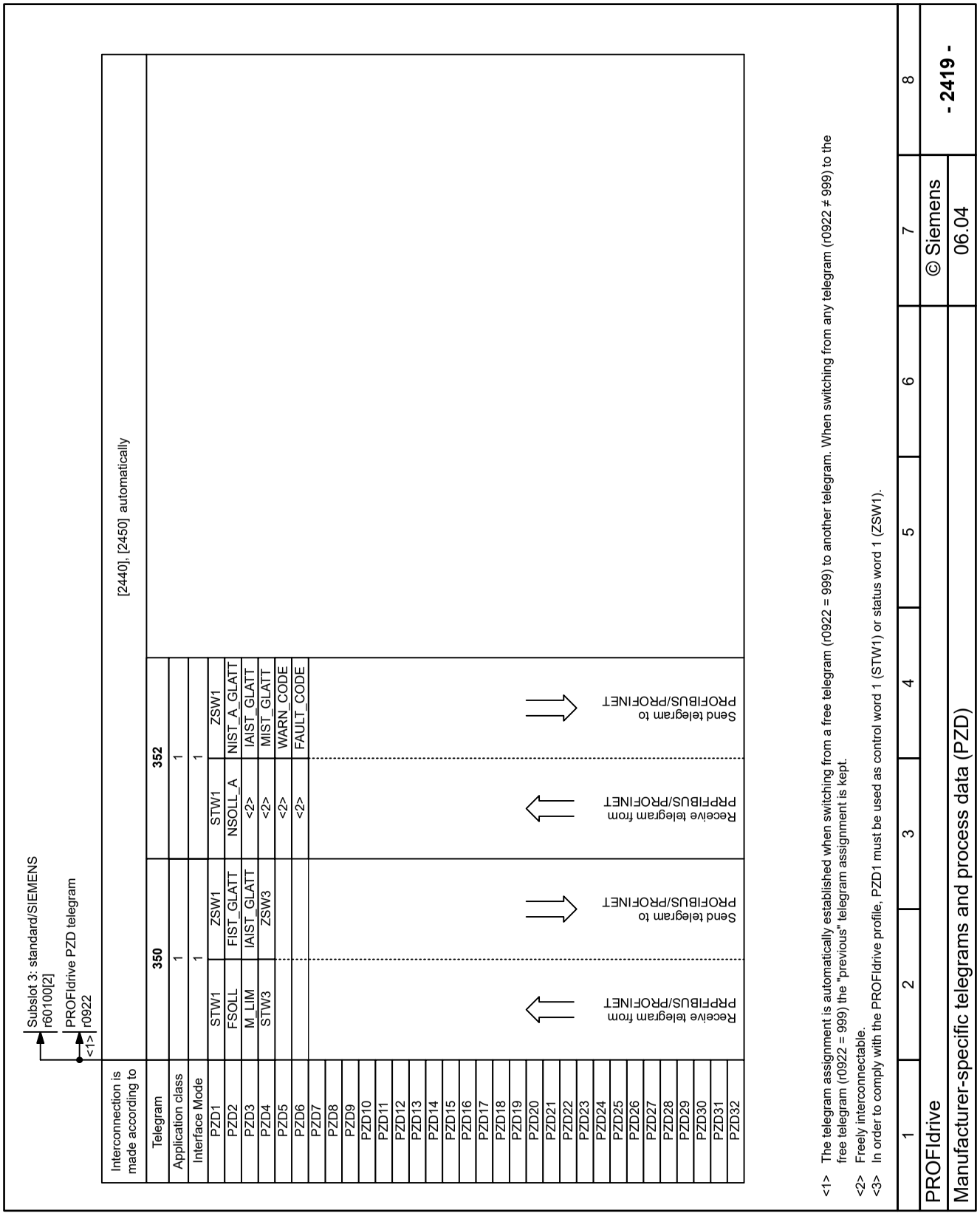


Figure 4-17 2419 – Manufacturer-specific telegrams and process data (PZD)

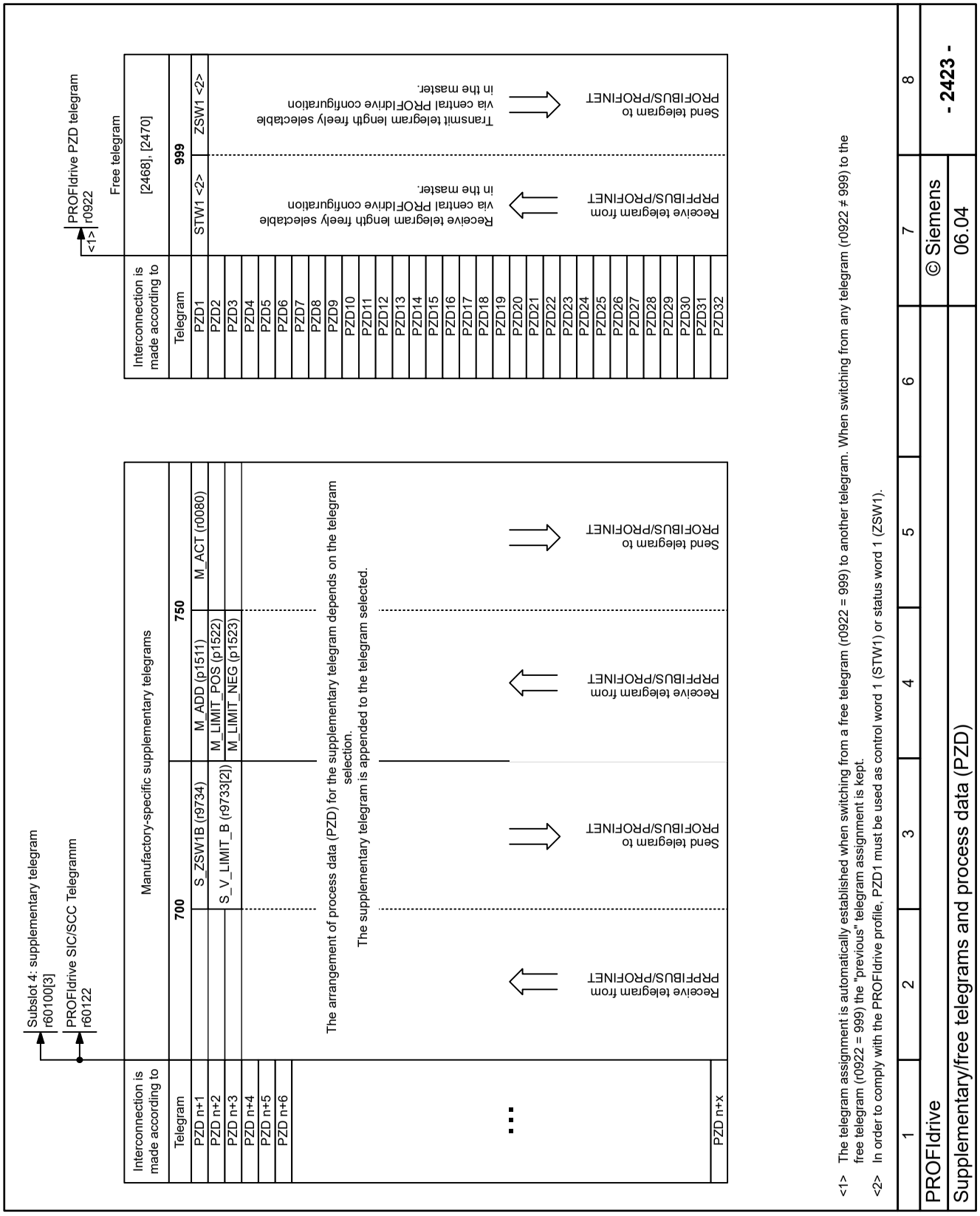
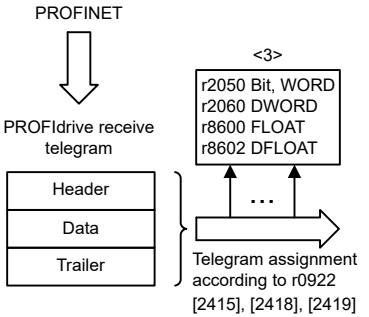


Figure 4-18 2423 – Supplementary/free telegrams and process data (PZD)



Signal targets for PZD receive signals

Signal	Meaning	PROFIdrive Signal-No.	<1> Interconnection parameter	Function diagramm	<2> Data type	Scaling
STW1	Control word 1	1	(bit serial)	[2441] ... [2443] [2475] <4>	U16	-
STW2	Control word 2	3	(bit serial)	[2444], [2445]	U16	-
NSOLL_A	Speed setpoint A (16-bit)	5	c1060	[3030.1]	I16	4000 hex ≙ p2000
NSOLL_B	Speed setpoint B (32-bit)	7	c1060	[3030.1]	I32	4000 0000 hex ≙ p2000
G1_STW	Encoder 1 control word	9	c0480[0]	-	U16	-
G2_STW	Encoder 2 control word	13	c0480[1]	-	U16	-
SATZANW	Block selection	32	(bit serial)	[2476]	U16	-
MDI_TARPOS	MDI target position	34	c2642	[3620.1]	I32	-
MDI_VELOCITY	MDI velocity	35	c2643	[3620.1]	I32	-
MDI_ACC	MDI acceleration	36	c2644	[3620.1]	I16	4000 hex ≙ 100 %
MDI_DEC	MDI deceleration	37	c2645	[3620.1]	I16	4000 hex ≙ 100 %
MDI_MOD	MDI mode specification	38	(bit serial)	[2480]	U16	-
MDI_TARPOS_F	MDI target position	42	c2642	[3620.1]	F32	- <6>
MDI_TARPOS_D	MDI target position	43	c2642	[3620.1]	F64	- <6>
MDI_VELOCITY_F	MDI velocity	44	c2643	[3620.1]	F32	- <6>
<5> MDI_ACC_F	MDI acceleration	45	c11560	-	F32	- <6>
MDI_DEC_F	MDI deceleration	46	c11561	-	F32	- <6>
REF_COORDINATE_F	Home position	47	c2598	[3612.4]	F32	- <6>
REF_COORDINATE_D	Home position	48	c2598	[3612.4]	F64	- <6>
MOMRED	Torque reduction	101	c1542	[6630.1]	I16	4000 hex ≙ p1544
POS_STW	Positioning control word	203	(bit serial)	-	U16	-
OVERRIDE	Override in positioning mode	205	c2646	[3630.5]	I16	4000 hex ≙ 100 %
POS_STW1	Positioning control word 1	220	(bit serial)	[2463]	U16	-
POS_STW2	Positioning control word 2	222	(bit serial)	[2464]	U16	-
MDI_Mode	MDI Mode	229	c2654	[3620.1]	U16	-
<7> STW3	Control word 3	304	(bit serial)	[2446]	U16	-
M_LIM	Torque limit	310	c1552, c1554	[6060.1]	U16	4000 hex ≙ 100 %

<1>
When selecting a standard telegram or manufacturer-specific telegram, this interconnection parameter of the command data set CDS0 is automatically set.

<2>
Data type acc. to the PROFIdrive profile:
I16 = Integer16, I32 = Integer32,
U16 = Unsigned16, U32 = Unsigned32,
F32 = FloatingPoint32,
F64 = FloatingPoint64.

<3>
Display parameters for receive data according to [2468].

<4>
Used in telegrams 7, 9, 111, 112, 113.

<5>
Only EPOS telegrams 112, 113.

<6>
No scaling necessary. The signal contains the value with data type FloatingPoint and physical unit.

<7>
Only SIEMENS telegram 350.

1	2	3	4	5	6	7	8
PROFIdrive						© Siemens	- 2440 -
PZD receive signals interconnection						06.04	

Figure 4-19 2440 - PZD receive signals interconnection

Signal targets for STW1 in Interface Mode 3 (VIK-NAMUR) <1>

Signal	Meaning	Interconnection parameter	[Function diagram] internal control word	[Function diagram] signal target
STW1.0	1 = ON (pulses can be enabled) 0 = OFF1 (braking with ramp-function generator, then pulse suppression & ready for switching on)	c0840[0] = r2050[0].0	[2501.2]	[2610]
STW1.1	1 = No OFF2 (enable is possible) 0 = OFF2 (immediate pulse suppression and switching on inhibited)	c0844[0] = r2050[0].1	[2501.2]	[2610]
STW1.2	1 = No OFF3 (enable is possible) 0 = OFF3 (braking with the OFF3 ramp p1135, then pulse suppression and switching on inhibited)	c0848[0] = r2050[0].2	[2501.2]	[2610]
STW1.3	1 = Enable operation (pulses can be enabled) 0 = Inhibit operation (suppress pulses)	c0852[0] = r2050[0].3	[2501.2]	[2610]
STW1.4	1 = Ramp-function generator enable 0 = Inhibit ramp-function generator (set the ramp-function generator output to zero)	c1140[0] = r2050[0].4	[2501.2]	[3060], [3070], [3080]
STW1.5	1 = Continue ramp-function generator 0 = Freezes the ramp-function generator	c1141[0] = r2050[0].5	[2501.2]	[3060], [3070]
STW1.6	1 = Setpoint enable 0 = Inhibits the setpoint (the ramp-function generator input is set to zero)	c1142[0] = r2050[0].6	[2501.2]	[3060], [3070], [3080]
STW1.7	0 → 1 = 1st acknowledge faults	c2103[0] = r2050[0].7	[2512.1]	[8060]
STW1.8	Reserved	-	-	-
STW1.9	Reserved	-	-	-
STW1.10	1 = Control via PLC <2>	c0854[0] = r2050[0].10	[2501.2]	[2501]
STW1.11	1 = Direction reversal <3>	c1113[0] = r2050[0].11	[2505.2]	[3040]
STW1.12	Reserved	-	-	-
STW1.13	Reserved	-	-	-
STW1.14	Reserved	-	-	-
STW1.15	1 = CDS bit 0	c0810 = r2050[0].15	-	[8560]

<1> Used in telegram 20.
<2> Bit 10 in STW1 must be set to ensure that the drive accepts the process data.
<3> The direction reversal can be locked (see p1110 and p1111).

1	2	3	4	5	6	7	8
PROFIdrive						© Siemens	- 2441 -
STW1 control word interconnection in Interface Mode 3 (VIK/NAMUR)						06.04	

Figure 4-20 2441 – STW1 control word interconnection in Interface Mode 3 (VIK/NAMUR)

Signal targets for STW1 in Interface Mode 1 <1>

Signal	Meaning	Interconnection parameter	[Function diagram] internal control word	[Function diagram] signal target
STW1.0	↑= ON (pulses can be enabled) 0 = OFF1 (braking with ramp-function generator, then pulse suppression & ready for switching on)	c0840[0] = r2050[0].0	[2501.2]	[2610]
STW1.1	1 = No OFF2 (enable is possible) 0 = OFF2 (immediate pulse suppression and switching on inhibited)	c0844[0] = r2050[0].1	[2501.2]	[2610]
STW1.2	1 = No OFF3 (enable is possible) 0 = OFF3 (braking with the OFF3 ramp p1135, then pulse suppression and switching on inhibited)	c0848[0] = r2050[0].2	[2501.2]	[2610]
STW1.3	1 = Enable operation (pulses can be enabled) 0 = Inhibit operation (suppress pulses)	c0852[0] = r2050[0].3	[2501.2]	[2610]
STW1.4	1 = Ramp-function generator enable 0 = Inhibit ramp-function generator (set the ramp-function generator output to zero)	c1140[0] = r2050[0].4	[2501.2]	[3060], [3070], [3080]
STW1.5	1 = Continue ramp-function generator 0 = Freezes the ramp-function generator	c1141[0] = r2050[0].5	[2501.2]	[3060], [3070]
STW1.6	1 = Setpoint enable 0 = Inhibits the setpoint (the ramp-function generator input is set to zero)	c1142[0] = r2050[0].6	[2501.2]	[3060], [3070], [3080]
STW1.7	↑ = 1st acknowledge faults	c2103[0] = r2050[0].7	[2512.1]	[8060]
STW1.8	Reserved	-	-	-
STW1.9	Reserved	-	-	-
STW1.10	1 = Control via PLC <2>	c0854[0] = r2050[0].10	[2501.2]	[2501]
STW1.11	1 = Direction reversal <3>	c1113[0] = r2050[0].11	[2505.2]	[3040]
STW1.12	Reserved	-	-	-
STW1.13	1 = Motorized potentiometer raise	c1035[0] = r2050[0].13	[2505.2]	[3020]
STW1.14	1 = Motorized potentiometer lower	c1036[0] = r2050[0].14	[2505.2]	[3020]
STW1.15	Reserved	-	-	-

<1> Used in telegram 1, 2, 3, 4, 350, 352.
<2> Bit 10 in STW1 must be set to ensure that the drive accepts the process data.
<3> The direction reversal can be locked (see p1110 and p1111).

1	2	3	4	5	6	7	8
PROFIdrive						© Siemens	- 2442 -
STW1 control word interconnection in Interface Mode 1						06.04	

Figure 4-21 2442 - control word interconnection via Interface Mode 1

Signal targets for STW1 in Interface Mode 2 <1>

Signal	Meaning	Interconnection parameter	[Function diagram] internal control word	[Function diagram] signal target
STW1.0	= ON (pulses can be enabled) 0 = OFF1 (braking with ramp-function generator, then pulse suppression & ready for switching on)	c0840[0] = r2050[0].0	[2501.2]	[2610]
STW1.1	1 = No OFF2 (enable is possible) 0 = OFF2 (immediate pulse suppression and switching on inhibited)	c0844[0] = r2050[0].1	[2501.2]	[2610]
STW1.2	1 = No OFF3 (enable is possible) 0 = OFF3 (braking with the OFF3 ramp p1135, then pulse suppression and switching on inhibited)	c0848[0] = r2050[0].2	[2501.2]	[2610]
STW1.3	1 = Enable operation (pulses can be enabled) 0 = Inhibit operation (suppress pulses)	c0852[0] = r2050[0].3	[2501.2]	[2610]
STW1.4	1 = Ramp-function generator enable 0 = Inhibit ramp-function generator (set the ramp-function generator output to zero)	c1140[0] = r2050[0].4	[2501.2]	[3060], [3070], [3080]
STW1.5	1 = Continue ramp-function generator 0 = Freezes the ramp-function generator	c1141[0] = r2050[0].5	[2501.2]	[3060], [3070]
STW1.6	1 = Setpoint enable 0 = Inhibits the setpoint (the ramp-function generator input is set to zero)	c1142[0] = r2050[0].6	[2501.2]	[3060], [3070], [3080]
STW1.7	= 1st acknowledge faults	c2103[0] = r2050[0].7	[2512.1]	[8060]
STW1.8	Reserved	-	-	-
STW1.9	Reserved	-	-	-
STW1.10	1 = Control via PLC <2>	c0854[0] = r2050[0].10	[2501.2]	[2501]
STW1.11	1 = Ramp-function generator active	c2148[0] = r2050[0].11	-	[8011]
STW1.12	1 = Unconditionally open the holding brake	c0855[0] = r2050[0].12	[2501.2]	[2701]
STW1.13	Reserved	-	-	-
STW1.14	1 = Closed-loop torque control active 0 = Closed-loop speed control active	c1501[0] = r2050[0].14	[2520.2]	[6060]
STW1.15	Reserved	-	-	-

<1> Used in telegram 102, 103.
<2> Bit 10 in STW1 must be set to ensure that the drive accepts the process data.

1	2	3	4	5	6	7	8
PROFIdrive						© Siemens	- 2443 -
STW1 control word interconnection in Interface Mode 2						06.04	

Figure 4-22 2443 – STW1 control word interconnection in Interface Mode 2

Signal targets for STW2 in Interface Mode 1 and Positioning mode <1>

Signal	Meaning	Interconnection parameter	[Function diagram] internal control word	[Function diagram] signal target
STW2.0	Drive Data Set selection DDS bit 0	c0820[0] = r2050[3].0	-	[8565]
STW2.1	Drive Data Set selection DDS bit 1	c0821[0] = r2050[3].1	-	[8565]
STW2.2	Drive Data Set selection DDS bit 2	c0822[0] = r2050[3].2	-	[8565]
STW2.3	Drive Data Set selection DDS bit 3	c0823[0] = r2050[3].3	-	[8565]
STW2.4	Reserved	-	-	-
STW2.5	Reserved	-	-	-
STW2.6	Reserved	-	-	-
STW2.7	Reserved	-	-	-
STW2.8	1 = Traverse to fixed endstop active	c1545[0] = r2050[3].8	[2520.2]	[8015]
STW2.9	Reserved	-	-	-
STW2.10	Reserved	-	-	-
STW2.11	⌐▲⌐ = Motor changeover feedback signal	c0828[0] = r2050[3].11	-	-
STW2.12	Master sign-of-life, bit 0	c2045 = r2050[3]	-	-
STW2.13	Master sign-of-life, bit 1			
STW2.14	Master sign-of-life, bit 2			
STW2.15	Master sign-of-life, bit 3			

<1> Used in telegram 2, 3, 4, 9, 111, 112, 113.

1	2	3	4	5	6	7	8
PROFIdrive						© Siemens	- 2444 -
STW2 control word interconnection in Interface Mode 1 and Positioning mode						06.04	

Figure 4-23 2444 – STW2 control word interconnection in Interface Mode 1 and positioning mode

Signal targets for STW2 in Interface Mode 2 <1>

Signal	Meaning	Interconnection parameter	[Function diagram] internal control word	[Function diagram] signal target	Inverted
STW2.0	Drive Data Set selection DDS bit 0	c0820[0] = r2050[3].0	-	[8565]	-
STW2.1	Drive Data Set selection DDS bit 1	c0821[0] = r2050[3].1	-	[8565]	-
STW2.2	Drive Data Set selection DDS bit 2	c0822[0] = r2050[3].2	-	[8565]	-
STW2.3	Reserved	-	-	-	-
STW2.4	Reserved	-	-	-	-
STW2.5	Reserved	-	-	-	-
STW2.6	1 = Integrator inhibit, speed controller	c1477[0] = r2050[3].6	[2520.2]	[6040]	-
STW2.7	Reserved	-	-	-	-
STW2.8	1 = Traverse to fixed endstop active	c1545[0] = r2050[3].8	[2520.2]	[8015]	-
STW2.9	1 = Drive Data Set, DDS effective bit 3	c0823[0] = r2050[3].9	-	[8565]	-
STW2.10	Reserved	-	-	-	-
STW2.11	= Motor changeover feedback signal	c0828[0] = r2050[3].11	-	-	-
STW2.12	Master sign-of-life, bit 0	r2045 = r2050[3]	-	-	-
STW2.13	Master sign-of-life, bit 1				-
STW2.14	Master sign-of-life, bit 2				-
STW2.15	Master sign-of-life, bit 3				-

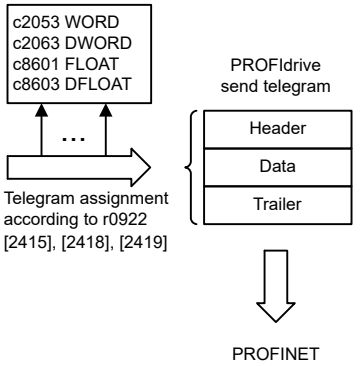
<1> Used in telegram 102, 103.

1	2	3	4	5	6	7	8
PROFIdrive						© Siemens	- 2445 -
STW2 control word interconnection in Interface Mode 2						06.04	

Figure 4-24 2445 – STW2 control word interconnection in Interface Mode 2

Signal sources for PZD send signals

Signal	Meaning	PROFIdrive Signal-No.	Interconnection parameter	Function diagramm	Data type <1>	Scaling
ZSW1	Status word 1	2	c2053[0]	[2451], [2452]	U16	-
				[2479] <6>	U16	-
ZSW2	Status word 2	4	c2053[3]	[2454]	U16	-
NIST_A	Actual speed A (16 bit)	6	r0063[0]	[4715]	I16	4000 hex ≙ p2000
NIST_B	Actual speed B (32 bit)	8	r0063[0]	[4715]	I32	4000 0000 hex ≙ p2000
G1_ZSW	Encoder 1 status word	10	r0481[0]	[4730]	U16	-
G1_XIST1	Encoder 1 position actual value 1	11	r0482[0]	[4704]	U32	-
G1_XIST2	Encoder 1 position actual value 2	12	r0483[0]	[4704]	U32	-
G2_ZSW	Encoder 2 status word	14	r0481[1]	[4730]	U16	-
G2_XIST1	Encoder 2 position actual value 1	15	r0482[1]	[4704]	U32	-
G2_XIST2	Encoder 2 position actual value 2	16	r0483[1]	[4704]	U32	-
XIST_A	Position actual value A	28	r2521[0]	[4010]	I32	-
XIST_D	Position actual value	31	r2521[0]	[4010]	F64	- <5> <2>
AKTSATZ	Active traversing block	33	r2670	[3650]	U16	-
XIST_F	Position actual value	40	r2521[0]	[4010]	F32	- <5> <2>
VIST_F	Velocity actual value	41	r2522[0]	[4010]	F32	- <5> <2>
IAIST_GLATT	Absolute actual current, smoothed	51	r0068[1]	[6799]	I16	4000 hex ≙p2002
MIST_GLATT	Actual torque smoothed	53	r0080[1]	[6799]	I16	4000 hex ≙p2003
PIST_GLATT	Actual active power, smoothed	54	r0082[1]	[6799]	I16	4000 hex ≙ p2004
NIST_A_GLATT	Actual speed, smoothed	57	r0063[1]	[6799]	I16	4000 hex ≙ p2000
MELD_NAMUR	VIK-NAMUR message bit bar	58	r3113	-	U16	-
MELDW	Message word	102	c2053[x] <4>	[2460]	U16	-
POS_ZSW1	Positioning status word 1	221	c2053[1]	[2466]	U16	-
POS_ZSW2	Positioning status word 2	223	c2053[2]	[2467]	U16	-
FAULT_CODE	Fault code	301	r2131	[8060]	U16	-
WARN_CODE	Alarm code	303	r2132	[8065]	U16	-
ZSW3	Status word 3	305	r0053	[2456]	U16	- <3>



<1> Data type acc. to the PROFIdrive profile: I16 = Integer16, I32 = Integer32, U16 = Unsigned16, U32 = Unsigned32, F32 = FloatingPoint32, F64 = FloatingPoint64.

<2> Only EPOS telegrams 112, 113.

<3> Only SIEMENS telegram 350.

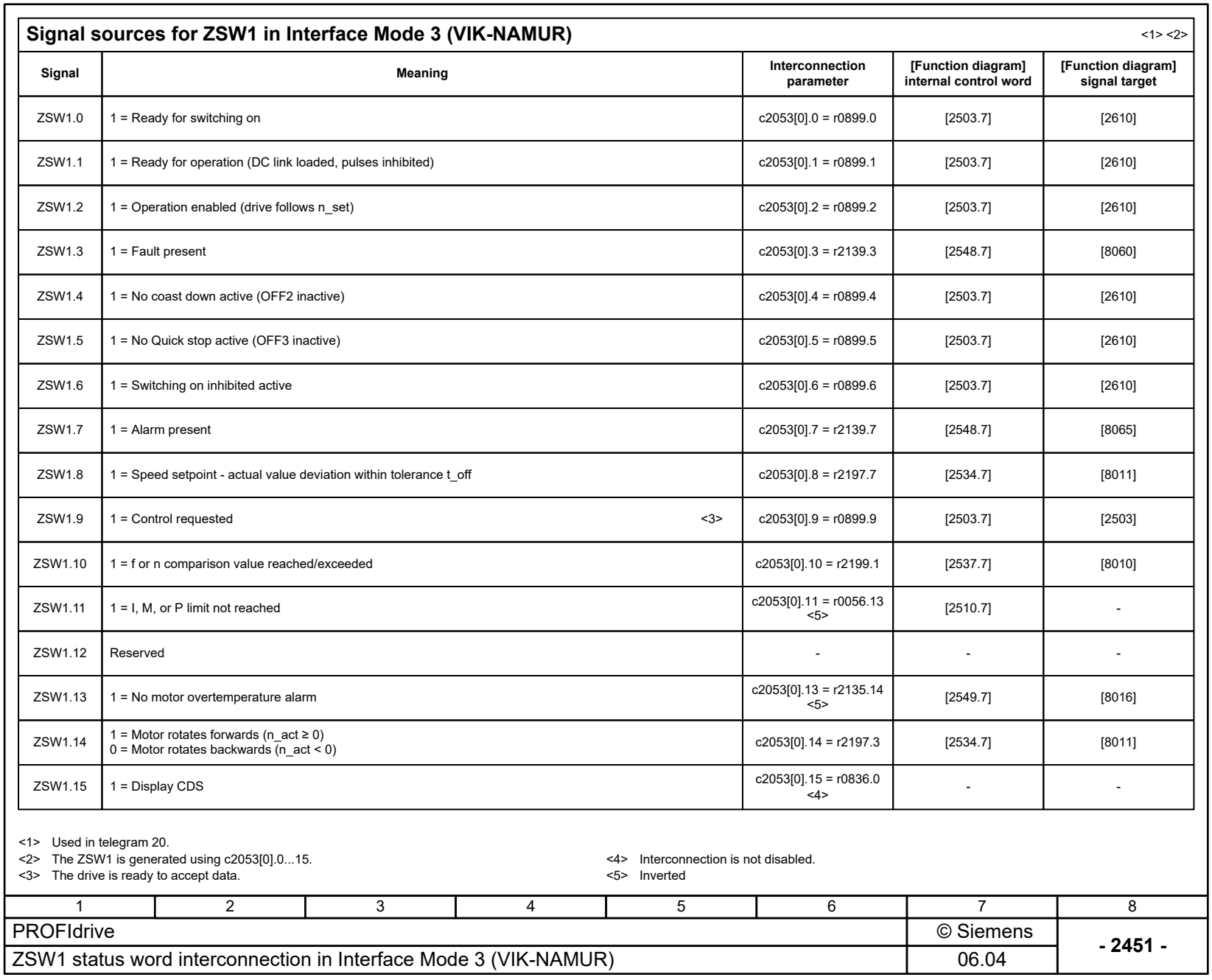
<4> When selecting a standard telegram or manufacturer-specific telegram, this interconnection parameter is automatically set.

<5> No scaling necessary. The signal contains the value with data type FloatingPoint and physical unit.

<6> Used in telegrams 7, 9, 111, 112, 113.

1	2	3	4	5	6	7	8
PROFIdrive						© Siemens	- 2450 -
PZD send signals interconnection						06.04	

Figure 4-25 2450 - PZD send signals interconnection



Signal sources for ZSW1 in Interface Mode 3 (VIK-NAMUR) <1> <2>

Signal	Meaning	Interconnection parameter	[Function diagram] internal control word	[Function diagram] signal target
ZSW1.0	1 = Ready for switching on	c2053[0].0 = r0899.0	[2503.7]	[2610]
ZSW1.1	1 = Ready for operation (DC link loaded, pulses inhibited)	c2053[0].1 = r0899.1	[2503.7]	[2610]
ZSW1.2	1 = Operation enabled (drive follows n_set)	c2053[0].2 = r0899.2	[2503.7]	[2610]
ZSW1.3	1 = Fault present	c2053[0].3 = r2139.3	[2548.7]	[8060]
ZSW1.4	1 = No coast down active (OFF2 inactive)	c2053[0].4 = r0899.4	[2503.7]	[2610]
ZSW1.5	1 = No Quick stop active (OFF3 inactive)	c2053[0].5 = r0899.5	[2503.7]	[2610]
ZSW1.6	1 = Switching on inhibited active	c2053[0].6 = r0899.6	[2503.7]	[2610]
ZSW1.7	1 = Alarm present	c2053[0].7 = r2139.7	[2548.7]	[8065]
ZSW1.8	1 = Speed setpoint - actual value deviation within tolerance t_off	c2053[0].8 = r2197.7	[2534.7]	[8011]
ZSW1.9	1 = Control requested <3>	c2053[0].9 = r0899.9	[2503.7]	[2503]
ZSW1.10	1 = f or n comparison value reached/exceeded	c2053[0].10 = r2199.1	[2537.7]	[8010]
ZSW1.11	1 = I, M, or P limit not reached	c2053[0].11 = r0056.13 <5>	[2510.7]	-
ZSW1.12	Reserved	-	-	-
ZSW1.13	1 = No motor overtemperature alarm	c2053[0].13 = r2135.14 <5>	[2549.7]	[8016]
ZSW1.14	1 = Motor rotates forwards (n_act ≥ 0) 0 = Motor rotates backwards (n_act < 0)	c2053[0].14 = r2197.3	[2534.7]	[8011]
ZSW1.15	1 = Display CDS	c2053[0].15 = r0836.0 <4>	-	-

<1> Used in telegram 20.
<2> The ZSW1 is generated using c2053[0].0...15.
<3> The drive is ready to accept data.
<4> Interconnection is not disabled.
<5> Inverted

1	2	3	4	5	6	7	8
PROFIdrive						© Siemens	- 2451 -
ZSW1 status word interconnection in Interface Mode 3 (VIK-NAMUR)						06.04	

Figure 4-26 2451 – ZSW1 status word interconnection in Interface Mode 3 (VIK/NAMUR)

Signal sources for ZSW1 in Interface Mode 1 <1> <2>

Signal	Meaning	Interconnection parameter	[Function diagram] internal status word	[Function diagram] signal target
ZSW1.0	1 = Ready for switching on	c2053[0].0 = r0899.0	[2503.7]	[2610]
ZSW1.1	1 = Ready for operation (DC link loaded, pulses inhibited)	c2053[0].1 = r0899.1	[2503.7]	[2610]
ZSW1.2	1 = Operation enabled (drive follows n_set)	c2053[0].2 = r0899.2	[2503.7]	[2610]
ZSW1.3	1 = Fault present	c2053[0].3 = r2139.3	[2548.7]	[8060]
ZSW1.4	1 = No coast down active (OFF2 inactive)	c2053[0].4 = r0899.4	[2503.7]	[2610]
ZSW1.5	1 = No Quick stop active (OFF3 inactive)	c2053[0].5 = r0899.5	[2503.7]	[2610]
ZSW1.6	1 = Switching on inhibited active	c2053[0].6 = r0899.6	[2503.7]	[2610]
ZSW1.7	1 = Alarm present	c2053[0].7 = r2139.7	[2548.7]	[8065]
ZSW1.8	1 = Speed setpoint - actual value deviation within tolerance t_off	c2053[0].8 = r2197.7	[2534.7]	[8011]
ZSW1.9	1 = Control requested <3>	c2053[0].9 = r0899.9	[2503.7]	[2503]
ZSW1.10	1 = f or n comparison value reached/exceeded	c2053[0].10 = r2199.1	[2537.7]	[8010]
ZSW1.11	1 = I, M, or P limit not reached	c2053[0].11 = r1407.7 <4>	[2522.7]	-
ZSW1.12	1 = Open holding brake	c2053[0].12 = r0899.12	[2503.7]	[2701]
ZSW1.13	1 = No motor overtemperature alarm	c2053[0].13 = r2135.14 <4>	[2549.7]	[8016]
ZSW1.14	1 = Motor rotates forwards (n_act ≥ 0) 0 = Motor rotates backwards (n_act < 0)	c2053[0].14 = r2197.3	[2534.7]	[8011]
ZSW1.15	1 = No alarm, thermal overload, power unit	c2053[0].15 = r2135.15 <4>	[2549.7]	[8021]

<1> Used in telegram 1, 2, 3, 4, 350, 352.
<2> The ZSW1 is generated using c2053[0].0...15.
<3> The drive is ready to accept data.
<4> Inverted

1	2	3	4	5	6	7	8
PROFIdrive						© Siemens	- 2452 -
ZSW1 status word interconnection in Interface Mode 1						06.04	

Figure 4-27 2452 – ZSW1 status word interconnection in Interface Mode 1

Figure 4-28 2453 – ZSW1 status word interconnection in Interface Mode 2

Signal sources for ZSW1 in Interface Mode 2 <1> <2>

Signal	Meaning	Interconnection parameter	[Function diagram] internal control word	[Function diagram] signal target
ZSW1.0	1 = Ready for switching on	c2053[0].0 = r0899.0	[2503.7]	[2610]
ZSW1.1	1 = Ready for operation (DC link loaded, pulses inhibited)	c2053[0].1 = r0899.1	[2503.7]	[2610]
ZSW1.2	1 = Operation enabled (drive follows n_set)	c2053[0].2 = r0899.2	[2503.7]	[2610]
ZSW1.3	1 = Fault present	c2053[0].3 = r2139.3	[2548.7]	[8060]
ZSW1.4	1 = No coast down active (OFF2 inactive)	c2053[0].4 = r0899.4	[2503.7]	[2610]
ZSW1.5	1 = No Quick stop active (OFF3 inactive)	c2053[0].5 = r0899.5	[2503.7]	[2610]
ZSW1.6	1 = Switching on inhibited active	c2053[0].6 = r0899.6	[2503.7]	[2610]
ZSW1.7	1 = Alarm present	c2053[0].7 = r2139.7	[2548.7]	[8065]
ZSW1.8	1 = Speed setpoint - actual value deviation within tolerance t_off	c2053[0].8 = r2197.7	[2534.7]	[8011]
ZSW1.9	1 = Control requested <3>	c2053[0].9 = r0899.9	[2503.7]	[2503]
ZSW1.10	1 = f or n comparison value reached/exceeded	c2053[0].10 = r2199.1	[2537.7]	[8010]
ZSW1.11	1 = Alarm class bit 0	c2053[0].11 = r2139.11	[2548.7]	-
ZSW1.12	1 = Alarm class bit 1	c2053[0].12 = r2139.12	[2548.7]	-
ZSW1.13	Reserved	-	-	-
ZSW1.14	1 = Closed-loop torque control active	c2053[0].14 = r1407.2	[2522.7]	-
ZSW1.15	Reserved	-	-	-

<1> Used in telegram 102, 103.
<2> The ZSW1 is generated using c2053[0].0...15.
<3> The drive is ready to accept data.

1	2	3	4	5	6	7	8
PROFIdrive						© Siemens	- 2453 -
ZSW1 status word interconnection in Interface Mode 2						06.04	

Signal sources for ZSW2 in Interface Mode 1 and Positioning mode <1> <2>

Signal	Meaning	Interconnection parameter	[Function diagram] internal control word	[Function diagram] signal target
ZSW2.0	1 = Drive Data Set, DDS effective bit 0	c2053[3].0 = r0051.0	-	[8565]
ZSW2.1	1 = Drive Data Set, DDS effective bit 1	c2053[3].1 = r0051.1	-	[8565]
ZSW2.2	1 = Drive Data Set, DDS effective bit 2	c2053[3].2 = r0051.2	-	[8565]
ZSW2.3	1 = Drive Data Set, DDS effective bit 3	c2053[3].3 = r0051.3	-	[8565]
ZSW2.4	Reserved	-	-	-
ZSW2.5	1 = Alarm class bit 0	c2053[3].5 = r2139.11	[2548.7]	[8065]
ZSW2.6	1 = Alarm class bit 1	c2053[3].6 = r2139.12	[2548.7]	[8065]
ZSW2.7	Reserved	-	-	-
ZSW2.8	1 = Travel to fixed stop active <3>	c2053[3].8 = r1406.8	[2520.7]	-
ZSW2.9	Reserved	-	-	-
ZSW2.10	1 = Pulses enabled	c2053[3].10 = r0899.11	[2503.7]	[2610]
ZSW2.11	1 = Motor changeover active	c2053[3].11 = r0835.0	-	[8575]
ZSW2.12	Follower sign-of-life, bit 0 <3> <4>	Implicitly interconnected	-	-
ZSW2.13	Follower sign-of-life, bit 1 <3> <4>			
ZSW2.14	Follower sign-of-life, bit 2 <3> <4>			
ZSW2.15	Follower sign-of-life, bit 3 <3> <4>			

<1> Used in telegram 2, 3, 4, 9, 111, 112, 113.
<2> The ZSW2 is generated using c2053[3].0...15.
<3> Not for U/f control.
<4> These signals are automatically interconnected for clock-cycle synchronous operation.

1	2	3	4	5	6	7	8
PROFIdrive						© Siemens	**- 2454 -**
ZSW2 status word interconnection in Interface Mode 1 and Positioning mode						06.04	

Figure 4-29 2454 – ZSW2 status word interconnection in Interface Mode 1 and positioning mode

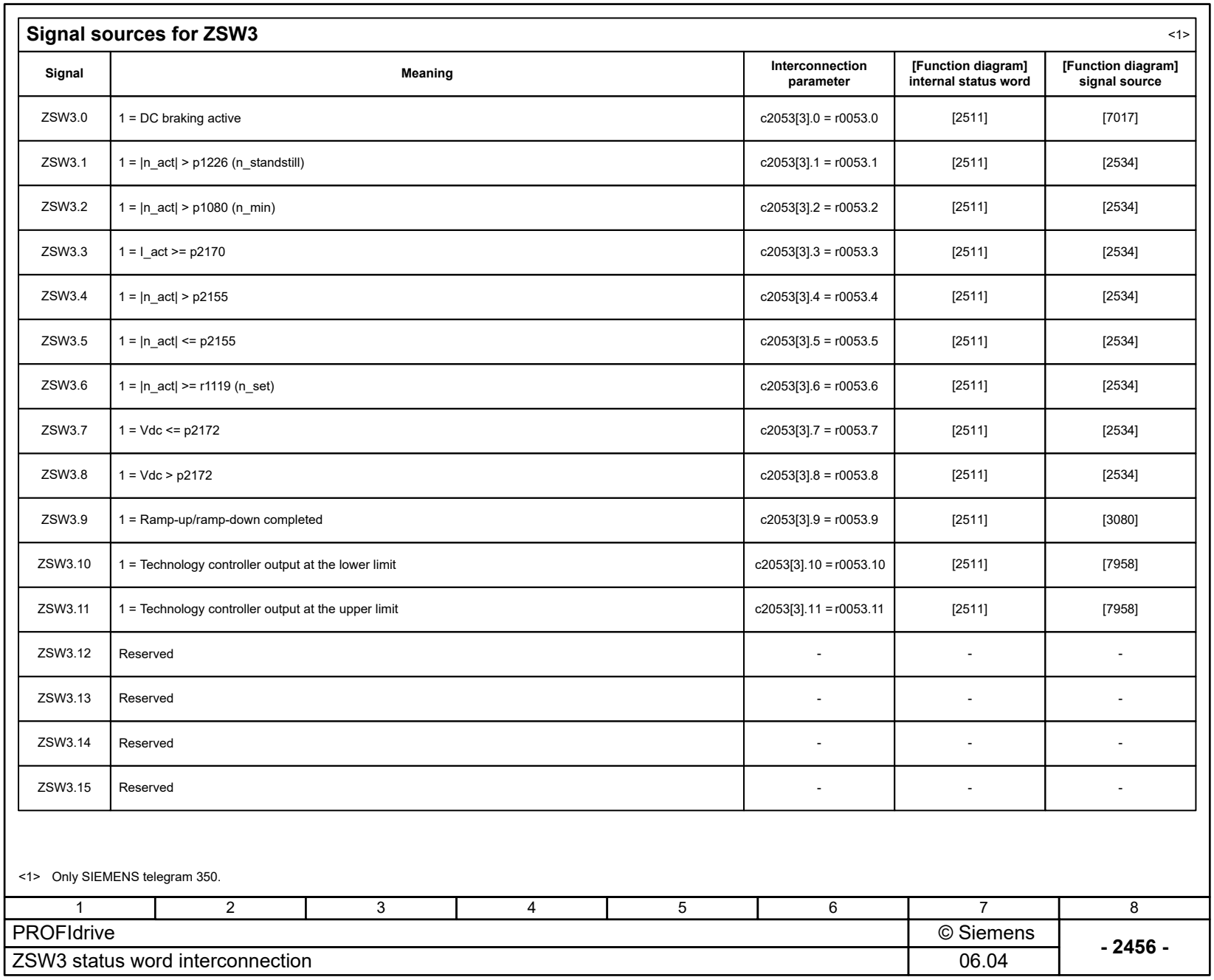
Signal sources for ZSW2 in Interface Mode 2 <1> <2>

Signal	Meaning	Interconnection parameter	[Function diagram] internal control word	[Function diagram] signal target
ZSW2.0	1 = Drive Data Set, DDS effective bit 0	c2053[3].0 = r0051.0	-	[8565]
ZSW2.1	1 = Drive Data Set, DDS effective bit 1	c2053[3].1 = r0051.1	-	[8565]
ZSW2.2	1 = Drive Data Set, DDS effective bit 2	c2053[3].2 = r0051.2	-	[8565]
ZSW2.3	Reserved	-	-	-
ZSW2.4	1 = Ramp-function generator inactive	c2053[3].4 = r0053.9	[2511.7]	-
ZSW2.5	1 = Open the holding brake	c2053[3].5 = r0899.12	-	[2701]
ZSW2.6	1 = Integrator inhibit, speed controller	c2053[3].6 = r2050[3].6	-	[2445]
ZSW2.7	Reserved	-	-	-
ZSW2.8	1 = Travel to fixed stop active <3>	c2053[3].8 = r1406.8	[2520.7]	-
ZSW2.9	1 = Drive Data Set, DDS effective bit 3	c2053[3].9 = r0051.3	-	[8565]
ZSW2.10	Reserved	-	-	-
ZSW2.11	1 = Motor changeover active	c2053[3].11 = r0835.0	-	[8575]
ZSW2.12	Follower sign-of-life, bit 0 <3> <4>	Implicitly interconnected	-	-
ZSW2.13	Follower sign-of-life, bit 1 <3> <4>			
ZSW2.14	Follower sign-of-life, bit 2 <3> <4>			
ZSW2.15	Follower sign-of-life, bit 3 <3> <4>			

<1> Used in telegram 102, 103.
<2> The ZSW2 is generated using c2053[3].0...15.
<3> Not for U/f control.
<4> These signals are automatically interconnected for clock-cycle synchronous operation.

1	2	3	4	5	6	7	8
PROFIdrive						© Siemens	- 2455 -
ZSW2 status word interconnection in Interface Mode 2						06.04	

Figure 4-30 2455 – ZSW2 status word interconnection in Interface Mode 2



Signal sources for ZSW3 <1>

Signal	Meaning	Interconnection parameter	[Function diagram] internal status word	[Function diagram] signal source
ZSW3.0	1 = DC braking active	c2053[3].0 = r0053.0	[2511]	[7017]
ZSW3.1	1 = |n_act| > p1226 (n_standstill)	c2053[3].1 = r0053.1	[2511]	[2534]
ZSW3.2	1 = |n_act| > p1080 (n_min)	c2053[3].2 = r0053.2	[2511]	[2534]
ZSW3.3	1 = I_act >= p2170	c2053[3].3 = r0053.3	[2511]	[2534]
ZSW3.4	1 = |n_act| > p2155	c2053[3].4 = r0053.4	[2511]	[2534]
ZSW3.5	1 = |n_act| <= p2155	c2053[3].5 = r0053.5	[2511]	[2534]
ZSW3.6	1 = |n_act| >= r1119 (n_set)	c2053[3].6 = r0053.6	[2511]	[2534]
ZSW3.7	1 = Vdc <= p2172	c2053[3].7 = r0053.7	[2511]	[2534]
ZSW3.8	1 = Vdc > p2172	c2053[3].8 = r0053.8	[2511]	[2534]
ZSW3.9	1 = Ramp-up/ramp-down completed	c2053[3].9 = r0053.9	[2511]	[3080]
ZSW3.10	1 = Technology controller output at the lower limit	c2053[3].10 = r0053.10	[2511]	[7958]
ZSW3.11	1 = Technology controller output at the upper limit	c2053[3].11 = r0053.11	[2511]	[7958]
ZSW3.12	Reserved	-	-	-
ZSW3.13	Reserved	-	-	-
ZSW3.14	Reserved	-	-	-
ZSW3.15	Reserved	-	-	-

<1> Only SIEMENS telegram 350.

1	2	3	4	5	6	7	8
PROFIdrive						© Siemens	- 2456 -
ZSW3 status word interconnection						06.04	

Figure 4-31 2456 – ZSW3 status word interconnection

Figure 4-32 2460 - MELDW status word interconnection

Signal sources for MELDW <1>

Signal	Meaning	Interconnection parameter <3>	[Function diagram] internal control word	[Function diagram] signal target
MELDW.0	1 = Ramp-up/ramp-down completed	c2053[x].0 = r2199.5	[2537.7]	[8011]
MELDW.1	1 = Torque utilization < torque threshold value 2 (p2194)	c2053[x].1 = r2199.11	[2537.7]	[8012]
MELDW.2	1 = |n_act| < speed threshold value 3 (p2161)	c2053[x].2 = r2199.0	[2537.7]	[8010]
MELDW.3	1 = |n_act| > speed threshold value 2 (p2155)	c2053[x].3 = r2197.1	[2534.7]	[8010]
MELDW.4	1 = Vdc_min controller active	c2053[x].4 = r0056.15	[2526.7]	[6220], [6320]
MELDW.5	Variable signaling function 1 output signal	c2053[x].5 = r3294.0	-	[8024]
MELDW.6	1 = No motor overtemperature alarm	c2053[x].6 = r2135.14 <2>	[2549.7]	[8016]
MELDW.7	1 = No alarm, thermal overload, power unit	c2053[x].7 = r2135.15 <2>	[2549.7]	[8021]
MELDW.8	1 = Speed setpoint - actual value deviation within tolerance t_on	c2053[x].8 = r2199.4	[2537.7]	[8011]
MELDW.9	Reserved	-	-	-
MELDW.10	Reserved	-	-	-
MELDW.11	1 = Controller enable	c2053[x].11 = r0899.8	[2503.7]	[2610]
MELDW.12	1 = Drive ready	c2053[x].12 = r0899.7	[2503.7]	[2610]
MELDW.13	1 = Pulses enabled	c2053[x].13 = r0899.11	[2503.7]	[2610]
MELDW.14	Variable signaling function 2 output signal	c2053[x].14 = r3294.1	-	[8024]
MELDW.15	Variable signaling function 3 output signal	c2053[x].15 = r3294.2	-	[8024]

<1> Used in telegram 102, 103, 111, 112, 113.
<2> Inverted
<3> When selecting a standard telegram or manufacturer-specific telegram, this interconnection parameter is automatically set.

1	2	3	4	5	6	7	8
PROFIdrive						© Siemens	- 2460 -
MELDW status word interconnection						06.04	

Signal targets for POS_STW1 (positioning mode) <1>

Signal	Meaning	Interconnection parameter	[Function diagram] internal control word	[Function diagram] signal target
POS_STW1.0	Traversing block selection, bit 0	c2625 = r2050[1].0	-	[3640]
POS_STW1.1	Traversing block selection, bit 1	c2626 = r2050[1].1	-	[3640]
POS_STW1.2	Traversing block selection, bit 2	c2627 = r2050[1].2	-	[3640]
POS_STW1.3	Traversing block selection, bit 3	c2628 = r2050[1].3	-	[3640]
POS_STW1.4	Traversing block selection, bit 4	c2629 = r2050[1].4	-	[3640]
POS_STW1.5	Traversing block selection, bit 5	c2630 = r2050[1].5	-	[3640]
POS_STW1.6	Reserved	-	-	-
POS_STW1.7	1 = Unconditionally open the holding brake	c0855 = r2050[1].7	-	-
POS_STW1.8	1 = Absolute positioning is selected. 0 = Relative positioning is selected.	c2648 = r2050[1].8	-	[3620]
POS_STW1.9	1 = Absolute positioning/MDI direction selection, positive. 2 = Absolute positioning/MDI direction selection, negative. 3 = Absolute positioning through the shortest distance.	c2651 = r2050[1].9	-	[3620]
POS_STW1.10	0 = Absolute positioning through the shortest distance.	c2652 = r2050[1].10	-	[3620]
POS_STW1.11	Reserved	-	-	-
POS_STW1.12	1 = Continuous transfer 0 = Activate MDI block change with a positive edge of a traversing task (STW1.6 [2475])	c2649 = r2050[1].12	-	[3620]
POS_STW1.13	Reserved	-	-	-
POS_STW1.14	1 = Signal setting-up selected 0 = Signal positioning selected.	c2653 = r2050[1].14	-	[3620]
POS_STW1.15	1 = MDI activated 0 = MDI deactivated	c2647 = r2050[1].15	-	[3620]

<1> Used in telegram 111, 112, 113.

1	2	3	4	5	6	7	8
PROFIdrive						© Siemens	- 2463 -
POS_STW1 positioning control word 1 interconnection						06.04	

Figure 4-33 2463 – POS_STW1 positioning control word 1 interconnection

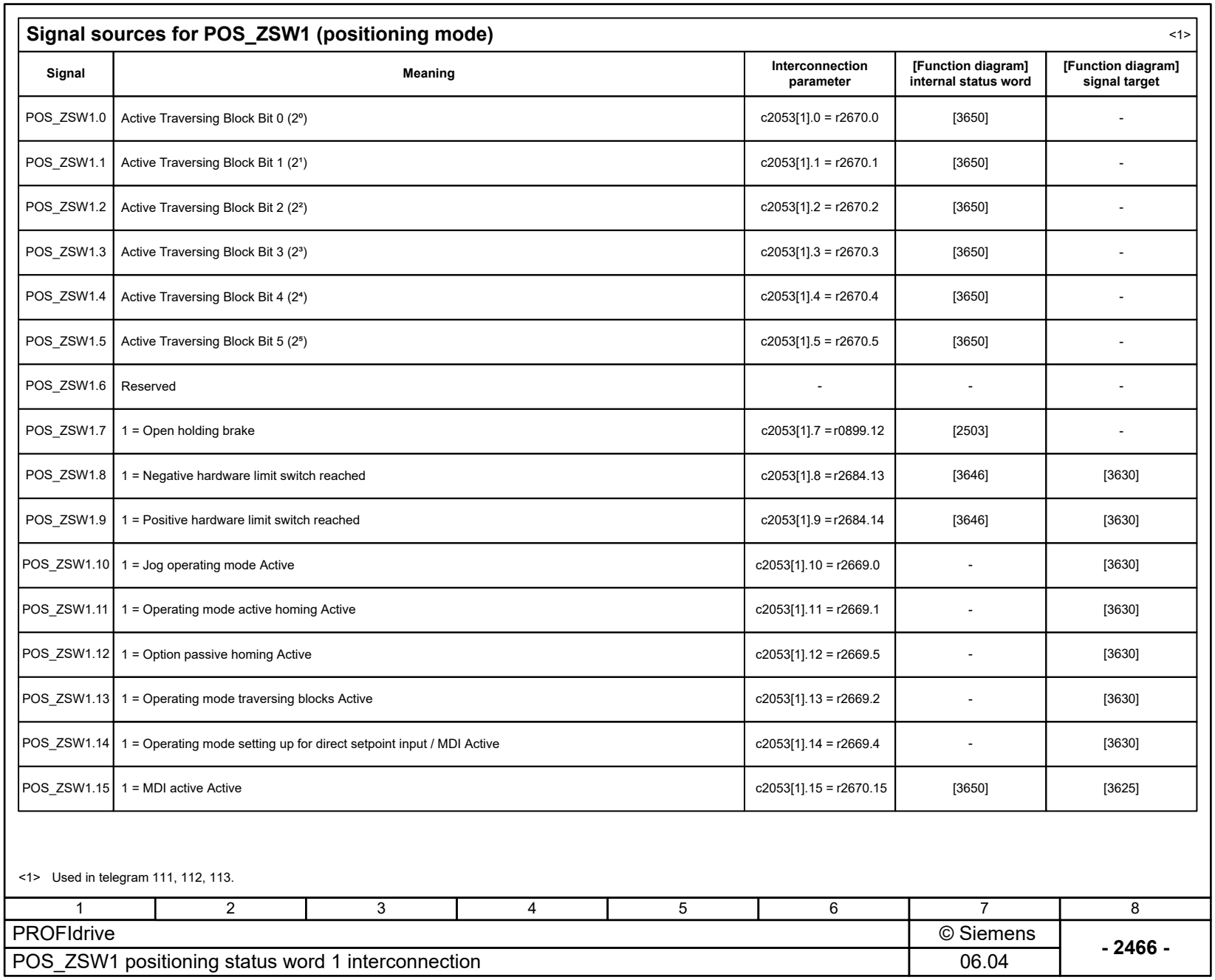
Signal targets for POS_STW2 (positioning mode) <1>

Signal	Meaning	Interconnection parameter	[Function diagram] internal control word	[Function diagram] signal target
POS_STW2.0	1 = Tracking mode active	c2655[0] = r2050[2].0	-	[3635]
POS_STW2.1	1 = Set home position	c2596 = r2050[2].1	-	[3612]
POS_STW2.2	1 = Reference cam active	c2612 = r2050[2].2	-	[3612]
POS_STW2.3	⅃ = initiate absolute encoder adjustment <2>	c11500[0] = r2050[2].3	-	-
POS_STW2.4	Reserved	-	-	-
POS_STW2.5	1 = Jogging, incremental active 0 = Jogging, velocity active	c2591 = r2050[2].5	-	[3610]
POS_STW2.6	Reserved	-	-	-
POS_STW2.7	Reserved	-	-	-
POS_STW2.8	1 = Passive homing selected 0 = Active homing selected	c2597 = r2050[2].8	-	[3612], [3614]
POS_STW2.9	1 = Start in negative direction for active homing 0 = Start in positive direction for active homing	c2604 = r2050[2].9	-	[3612]
POS_STW2.10	1 = Measuring probe 2 is activated 0 = Measuring probe 1 is activated	c2510[0] = r2050[2].10	-	[3615], [4010]
POS_STW2.11	1 = Negative edge of the measuring probe 0 = Positive edge of the measuring probe	c2511[0] = r2050[2].11	-	[3615], [4010]
POS_STW2.12	Reserved	-	-	-
POS_STW2.13	Reserved	-	-	-
POS_STW2.14	1 = Software limit switch active	c2582 = r2050[2].14	-	[3630]
POS_STW2.15	1 = Hardware limit switch active	c2568 = r2050[2].15	-	[3630]

<1> Used in telegram 111, 112, 113.
<2> In telegram 111: reserved

1	2	3	4	5	6	7	8
PROFIdrive						© Siemens	- 2464 -
POS_STW2 positioning control word 2 interconnection						06.04	

Figure 4-34 2464 – POS_STW2 positioning control word 2 interconnection



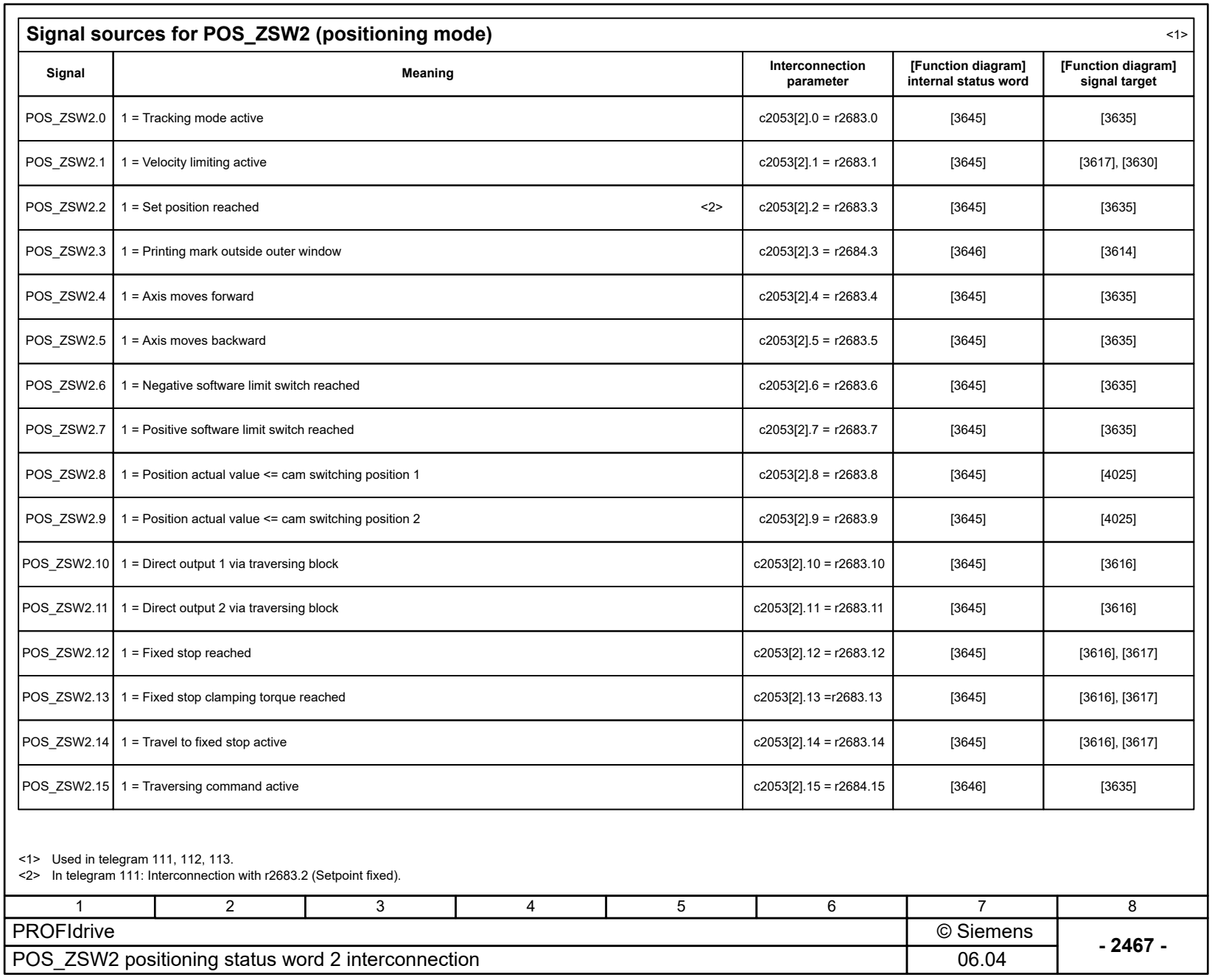
Signal sources for POS_ZSW1 (positioning mode) <1>

Signal	Meaning	Interconnection parameter	[Function diagram] internal status word	[Function diagram] signal target
POS_ZSW1.0	Active Traversing Block Bit 0 (2^0)	c2053[1].0 = r2670.0	[3650]	-
POS_ZSW1.1	Active Traversing Block Bit 1 (2^1)	c2053[1].1 = r2670.1	[3650]	-
POS_ZSW1.2	Active Traversing Block Bit 2 (2^2)	c2053[1].2 = r2670.2	[3650]	-
POS_ZSW1.3	Active Traversing Block Bit 3 (2^3)	c2053[1].3 = r2670.3	[3650]	-
POS_ZSW1.4	Active Traversing Block Bit 4 (2^4)	c2053[1].4 = r2670.4	[3650]	-
POS_ZSW1.5	Active Traversing Block Bit 5 (2^5)	c2053[1].5 = r2670.5	[3650]	-
POS_ZSW1.6	Reserved	-	-	-
POS_ZSW1.7	1 = Open holding brake	c2053[1].7 = r0899.12	[2503]	-
POS_ZSW1.8	1 = Negative hardware limit switch reached	c2053[1].8 = r2684.13	[3646]	[3630]
POS_ZSW1.9	1 = Positive hardware limit switch reached	c2053[1].9 = r2684.14	[3646]	[3630]
POS_ZSW1.10	1 = Jog operating mode Active	c2053[1].10 = r2669.0	-	[3630]
POS_ZSW1.11	1 = Operating mode active homing Active	c2053[1].11 = r2669.1	-	[3630]
POS_ZSW1.12	1 = Option passive homing Active	c2053[1].12 = r2669.5	-	[3630]
POS_ZSW1.13	1 = Operating mode traversing blocks Active	c2053[1].13 = r2669.2	-	[3630]
POS_ZSW1.14	1 = Operating mode setting up for direct setpoint input / MDI Active	c2053[1].14 = r2669.4	-	[3630]
POS_ZSW1.15	1 = MDI active Active	c2053[1].15 = r2670.15	[3650]	[3625]

<1> Used in telegram 111, 112, 113.

1	2	3	4	5	6	7	8
PROFIdrive						© Siemens	**- 2466 -**
POS_ZSW1 positioning status word 1 interconnection						06.04	

Figure 4-35 2466 – POS_ZSW1 positioning status word 1 interconnection



Signal sources for POS_ZSW2 (positioning mode) <1>

Signal	Meaning	Interconnection parameter	[Function diagram] internal status word	[Function diagram] signal target
POS_ZSW2.0	1 = Tracking mode active	c2053[2].0 = r2683.0	[3645]	[3635]
POS_ZSW2.1	1 = Velocity limiting active	c2053[2].1 = r2683.1	[3645]	[3617], [3630]
POS_ZSW2.2	1 = Set position reached <2>	c2053[2].2 = r2683.3	[3645]	[3635]
POS_ZSW2.3	1 = Printing mark outside outer window	c2053[2].3 = r2684.3	[3646]	[3614]
POS_ZSW2.4	1 = Axis moves forward	c2053[2].4 = r2683.4	[3645]	[3635]
POS_ZSW2.5	1 = Axis moves backward	c2053[2].5 = r2683.5	[3645]	[3635]
POS_ZSW2.6	1 = Negative software limit switch reached	c2053[2].6 = r2683.6	[3645]	[3635]
POS_ZSW2.7	1 = Positive software limit switch reached	c2053[2].7 = r2683.7	[3645]	[3635]
POS_ZSW2.8	1 = Position actual value <= cam switching position 1	c2053[2].8 = r2683.8	[3645]	[4025]
POS_ZSW2.9	1 = Position actual value <= cam switching position 2	c2053[2].9 = r2683.9	[3645]	[4025]
POS_ZSW2.10	1 = Direct output 1 via traversing block	c2053[2].10 = r2683.10	[3645]	[3616]
POS_ZSW2.11	1 = Direct output 2 via traversing block	c2053[2].11 = r2683.11	[3645]	[3616]
POS_ZSW2.12	1 = Fixed stop reached	c2053[2].12 = r2683.12	[3645]	[3616], [3617]
POS_ZSW2.13	1 = Fixed stop clamping torque reached	c2053[2].13 =r2683.13	[3645]	[3616], [3617]
POS_ZSW2.14	1 = Travel to fixed stop active	c2053[2].14 = r2683.14	[3645]	[3616], [3617]
POS_ZSW2.15	1 = Traversing command active	c2053[2].15 = r2684.15	[3646]	[3635]

<1> Used in telegram 111, 112, 113.
<2> In telegram 111: Interconnection with r2683.2 (Setpoint fixed).

1	2	3	4	5	6	7	8
PROFIdrive						© Siemens	- 2467 -
POS_ZSW2 positioning status word 2 interconnection						06.04	

Figure 4-36 2467 – POS_ZSW2 positioning status word 2 interconnection

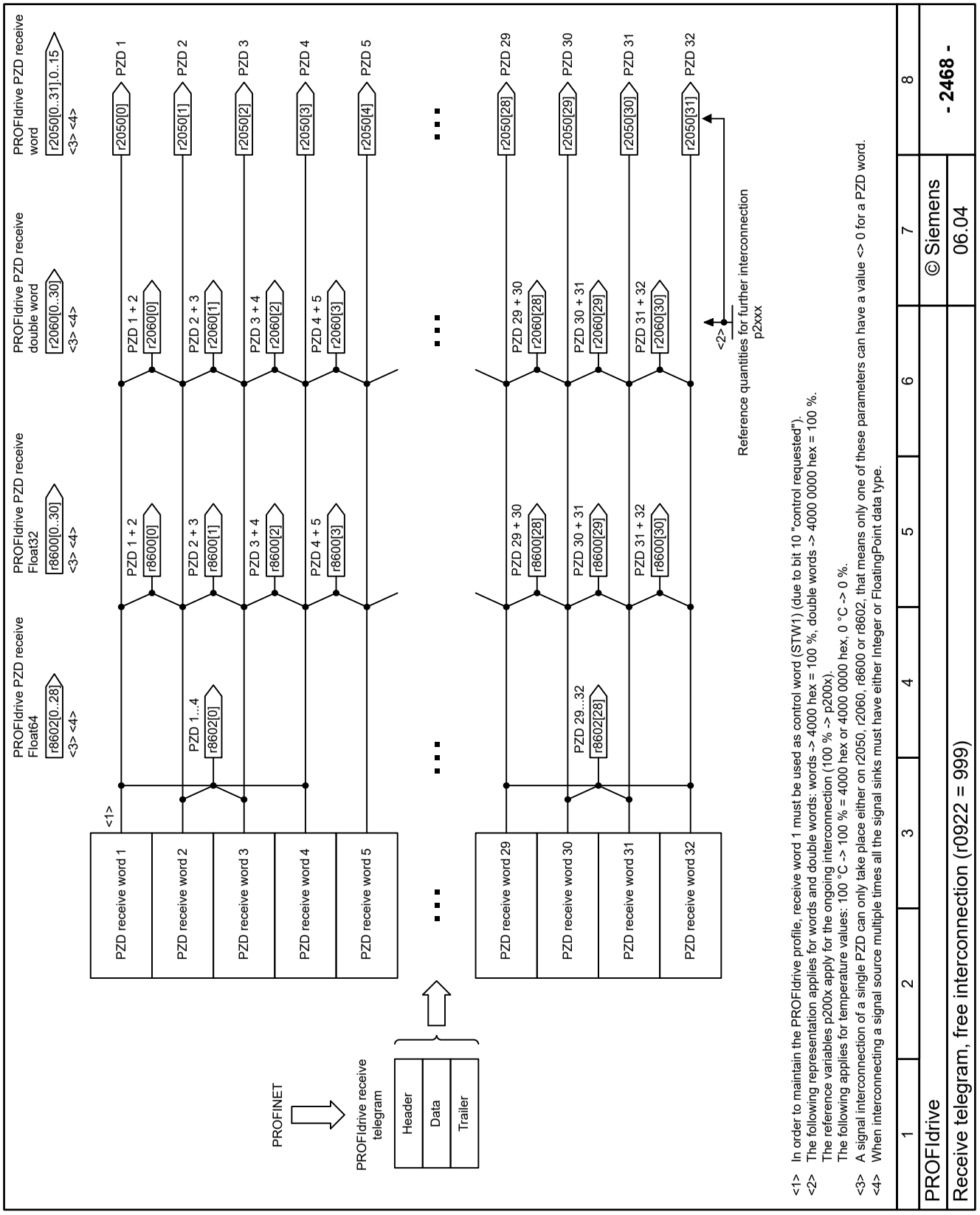


Figure 4-37 2468 - Receive telegram free interconnection

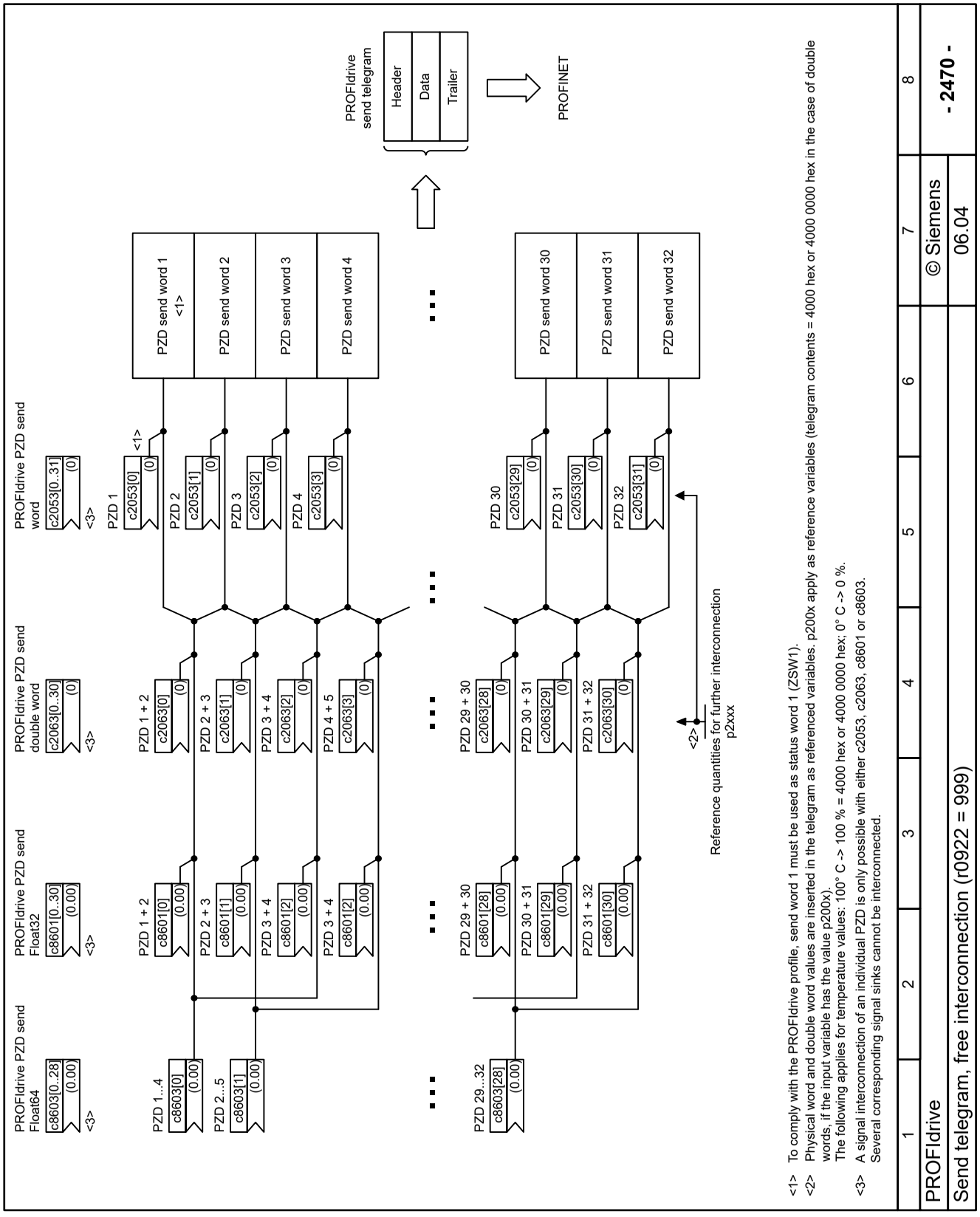


Figure 4-38 2470 - Send telegram free interconnection

Signal targets for STW1 (positioning mode) <1>

Signal	Meaning	Interconnection parameter	[Function diagram] internal control word	[Function diagram] signal target
STW1.0	↑ = ON (pulses can be enabled) 0 = OFF1 (braking with ramp-function generator, then pulse suppression & ready for switching on)	c0840[0] = r2050[0].0	[2501]	Sequencer
STW1.1	1 = No OFF2 (enable is possible) 0 = OFF2 (immediate pulse suppression and switching on inhibited)	c0844[0] = r2050[0].1	[2501]	Sequencer
STW1.2	1 = No OFF3 (enable is possible) 0 = OFF3 (braking with the OFF3 ramp p1135, then pulse suppression and switching on inhibited)	c0848[0] = r2050[0].2	[2501]	Sequencer
STW1.3	1 = Enable operation (pulses can be enabled) 0 = Inhibit operation (suppress pulses)	c0852[0] = r2050[0].3	[2501]	Sequencer
STW1.4	1 = Do not reject traversing task 0 = Reject traversing task	c2641 = r2050[0].4	-	[3616], [3620], [3625]
STW1.5	1 = No intermediate stop 0 = Intermediate stop	c2640 = r2050[0].5	-	[3616], [3620], [3625]
STW1.6	↑ = Activate traversing task	c2631 = r2050[0].6 <3> c2650 = r2050[0].6	-	[3616], [3620], [3625]
STW1.7	↑ = Acknowledge faults	c2103[0] = r2050[0].7	[2546]	[8060]
STW1.8	1 = Jog 1 signal source	c2589 = r2050[0].8	-	[3610], [3625]
STW1.9	1 = Jog 2 signal source	c2590 = r2050[0].9	-	[3610], [3625]
STW1.10	1 = Control via PLC	c0854[0] = r2050[0].10	[2501]	[2501]
STW1.11	1 = Start referencing 1 = Stop referencing	c2595 = r2050[0].11	-	[3612], [3614], [3625]
STW1.12	Reserved	-	-	-
STW1.13	↑ = External block change	c2633 = r2050[0].13	-	[3615]
STW1.14	Reserved	-	-	-
STW1.15	Reserved	-	-	-

<1> Used in telegrams 7, 9, 111, 112, 113.
<2> Bit 10 in STW1 must be set to ensure that the drive accepts the process data.
<3> The interconnection c2649 = 0 is made additionally only in Telegram 7 and 9.

1	2	3	4	5	6	7	8
PROFIdrive						© Siemens	- 2475 -
STW1 control word interconnection (Positioning mode)						06.04	

Figure 4-39 2475 – STW1 control word interconnection (positioning mode)

Signal sources for ZSW1 (positioning mode) <1>

Signal	Meaning	Interconnection parameter	[Function diagram] internal status word	[Function diagram] signal source
ZSW1.0	1 = Ready for switching on	c2053[0].0 = r0899.0	[2503]	[2610]
ZSW1.1	1 = Ready	c2053[0].1 = r0899.1	[2503]	[2610]
ZSW1.2	1 = Operation enabled	c2053[0].2 = r0899.2	[2503]	[2610]
ZSW1.3	1 = Fault present	c2053[0].3 = r2139.3	[2548]	[8060]
ZSW1.4	1 = No coasting active OFF2 inactive	c2053[0].4 = r0899.4	[2503]	[2610]
ZSW1.5	1 = No Quick Stop active OFF3 inactive	c2053[0].5 = r0899.5	[2503]	[2610]
ZSW1.6	1 = Switching on inhibited active	c2053[0].6 = r0899.6	[2503]	[2610]
ZSW1.7	1 = Alarm present	c2053[0].7 = r2139.7	[2548]	[8065]
ZSW1.8	1 = Following error in tolerance	c2053[0].8 = r2684.8	[3646]	[4025]
ZSW1.9	1 = Control requested <2>	c2053[0].9 = r0899.9	[2503]	[2610]
ZSW1.10	1 = Target position reached	c2053[0].10 = r2684.10	[3646]	[4020], [3625]
ZSW1.11	1 = Home position set	c2053[0].11 = r2684.11	[3646]	[3612], [3614]
ZSW1.12	= Acknowledgment traversing block activated	c2053[0].12 = r2684.12	[3646]	[3616], [3620]
ZSW1.13	1 = Setpoint fixed	c2053[0].13 = r2683.2	[3645]	[3635]
ZSW1.14	1 = Axis accelerating <3>	c2053[0].14 = r2684.4	[3646]	[3635]
ZSW1.15	1 = Axis decelerating <3>	c2053[0].15 = r2684.5	[3646]	[3635]

<1> Used in telegrams 7, 9, 111, 112, 113.
<2> The drive is ready to accept data.
<3> Only for telegram 111, 112, 113.

1	2	3	4	5	6	7	8
PROFIdrive						© Siemens	- 2479 -
ZSW1 status word 1 interconnection (positioning mode)						06.04	

Figure 4-40 2479 – ZSW1 status word interconnection (positioning mode)

4.5 Internal control/status words

Overview

The following function diagrams describe the internal control and status words.

Function diagrams

2501 – Control word sequence control (Page 930)
2503 – Status word sequence control (Page 931)
2505 – Control word setpoint channel (Page 932)
2511 – Status word 2 (Page 933)
2512 – Control word 1 (Page 934)
2513 – Control word 2 (Page 935)
2520 – Control word speed controller (Page 936)
2522 – Status word speed controller (Page 937)
2526 – Status word closed-loop control (Page 938)
2530 – Status word closed-loop current control (Page 939)
2534 – Status word monitoring functions 1 (Page 940)
2536 – Status word monitoring functions 2 (Page 941)
2537 – Status word monitoring functions 3 (Page 942)
2548 – Status word faults/alarms 1 (Page 943)
2549 – Status word faults/alarms 2 (Page 944)
2610 – Sequence control - sequencer (Page 945)
2634 – Sequence control - missing enable signals, line contactor control (Page 946)

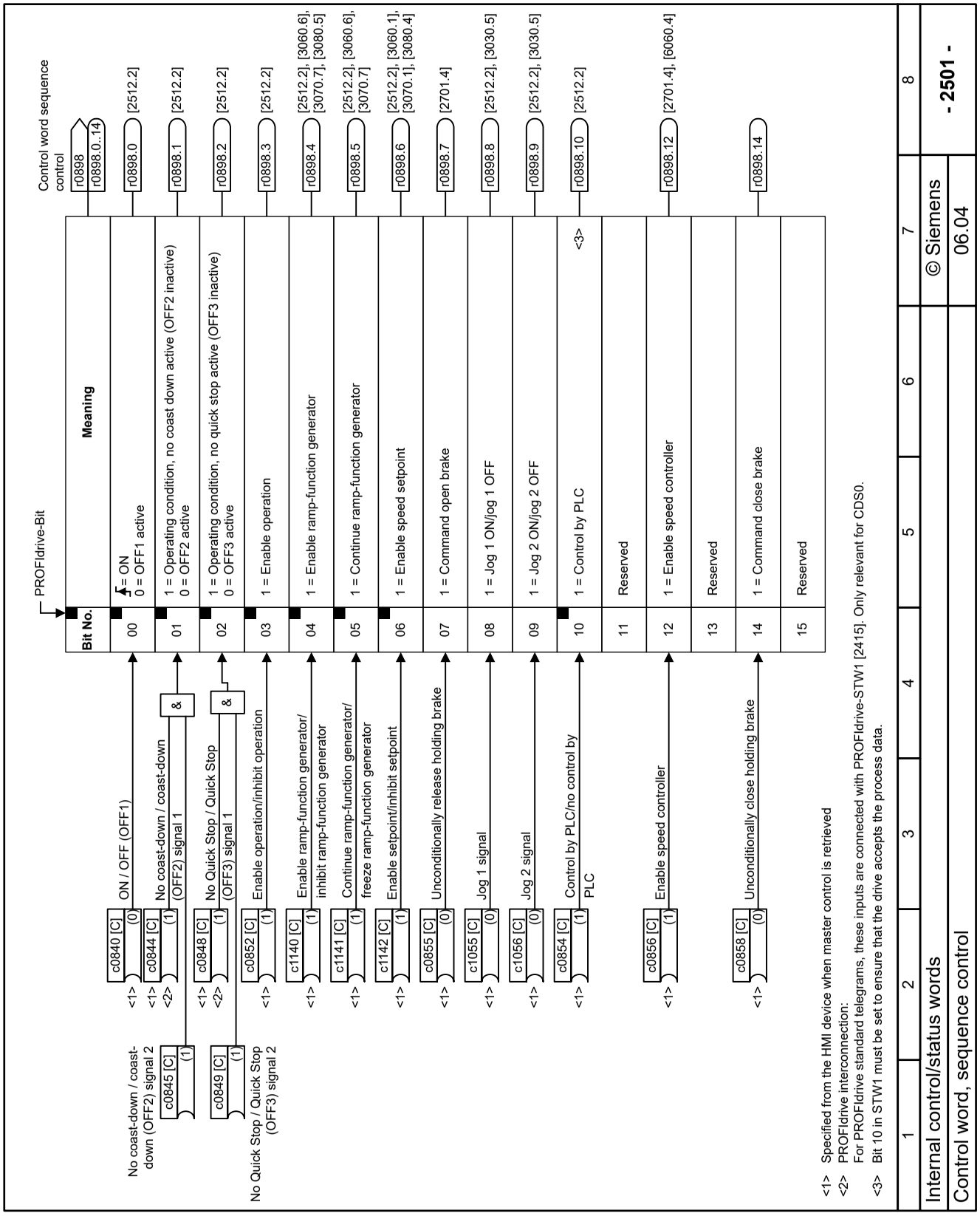


Figure 4-41 2501 - Control word sequence control

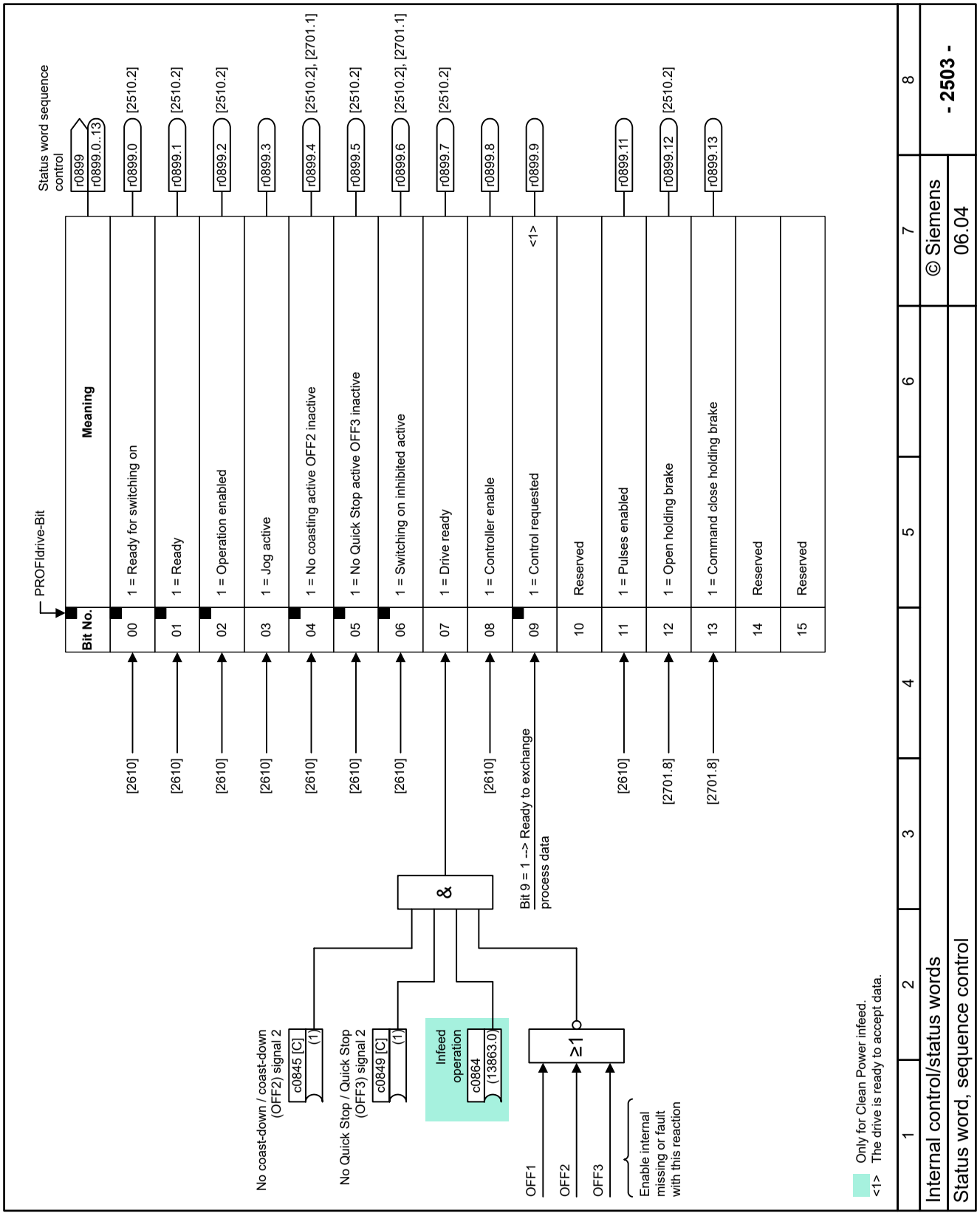


Figure 4-42 2503 - Status word sequence control

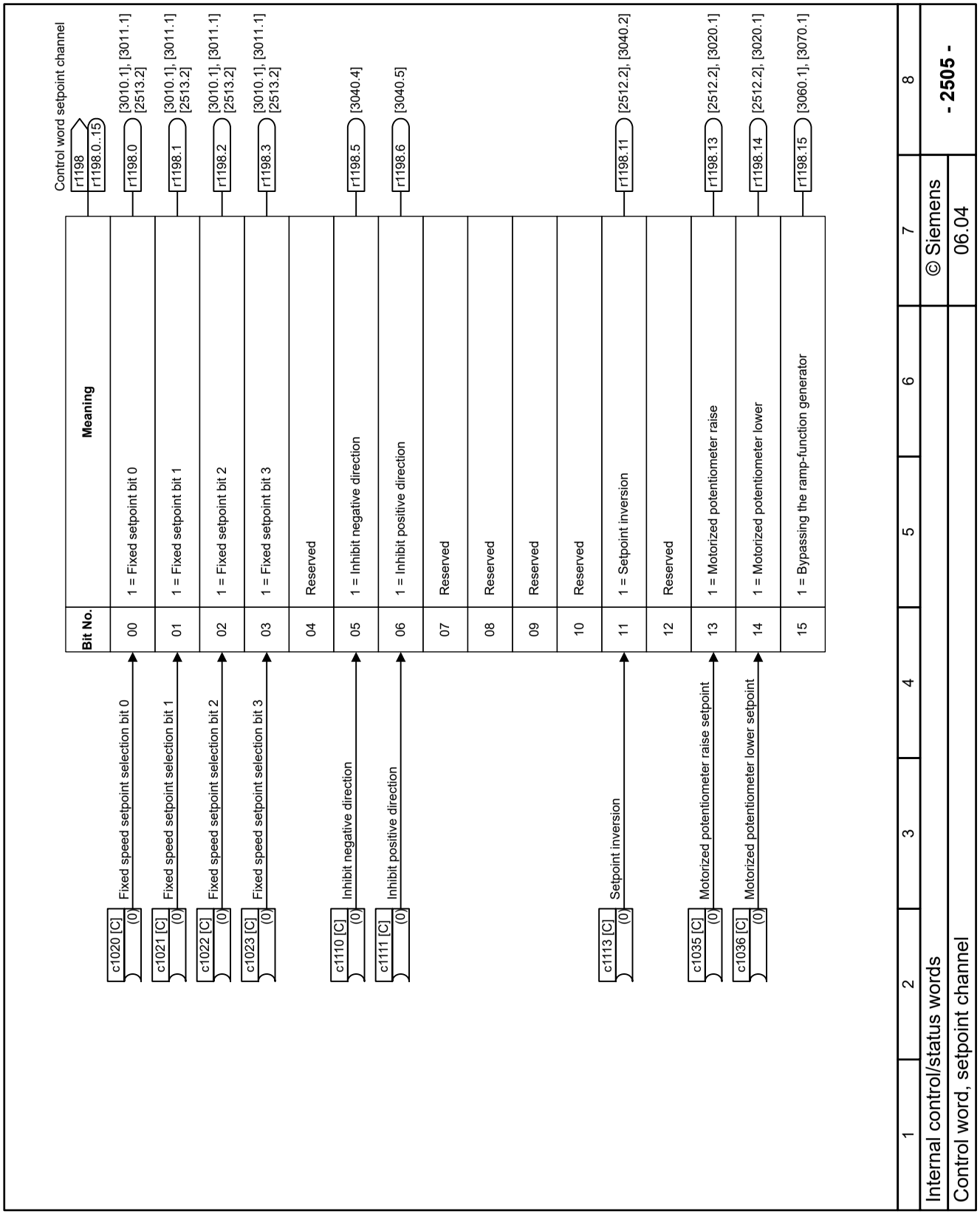


Figure 4-43 2505 - Control word setpoint channel

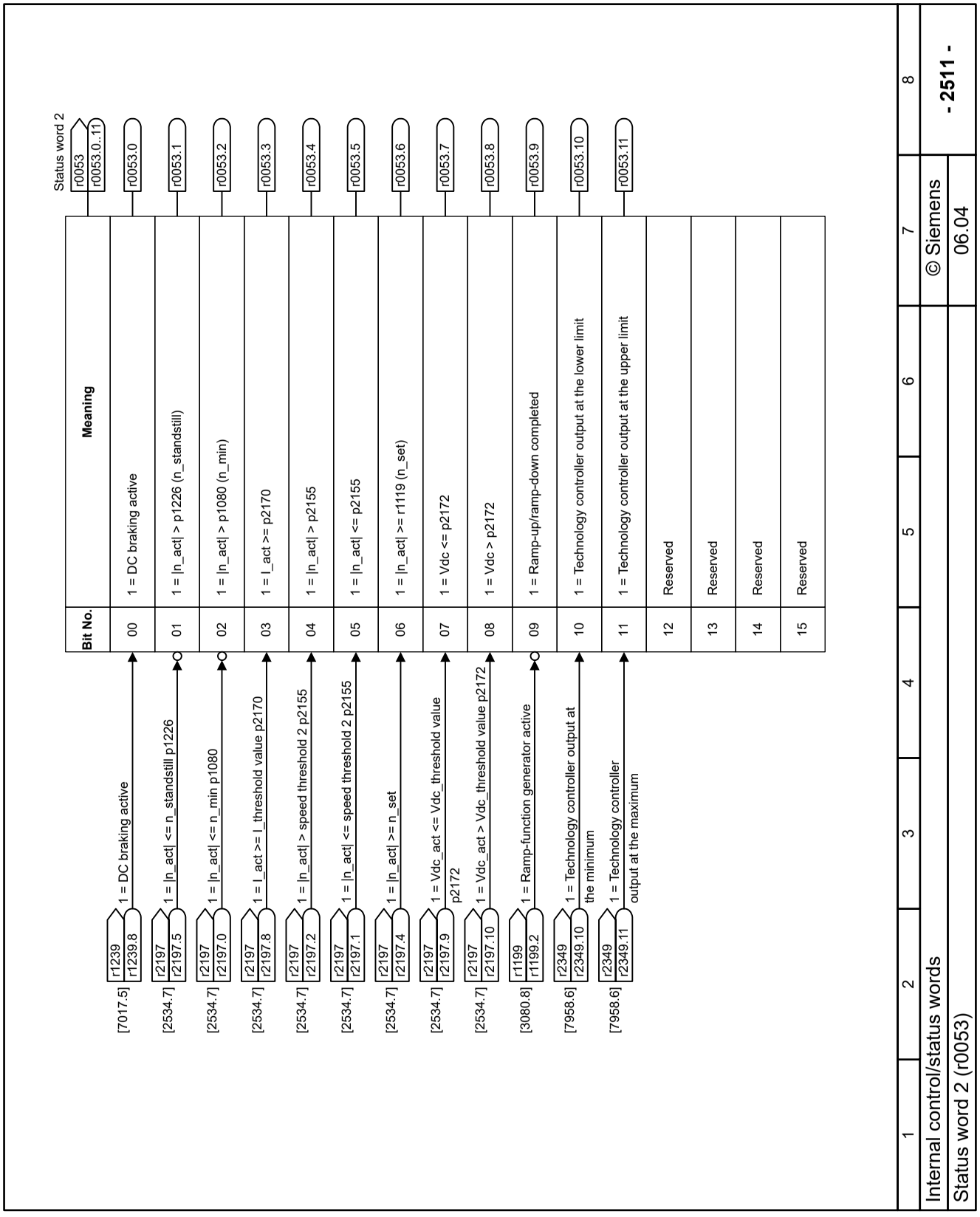
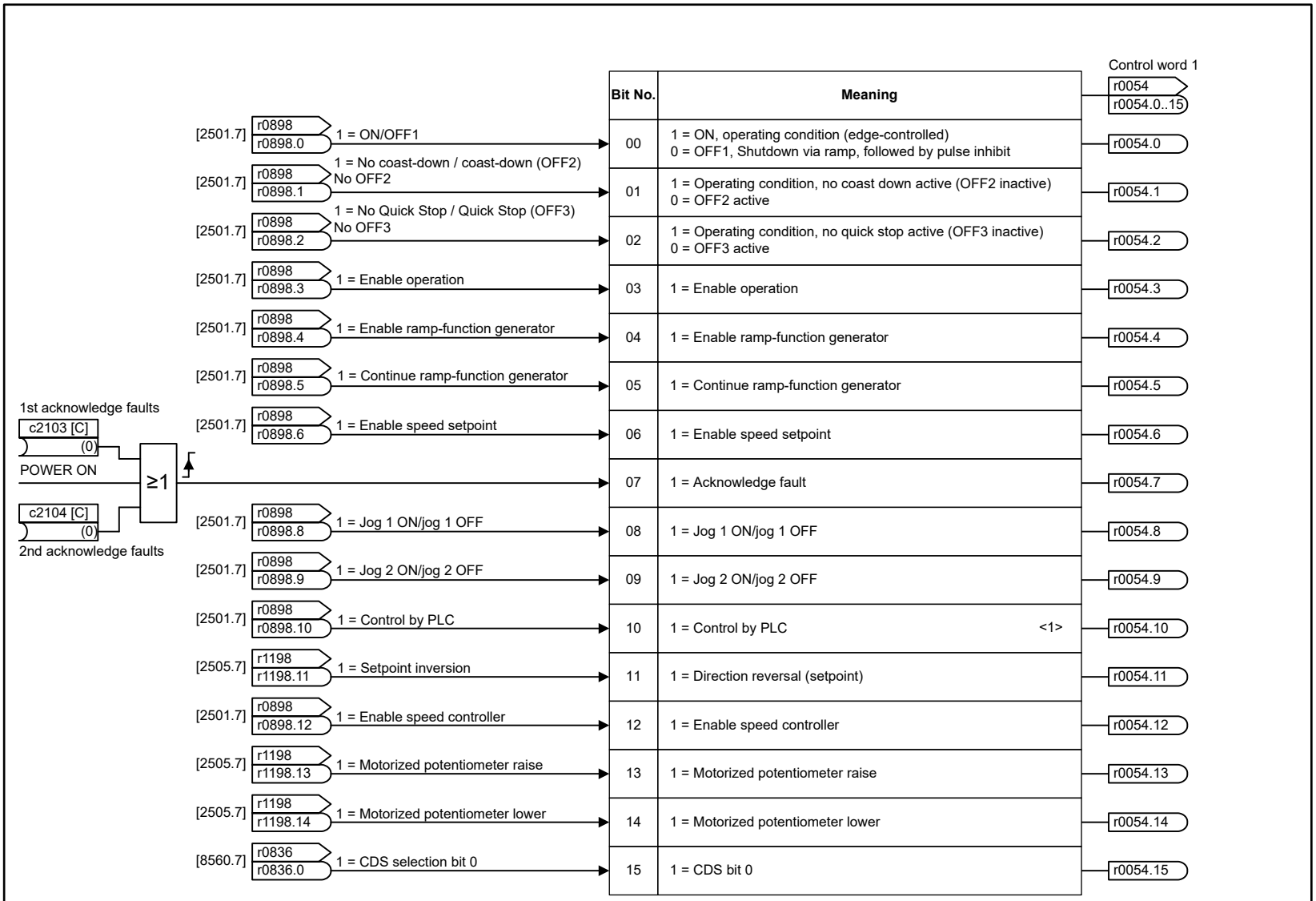


Figure 4-44 2511 – Status word 2



<1> Bit 10 in STW1 must be set to ensure that the drive accepts the process data.

1	2	3	4	5	6	7	8
Internal control/status words						© Siemens	- 2512 -
Control word 1 (r0054)						06.04	

Figure 4-45 2512 – Control word 1

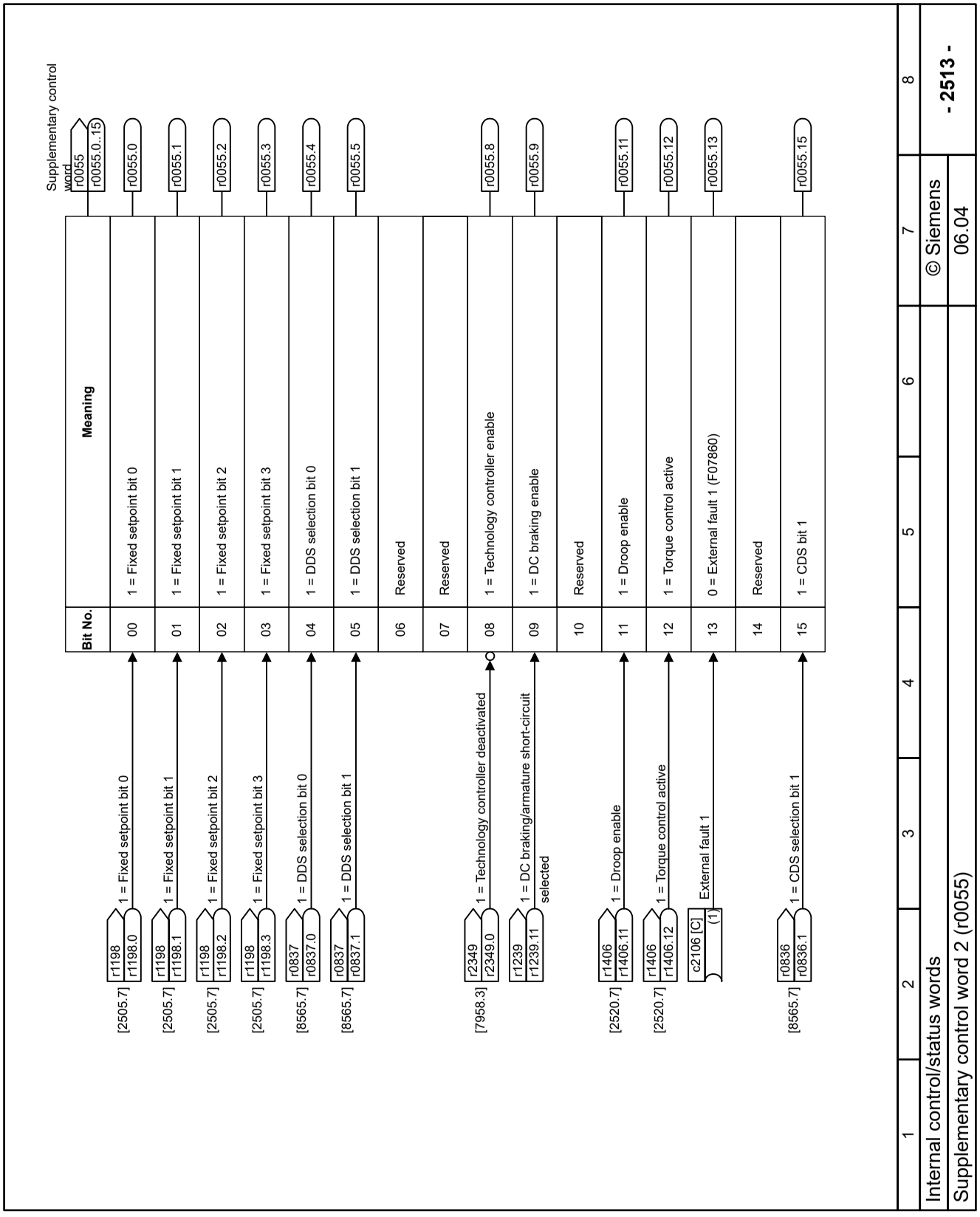


Figure 4-46 2513 – Control word 2

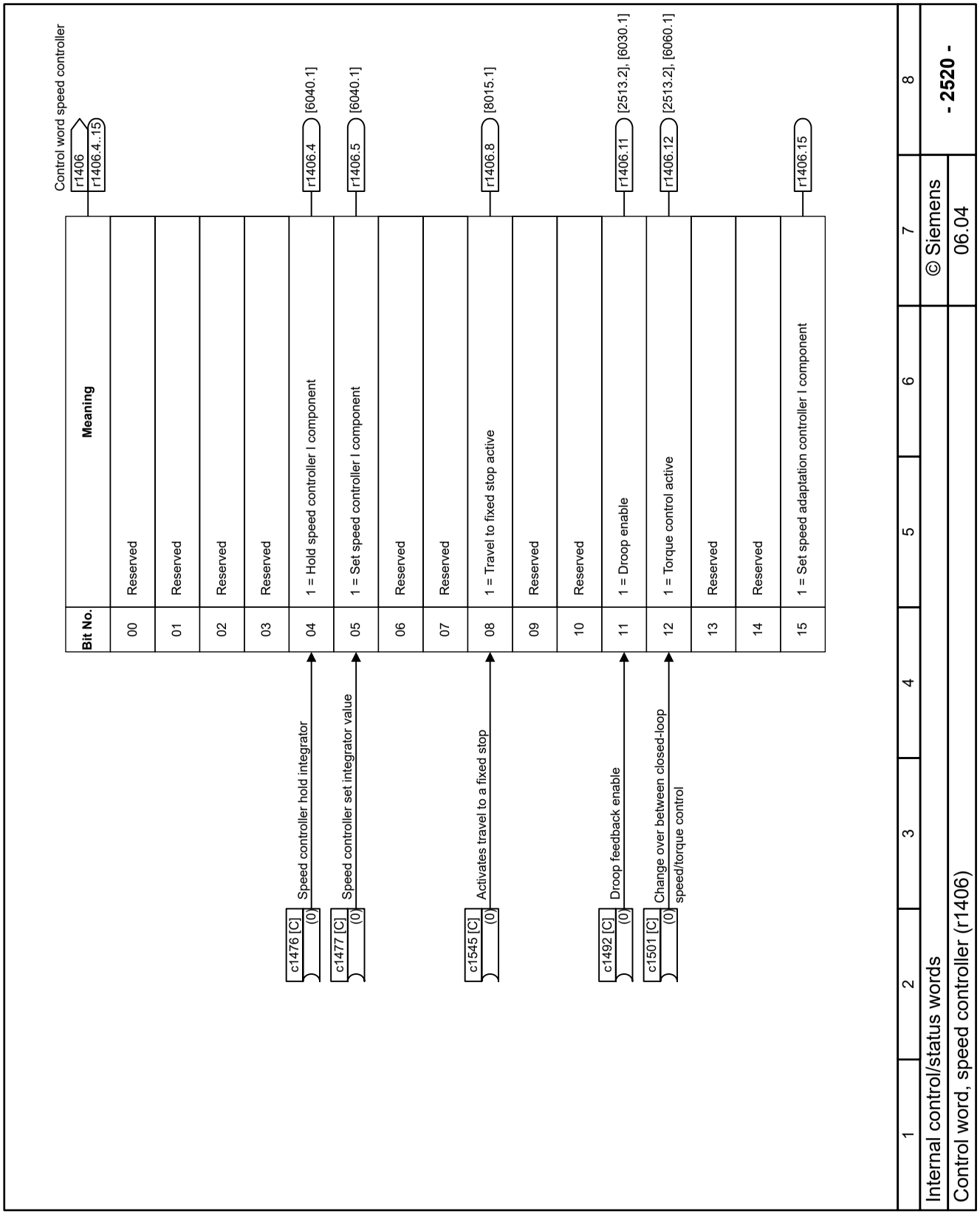


Figure 4-47 2520 - Control word speed controller

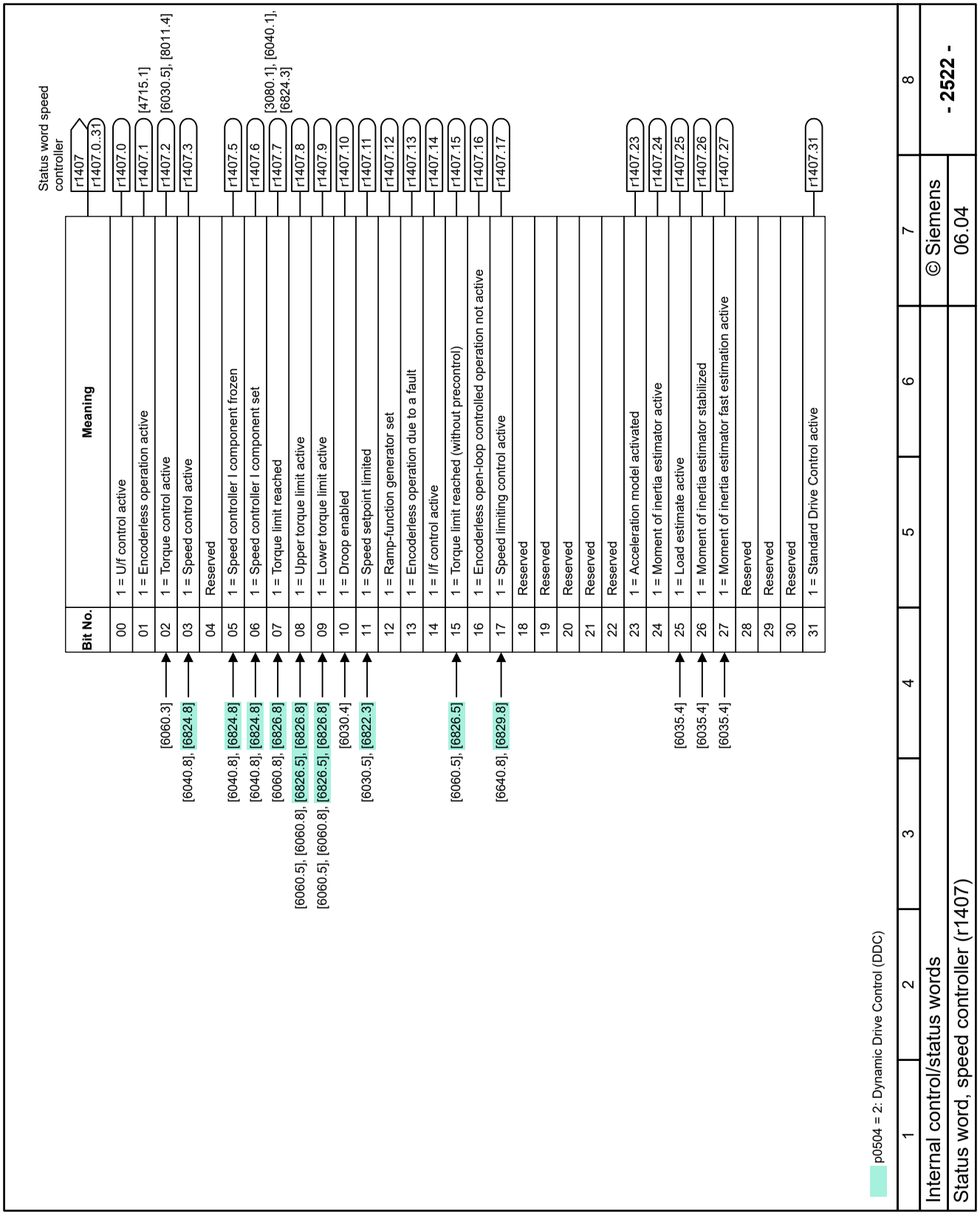


Figure 4-48 2522 - Status word speed controller

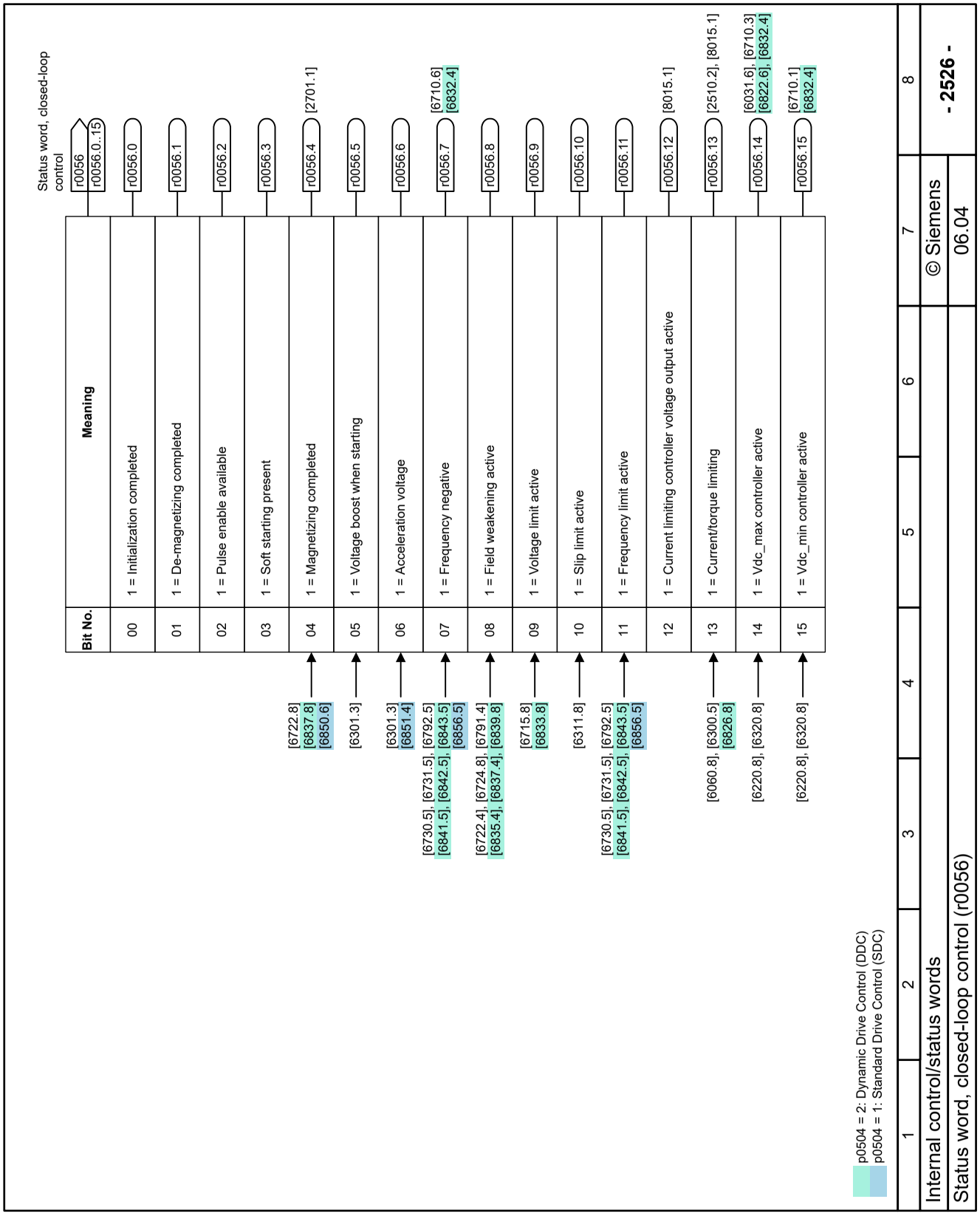


Figure 4-49 2526 - Status word closed-loop control

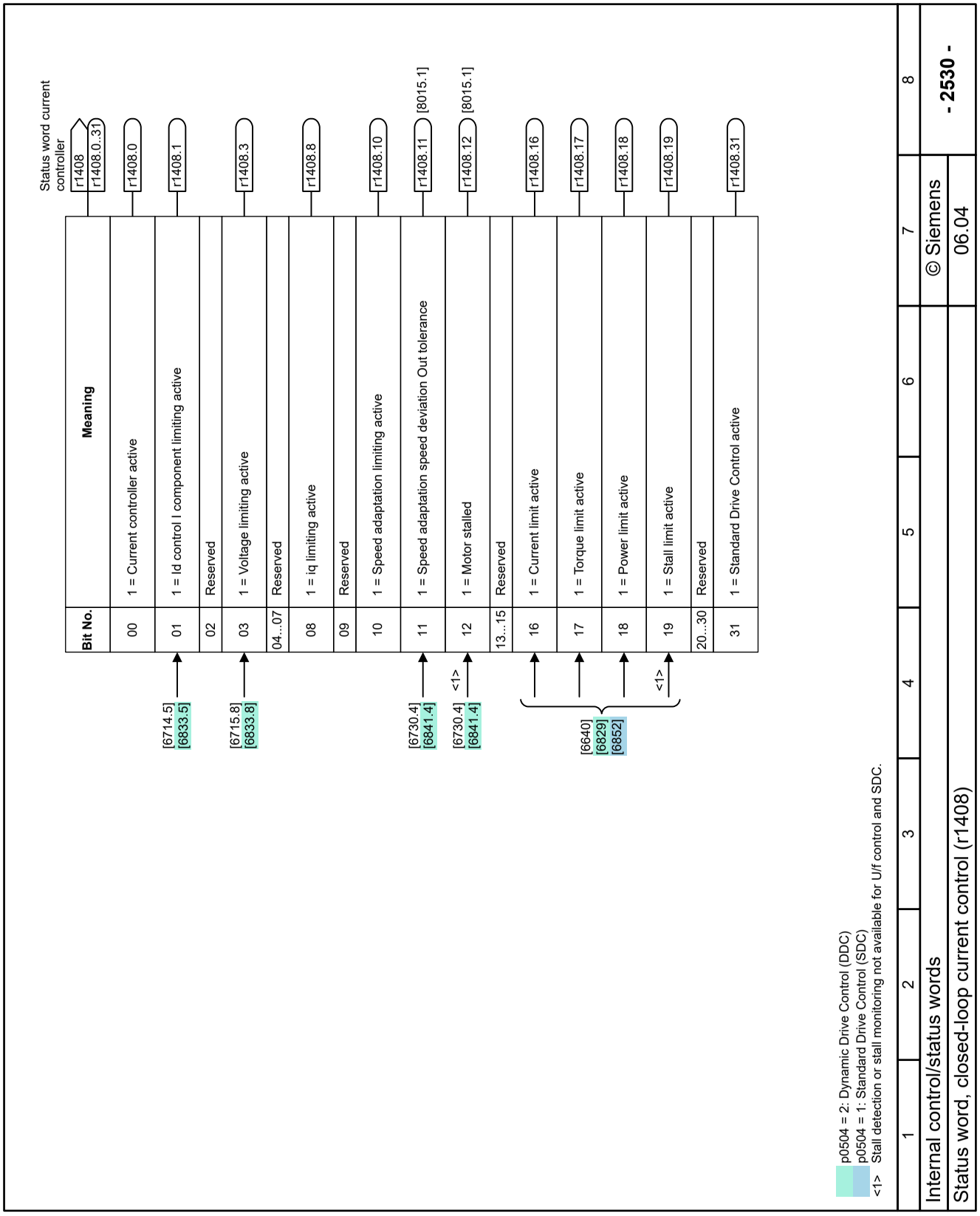


Figure 4-50 2530 - Status word closed-loop current control

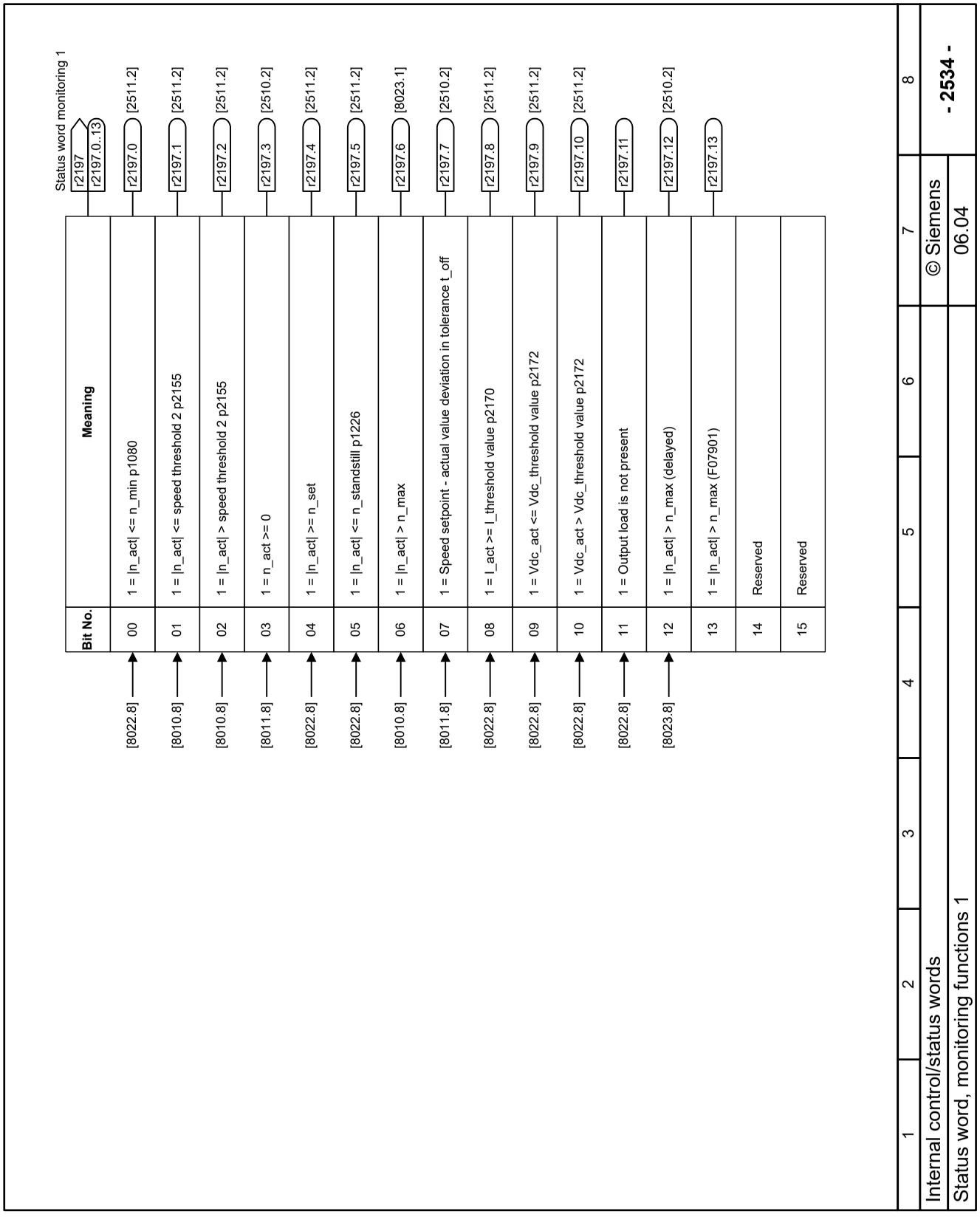


Figure 4-51 2534 - Status word monitoring functions 1

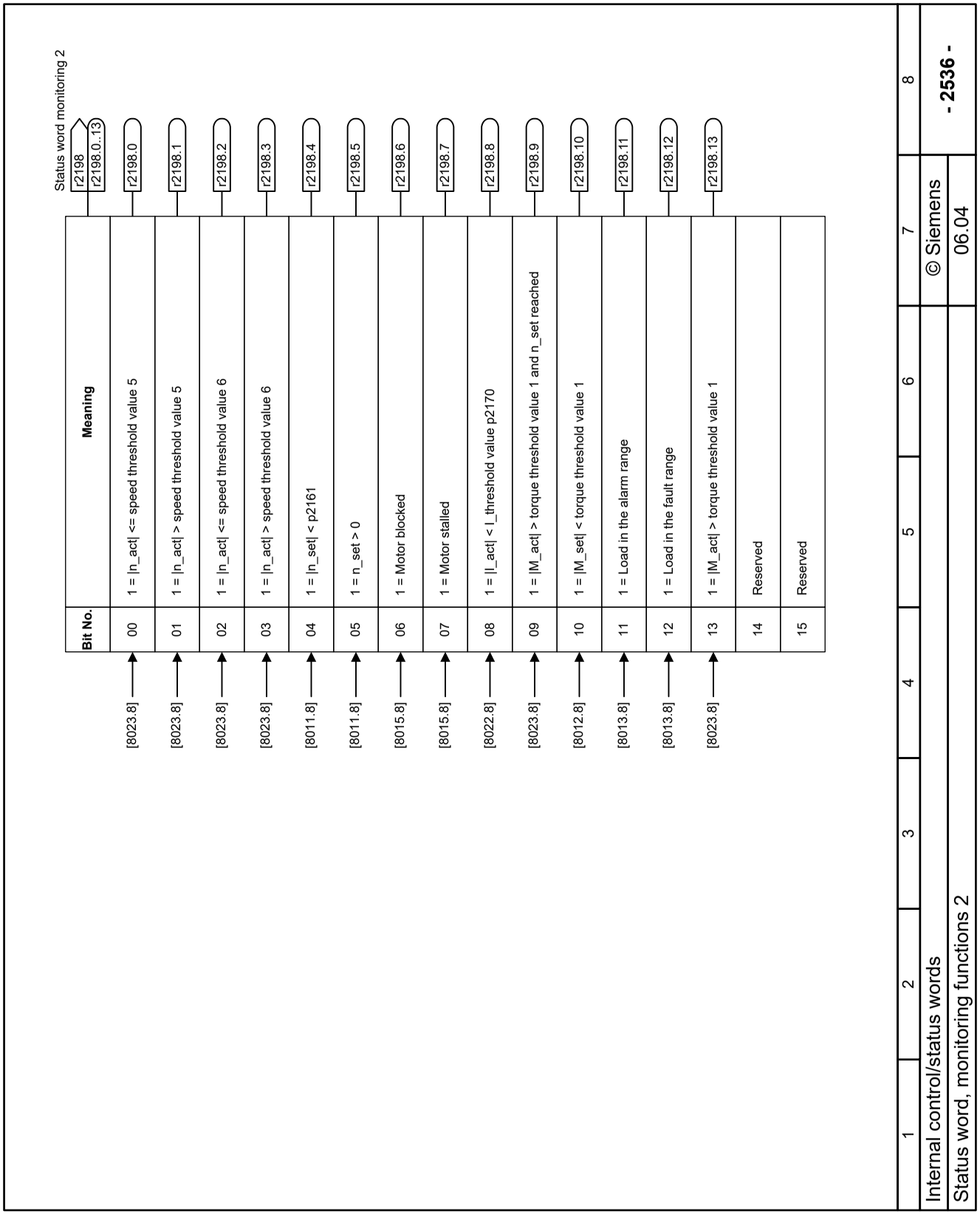


Figure 4-52 2536 - Status word monitoring functions 2

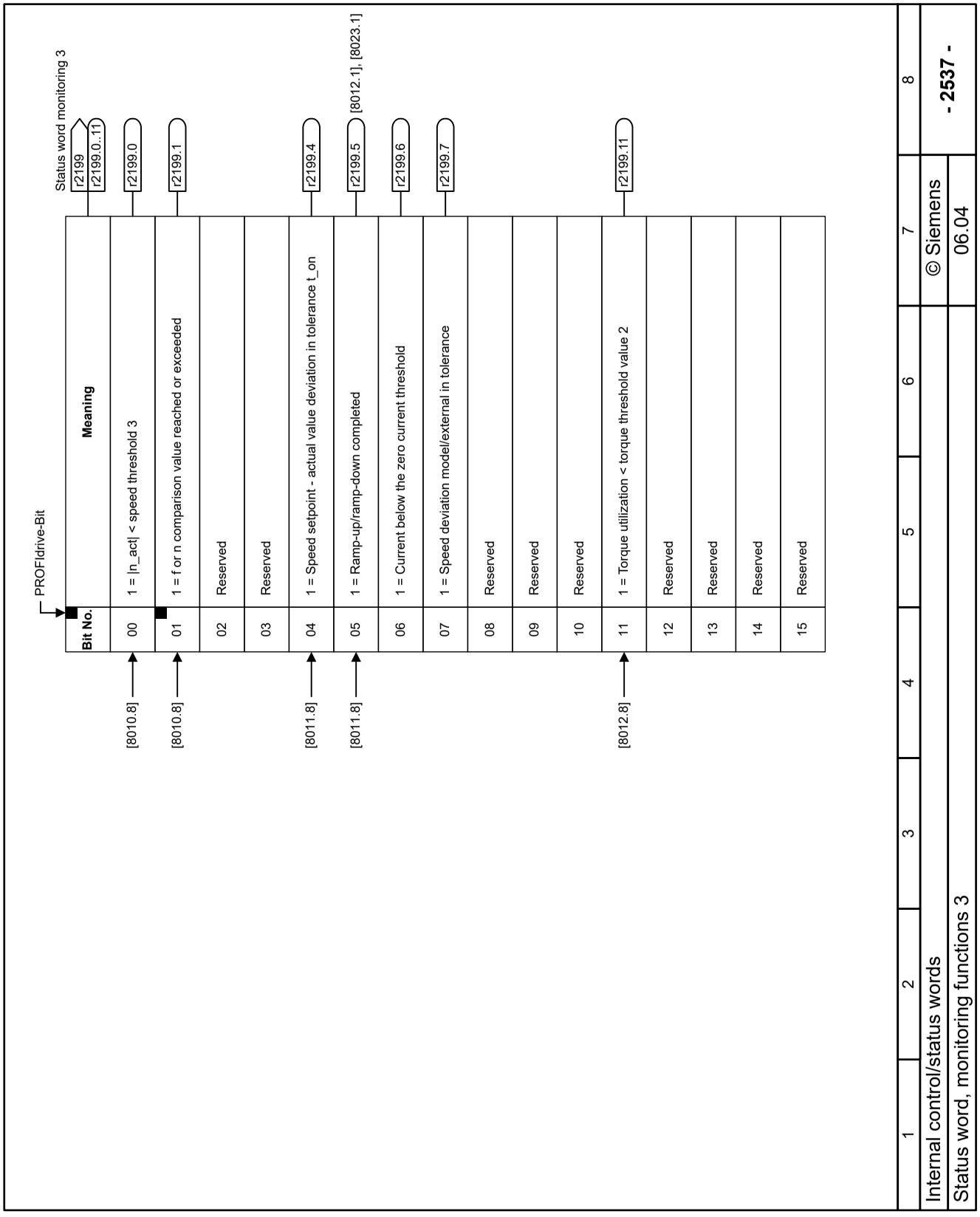


Figure 4-53 2537 - Status word monitoring functions 3

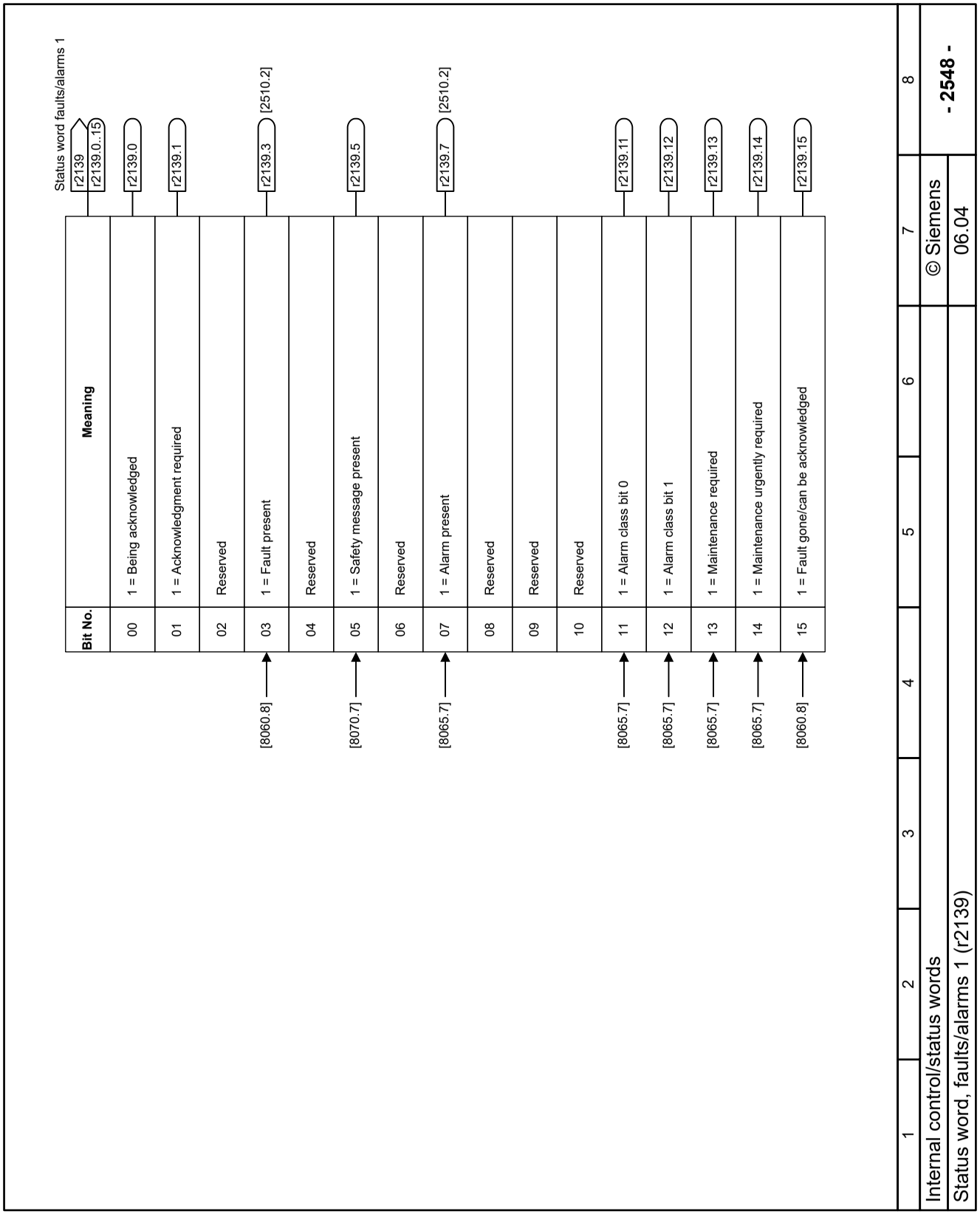


Figure 4-54 2548 - Status word faults/alarms 1

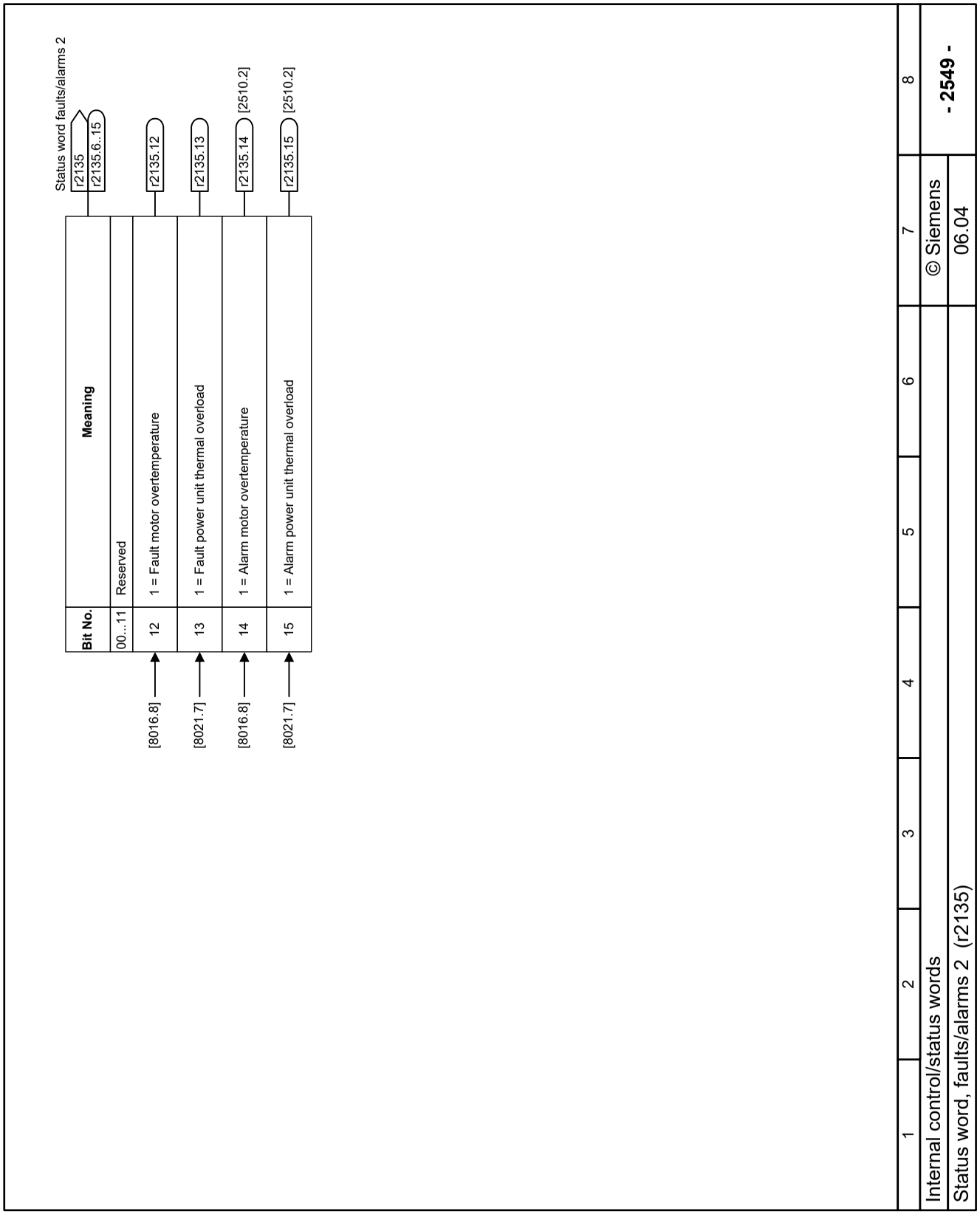


Figure 4-55 2549 – Status word faults/alarms 2

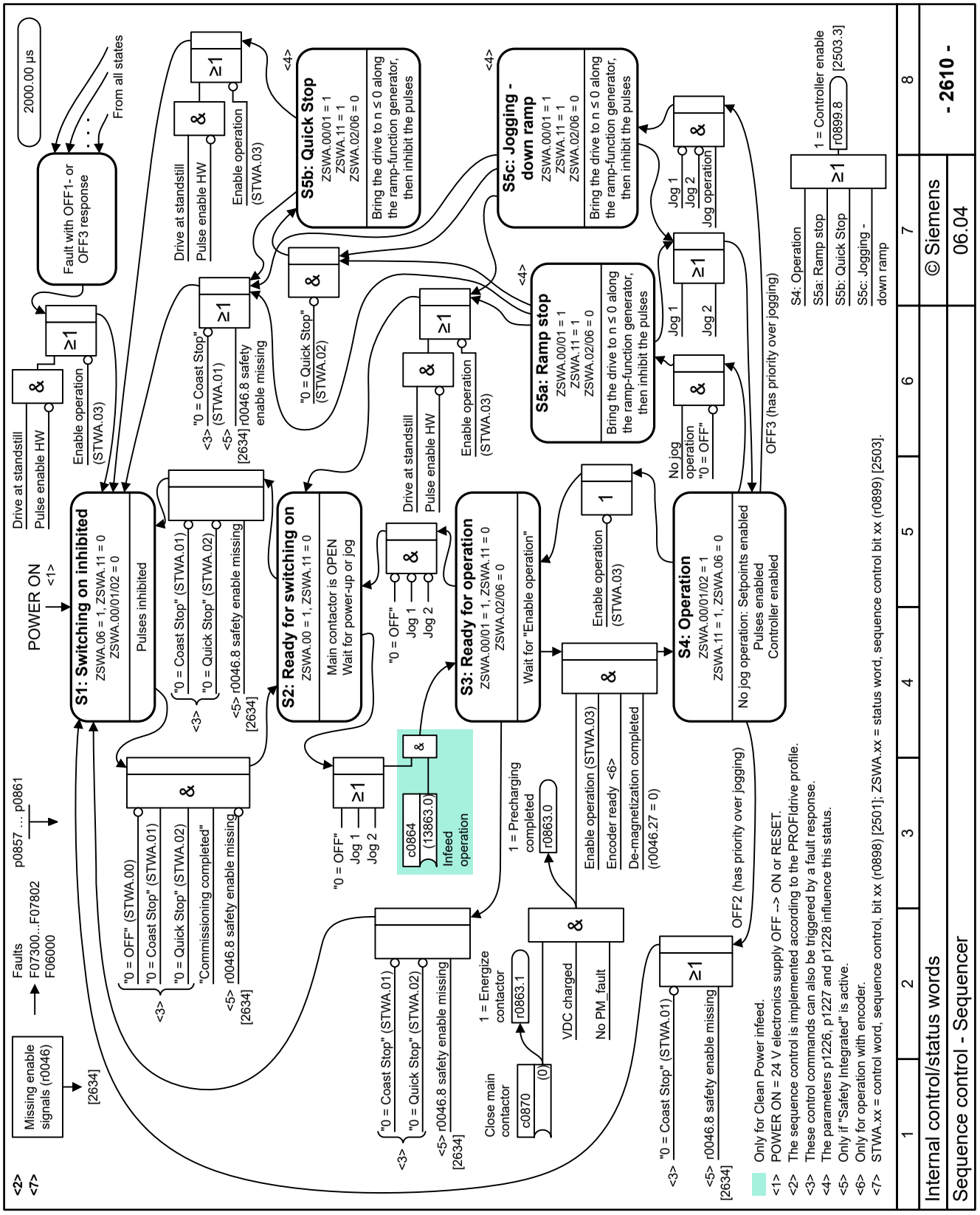


Figure 4-56 2610 - Sequence control - sequencer

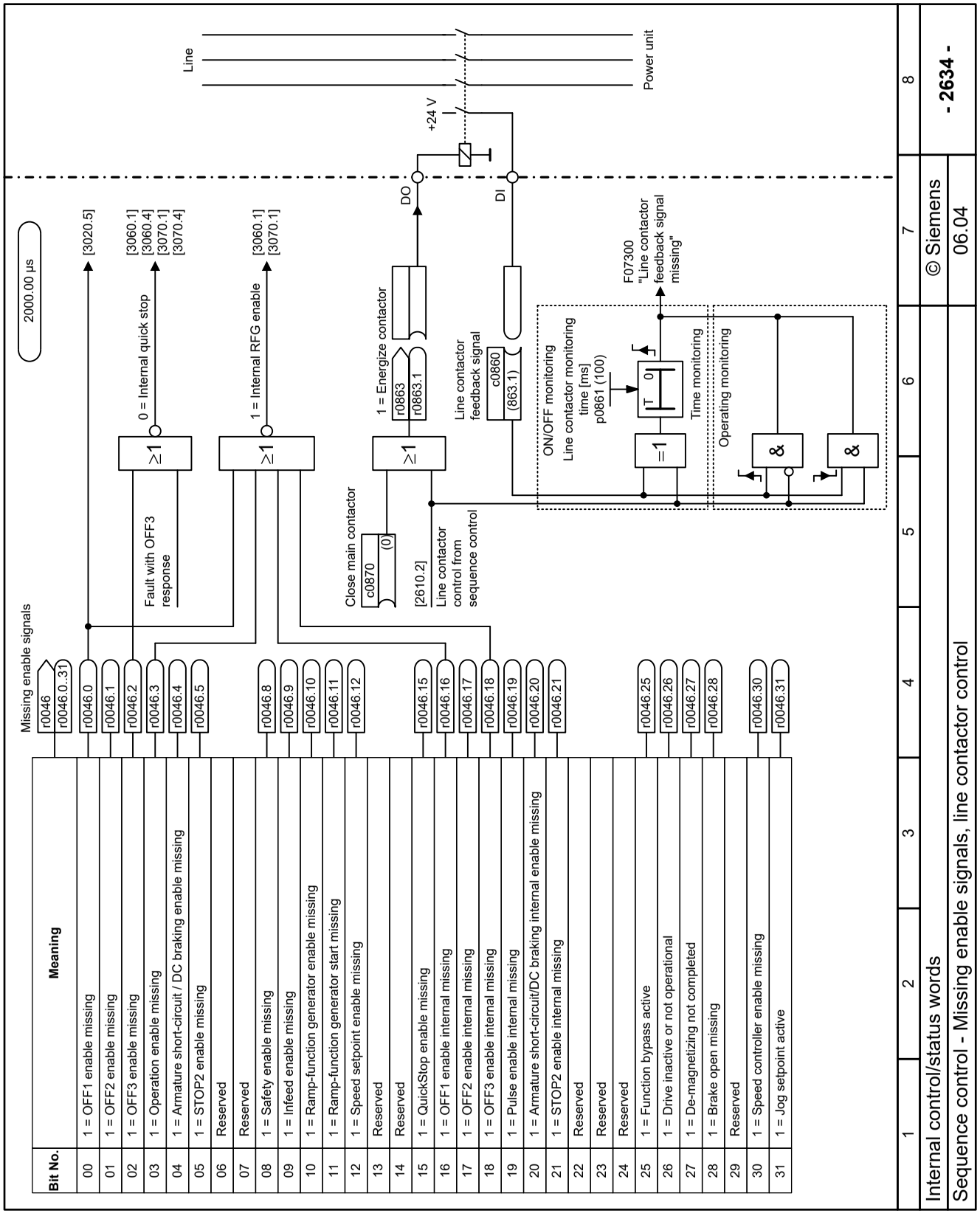


Figure 4-57 2634 – Sequence control - missing enable signals, line contactor control

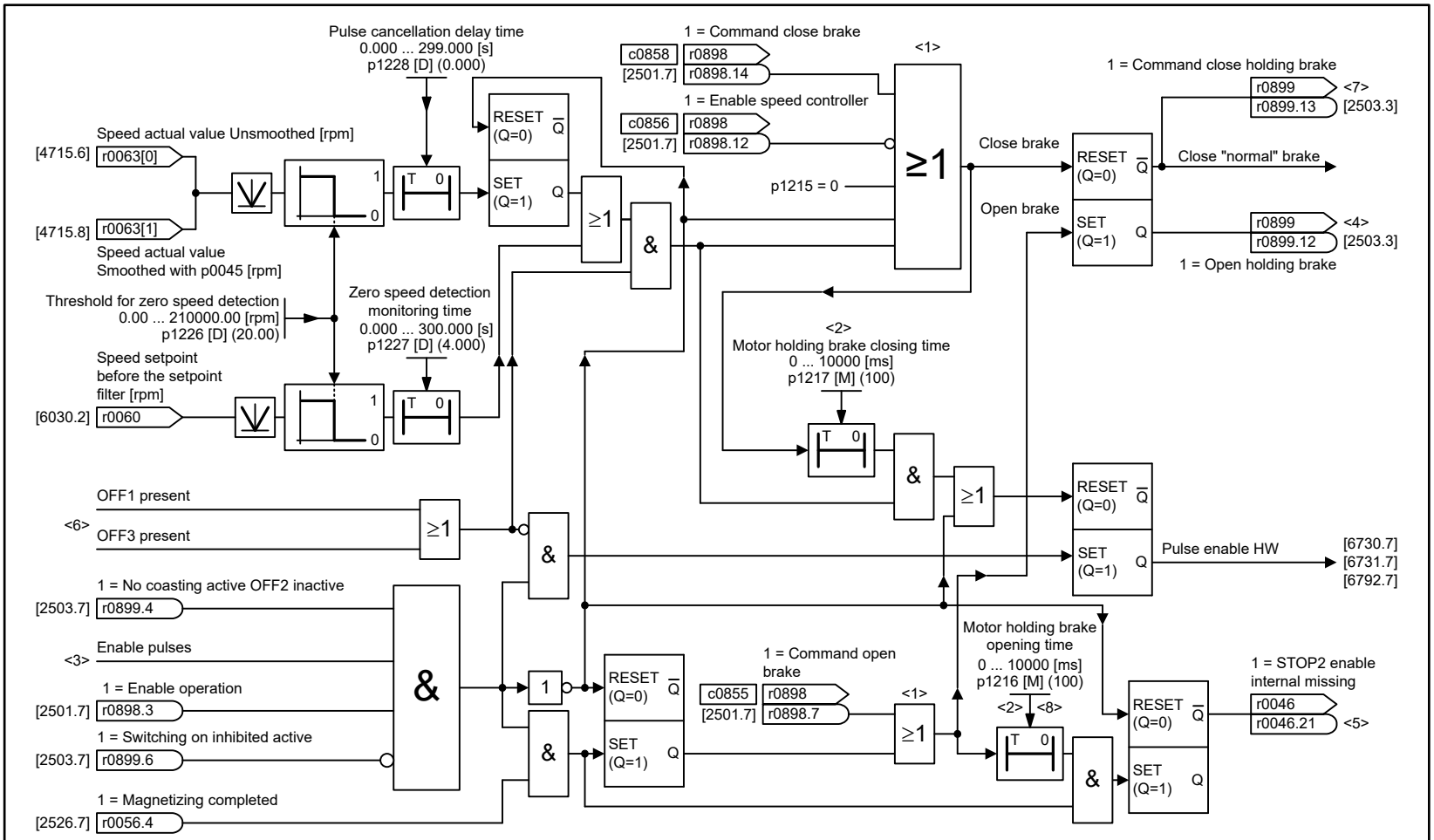
4.6 Brake control

Overview

The following function diagrams describe the brake control function.

Function diagrams

2701 – Basic brake control (Page 948)



<1> Priority assignment (high -> low): p1215, p0858, p0855, p0856, sequence control.
<2> If p1215 = 0 -> t = 0 ms.
<3> Only if "Safety Integrated" is active.
<4> If an external motor holding brake is used, p1215 should be set to 3 and r0899.12 should be interconnected as control signal.
<5> r0046.21 = 0, as long as r0046.0 = 1 (OFF1 enable missing or switching on inhibited).
r0046.21 = 1, if c0858 = 1 or c0856 = 0.
The signal generation is shown simplified.
<6> The internal signal includes signals that lead to OFF1 or OFF3 (e. g. signal interconnection or fault response).
<7> If the brake is permanently applied or released (c0855, c0858 or p1215) the drive does not wait while the brake is released or applied.
<8> Start frequency with U/f control: p1351 [6311.3]; Start torque with vector control: c1475 [6040.1].

1	2	3	4	5	6	7	8
Brake Control						© Siemens	- 2701 -
Basic brake control						06.04	

Figure 4-58 2701 - Basic brake control

4.7 Safety Integrated

Overview

The following function diagrams describe the Safety Integrated function.

Function diagrams

2850 – Failsafe digital inputs (F-DI 0 ... F-DI 2) (Page 950)

2852 – Failsafe digital output (F-DO 0) (Page 951)

2853 – Control signals safe motion monitoring functions (STO, SS1, SS1E, SS2, SS2E) (Page 952)

2854 – Control signals safe motion monitoring functions (SDI, SLS) (Page 953)

2855 – Control signals safe motion monitoring functions (SSM, SOS, SLA) (Page 954)

2856 – Safe state selection (Page 955)

2915 – Standard telegrams (Page 956)

2917 – Manufacturer-specific telegrams (Page 957)

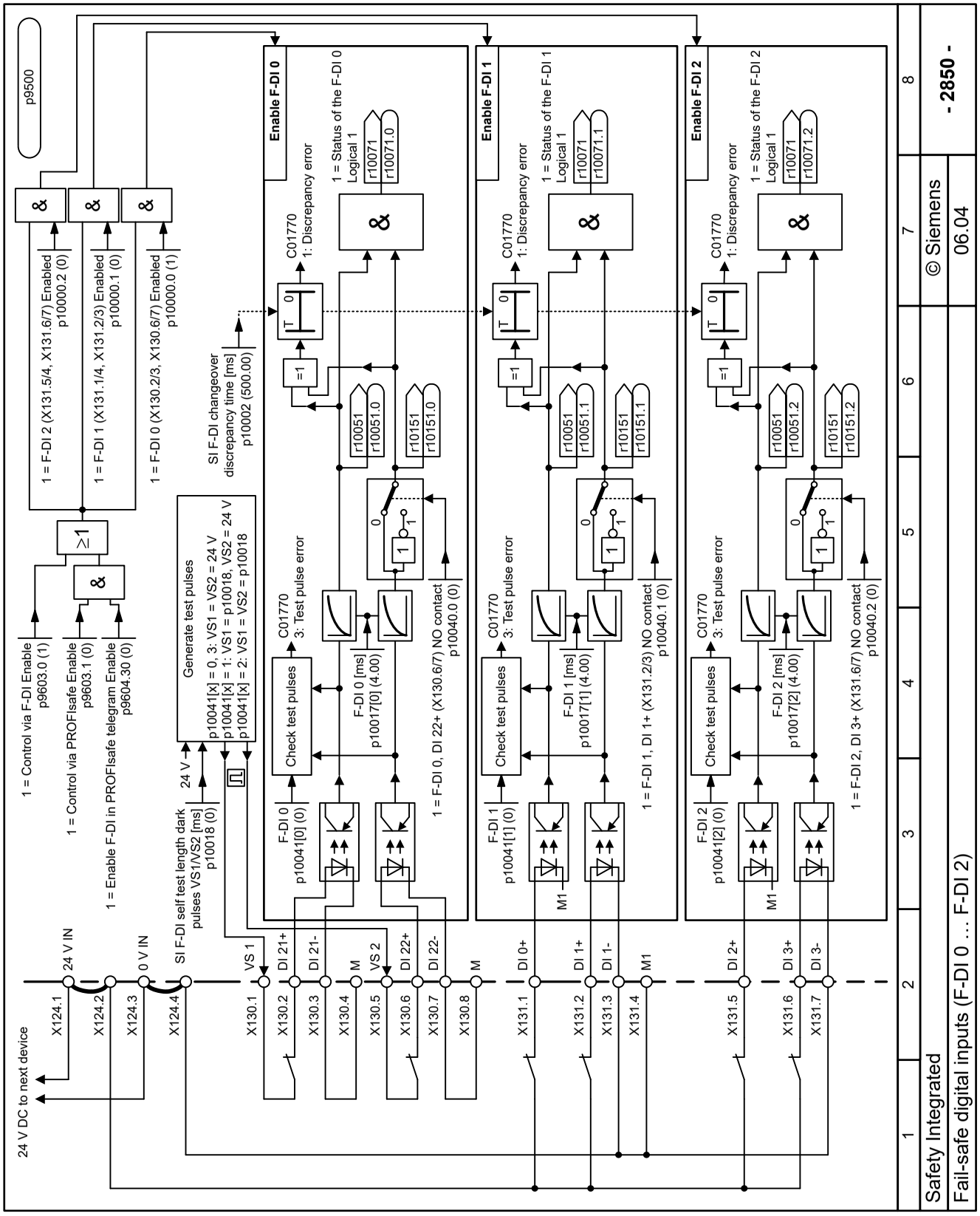


Figure 4-59 2850 - Fail-safe digital inputs (F-DI 0 ... F-DI 2)

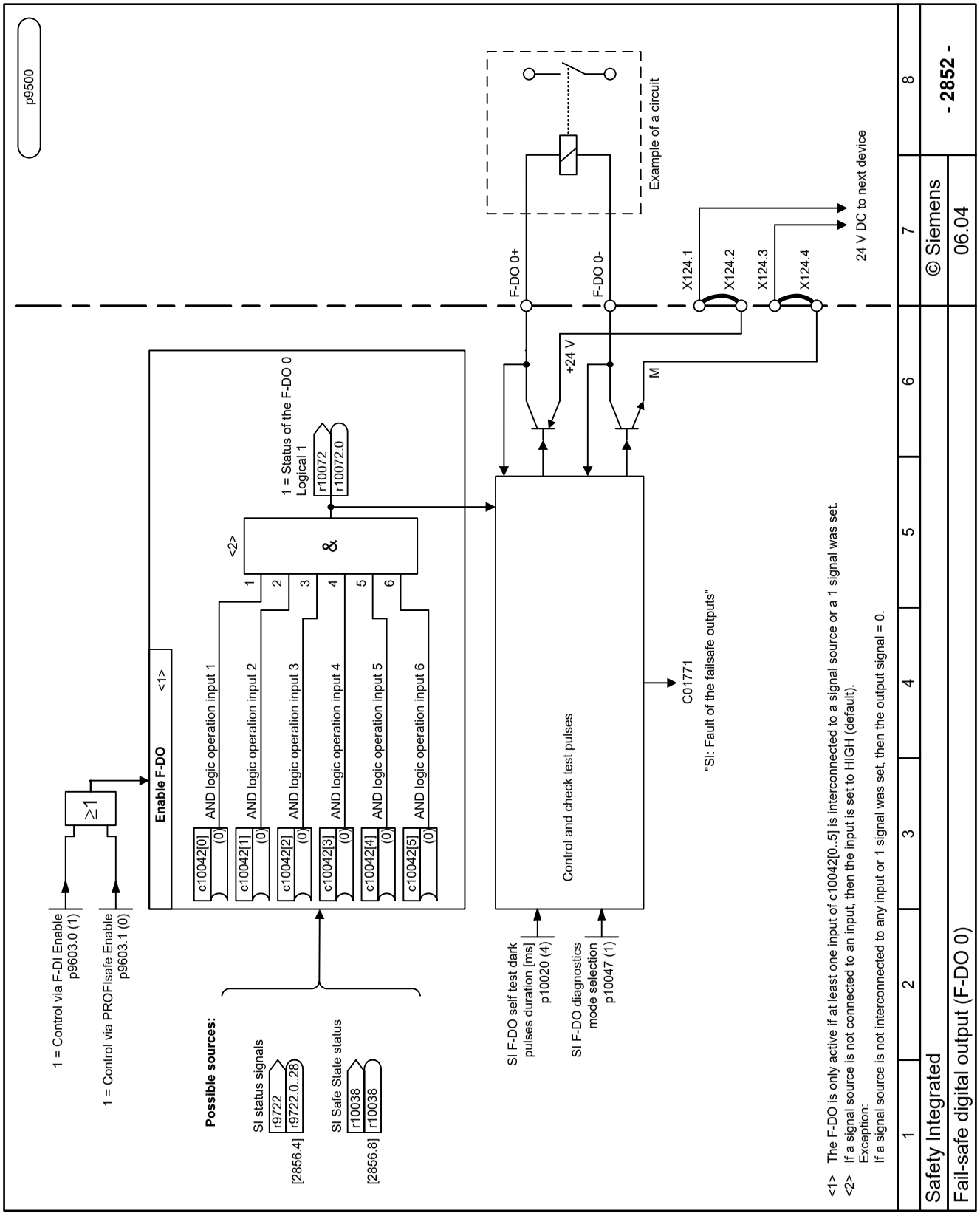


Figure 4-60 2852 – Failsafe digital output (F-DO 0)

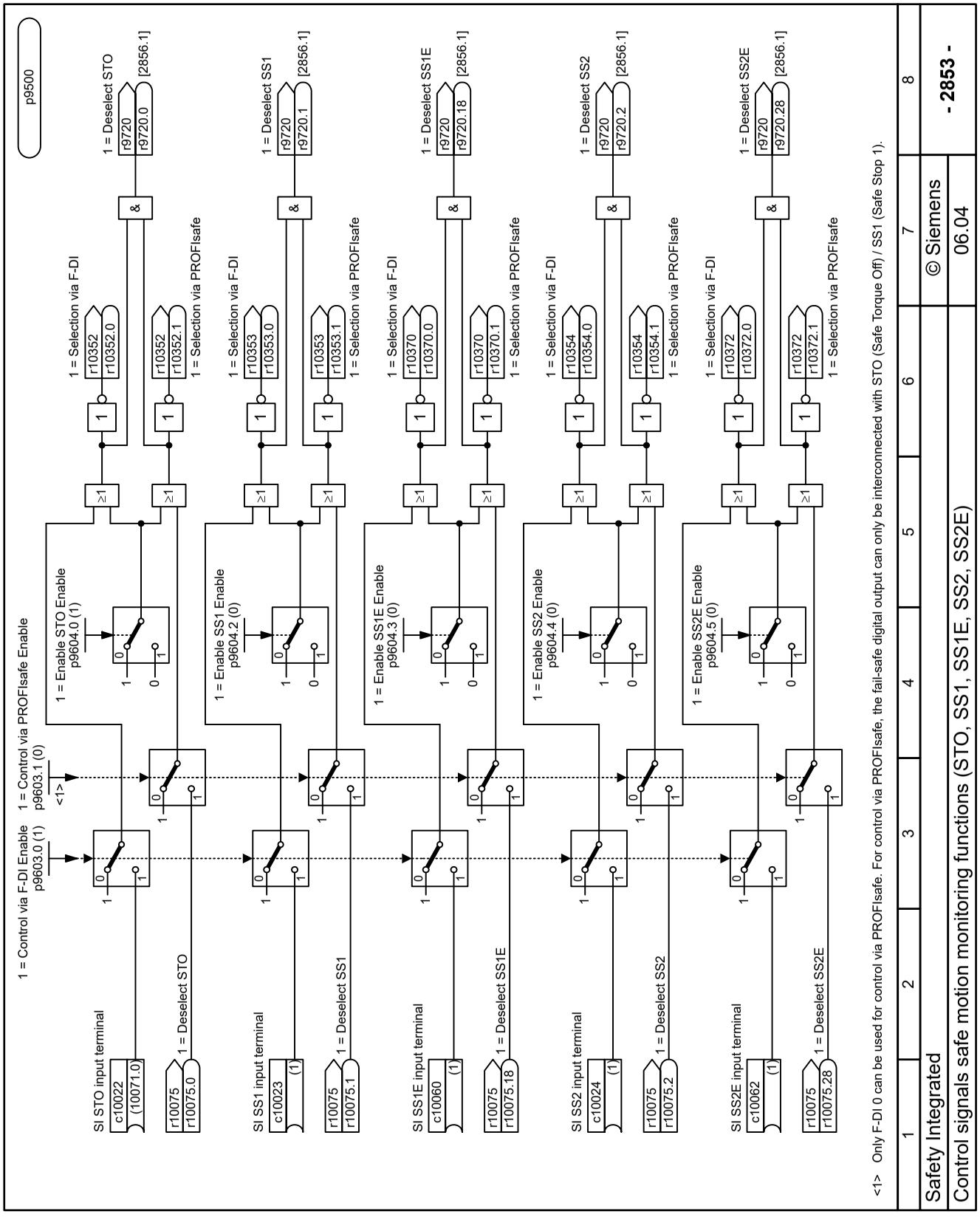


Figure 4-61 2853 – Control signals safe motion monitoring functions (STO, SS1, SS1E, SS2, SS2E)

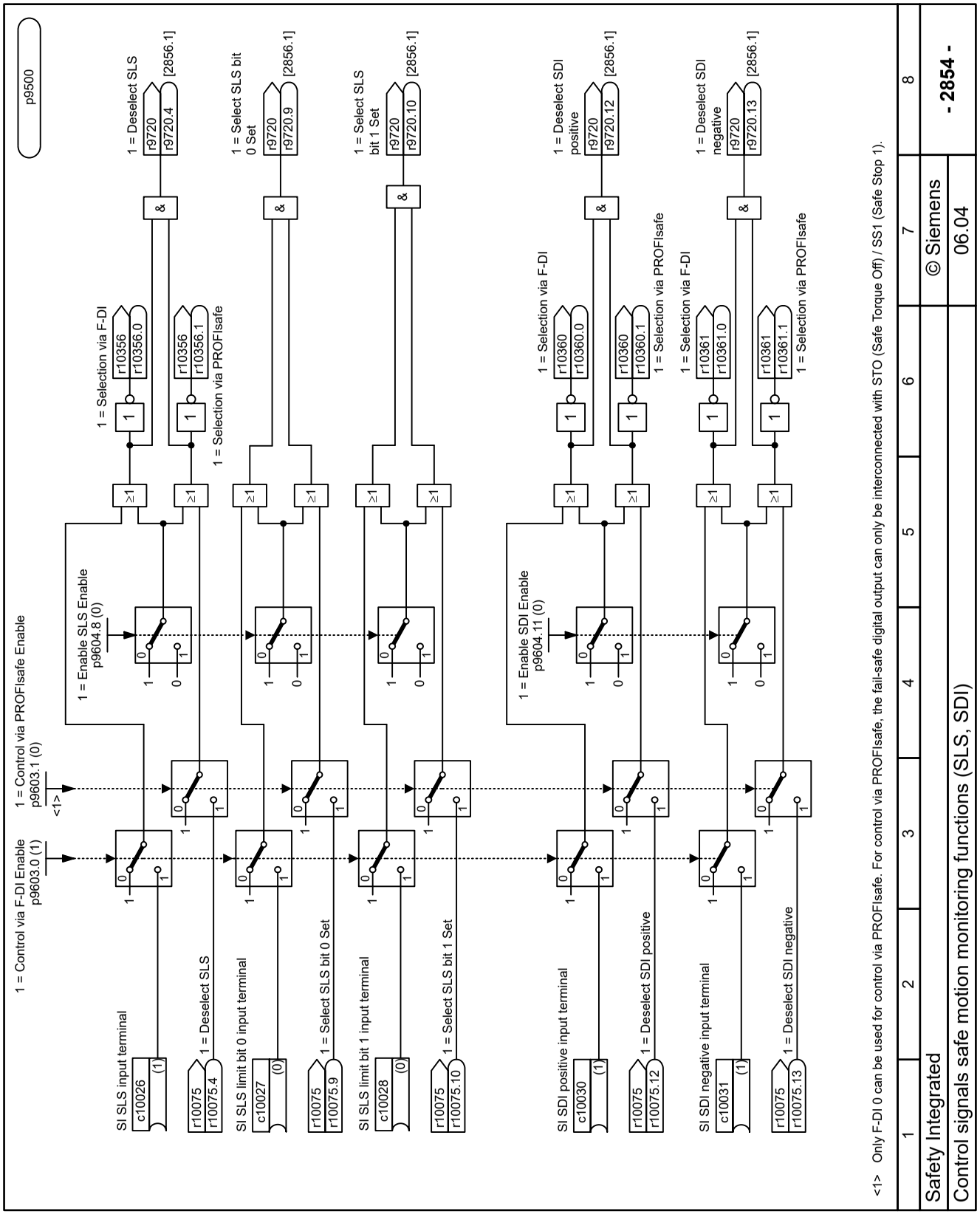


Figure 4-62 2854 - Control signals safe motion monitoring function (SDI, SLS)

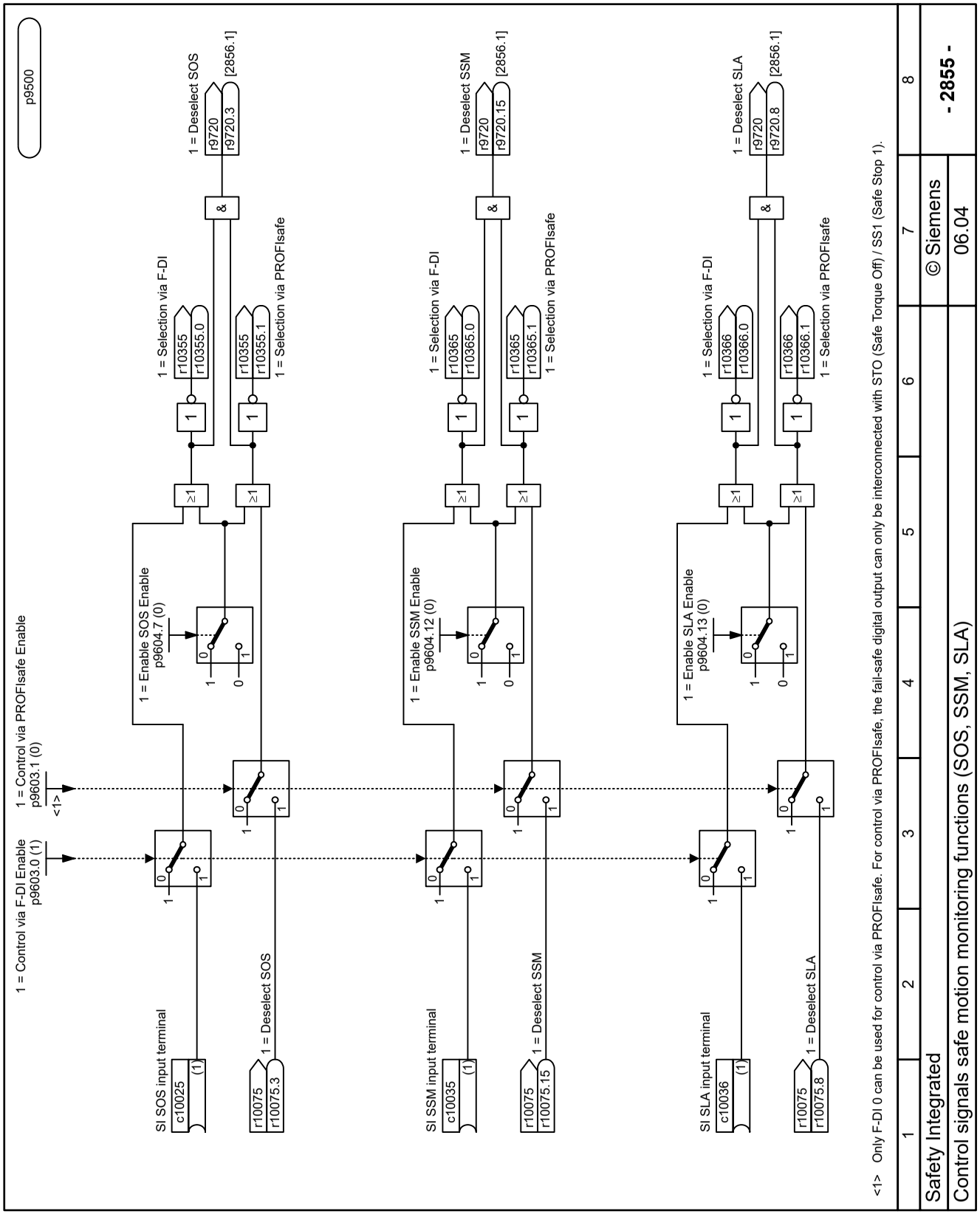


Figure 4-63 2855 - Control signals safe motion monitoring functions (SSM, SOS, SLA)

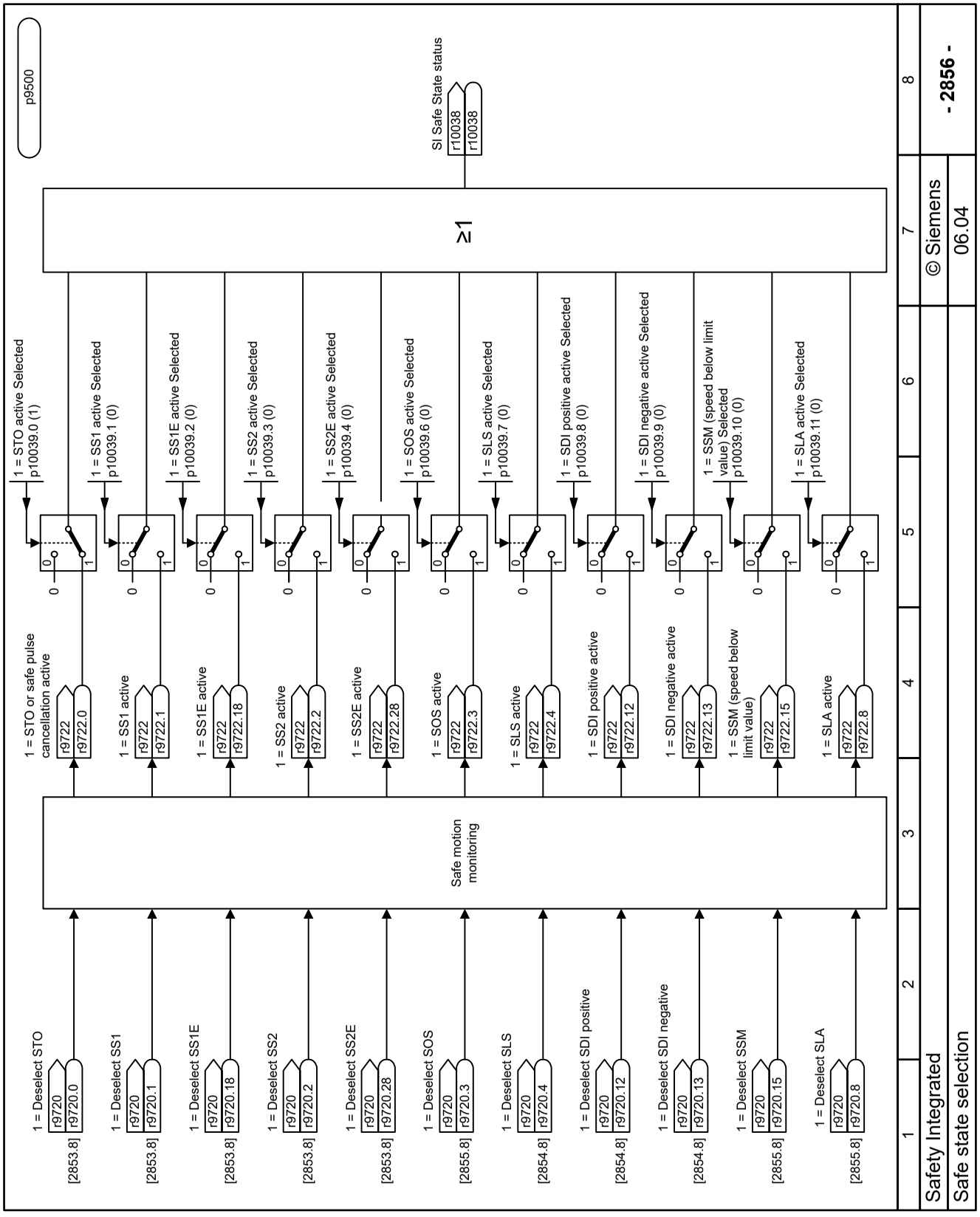


Figure 4-64 2856 - Safe State selection

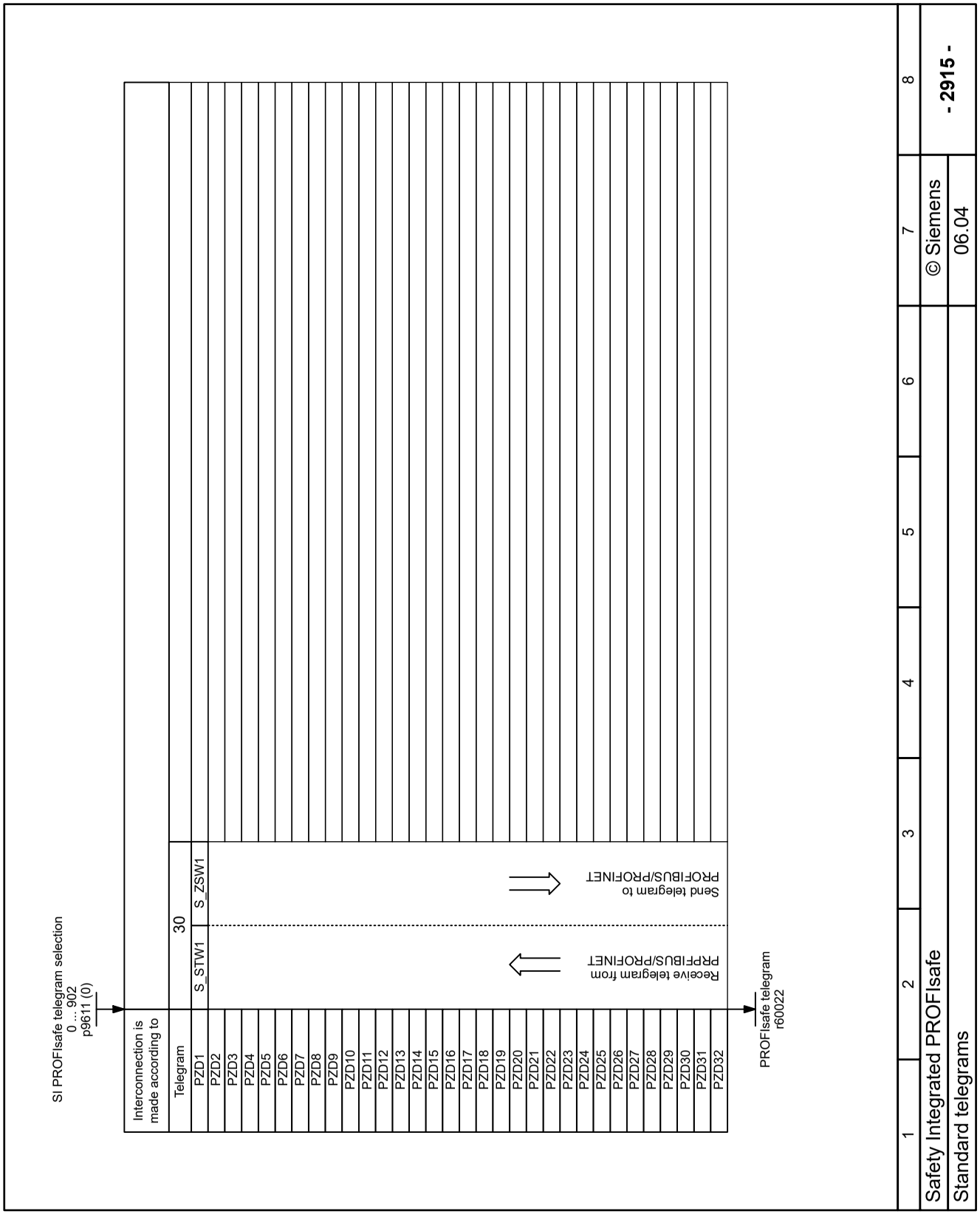


Figure 4-65 2915 - Standard telegrams

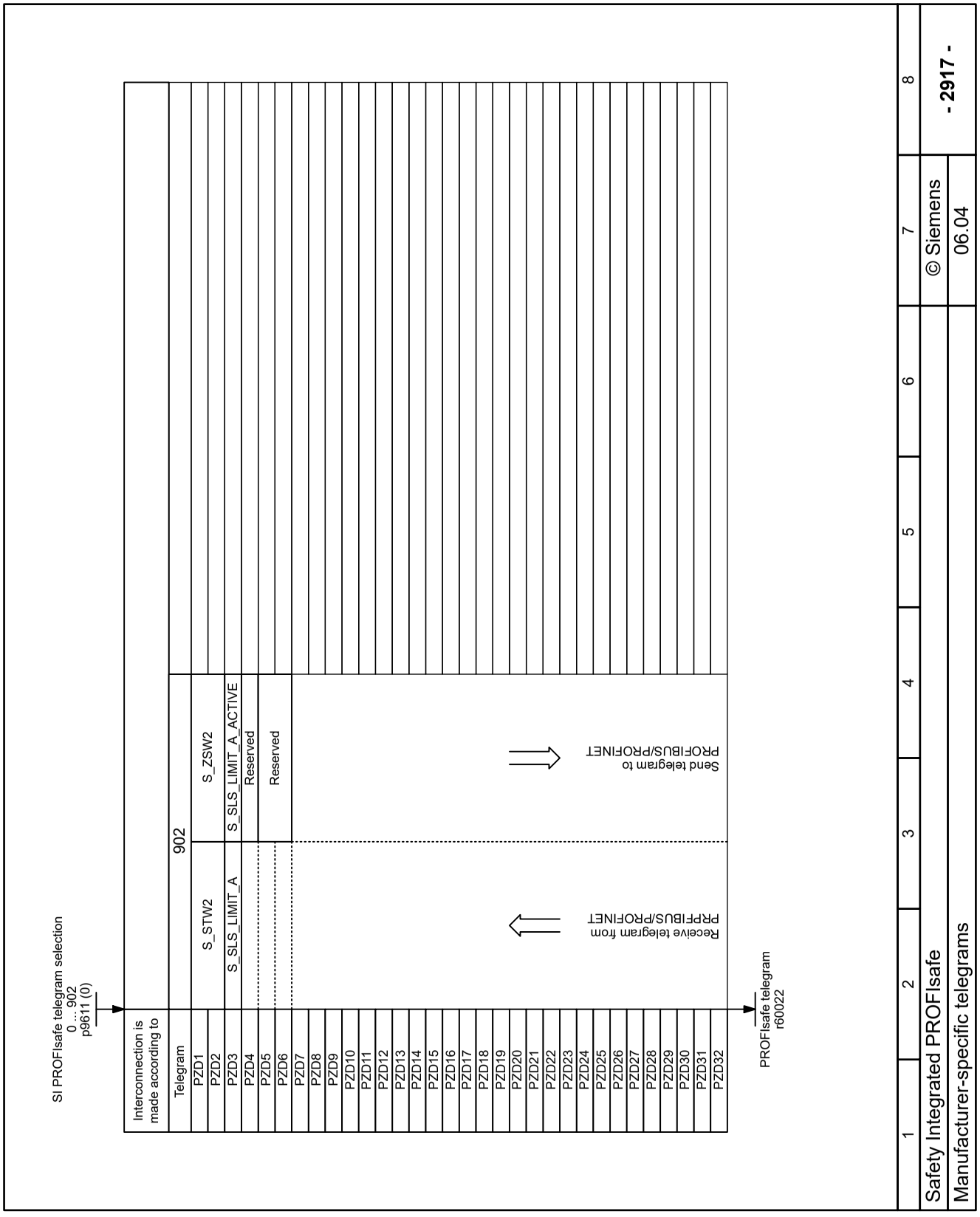


Figure 4-66 2917 - Manufacturer-specific telegrams

4.8 Setpoint channel

Overview

The following function diagrams describe the setpoint channel.

Function diagrams

3001 – Overview (Page 959)
3010 – Fixed speed setpoints, binary selection (Page 960)
3011 – Fixed speed setpoints, direct selection (Page 961)
3020 – Motorized potentiometer (Page 962)
3030 – Main/supplementary setpoint, setpoint scaling, jogging (Page 963)
3040 – Direction limitation and direction reversal (Page 964)
3050 – Skip edges (Page 965)
3051 – Speed limits (Page 966)
3060 – Basic ramp-function generator (Page 967)
3070 – Extended ramp-function generator (Page 968)
3080 – Ramp-function generator selection, status word, tracking (Page 969)

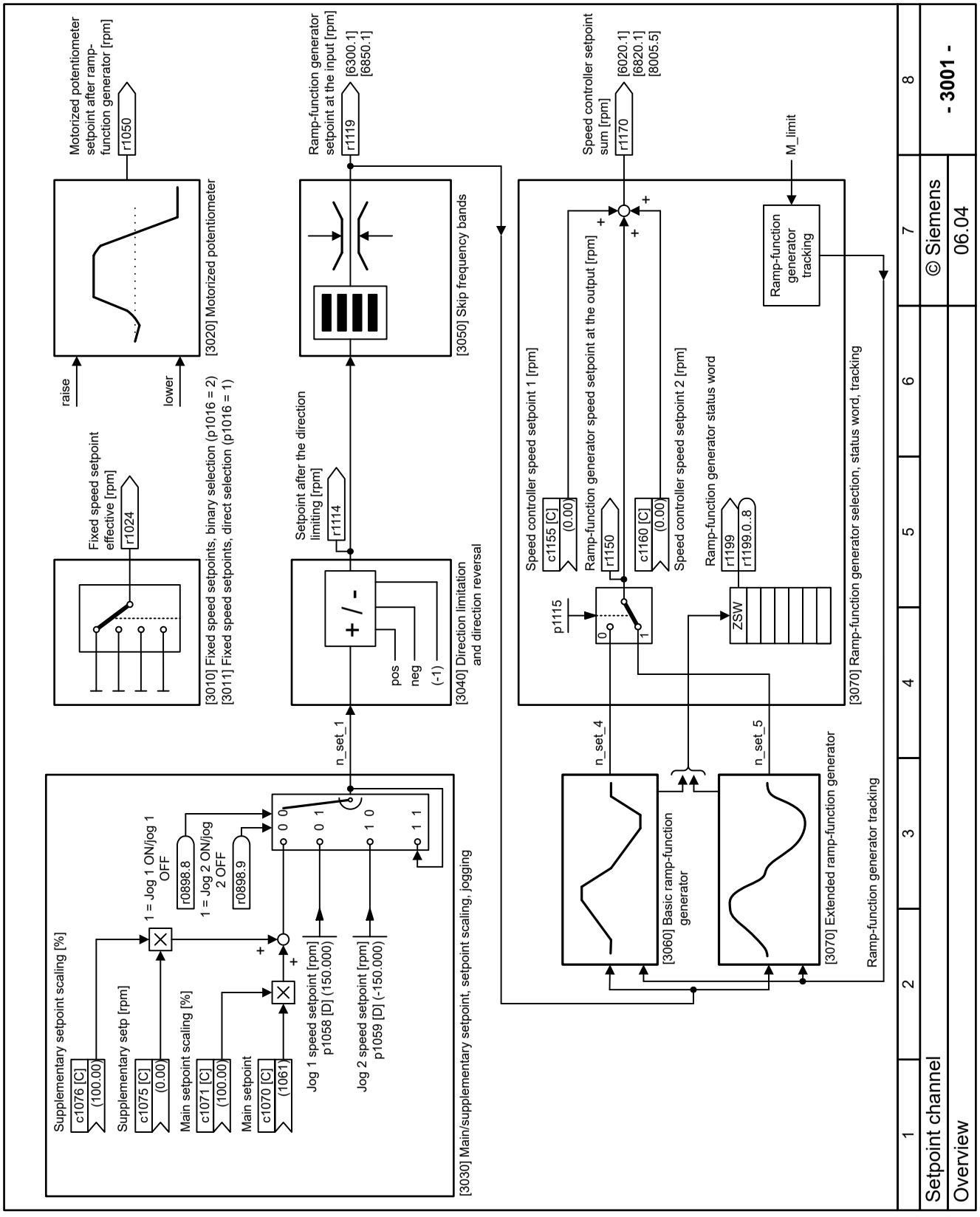


Figure 4-67 3001 – Overview

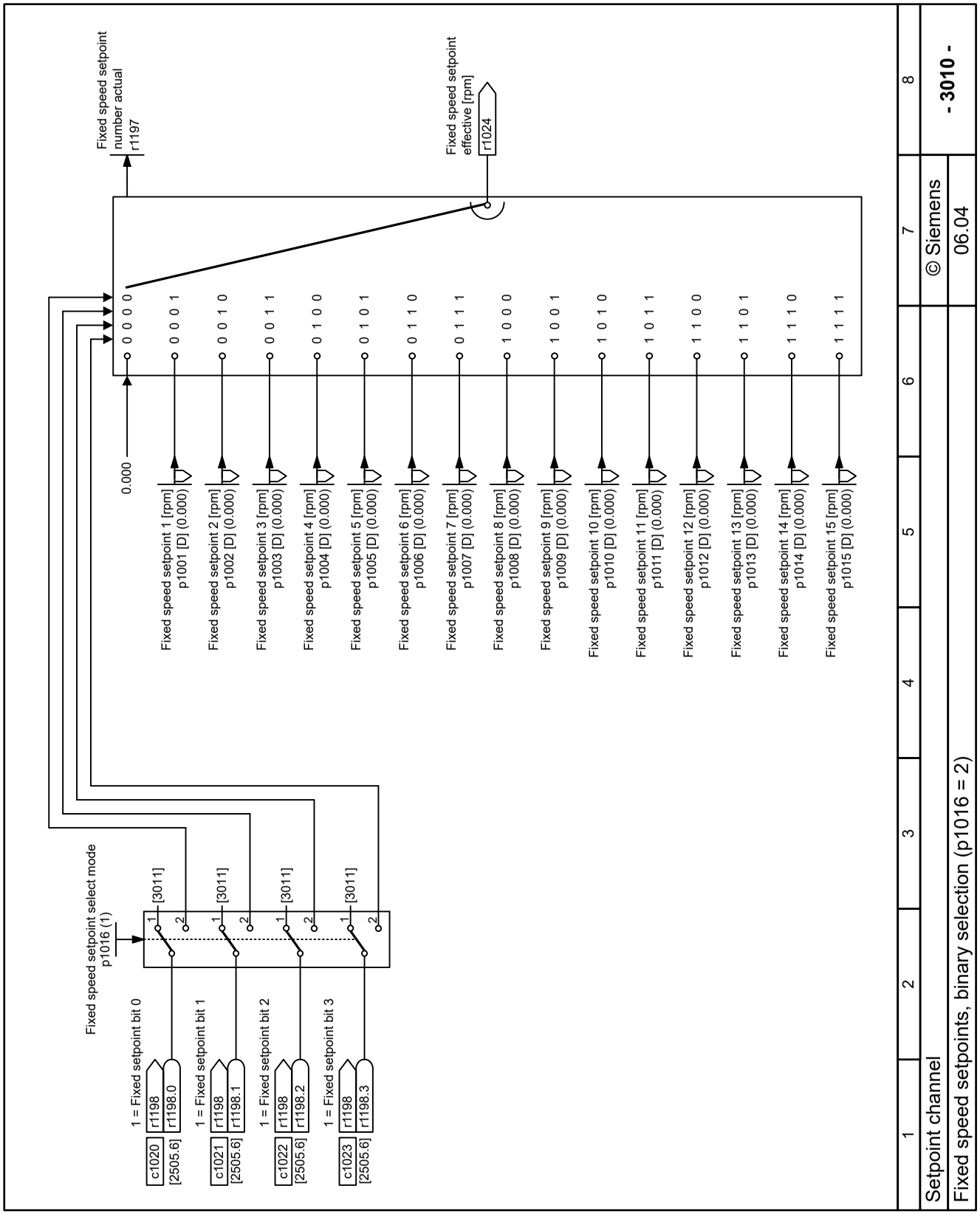


Figure 4-68 3010 - Fixed speed setpoints, binary selection

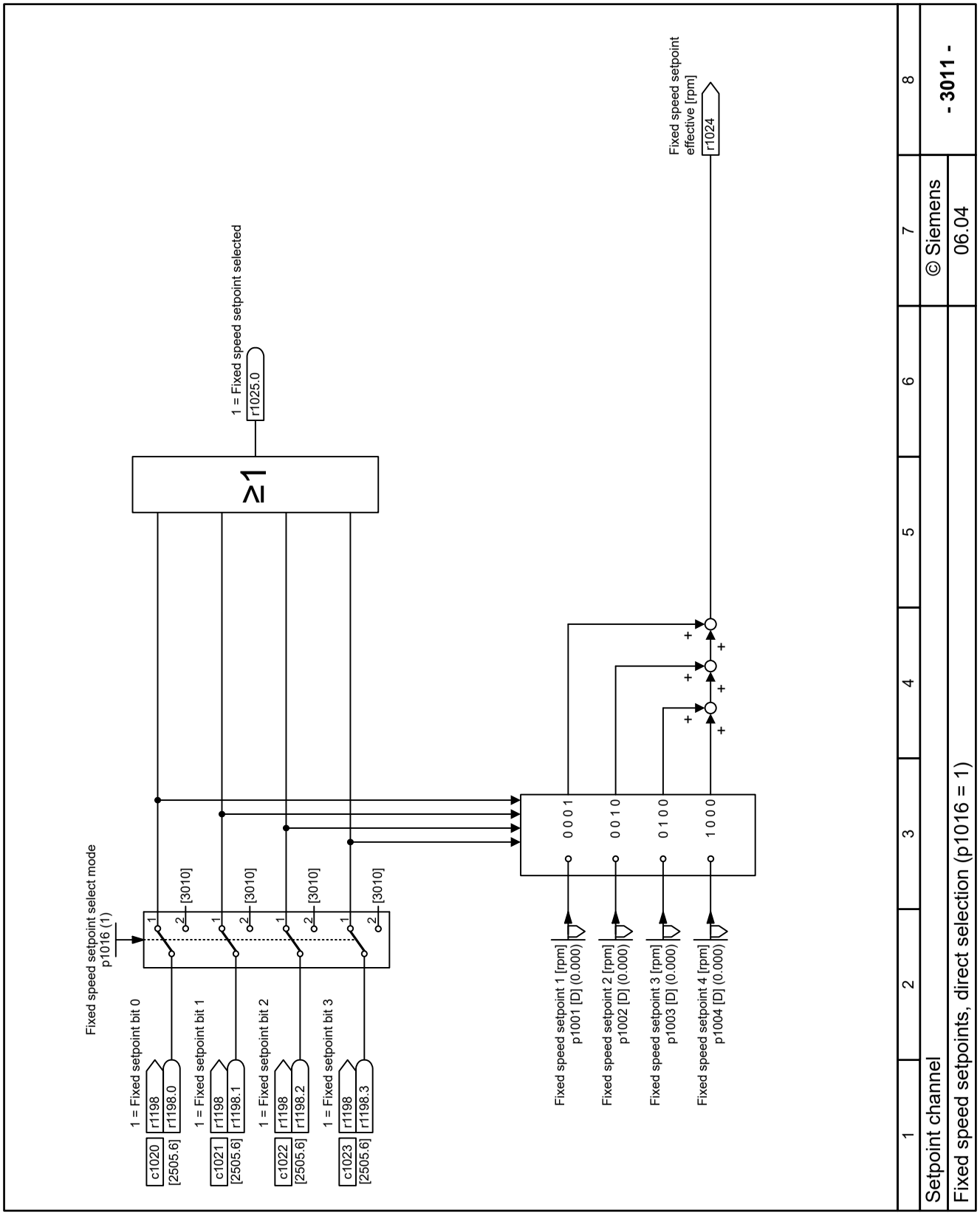
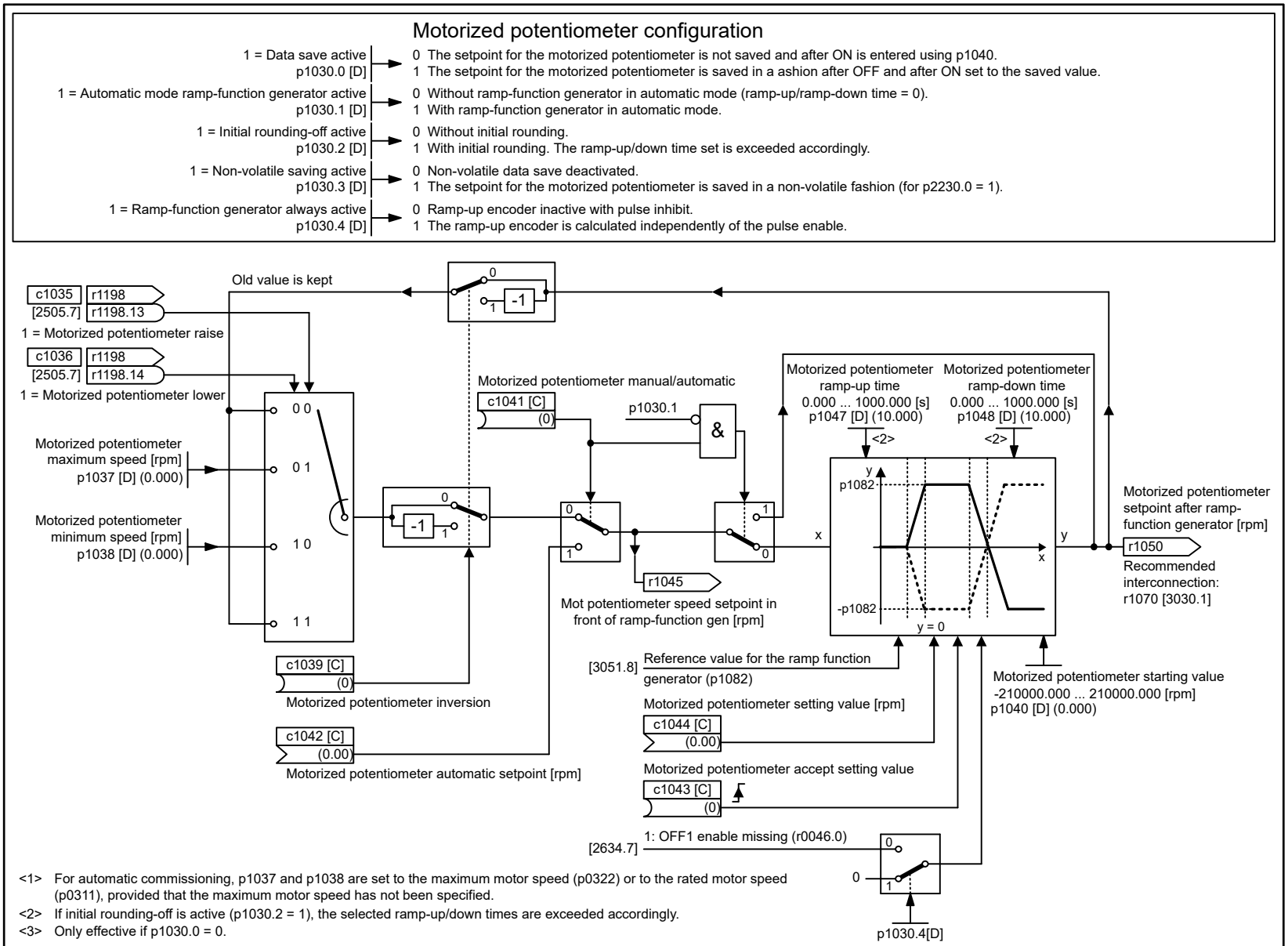


Figure 4-69 3011 - Fixed speed setpoints, direct selection

Figure 4-70 3020 - Motorized potentiometer



1	2	3	4	5	6	7	8
Setpoint channel						© Siemens	- 3020 -
Motorized potentiometer						06.04	

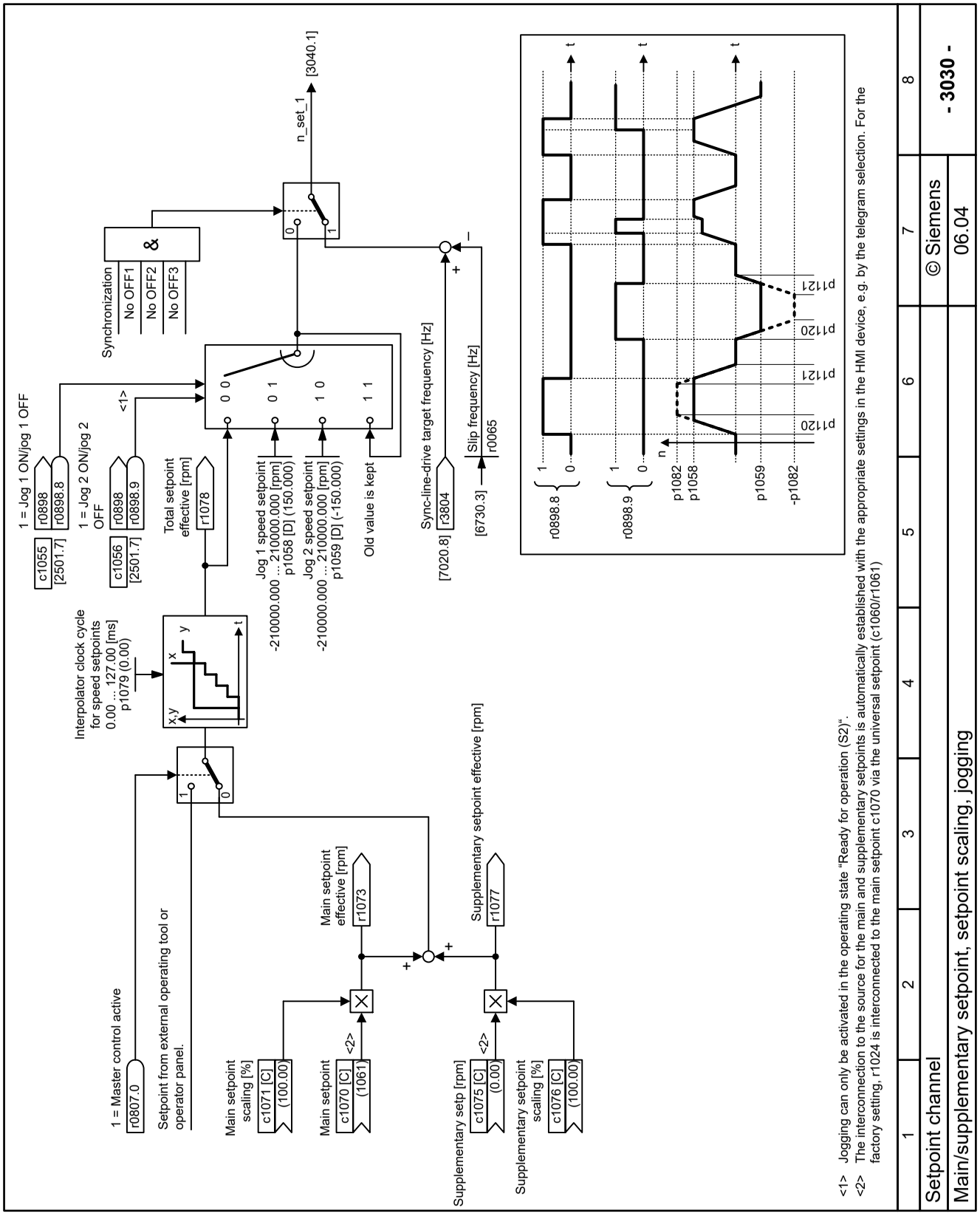


Figure 4-71 3030 - Main/supplementary setpoint, setpoint scaling, jogging

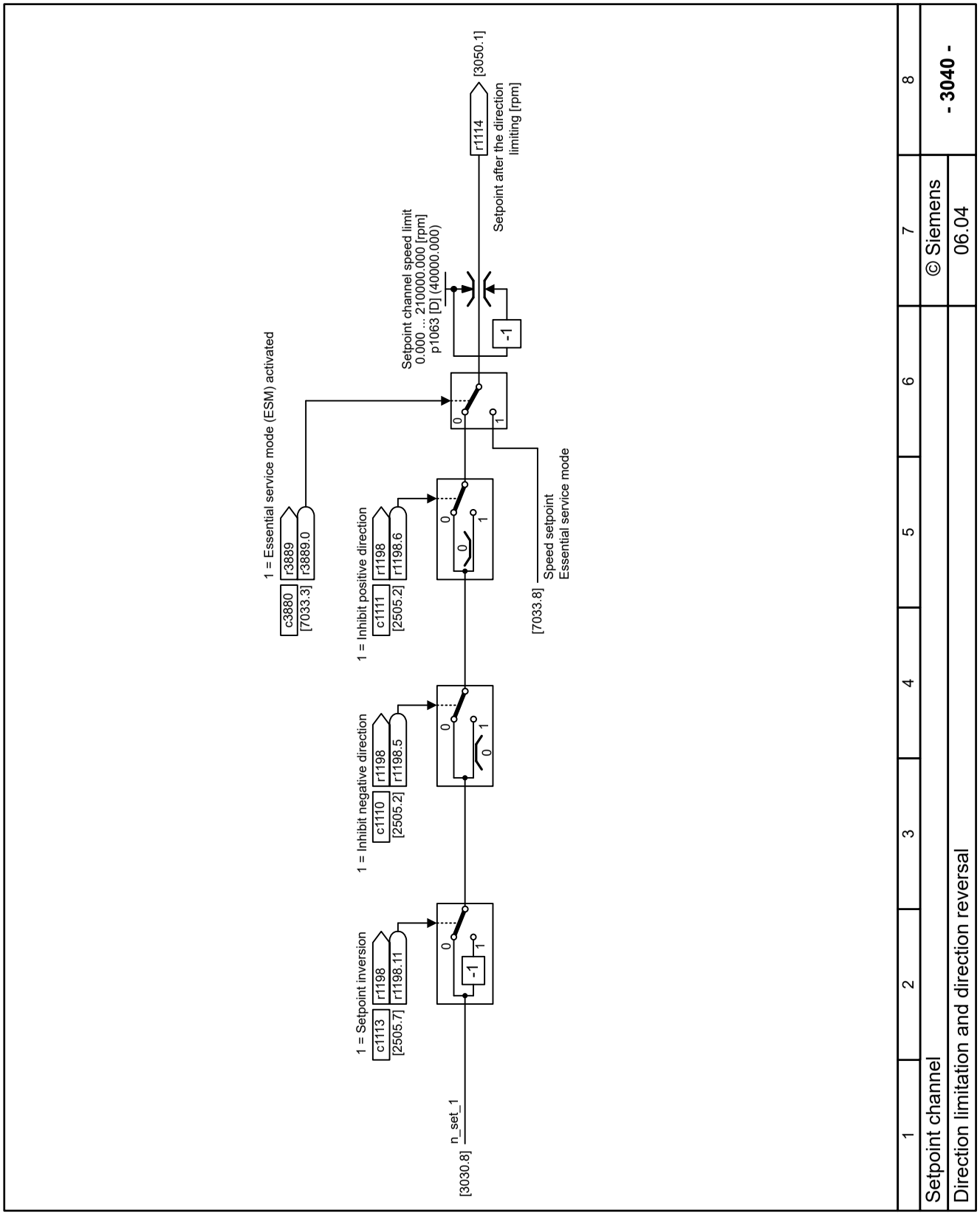


Figure 4-72 3040 - Direction limitation and direction reversal

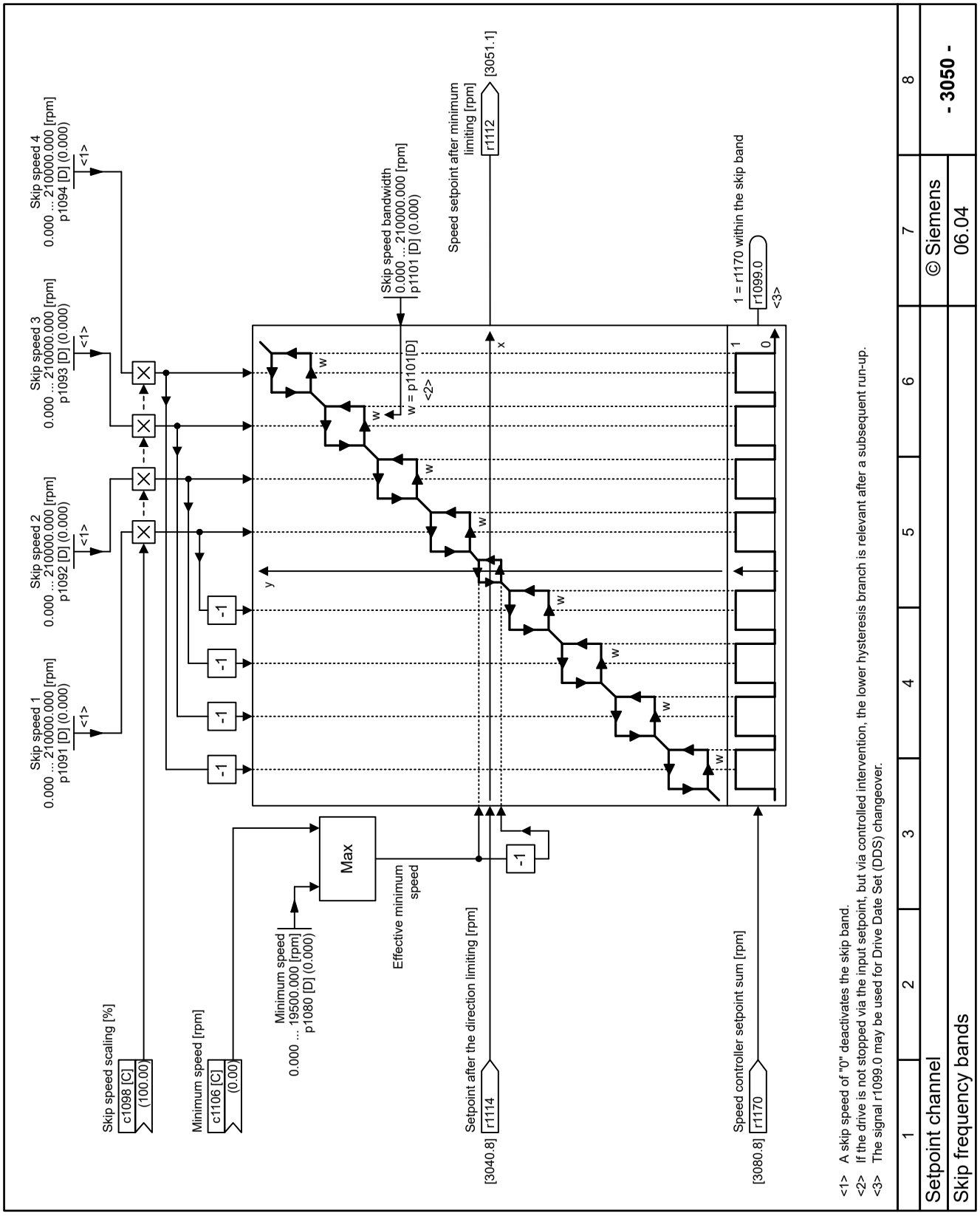


Figure 4-73 3050 - Skip frequency bands

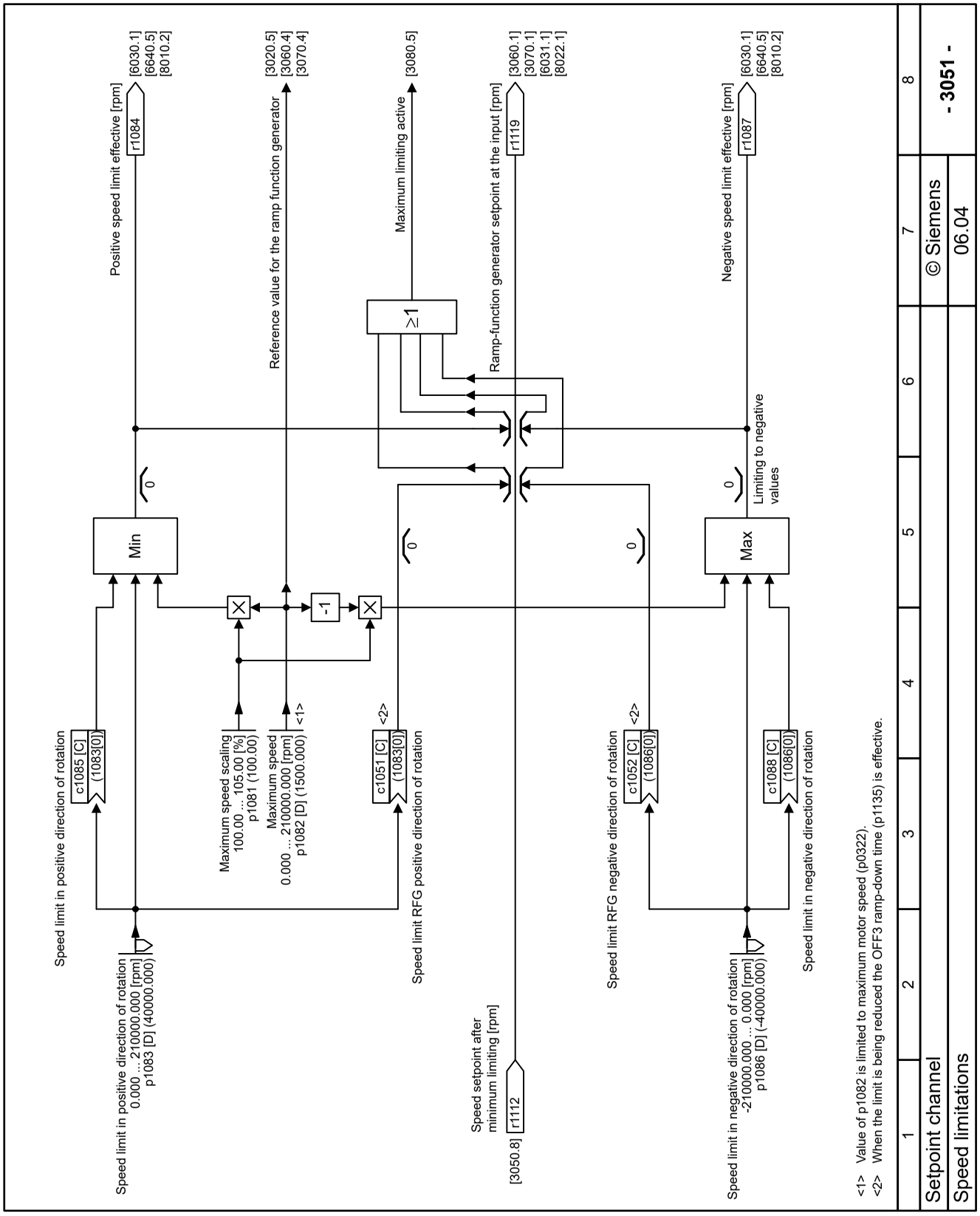


Figure 4-74 3051 - Speed limitations

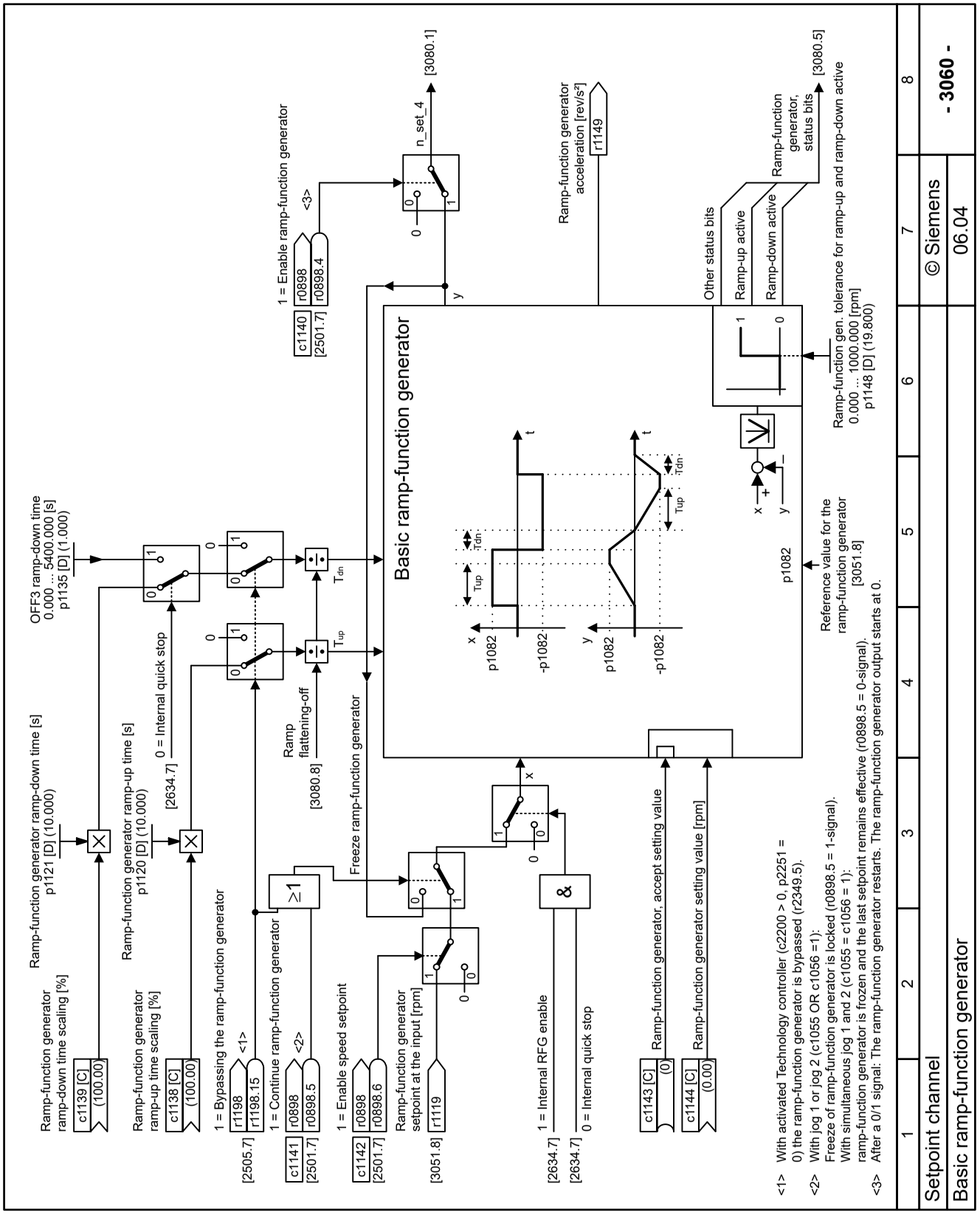
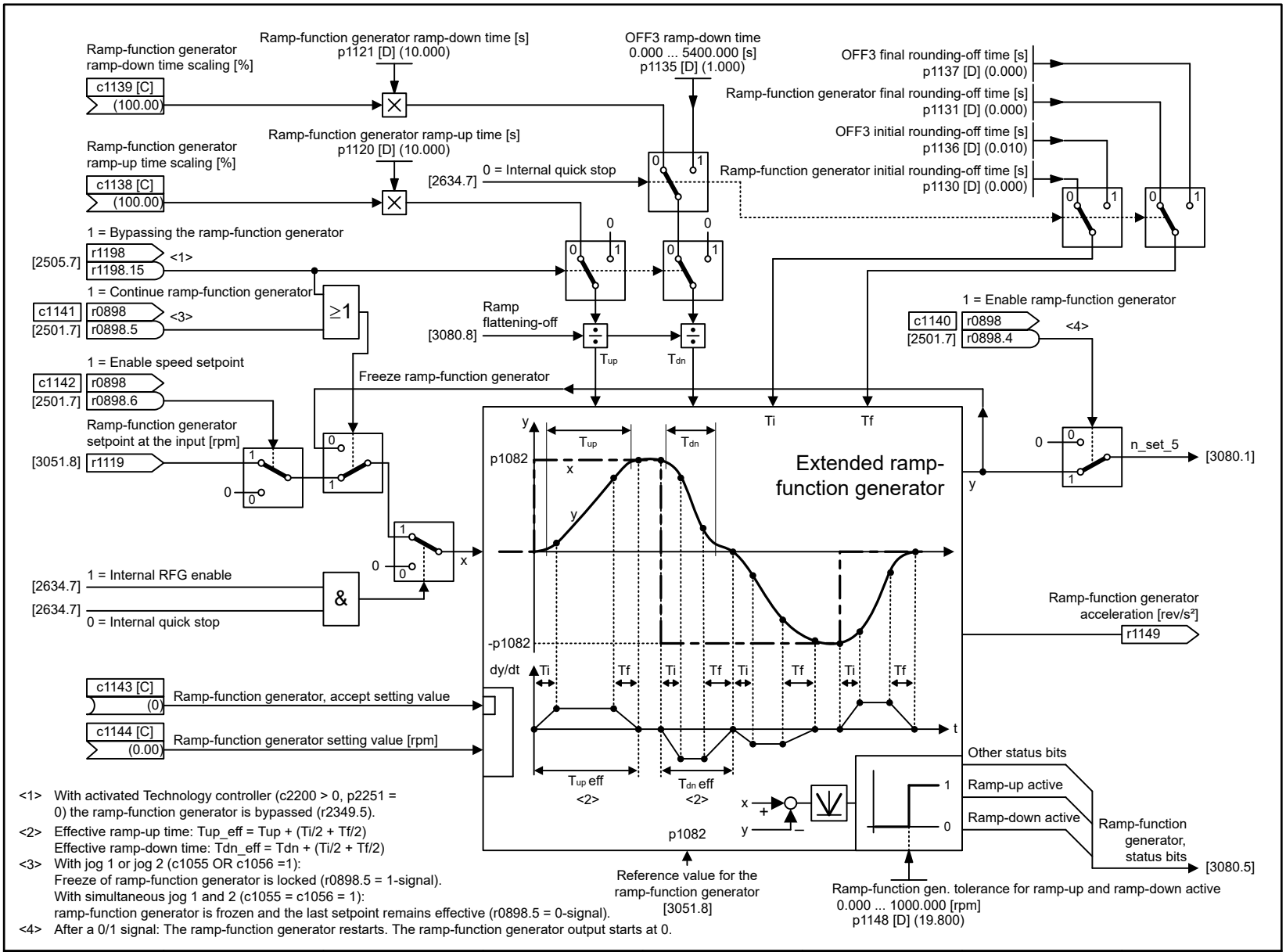


Figure 4-75 3060 - Basic ramp-function generator



<1> With activated Technology controller (c2200 > 0, p2251 = 0) the ramp-function generator is bypassed (r2349.5).
<2> Effective ramp-up time: Tup_eff = Tup + (Ti/2 + Tf/2)
Effective ramp-down time: Tdn_eff = Tdn + (Ti/2 + Tf/2)
<3> With jog 1 or jog 2 (c1055 OR c1056 =1):
Freeze of ramp-function generator is locked (r0898.5 = 1-signal).
With simultaneous jog 1 and 2 (c1055 = c1056 = 1):
ramp-function generator is frozen and the last setpoint remains effective (r0898.5 = 0-signal).
<4> After a 0/1 signal: The ramp-function generator restarts. The ramp-function generator output starts at 0.

1	2	3	4	5	6	7	8
Setpoint channel						© Siemens	- 3070 -
Extended ramp-function generator						06.04	

Figure 4-76 3070 - Extended ramp-function generator

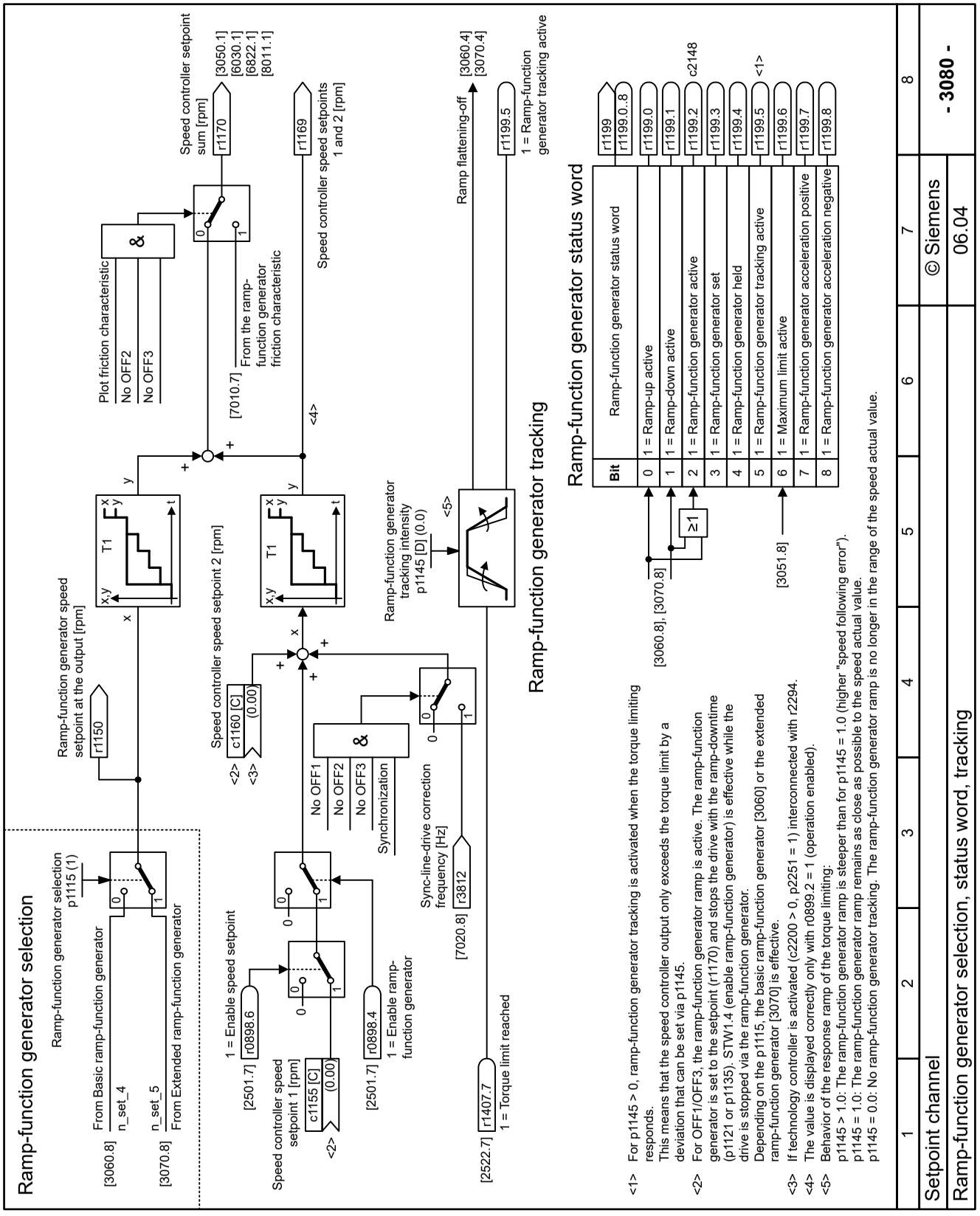


Figure 4-77 3080 - Ramp-function generator selection, status word, tracking

4.9 Basic positioner (EPOS)

Overview

The following function diagrams describe the basic positioner.

Function diagrams

3610 – Jog mode (r2669.0 = 1) (Page 971)
3612 – Active homing mode (r2669.1 = 1) (Page 972)
3614 – Passive homing mode (r2669.5 = 1) (Page 973)
3615 – Traversing block mode, external block change (r2669.2 = 1) (Page 974)
3616 – Traversing block mode (r2669.2 = 1) (Page 975)
3617 – Travel to fixed stop (Page 976)
3620 – Direct setpoint input/MDI mode (r2669.3/4 =1) (Page 977)
3625 – Mode control (Page 978)
3630 – Traversing range limits (Page 979)
3635 – Interpolator (Page 980)
3640 – Control word, block selection/MDI selection (Page 981)
3645 – Status word 1 (Page 982)
3646 – Status word 2 (Page 983)
3650 – Status word, active traversing block/MDI active (Page 984)

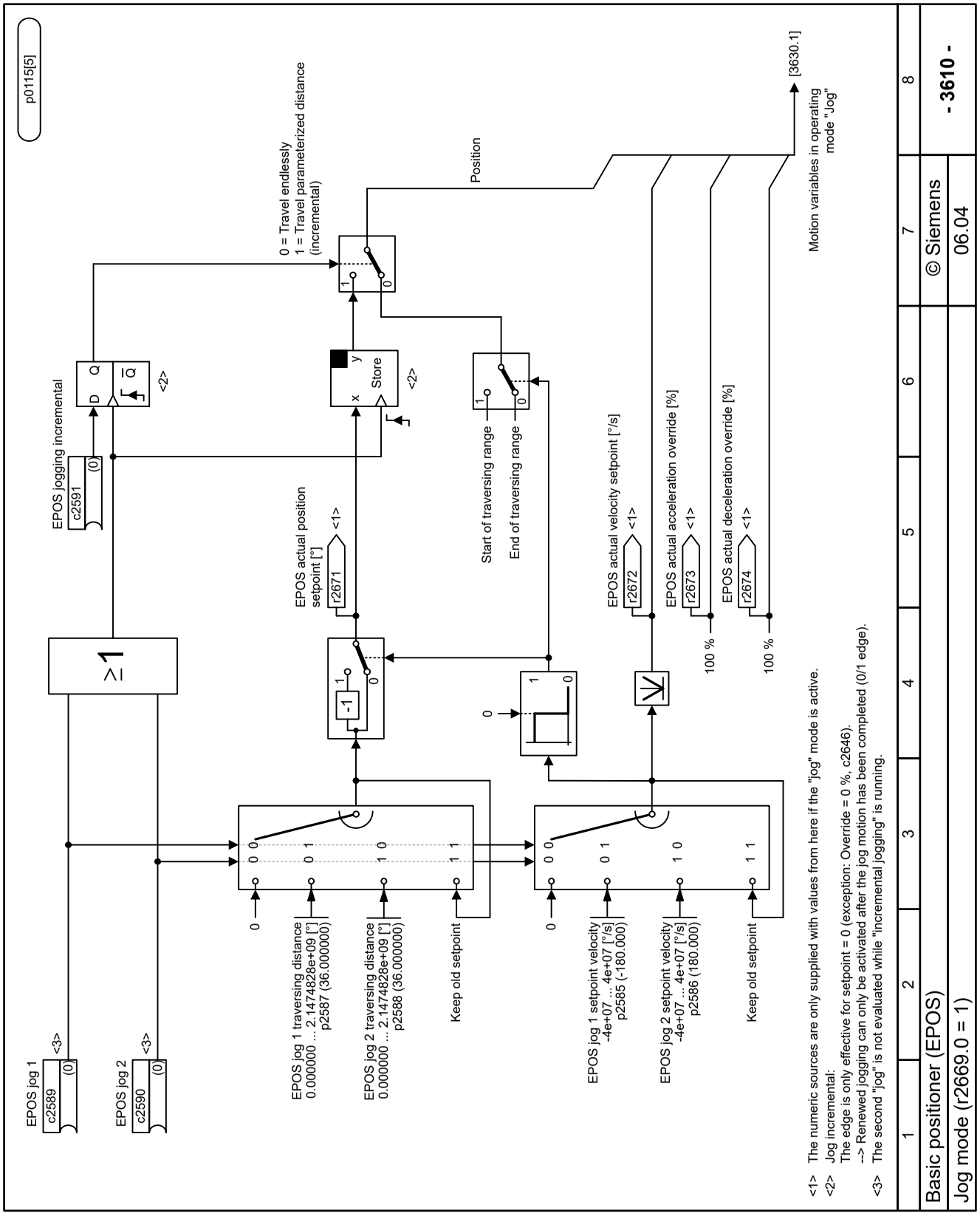
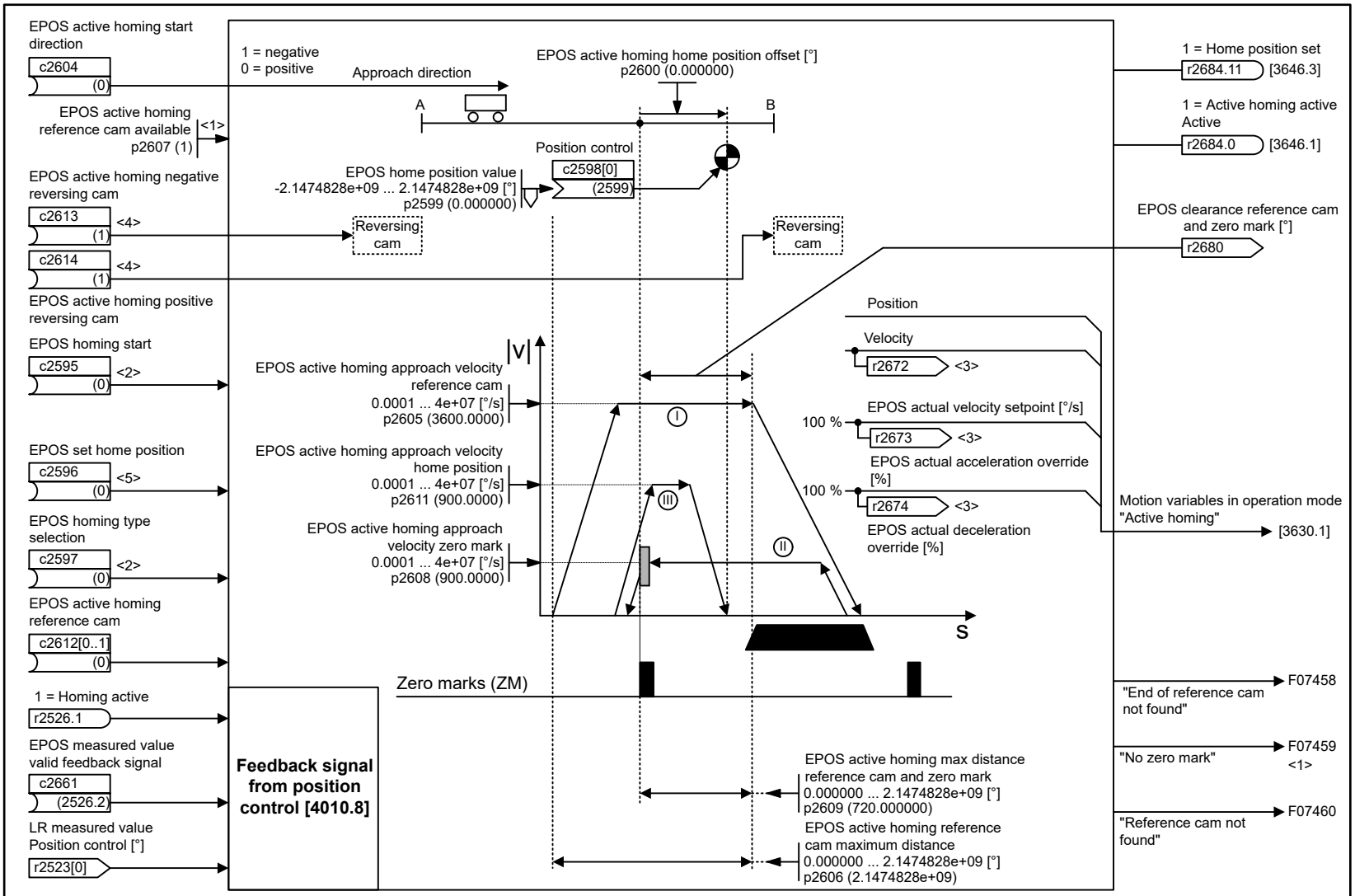


Figure 4-78 3610 – Jog mode (r2669.0 = 1)



<1> If no reference cam exists, the axis directly moves to the zero mark (in the defined start direction).
<2> When "passive referencing" is selected (c2597 = 1 signal), this function diagram is of no significance => refer to [3614].
<3> The numeric sources are only supplied with values from here if the “active homing“ mode is active.
<4> The reversing cams are low active. When a cam is actuated, motion (reference cam search) is continued in the opposite direction.
<5> Reference point setting is only effective in the initial state [3625].

1	2	3	4	5	6	7	8
Basic positioner (EPOS)						© Siemens	- 3612 -
Operating mode active homing (r2669.1 = 1)						06.04	

Figure 4-79 3612 – Active homing mode (r2669.1 = 1)

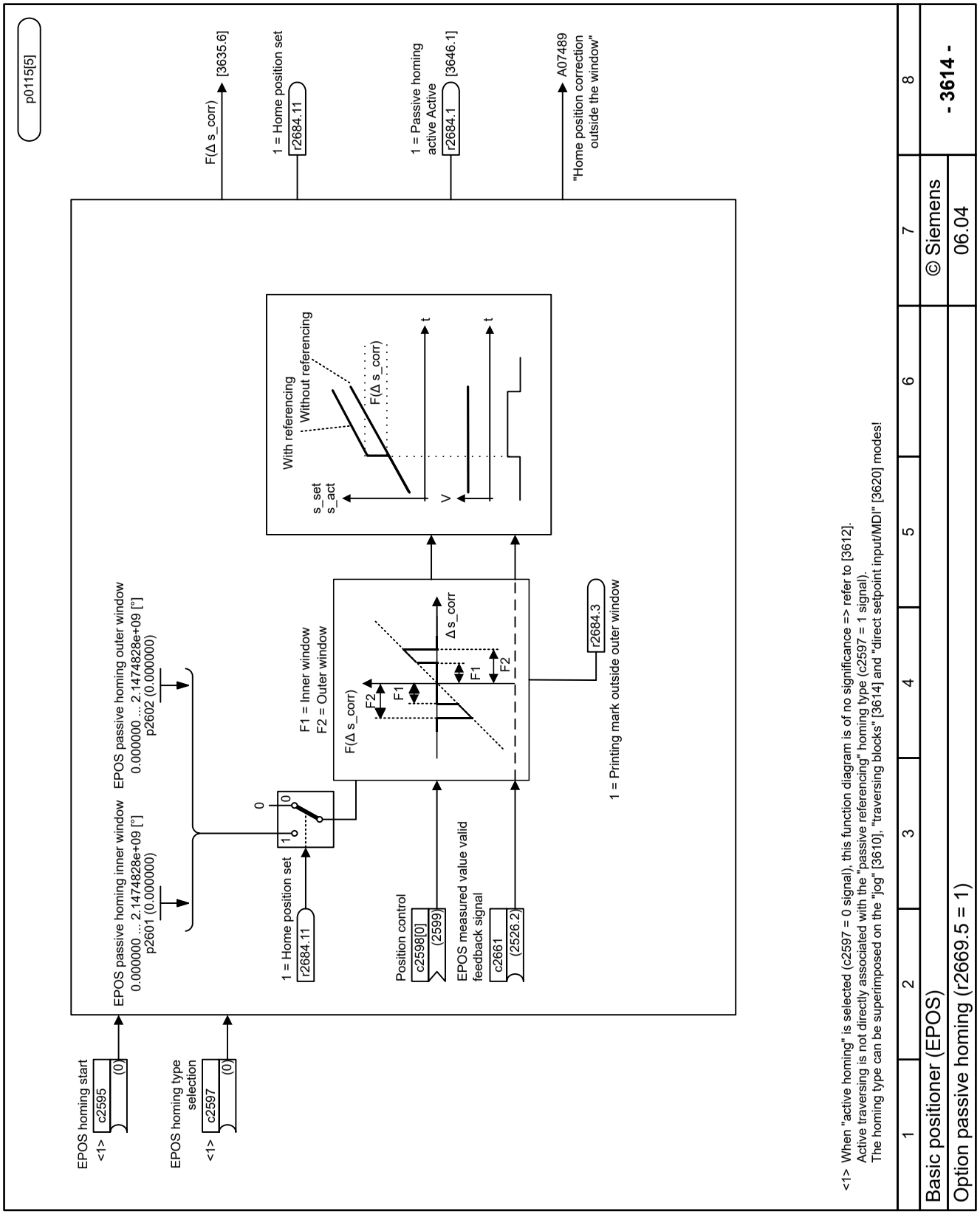


Figure 4-80 3614 – Passive homing mode (r2669.5 = 1)

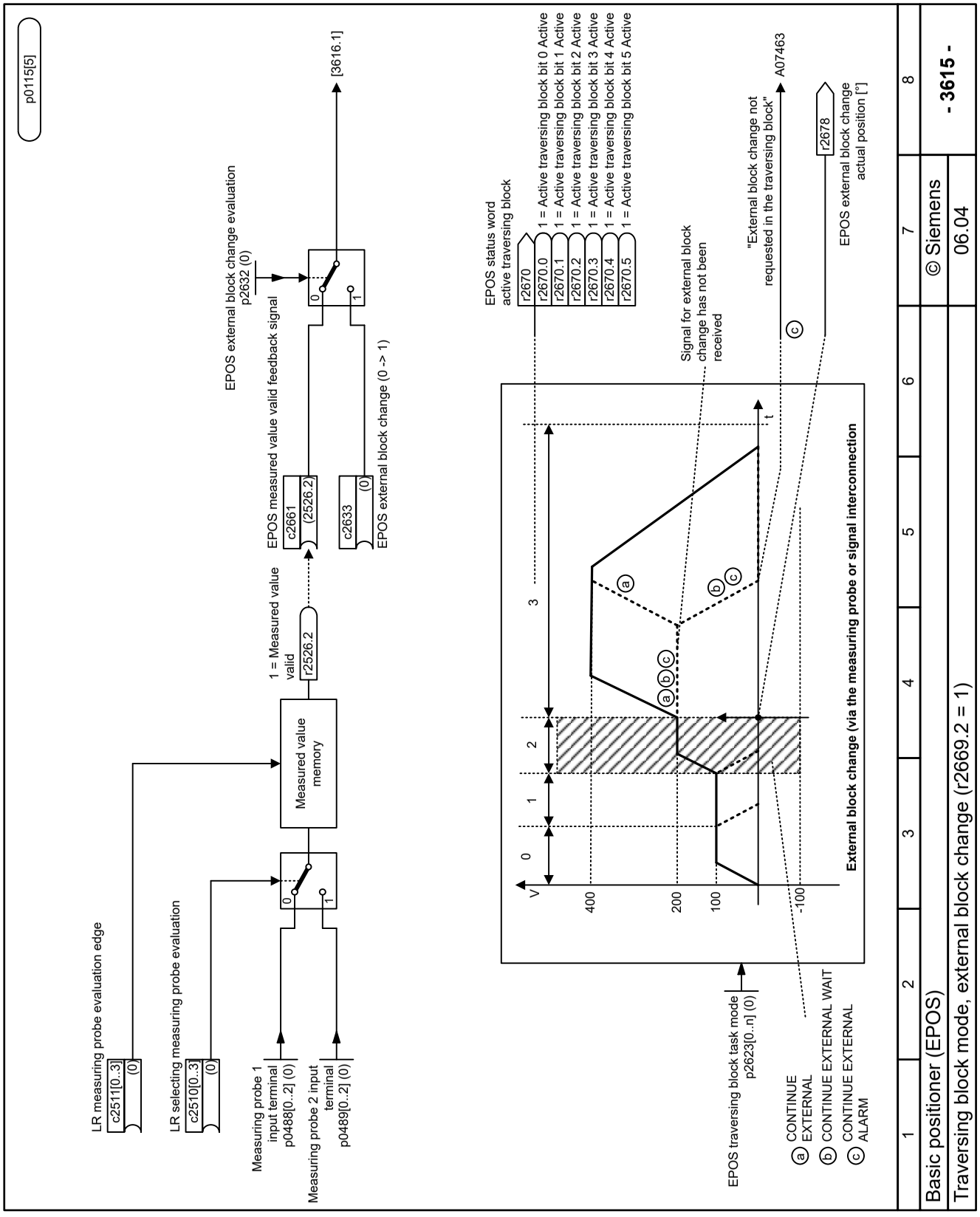


Figure 4-81 3615 – Traversing block mode, external block change (r2669.2 = 1)

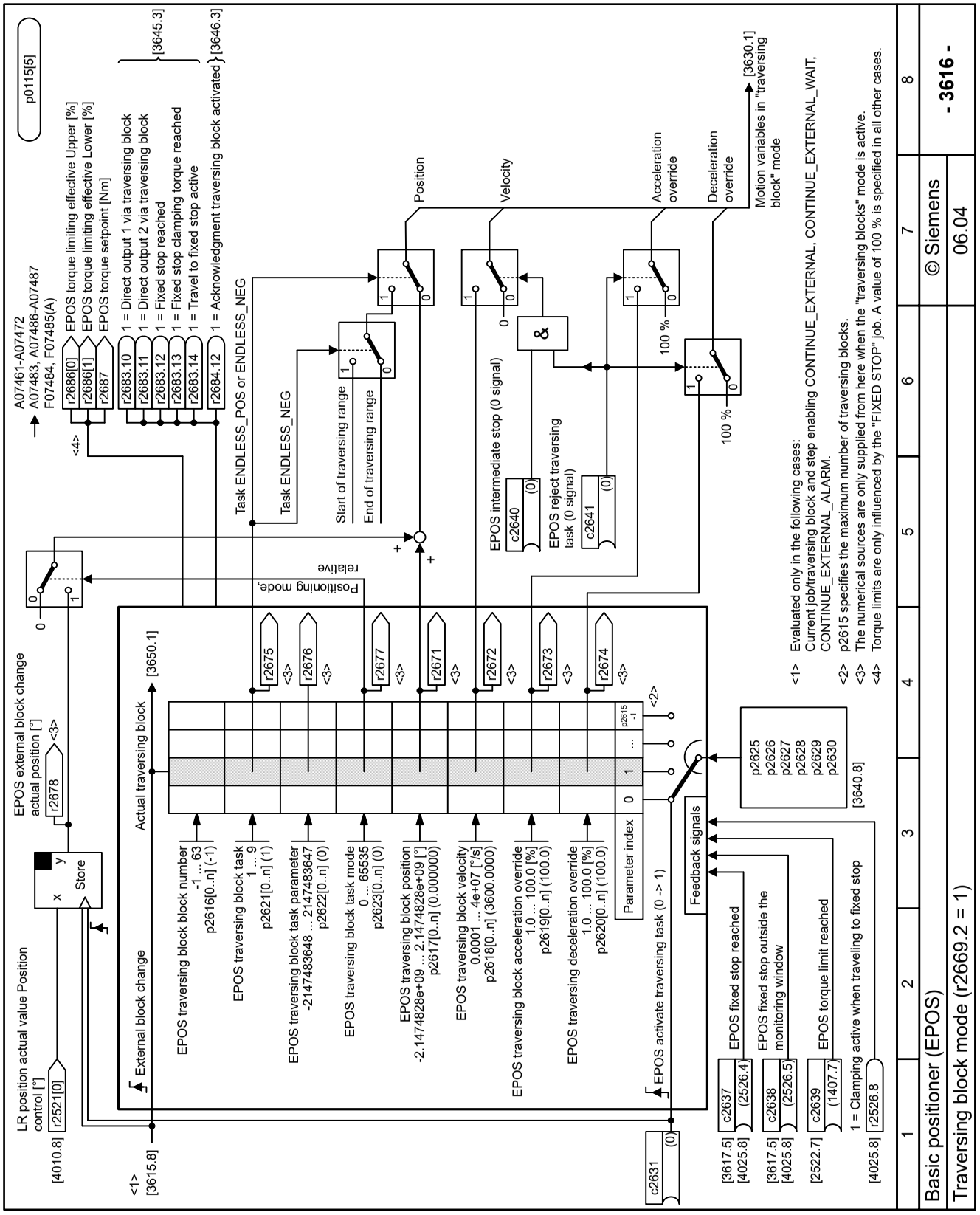


Figure 4-82 3616 – Traversing block mode (r2669.2 = 1)

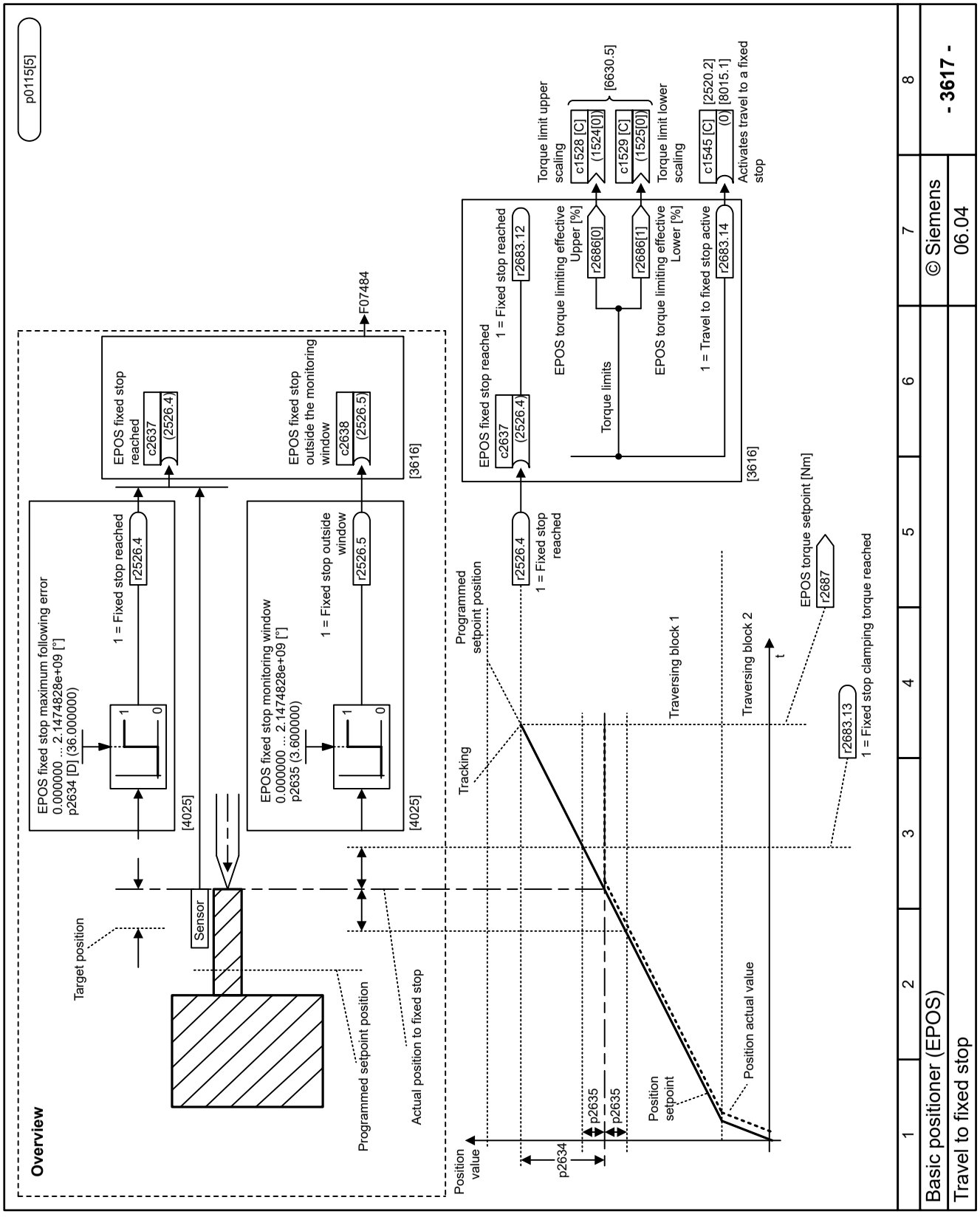


Figure 4-83 3617 – Travel to fixed stop

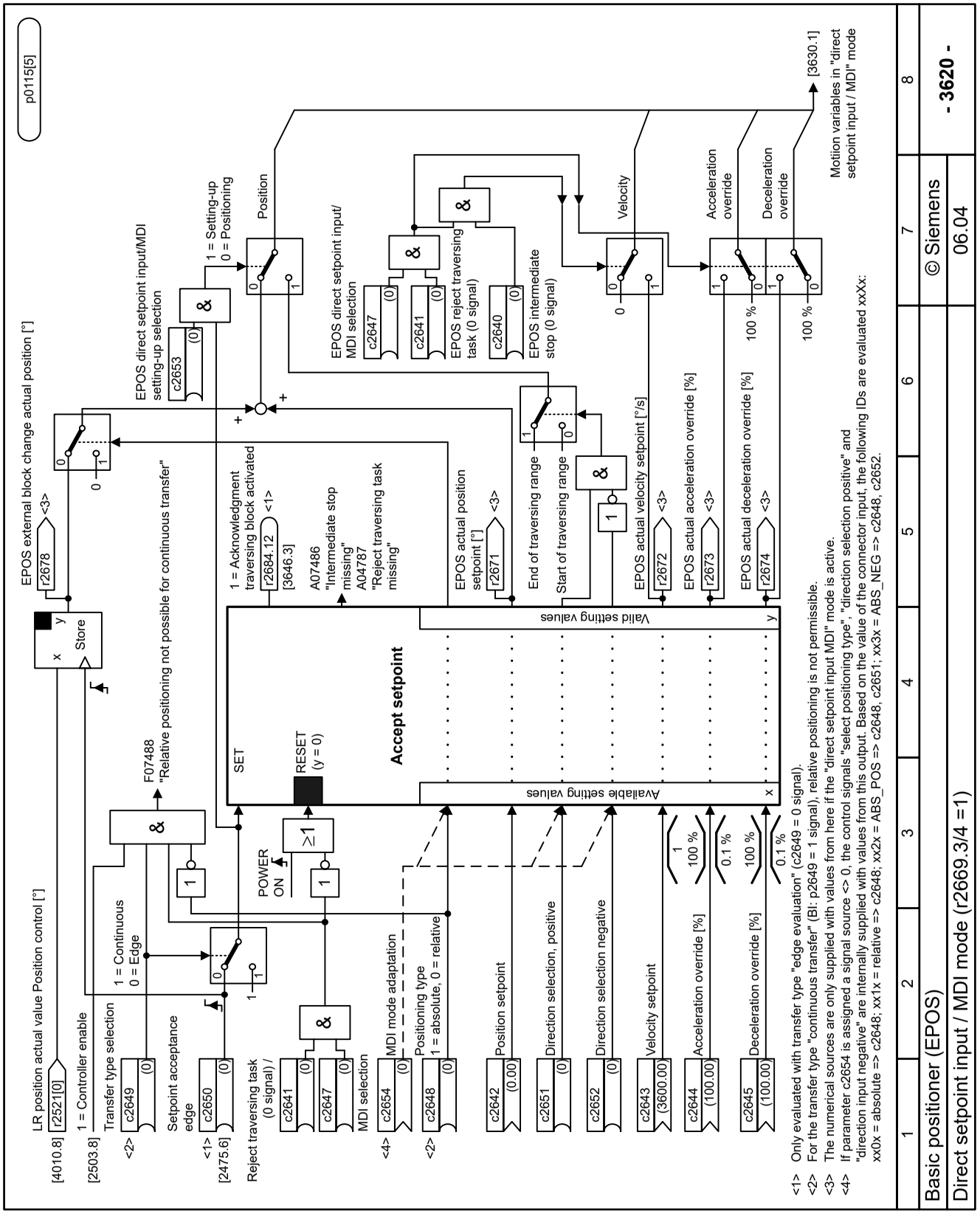


Figure 4-84 3620 – Direct setpoint input/MDI mode (r2669.3/4 =1)

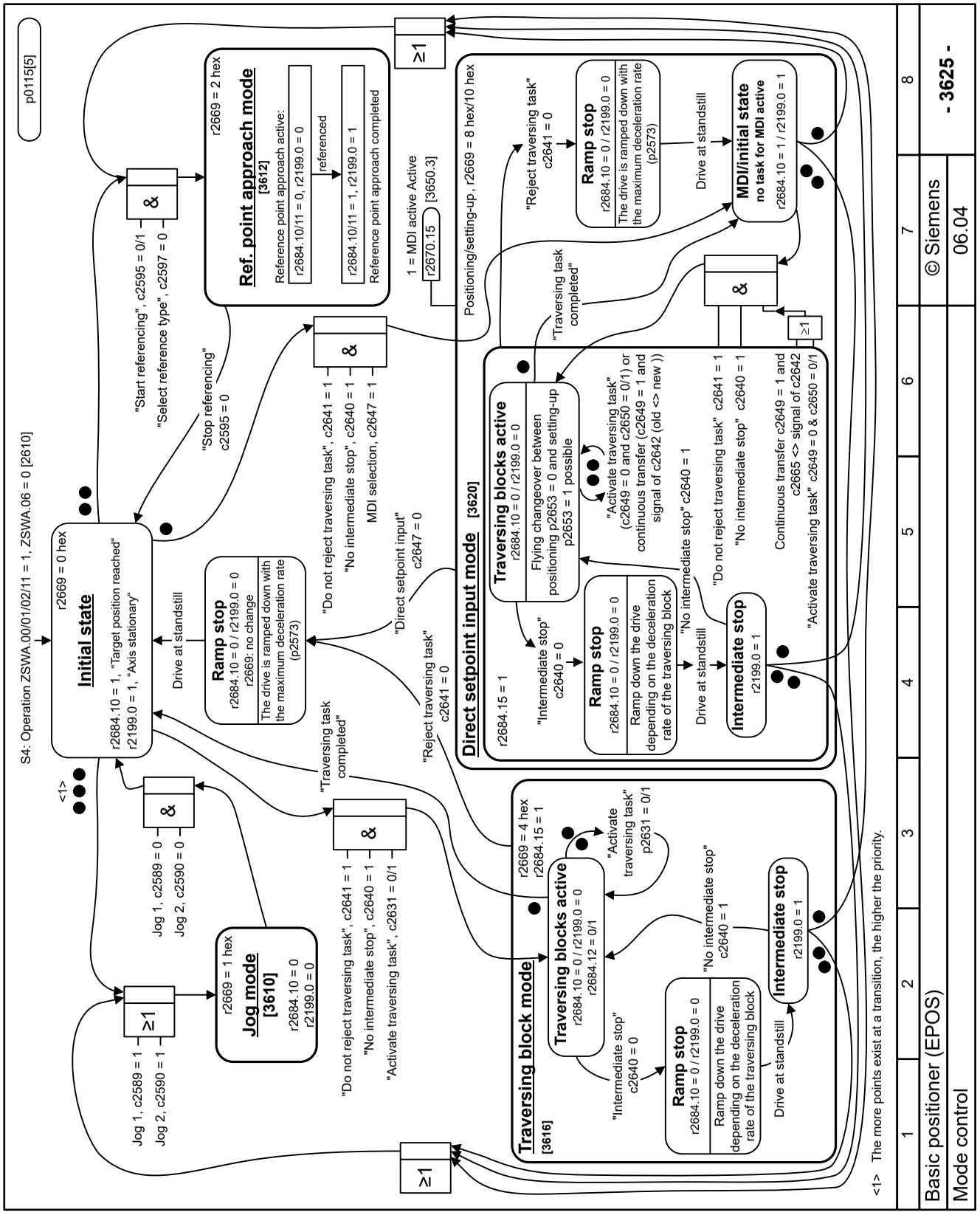


Figure 4-85 3625 – Mode control

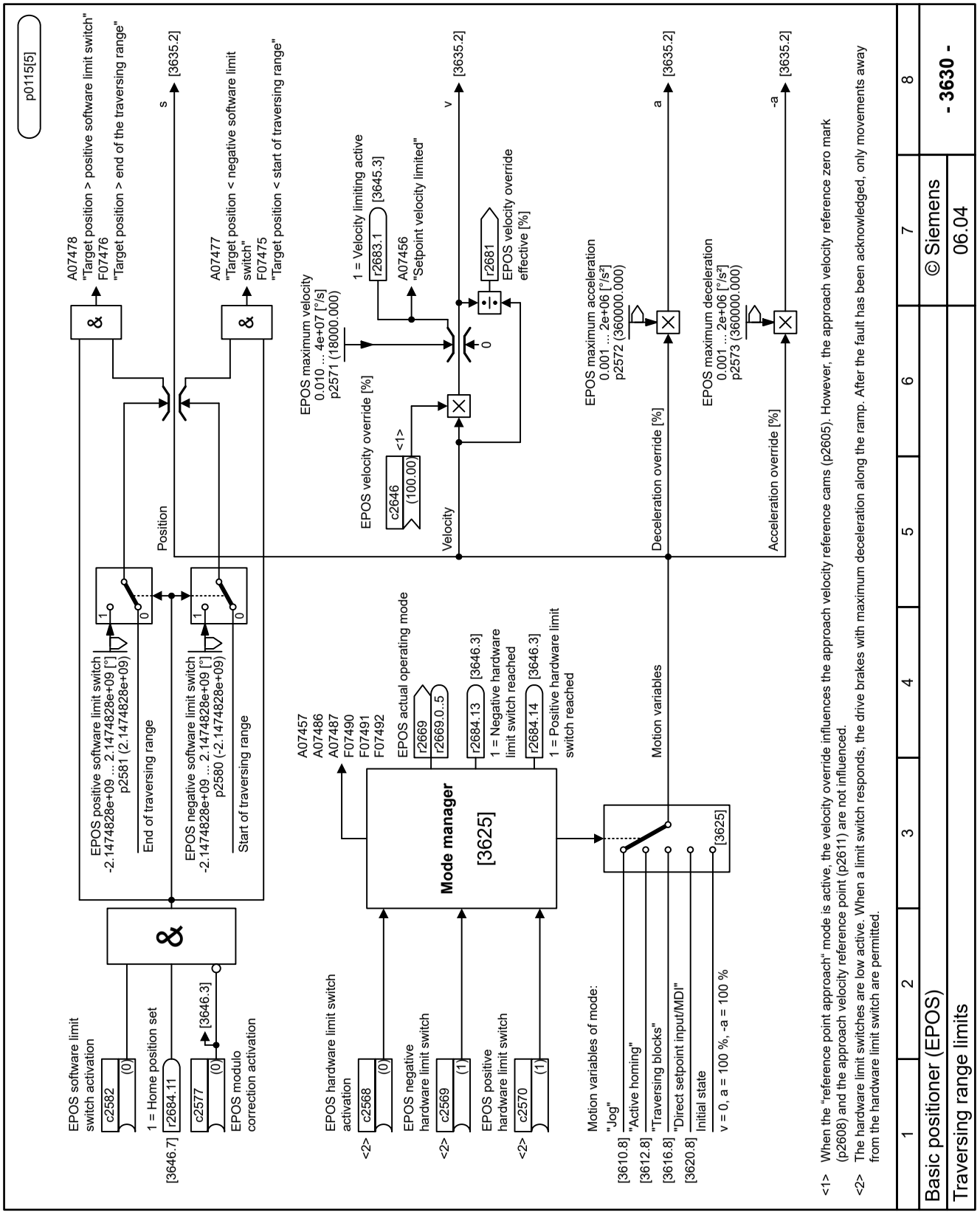


Figure 4-86 3630 – Traversing range limits

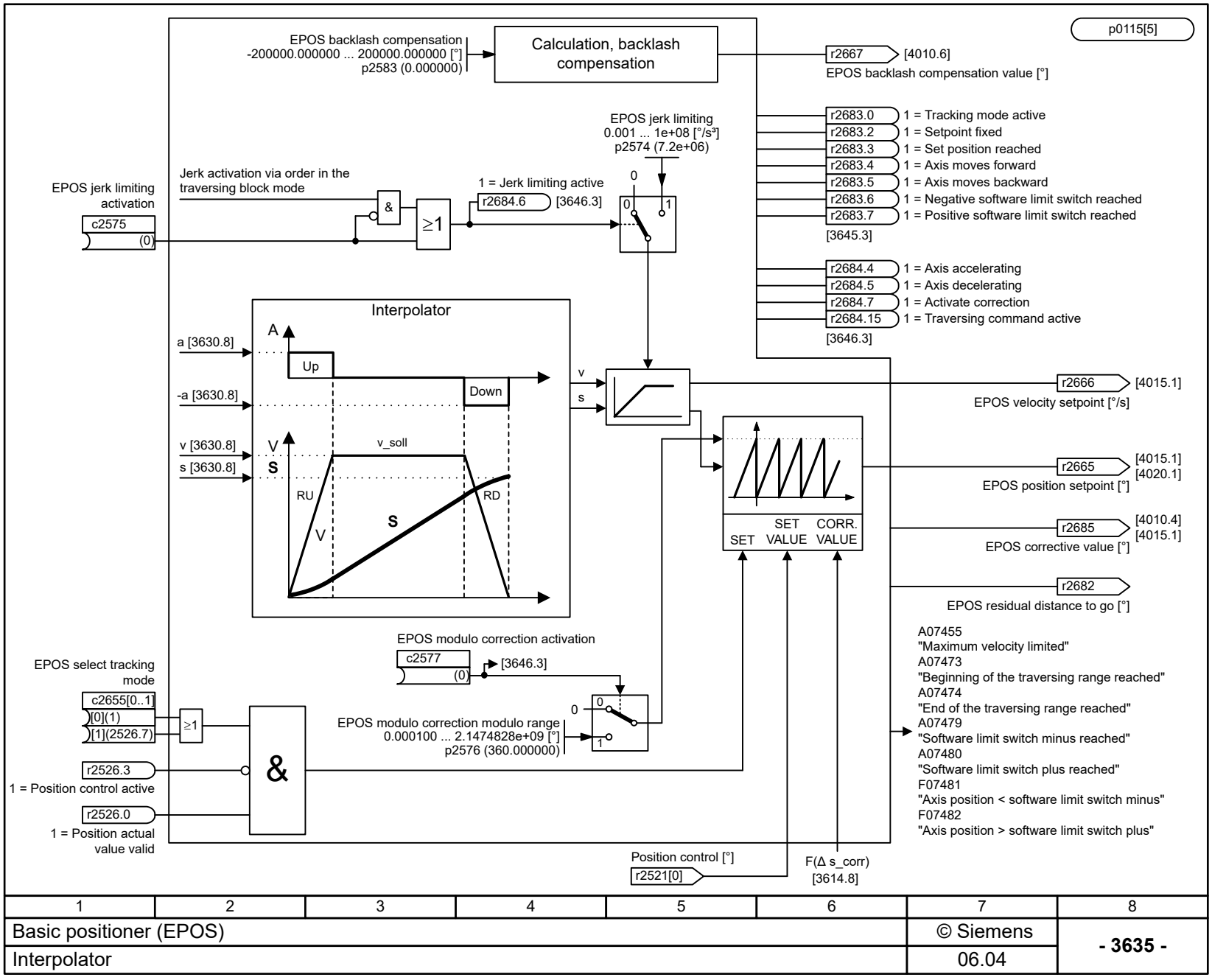


Figure 4-87 3635 – Interpolator

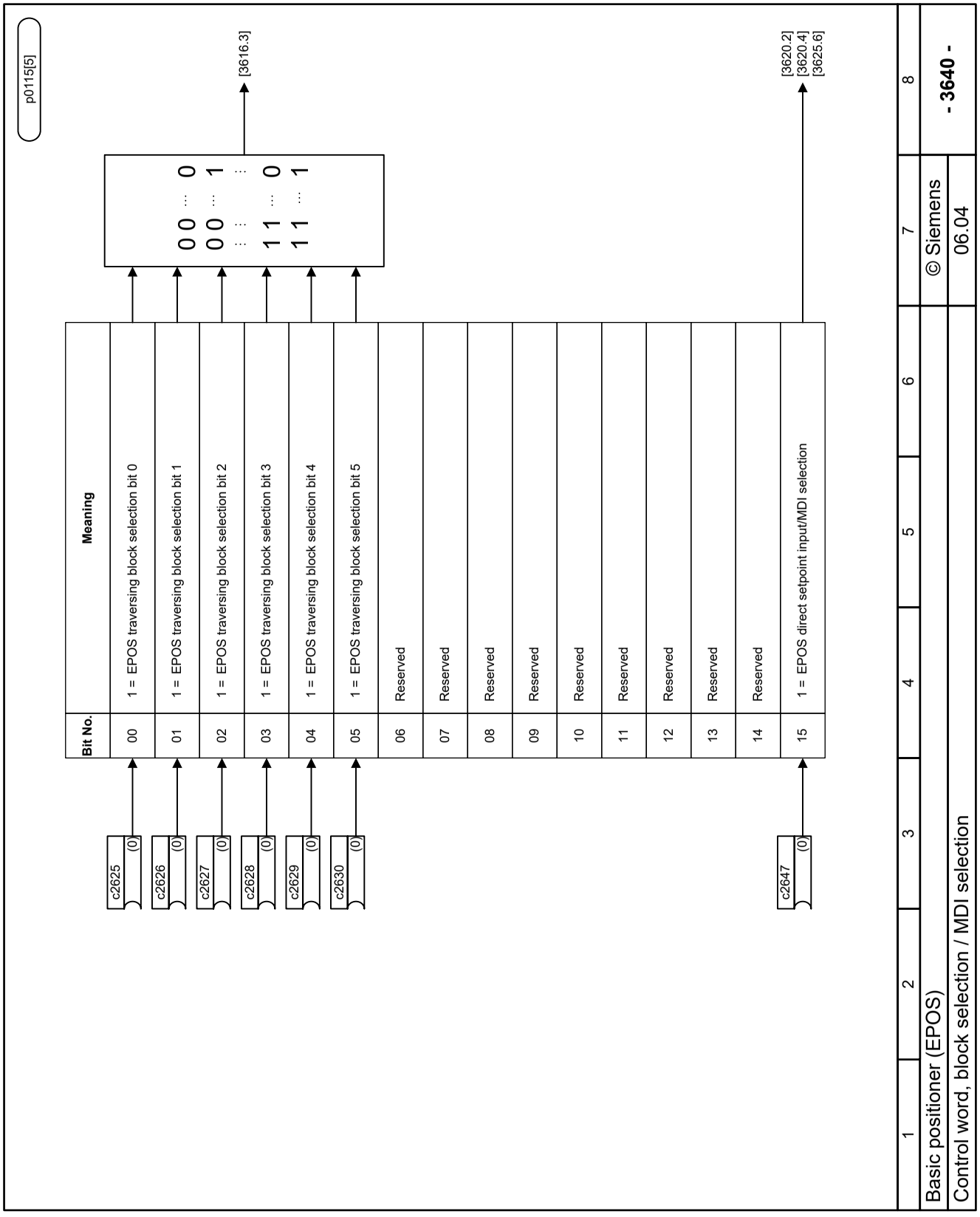


Figure 4-88 3640 – Control word, block selection/MDI selection

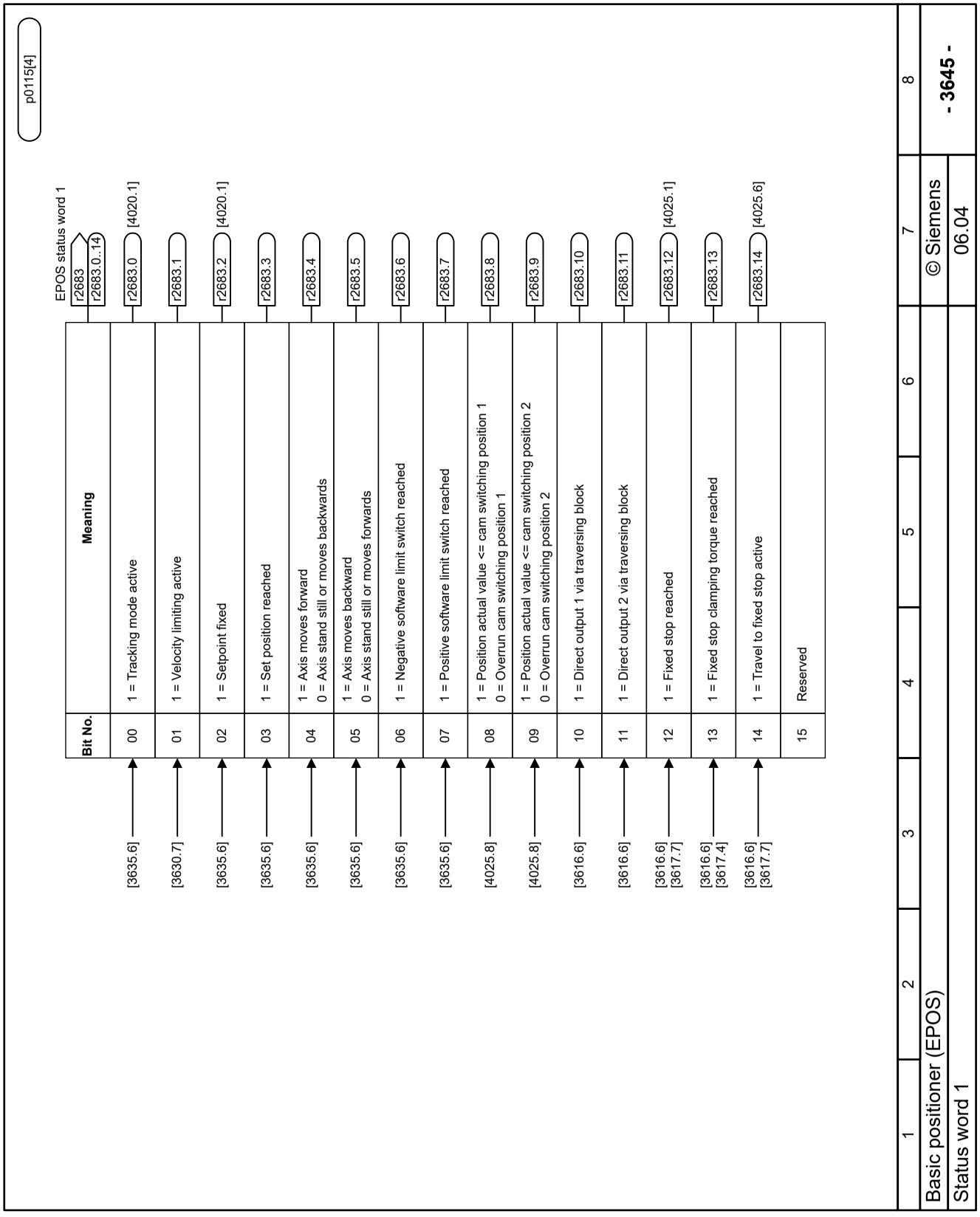


Figure 4-89 3645 – Status word 1

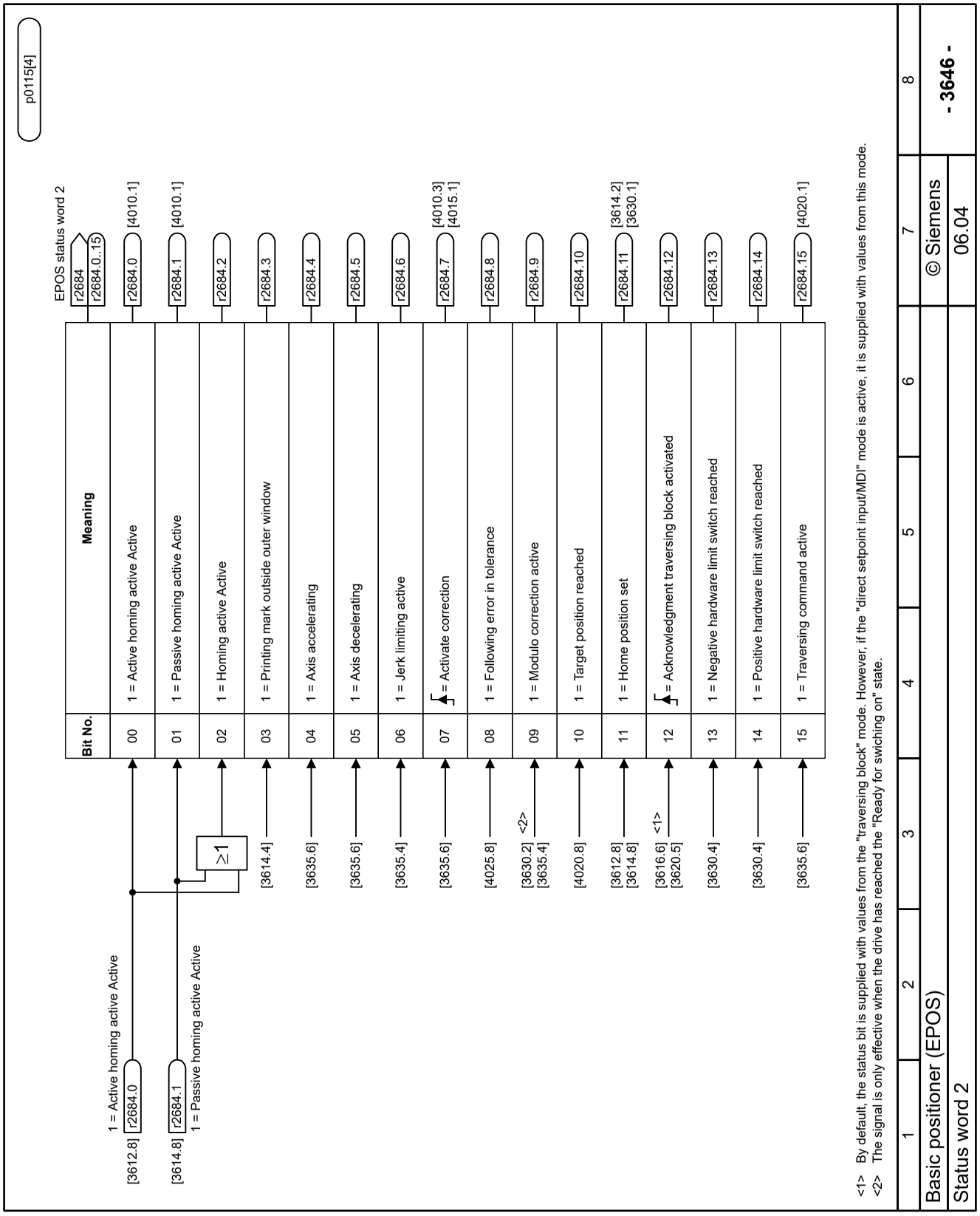


Figure 4-90 3646 – Status word 2

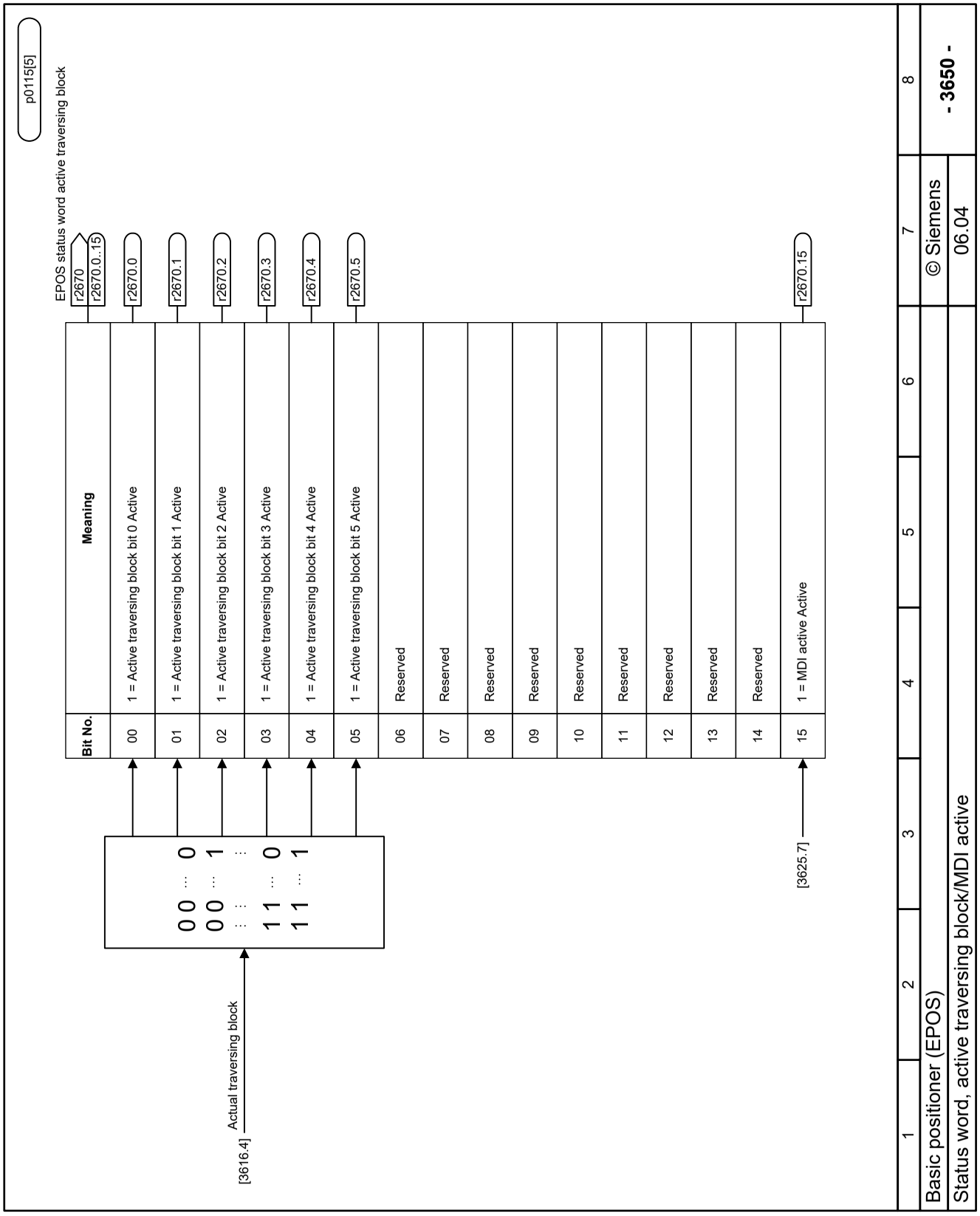


Figure 4-91 3650 – Status word, active traversing block/MDI active

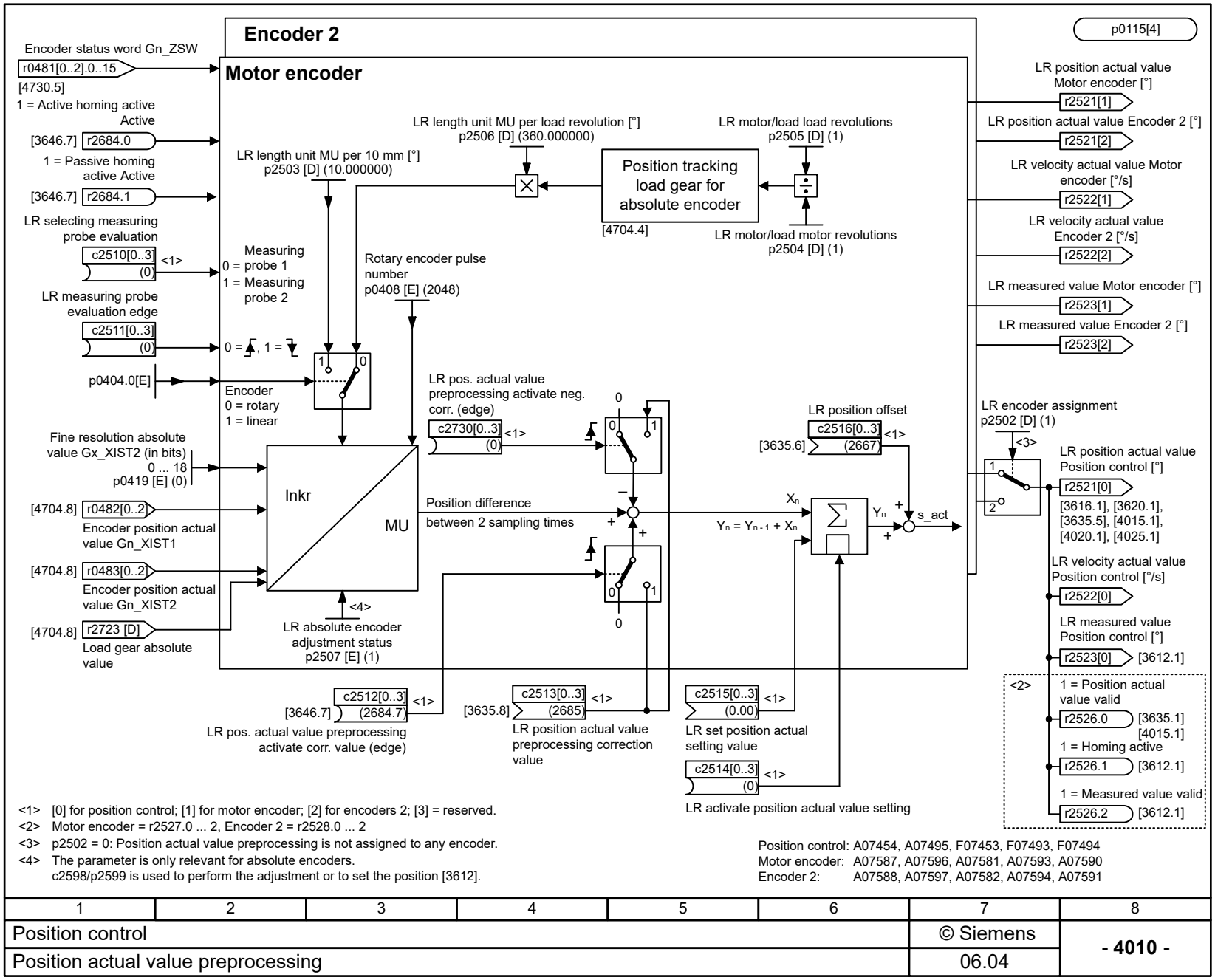
4.10 Closed-loop position control

Overview

The following function diagrams describe the closed loop position control.

Function diagrams

4010 – Position actual value preprocessing (Page 986)
4015 – Position controller (Page 987)
4020 – Standstill monitoring / positioning monitoring (Page 988)
4025 – Dynamic following error monitoring, cam controllers (Page 989)



<1> [0] for position control; [1] for motor encoder; [2] for encoders 2; [3] = reserved.
<2> Motor encoder = r2527.0 ... 2, Encoder 2 = r2528.0 ... 2
<3> p2502 = 0: Position actual value preprocessing is not assigned to any encoder.
<4> The parameter is only relevant for absolute encoders.
c2598/p2599 is used to perform the adjustment or to set the position [3612].

Position control: A07454, A07495, F07453, F07493, F07494
Motor encoder: A07587, A07596, A07581, A07593, A07590
Encoder 2: A07588, A07597, A07582, A07594, A07591

1	2	3	4	5	6	7	8
Position control						© Siemens	- 4010 -
Position actual value preprocessing						06.04	

Figure 4-92 4010 – Position actual value preprocessing

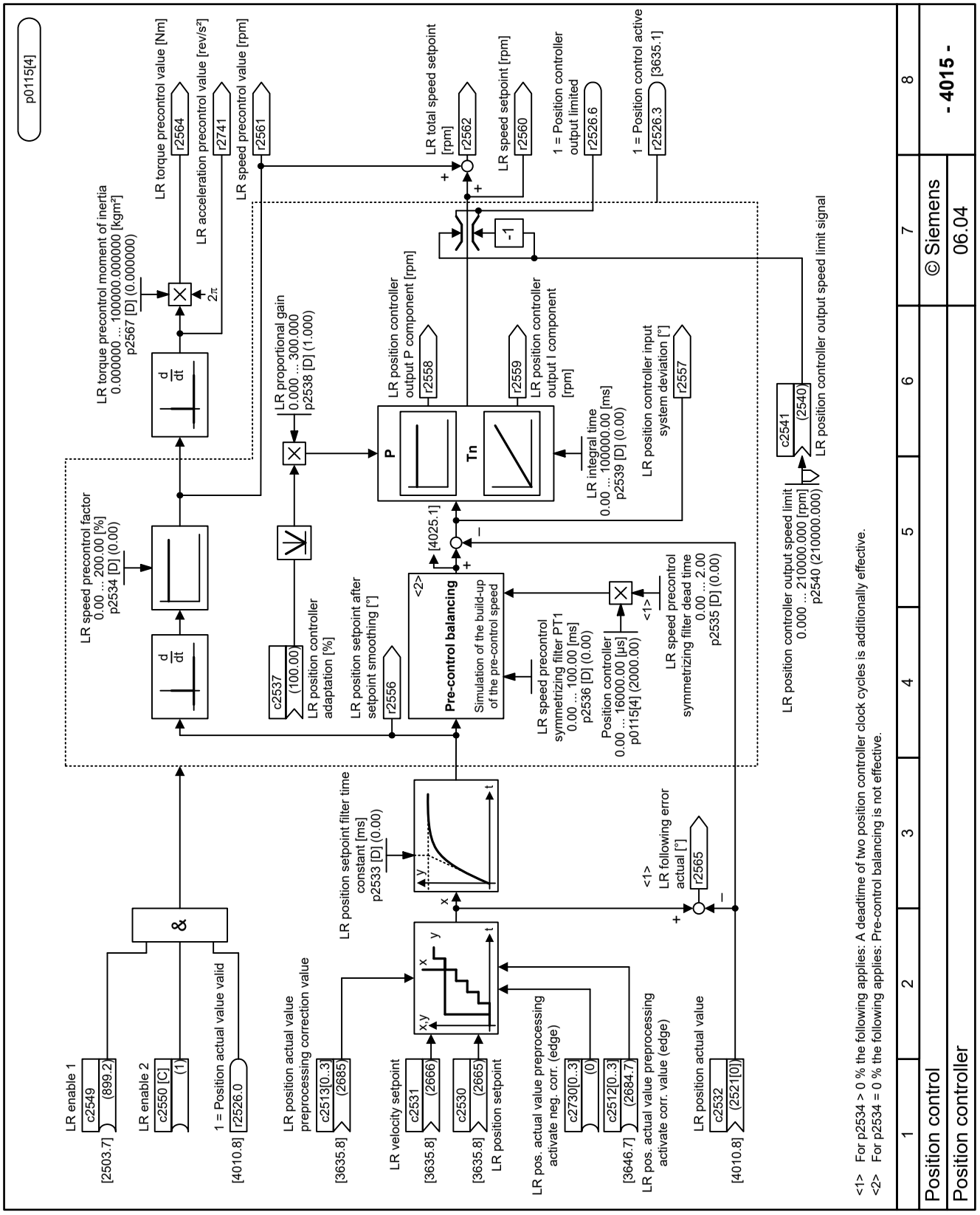


Figure 4-93 4015 – Position controller

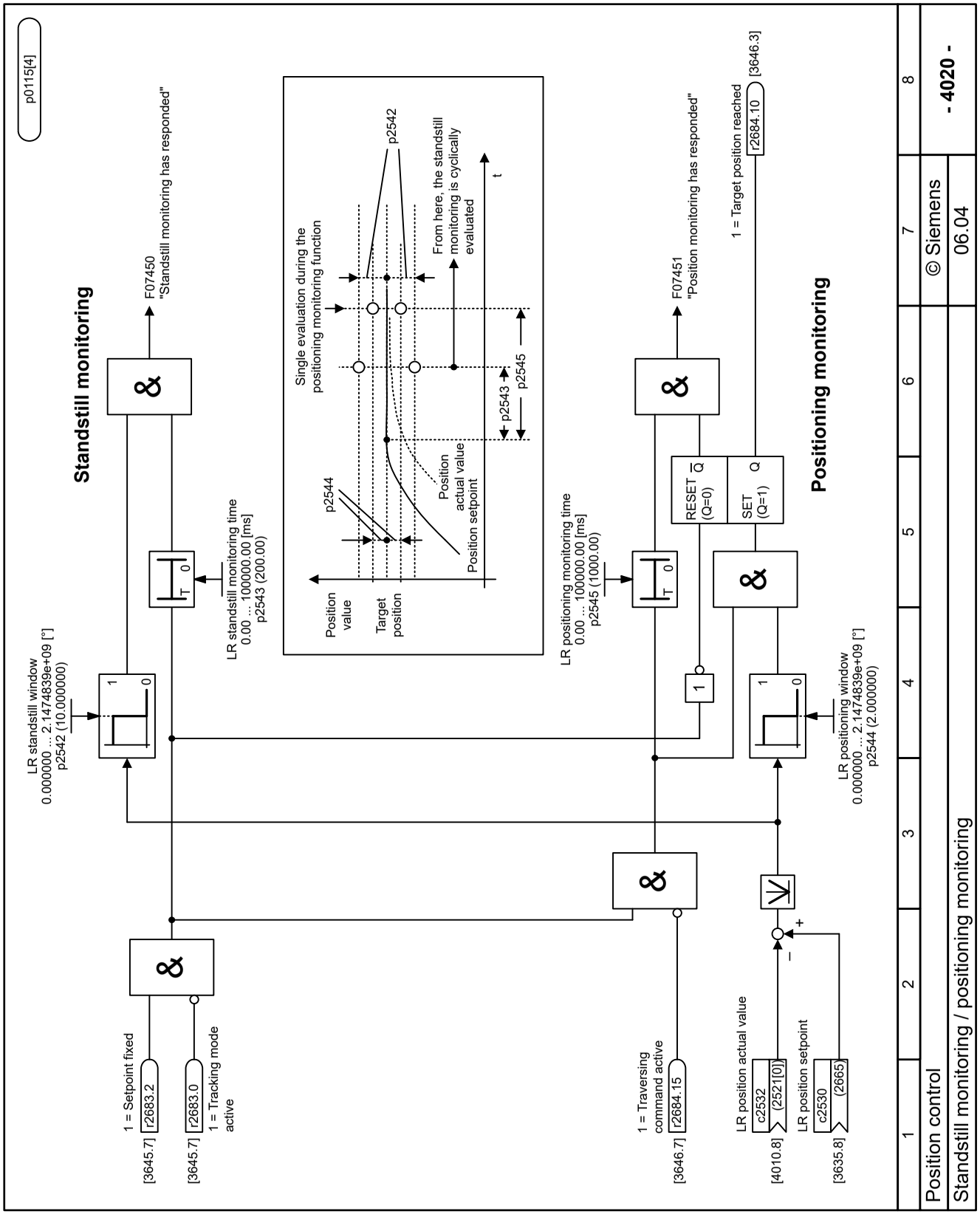
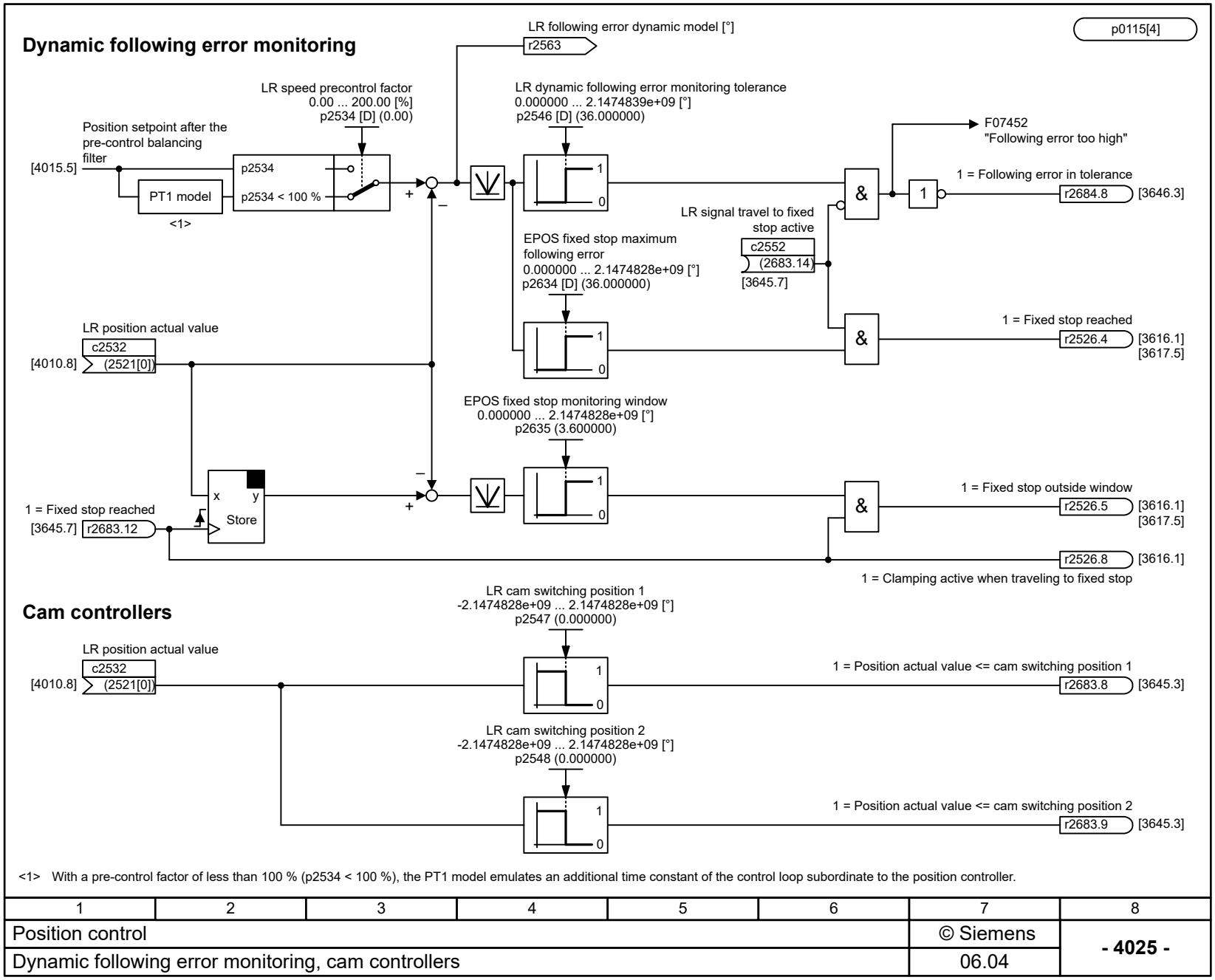


Figure 4-94 4020 – Standstill monitoring / positioning monitoring



<1> With a pre-control factor of less than 100 % (p2534 < 100 %), the PT1 model emulates an additional time constant of the control loop subordinate to the position controller.

1	2	3	4	5	6	7	8
Position control						© Siemens	- 4025 -
Dynamic following error monitoring, cam controllers						06.04	

Figure 4-95 4025 – Dynamic following error monitoring, cam controllers

4.11 Encoder evaluation

Overview

The following function diagrams describe the encoder evaluation.

Function diagrams

4704 – Position and temperature sensing, encoders 1 ... 2 (Page 991)
4715 – Speed actual value and pole pos. sensing, motor encoder (encoder 1) (Page 992)
4720 – Encoder interface, receive signals, encoders 1 ... 2 (Page 993)
4730 – Encoder interface, send signals, encoders 1 ... 2 (Page 994)
4750 – Absolute value for incremental encoder (Page 995)

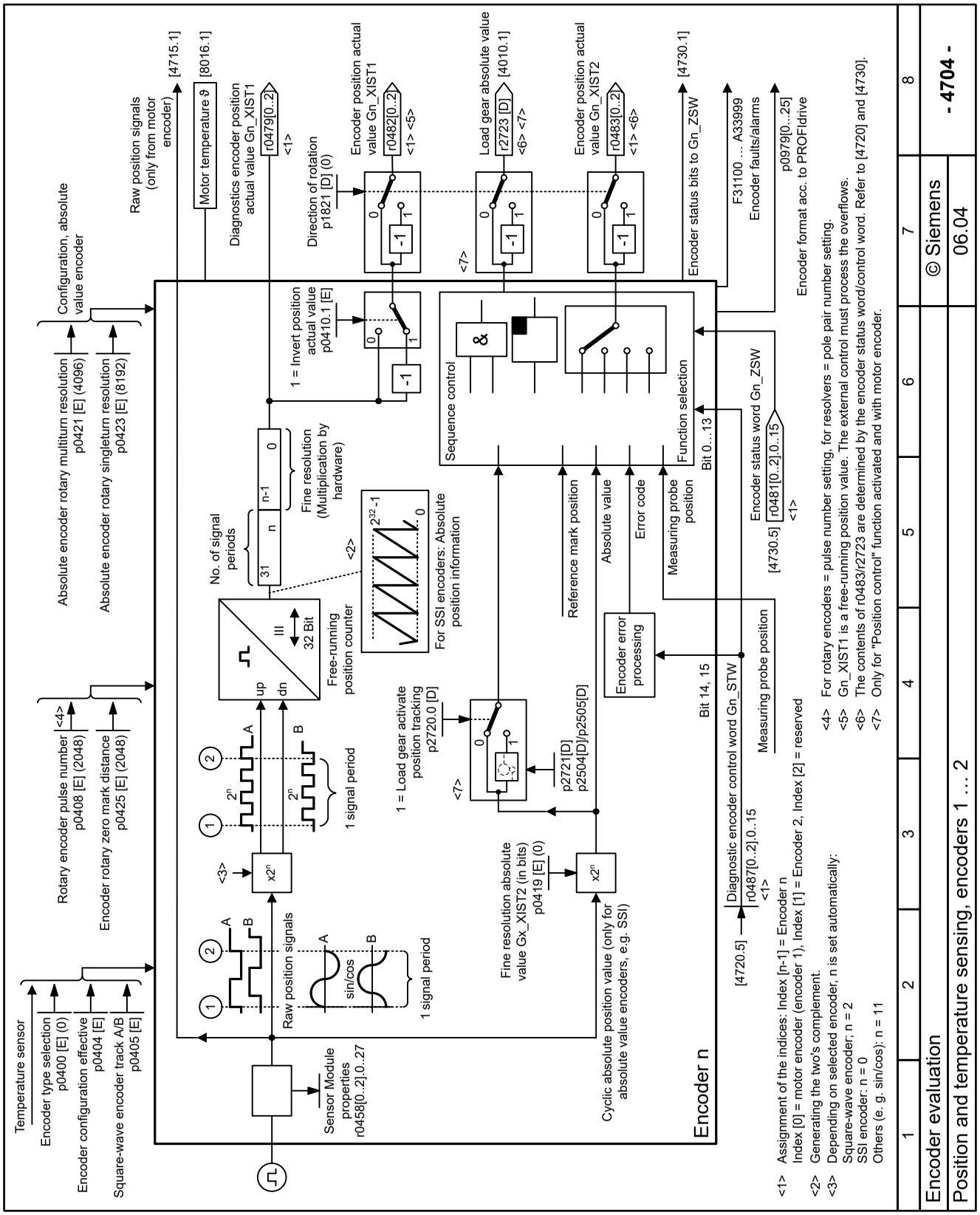


Figure 4-96 4704 – Position and temperature sensing encoders 1 ... 2

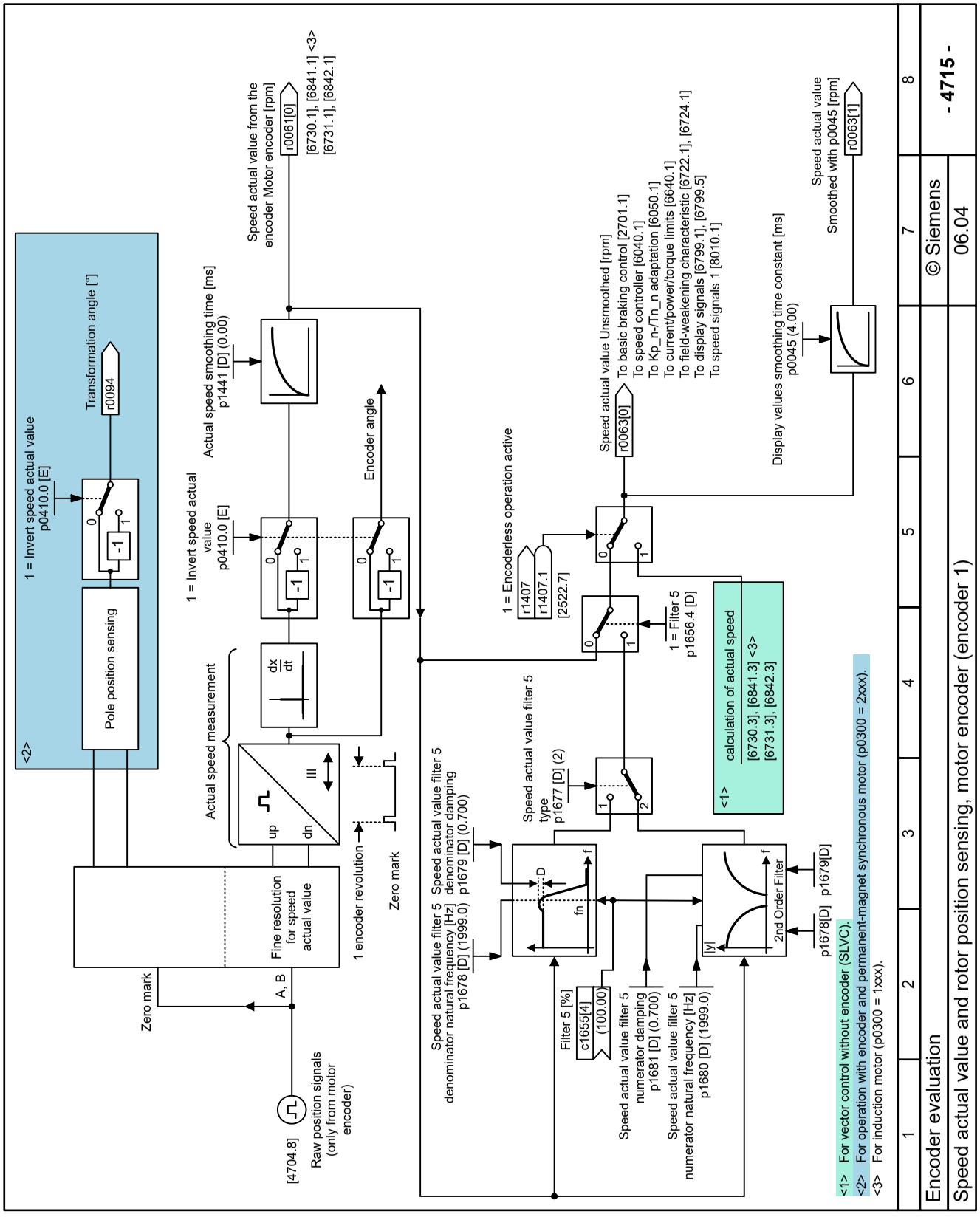


Figure 4-97 4715 – Speed actual value and pole pos. sensing, motor encoder (encoder 1)

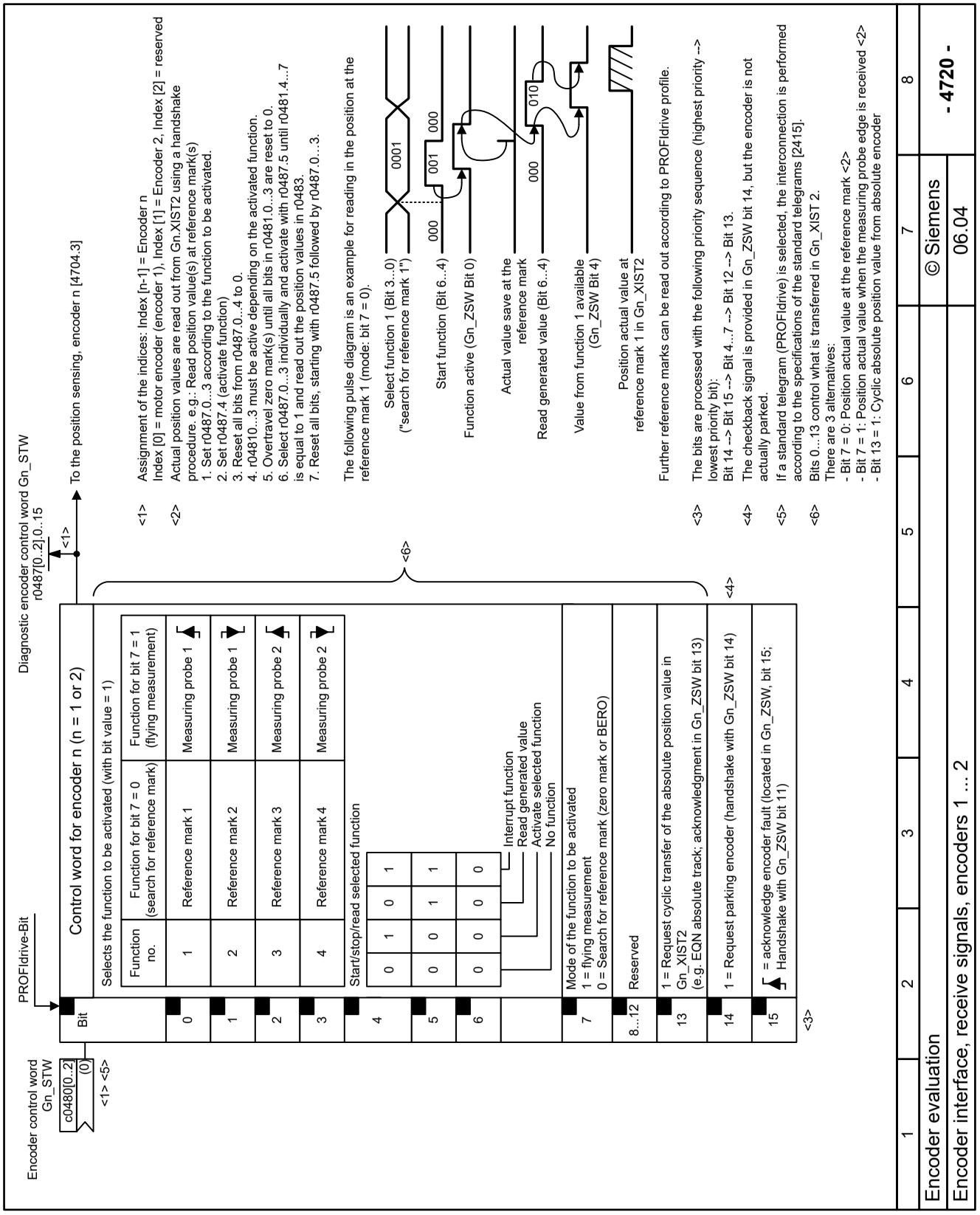


Figure 4-98 4720 – Encoder interface, receive signals, encoders 1 ... 2

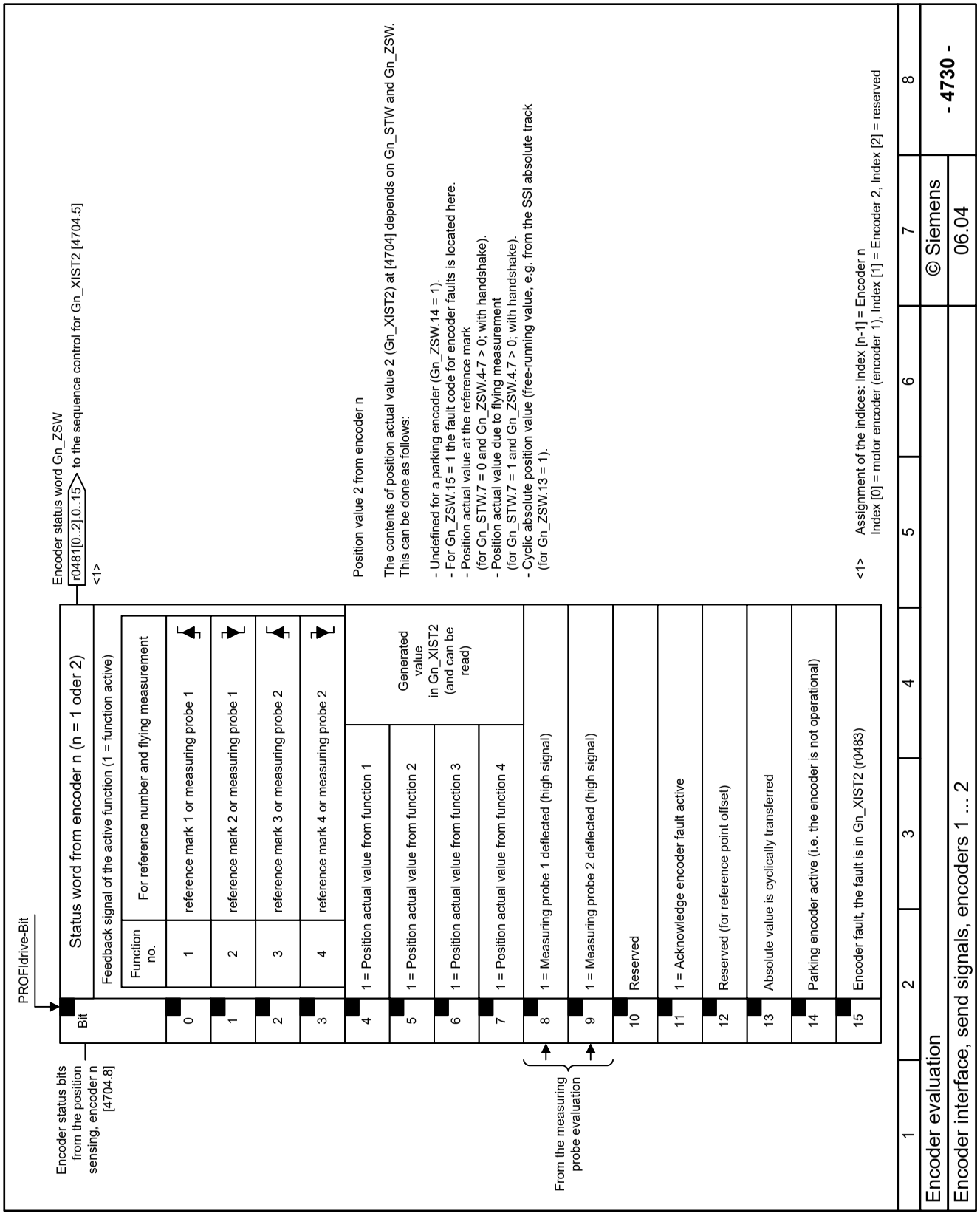


Figure 4-99 4730 – Encoder interface, send signals, encoders 1 ... 2

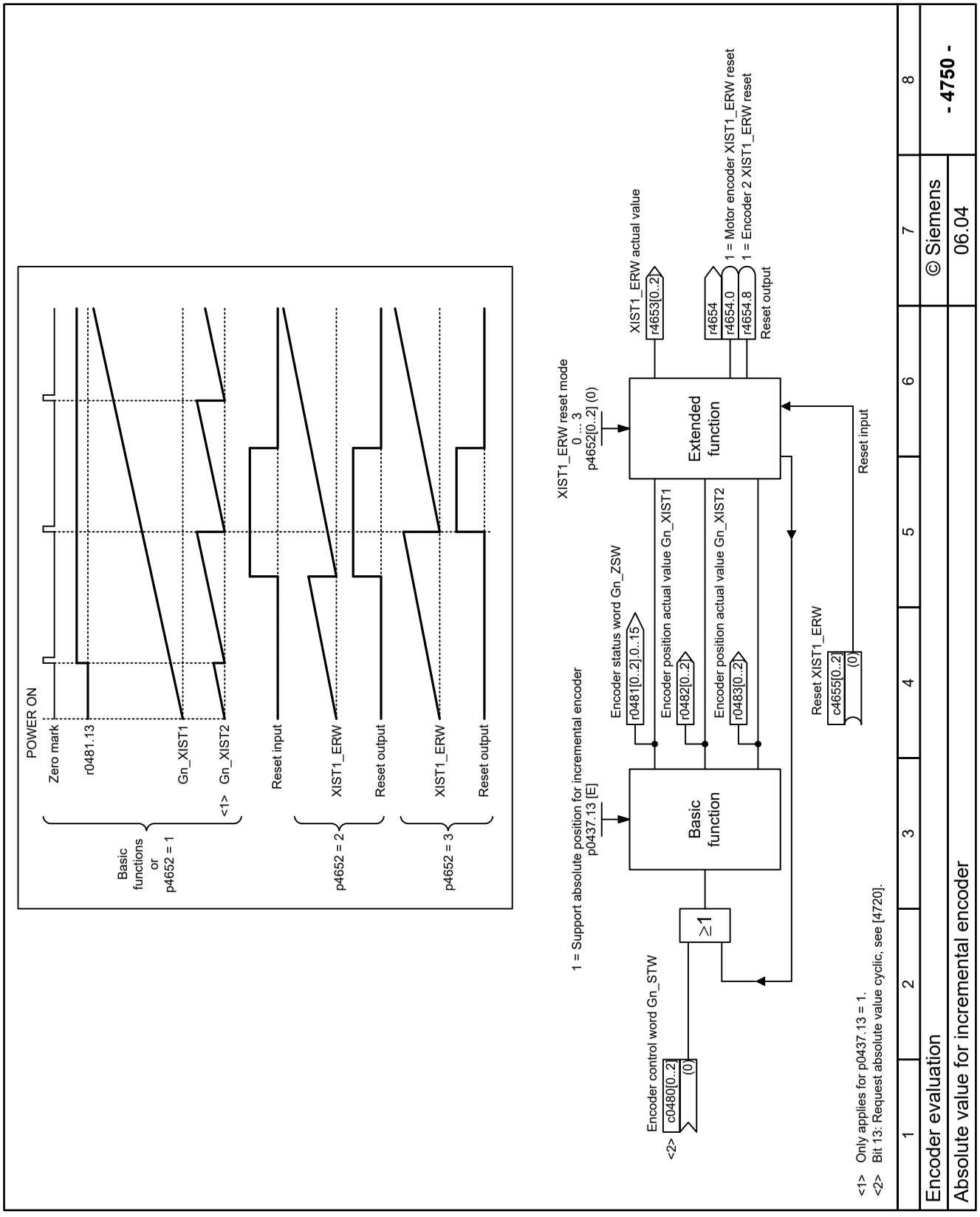


Figure 4-100 4750 – Absolute value for incremental encoder

4.12 Vector control

Overview

The following function diagrams describe the vector control function.

Function diagrams

6020 – Closed-loop speed control and generation of the torque limits, overview (Page 997)
6030 – Speed setpoint, droop (Page 998)
6031 – Pre-control balancing, acceleration model (Page 999)
6035 – Moment of inertia estimator (Page 1000)
6040 – Speed controller (Page 1001)
6050 – Kp_n-/Tn_n adaptation (Page 1002)
6060 – Torque setpoint (Page 1003)
6220 – Vdc_max controller and Vdc_min controller (VECTOR) (Page 1004)
6490 – Speed control configuration (Page 1005)
6491 – Flux control configuration (Page 1006)
6630 – Upper/lower torque limit (Page 1007)
6640 – Current/power/torque limits (Page 1008)
6700 – Closed-loop current control, overview (Page 1009)
6710 – Current setpoint filter (Page 1010)
6714 – Iq and Id controllers (Part 1) (Page 1011)
6715 – Iq and Id controllers (Part 2) (Page 1012)
6721 – Id setpoint (permanent magnet synchronous motor) (Page 1013)
6722 – Field weakening characteristic, Id setpoint (induction motor) (Page 1014)
6723 – Field weakening controller, flux controller (induction motor) (Page 1015)
6724 – Field weakening controller (permanent magnet synchronous motor) (Page 1016)
6730 – Interface to power unit (induction motor) (Page 1017)
6731 – Interface to the power unit (permanent magnet synchronous motor) (Page 1018)
6790 – Flux setpoint (synchronous reluctance motor) (Page 1019)
6791 – Field weakening controller, Id setpoint (synchronous reluctance motor) (Page 1020)
6792 – Interface to the power unit (synchronous reluctance motor) (Page 1021)
6799 – Display signals (Page 1022)

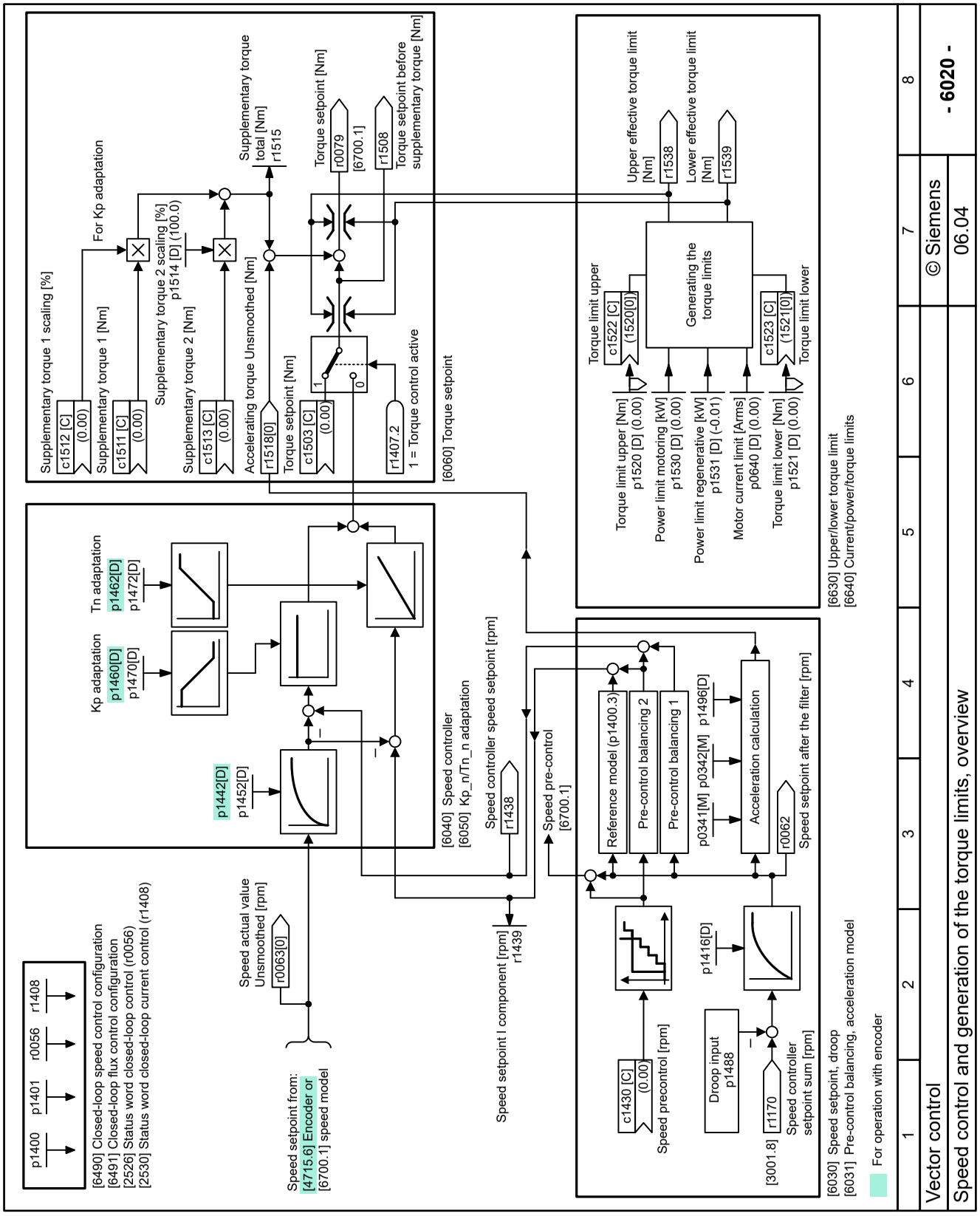
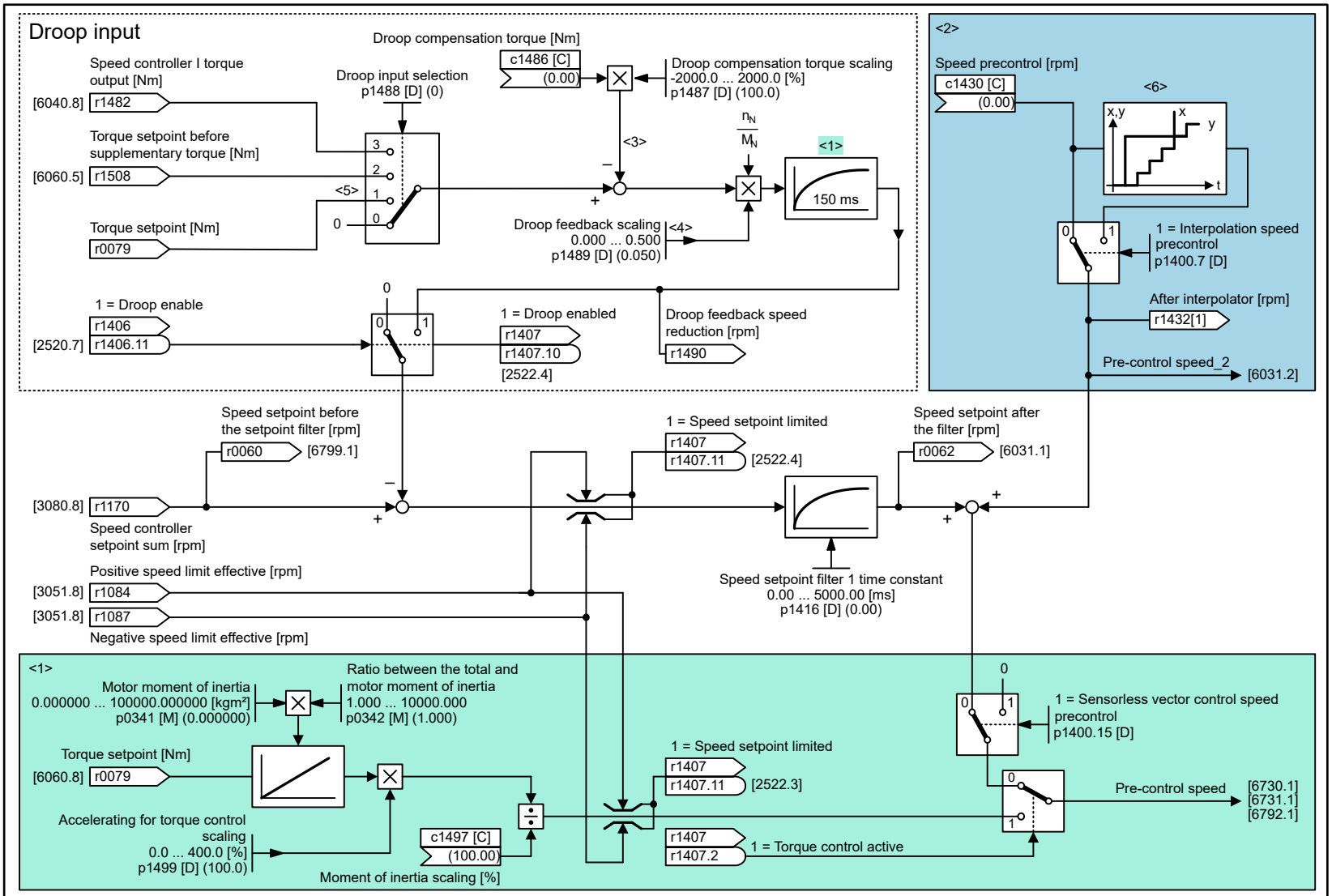


Figure 4-101 6020 - Closed-loop speed control and generation of the torque limits, overview



<1> For vector control without encoder (SLVC).
<2> Only for p1400[D].10 = 1.
<3> Only active, if p1488 > 0.
<4> Scaling: p1489 = 0.100 - for a rated motor torque of r0333 - results in a speed setpoint reduction of 0.1 · p0311.
<5> p1488 = 1 not recommended with active acceleration calculation [6031].
<6> Interpolation between p0115[4] and p0115[1].

1	2	3	4	5	6	7	8
Vector control						© Siemens	- 6030 -
Speed setpoint, droop						06.04	

Figure 4-102 6030 - Speed setpoint, droop

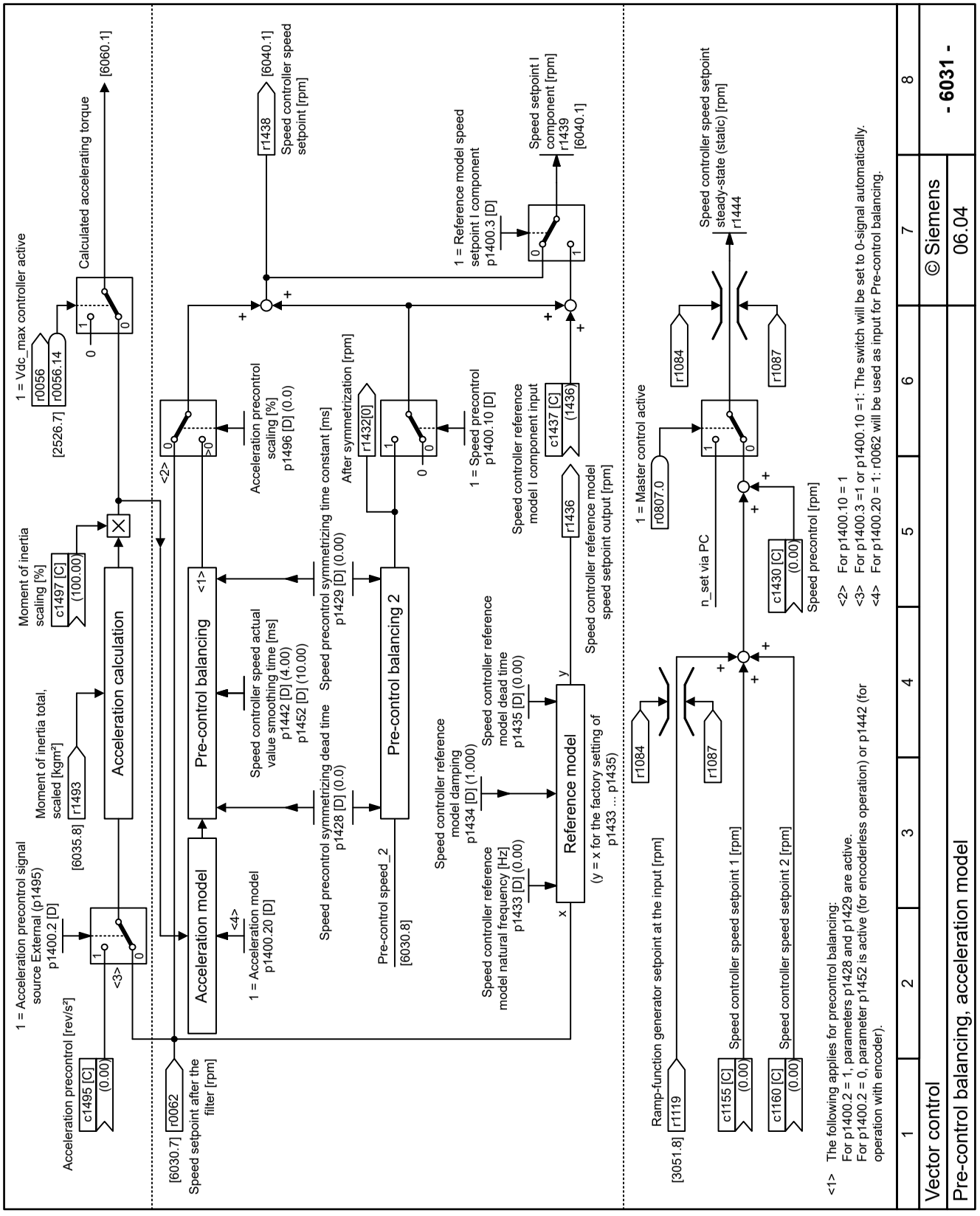


Figure 4-103 6031 - Precontrol balancing, acceleration model

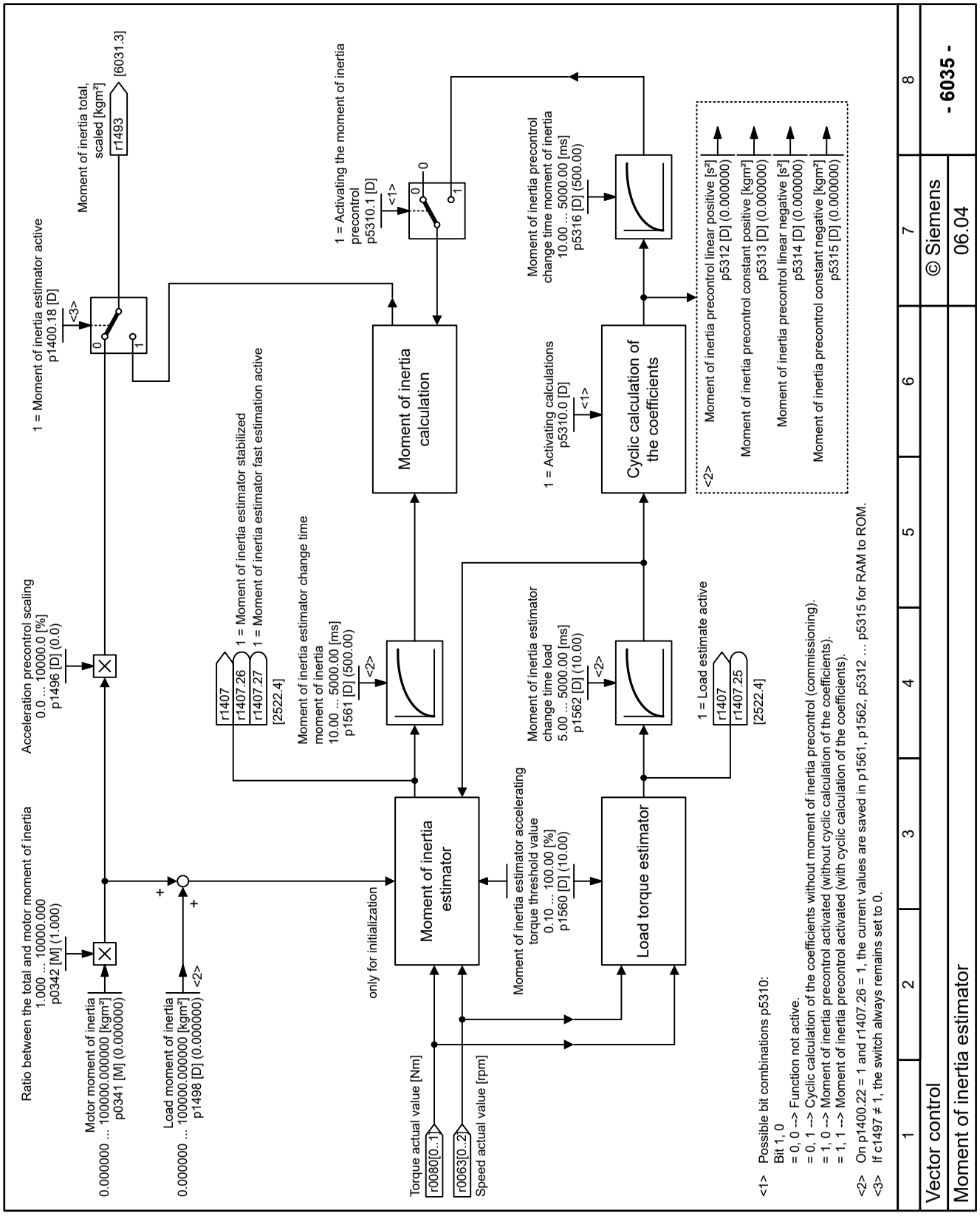


Figure 4-104 6035 – Moment of inertia estimator

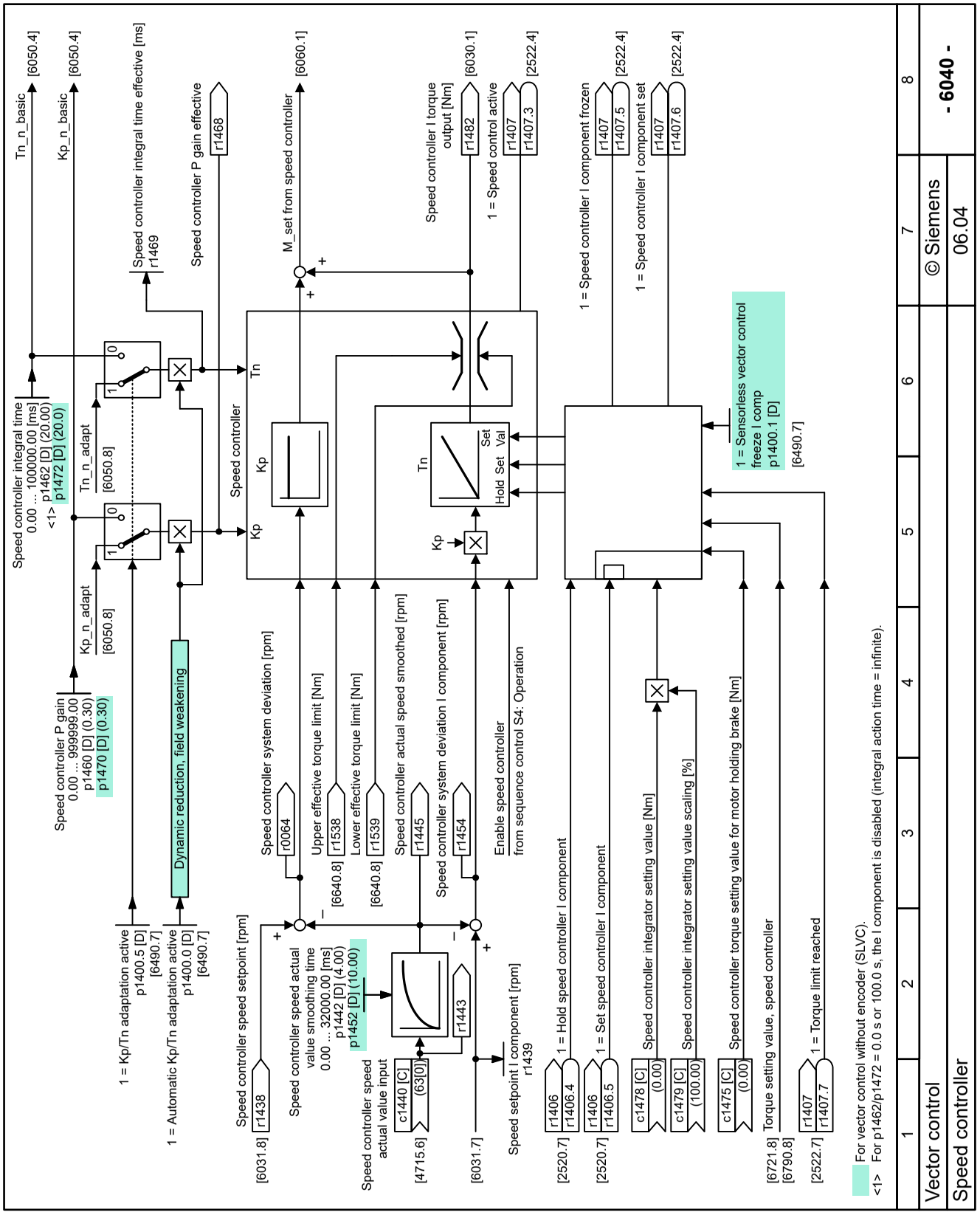


Figure 4-105 6040 - Speed controller

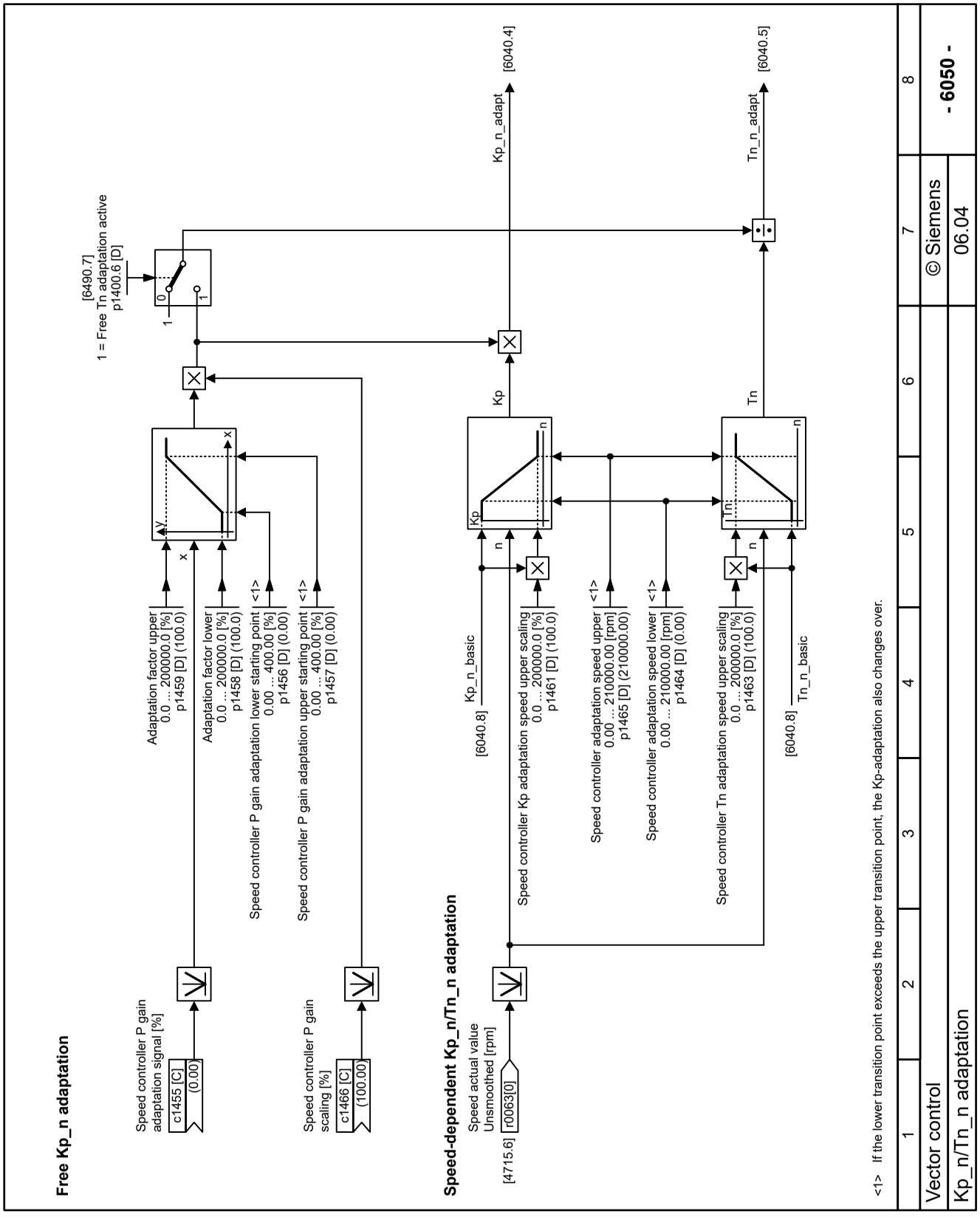


Figure 4-106 6050 - Kp_n-/Tn_n adaptation

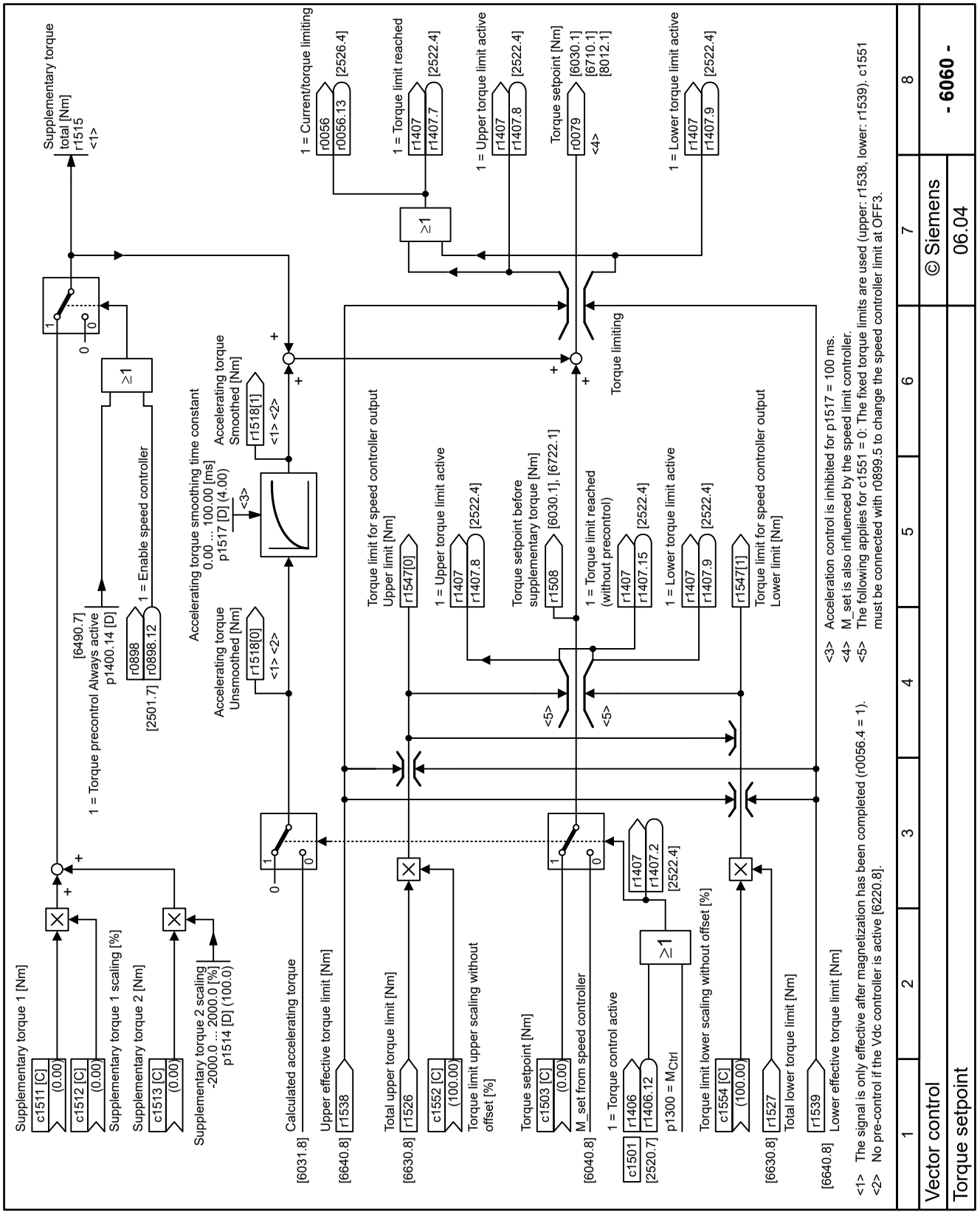


Figure 4-107 6060 - Torque setpoint

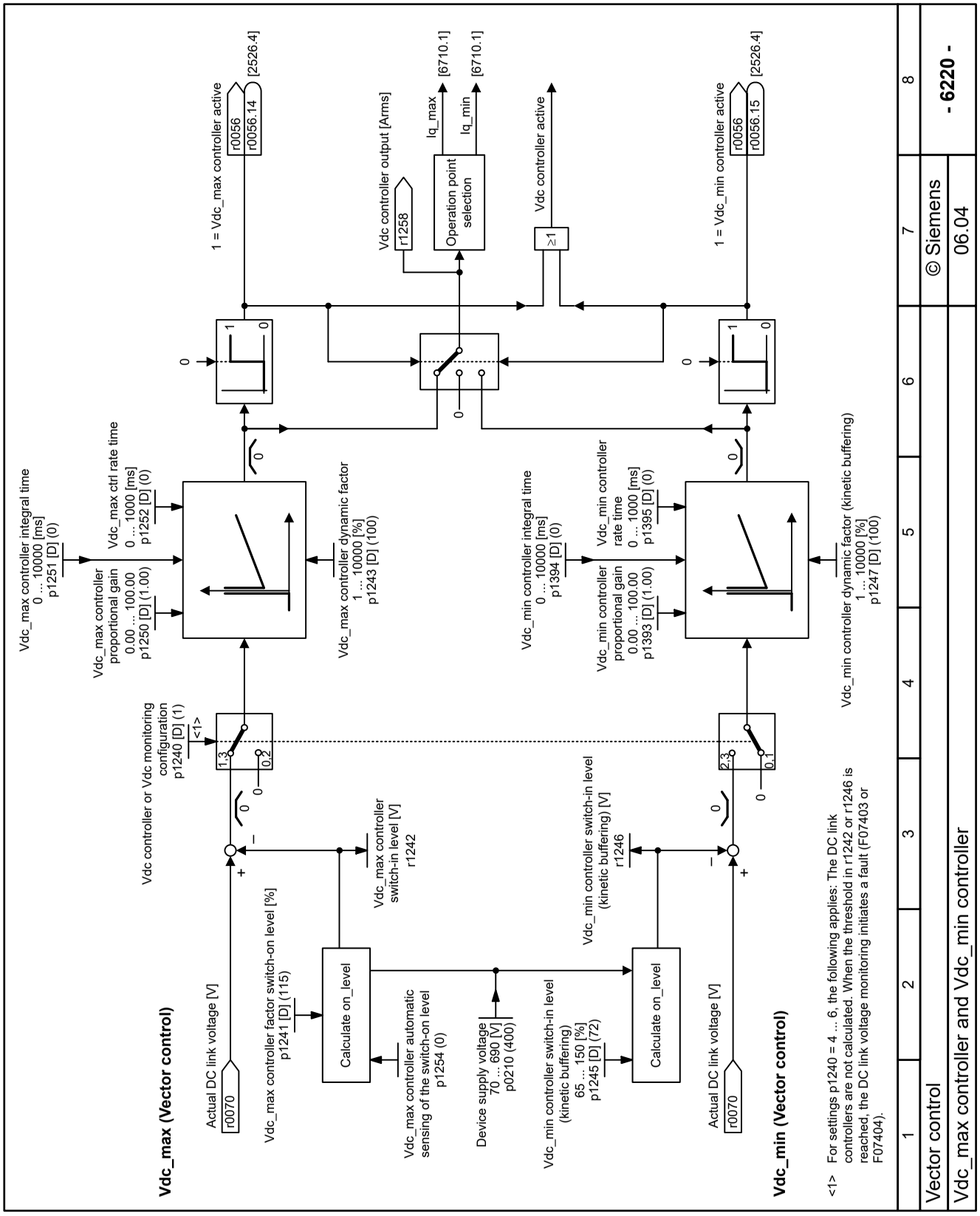


Figure 4-108 6220 - Vdc_max controller and Vdc_min controller (VECTOR)

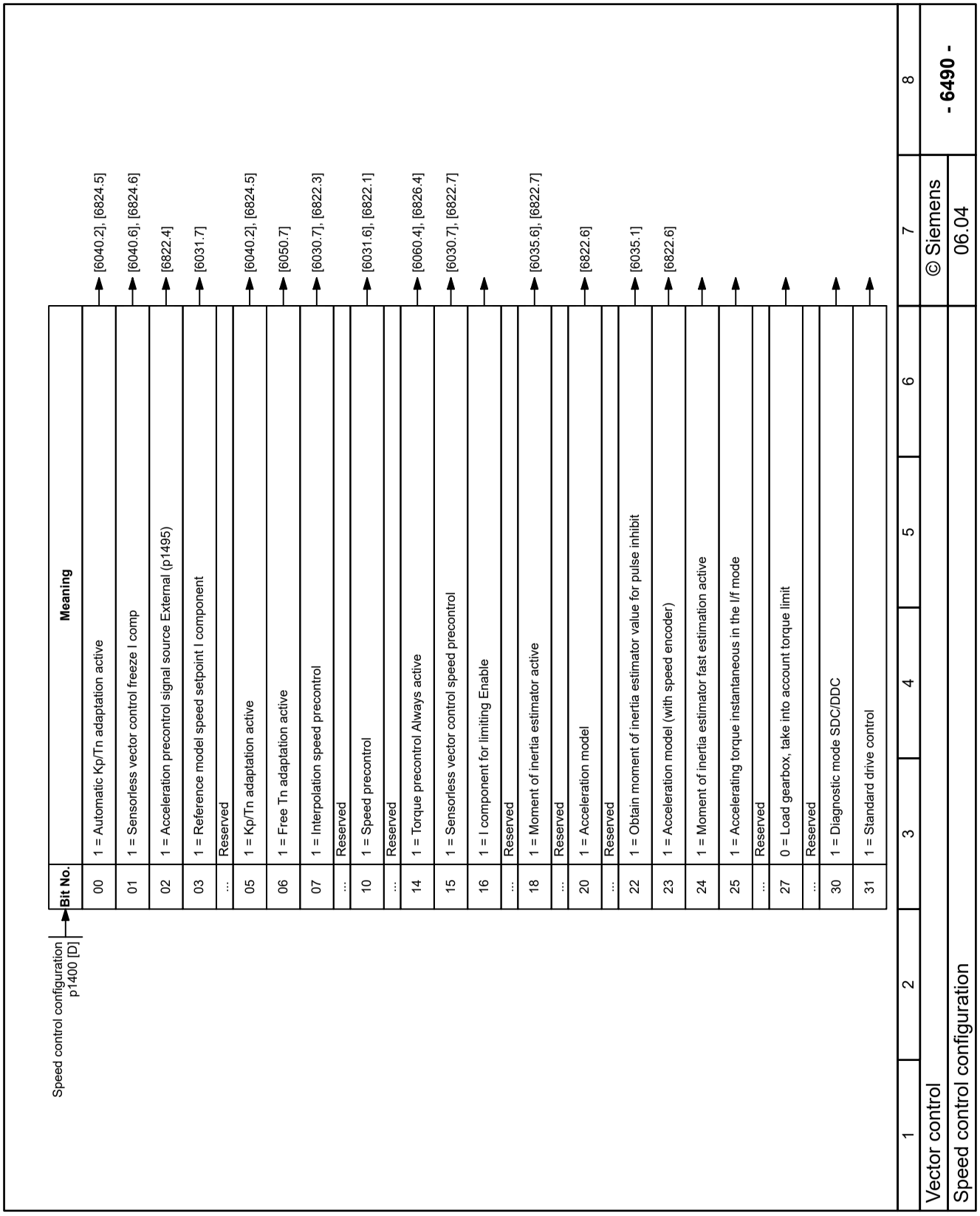


Figure 4-109 6490 - Speed control configuration

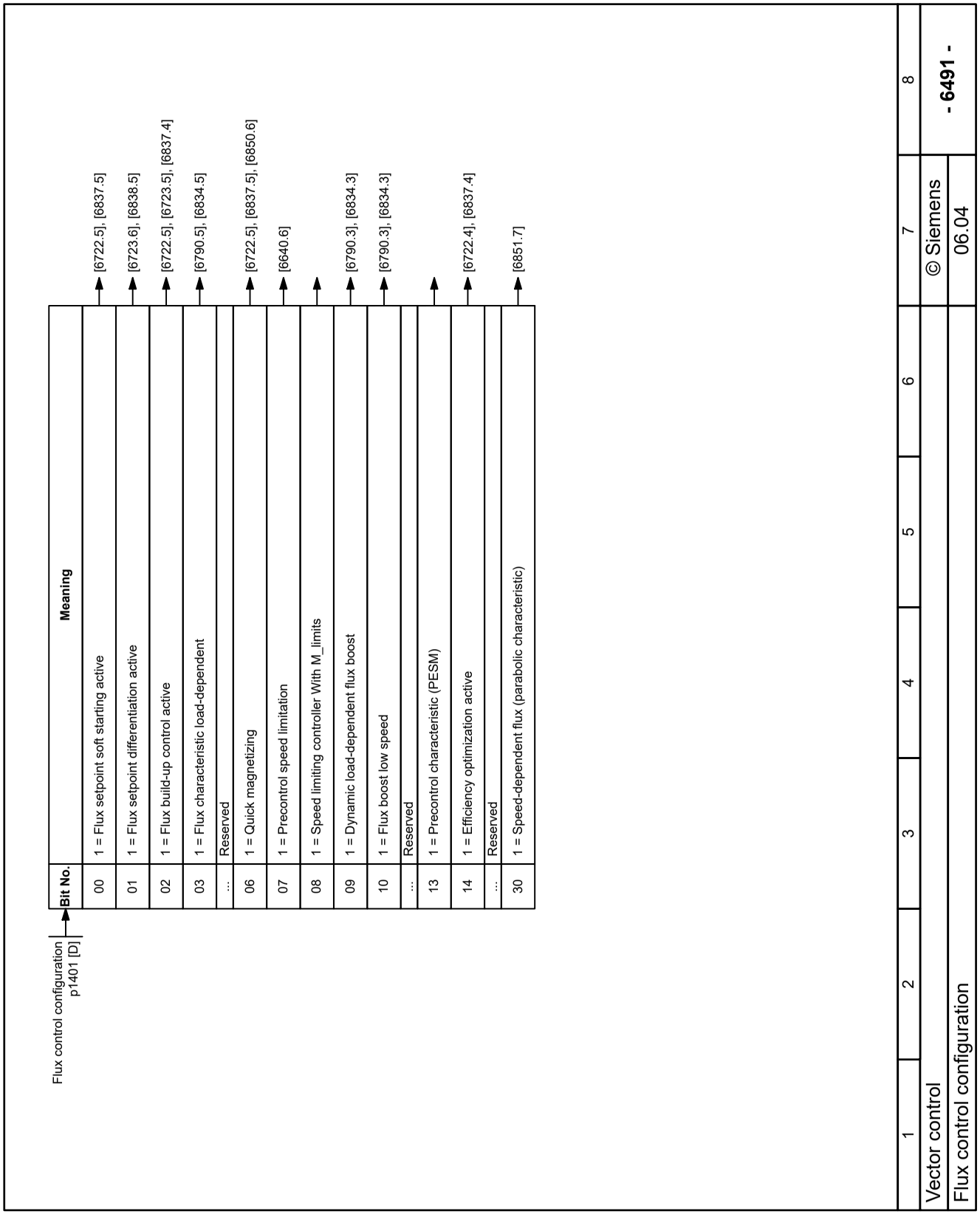


Figure 4-110 6491 - Flux control configuration

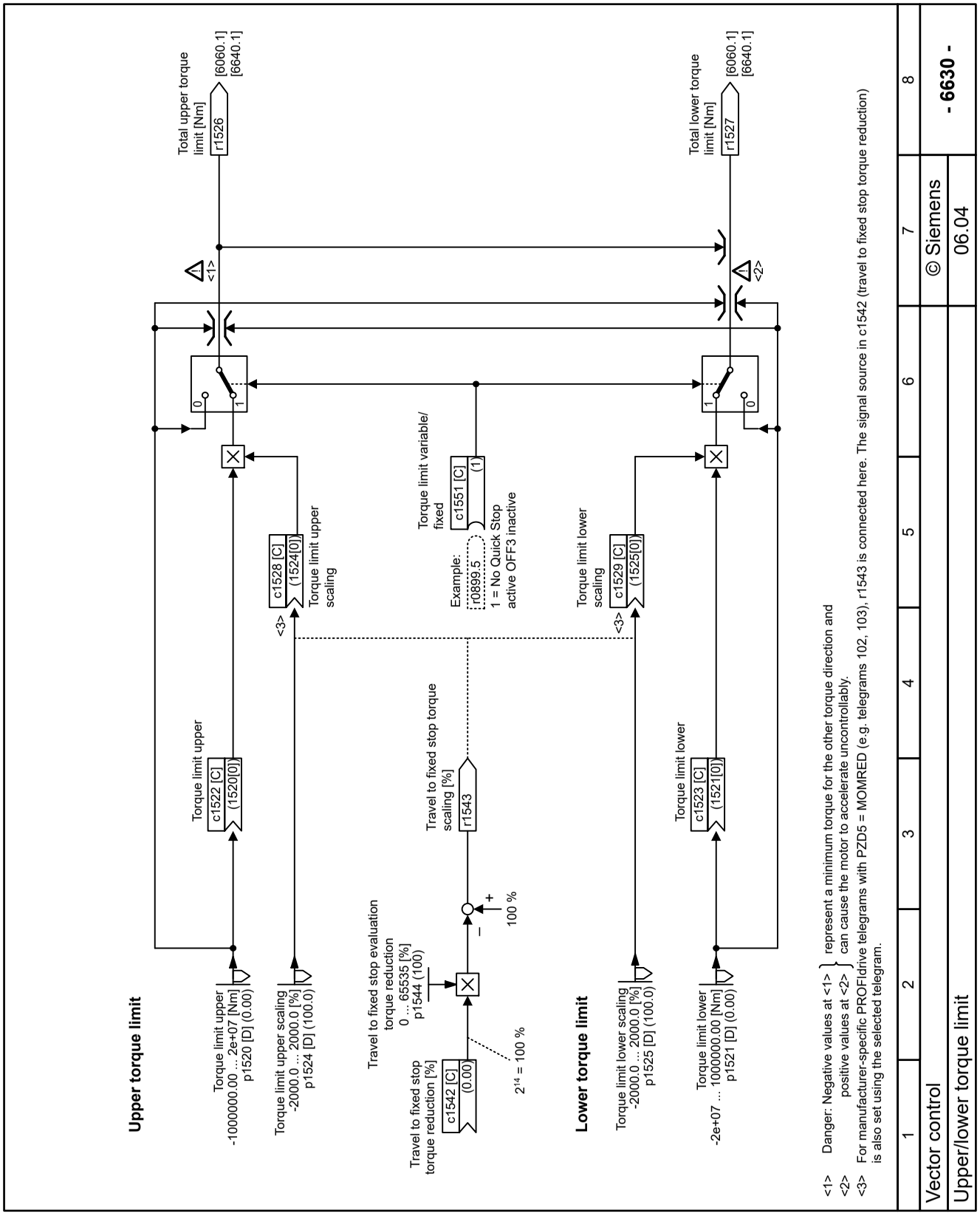


Figure 4-111 6630 - Upper/lower torque limit

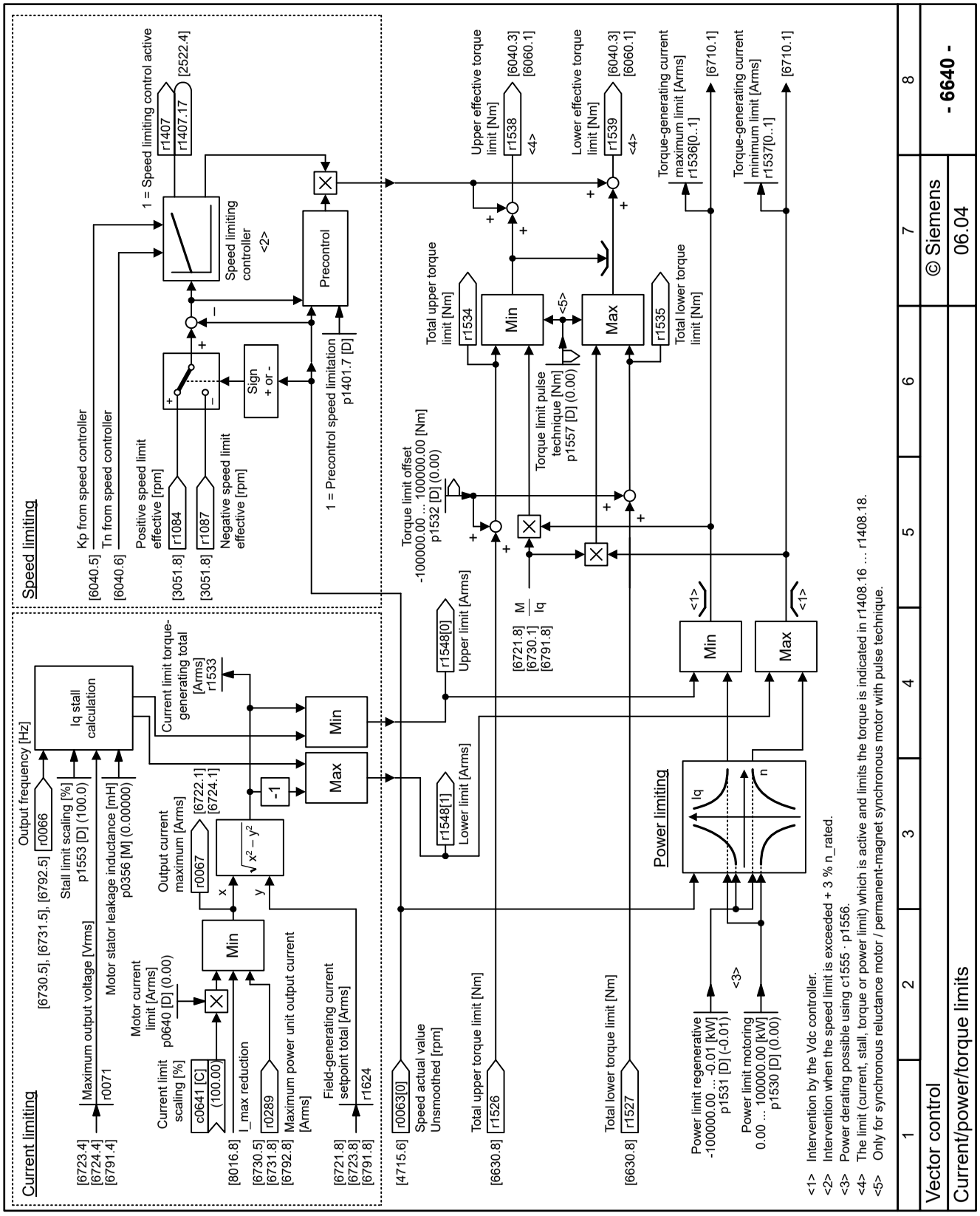


Figure 4-112 6640 - Current/power/torque limits

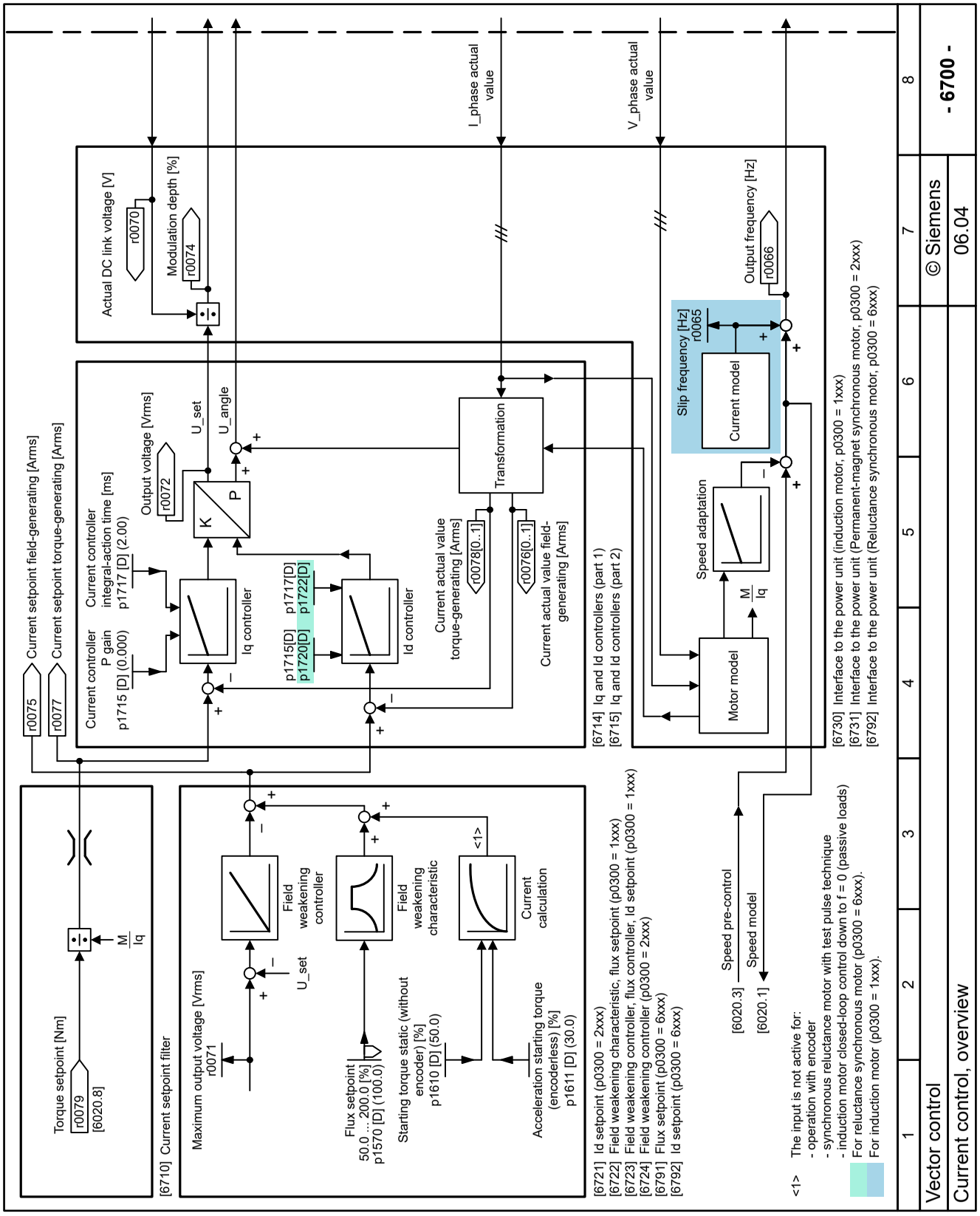


Figure 4-113 6700 - Current regulation, overview

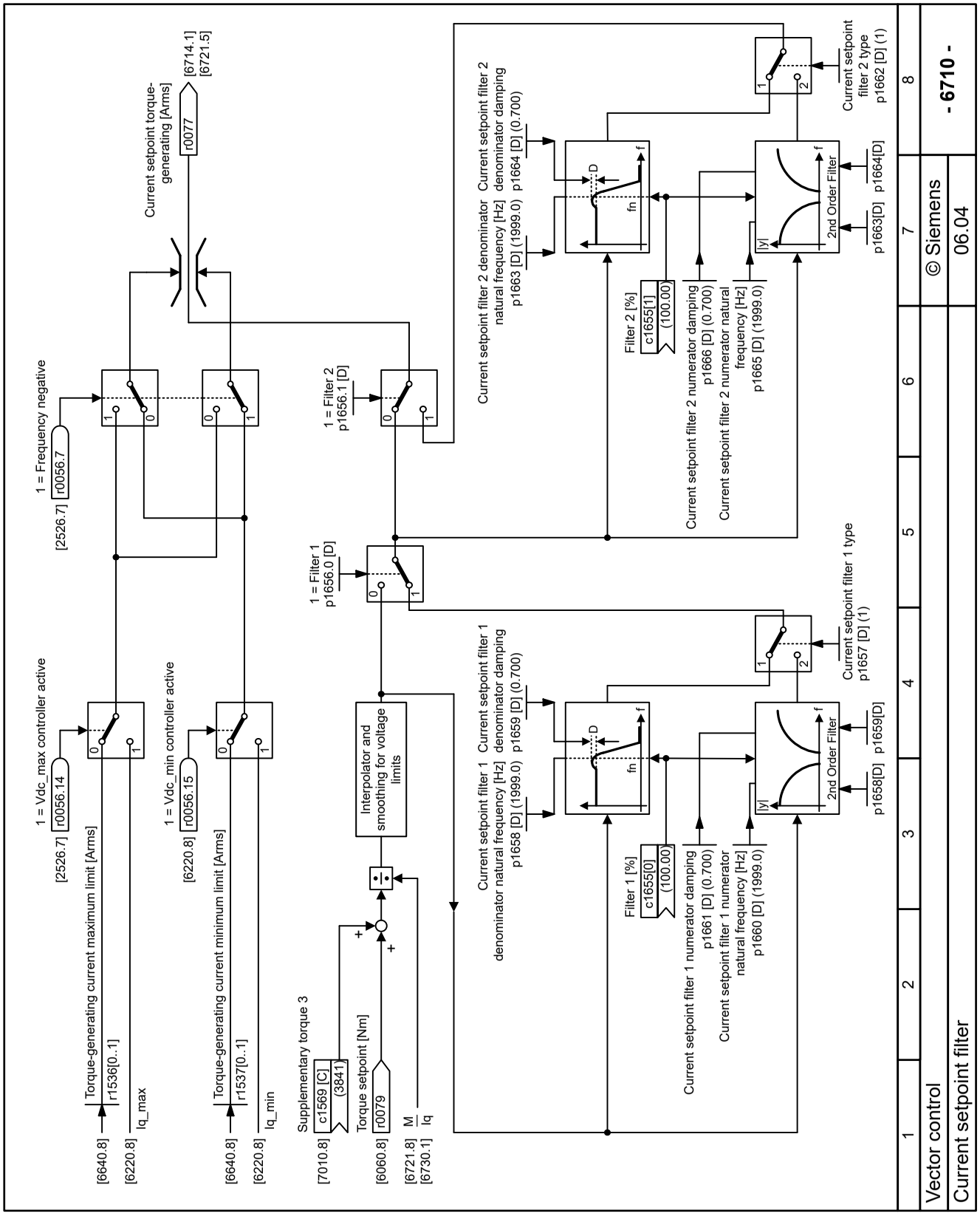


Figure 4-114 6710 - Current setpoint filter

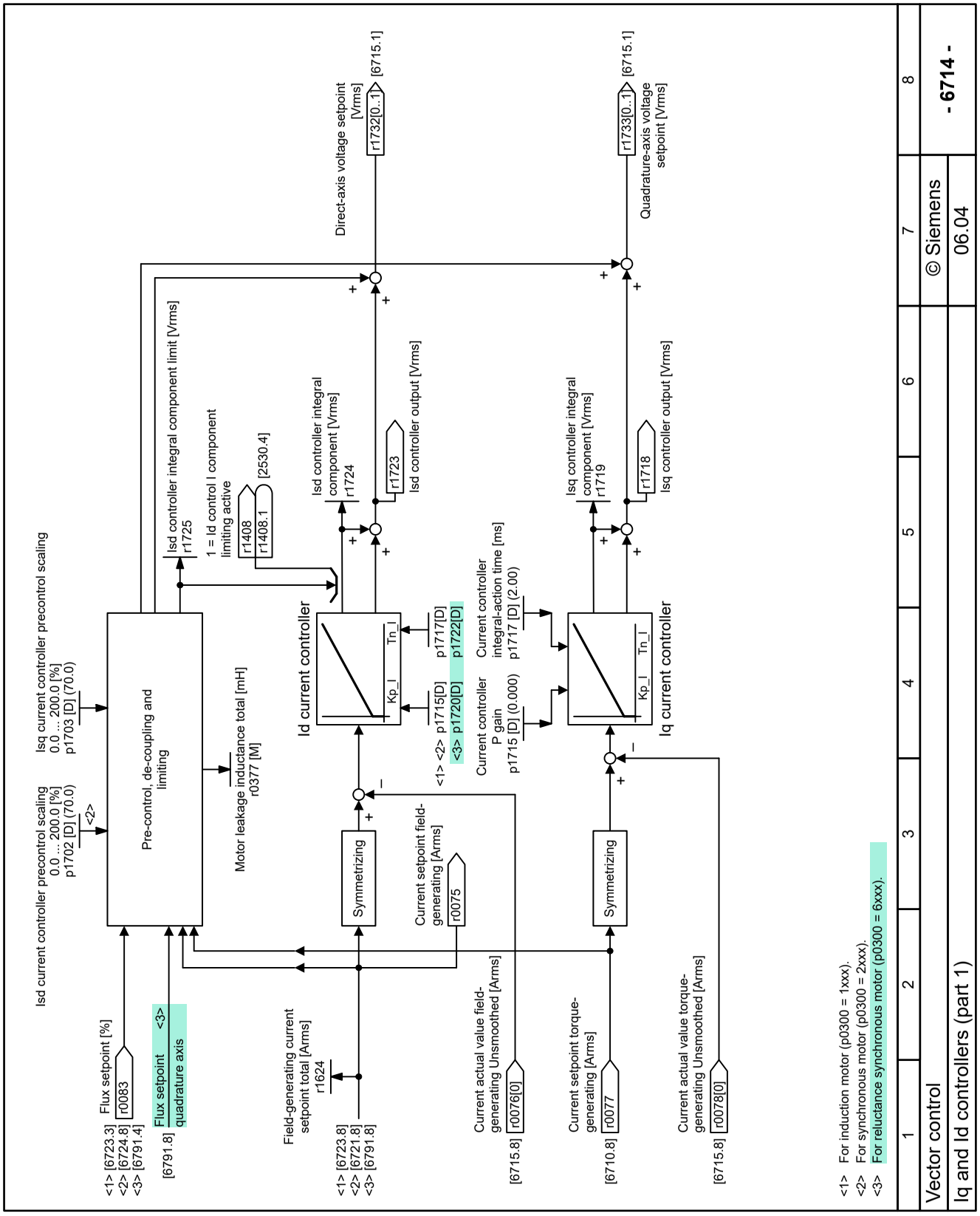


Figure 4-115 6714 - Iq and Id controllers (Part 1)

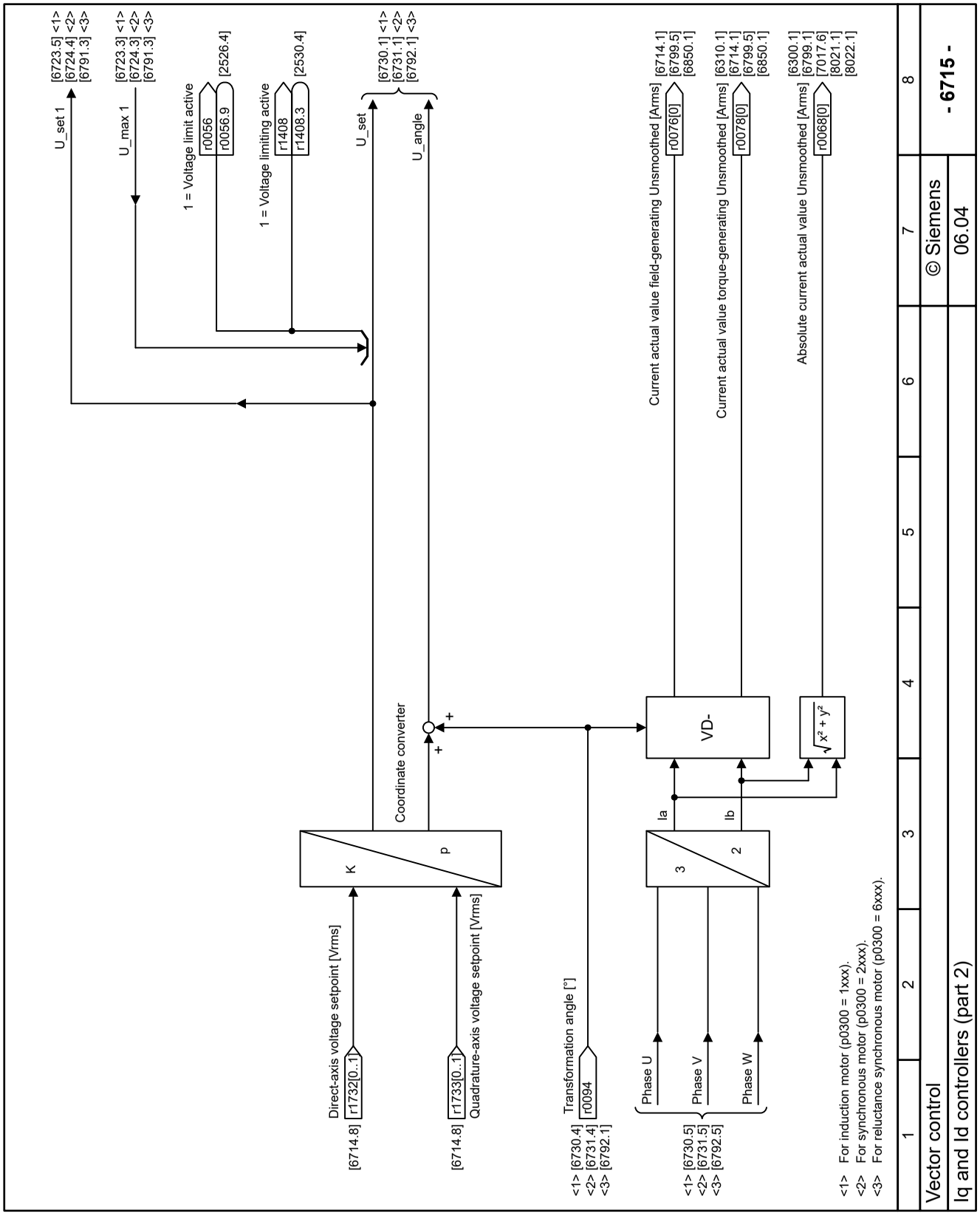


Figure 4-116 6715 - Iq and Id controllers (Part 2)

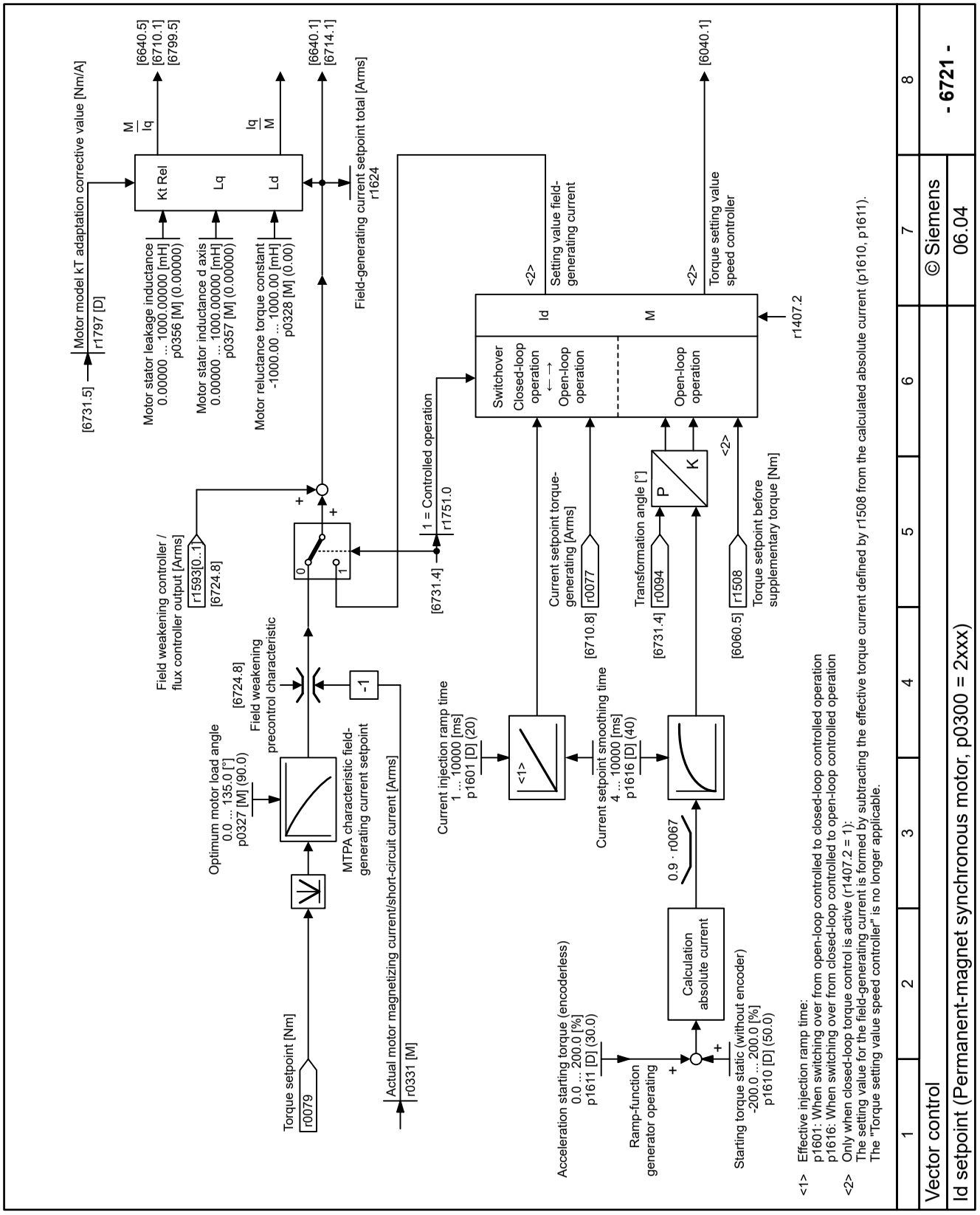


Figure 4-117 6721 - Id setpoint (permanent-magnet synchronous motor)

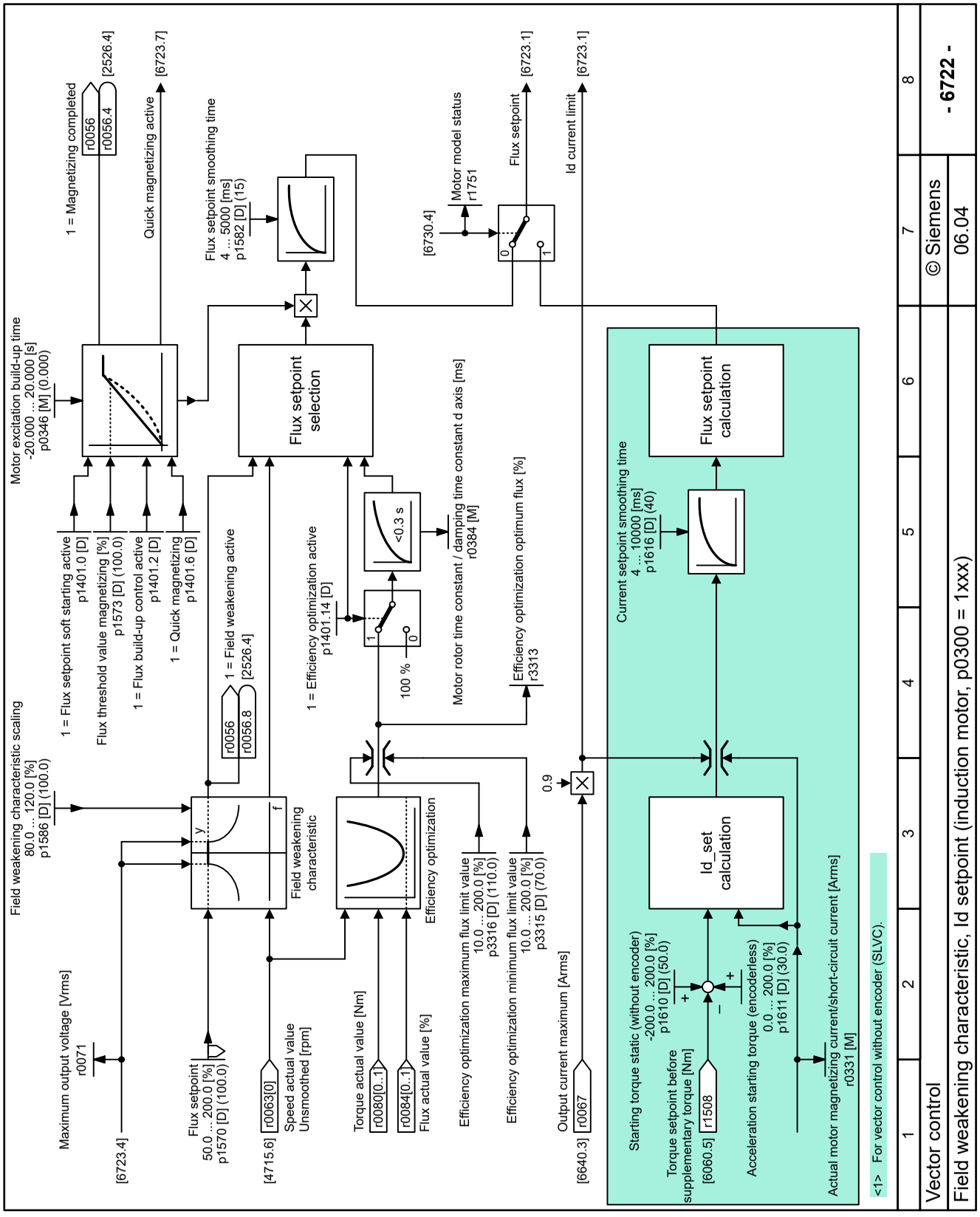


Figure 4-118 6722 - Field weakening characteristic, Id setpoint (induction motor)

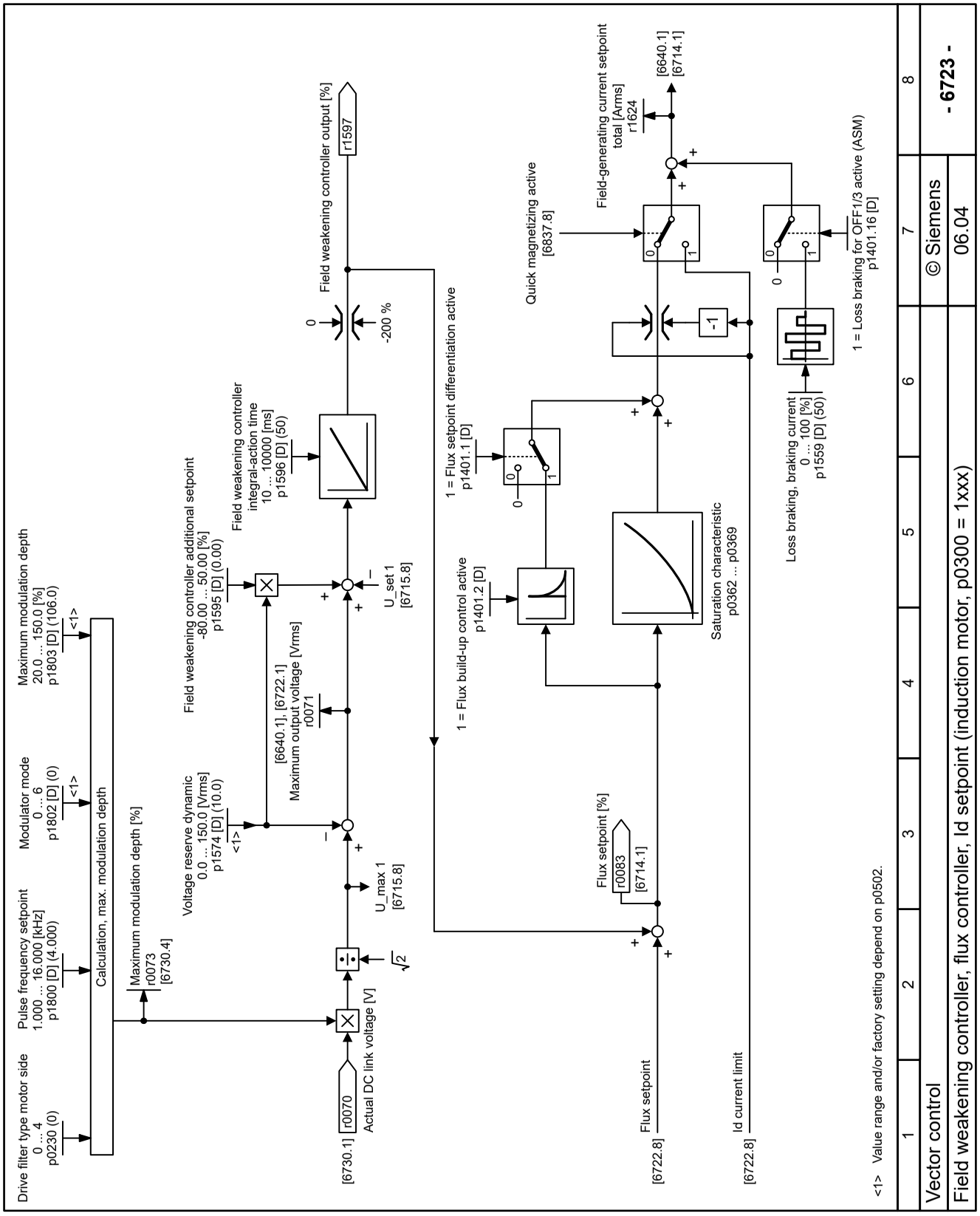


Figure 4-119 6723 – Field weakening controller, flux controller, Id setpoint (induction motor)

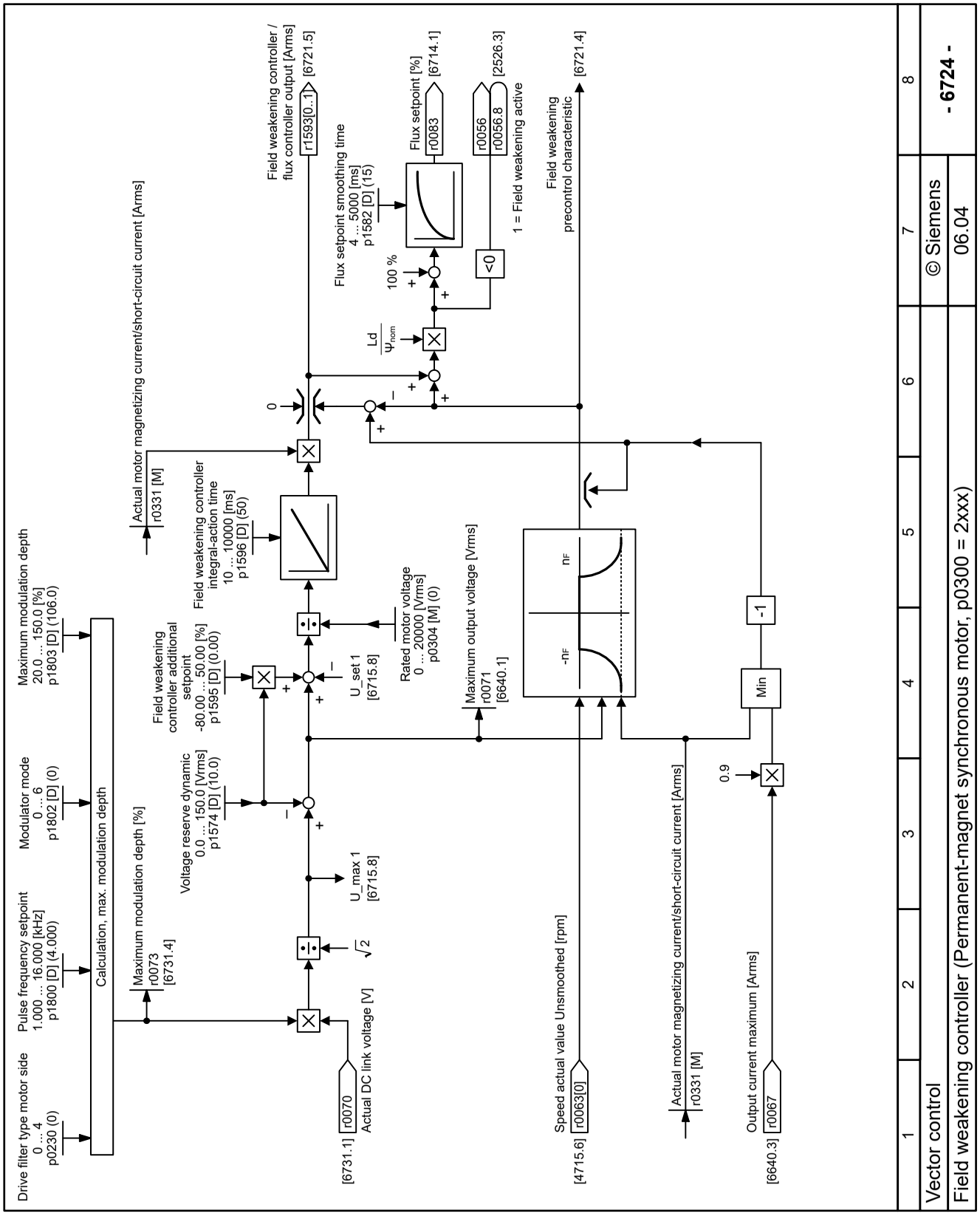


Figure 4-120 6724 - Field weakening controller (permanent-magnet synchronous motor)

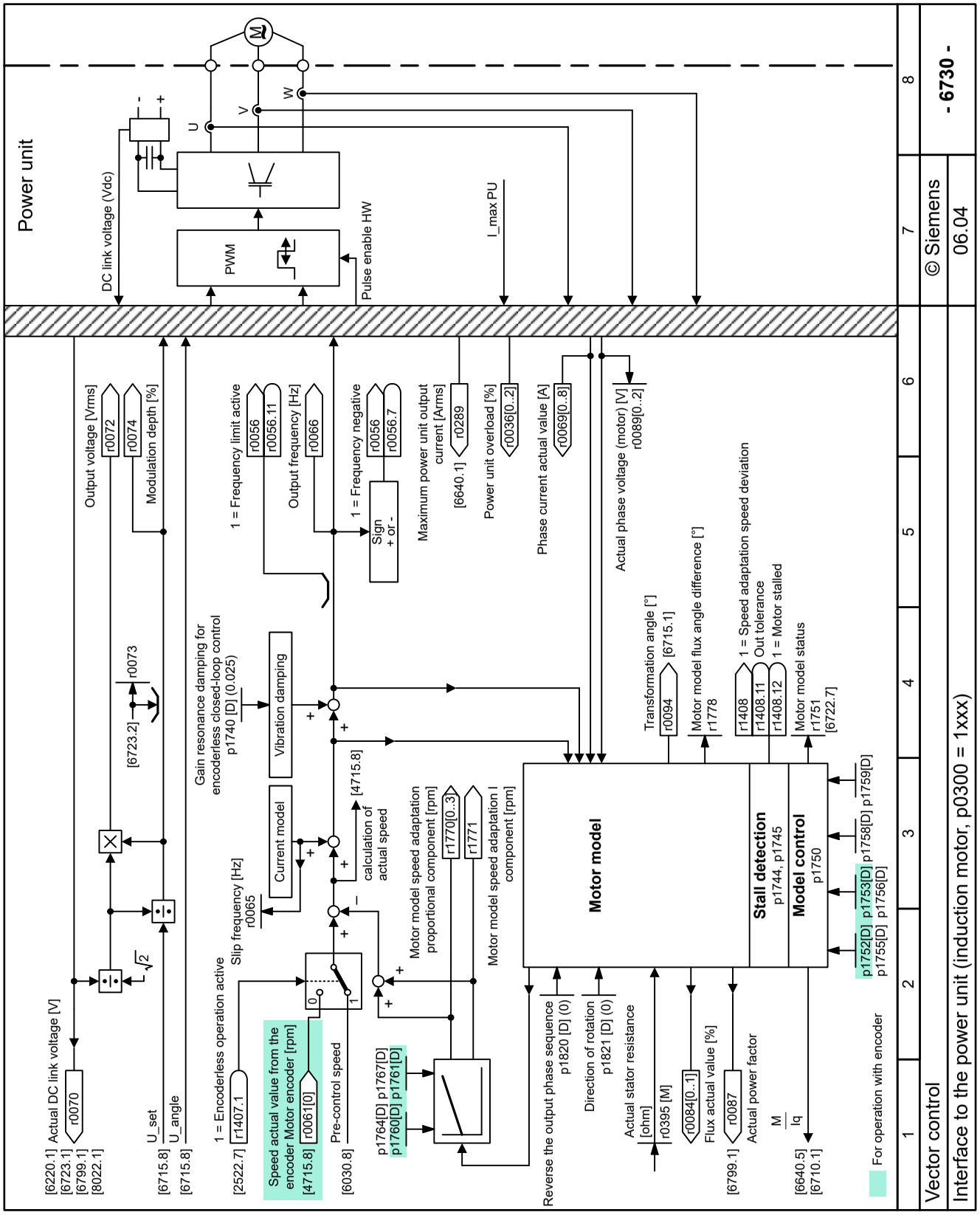


Figure 4-121 6730 - Interface to power unit (induction motor)

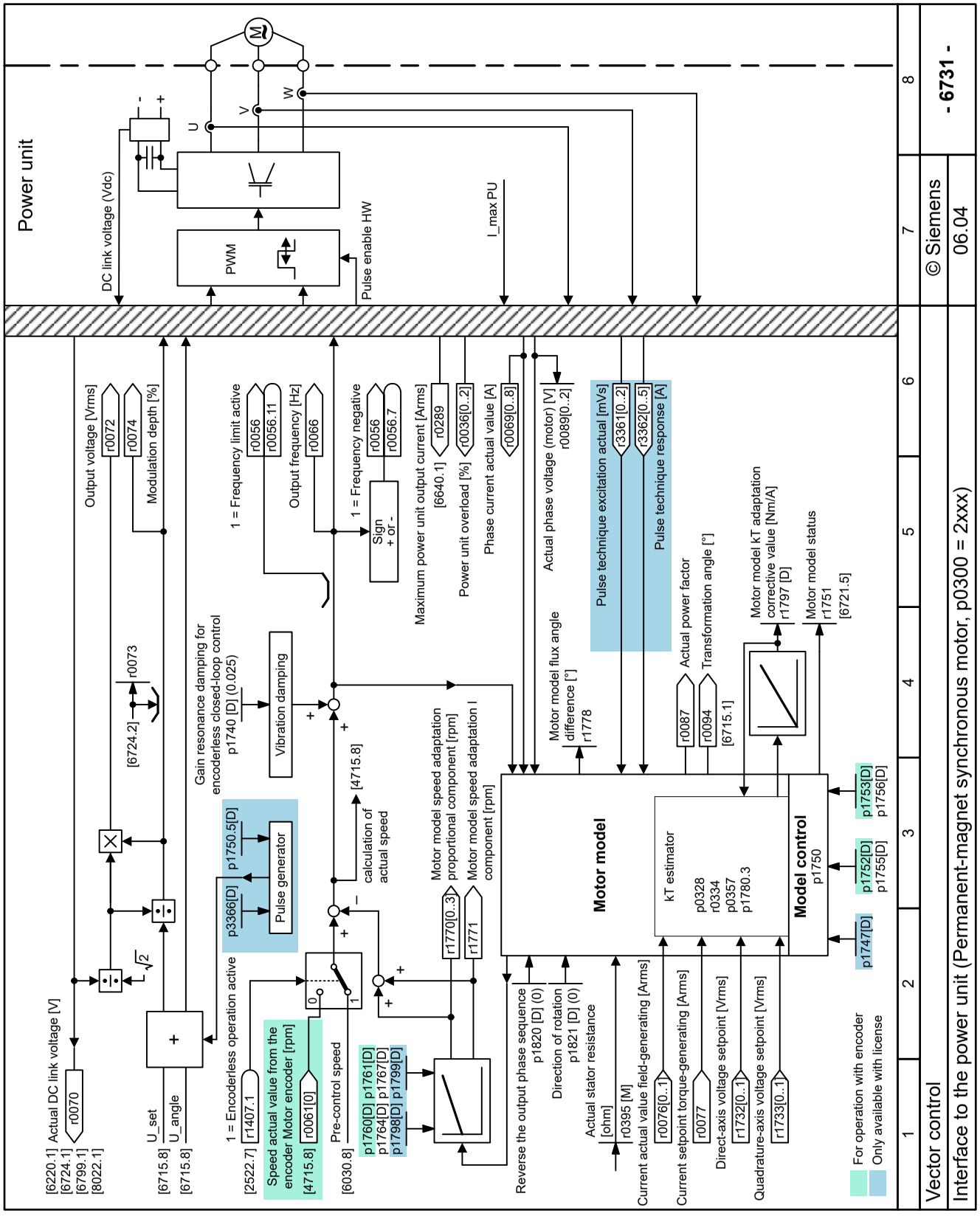


Figure 4-122 6731 - Interface to the power unit (permanent-magnet synchronous motor)

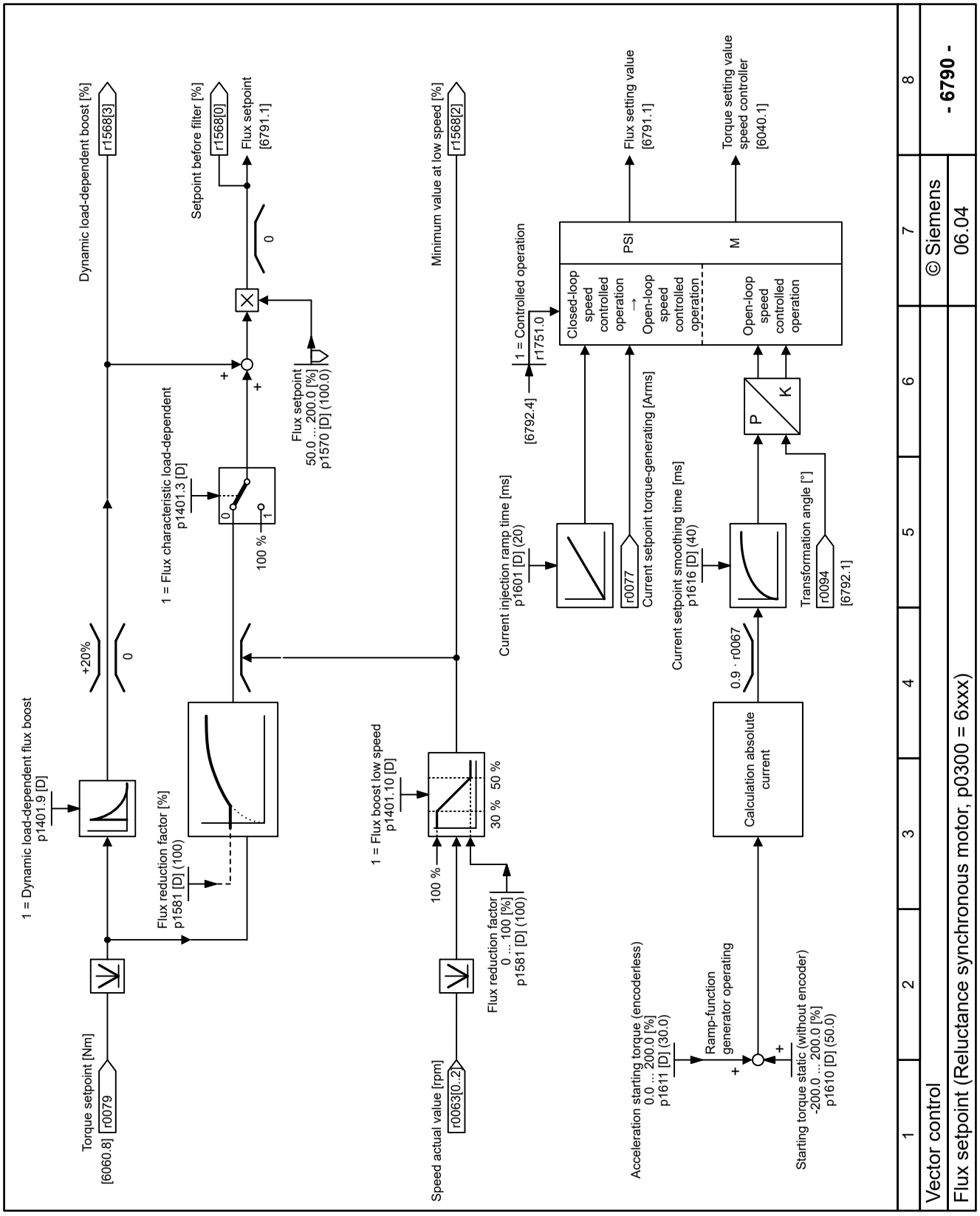


Figure 4-123 6790 - Flux setpoint (synchronous reluctance motor)

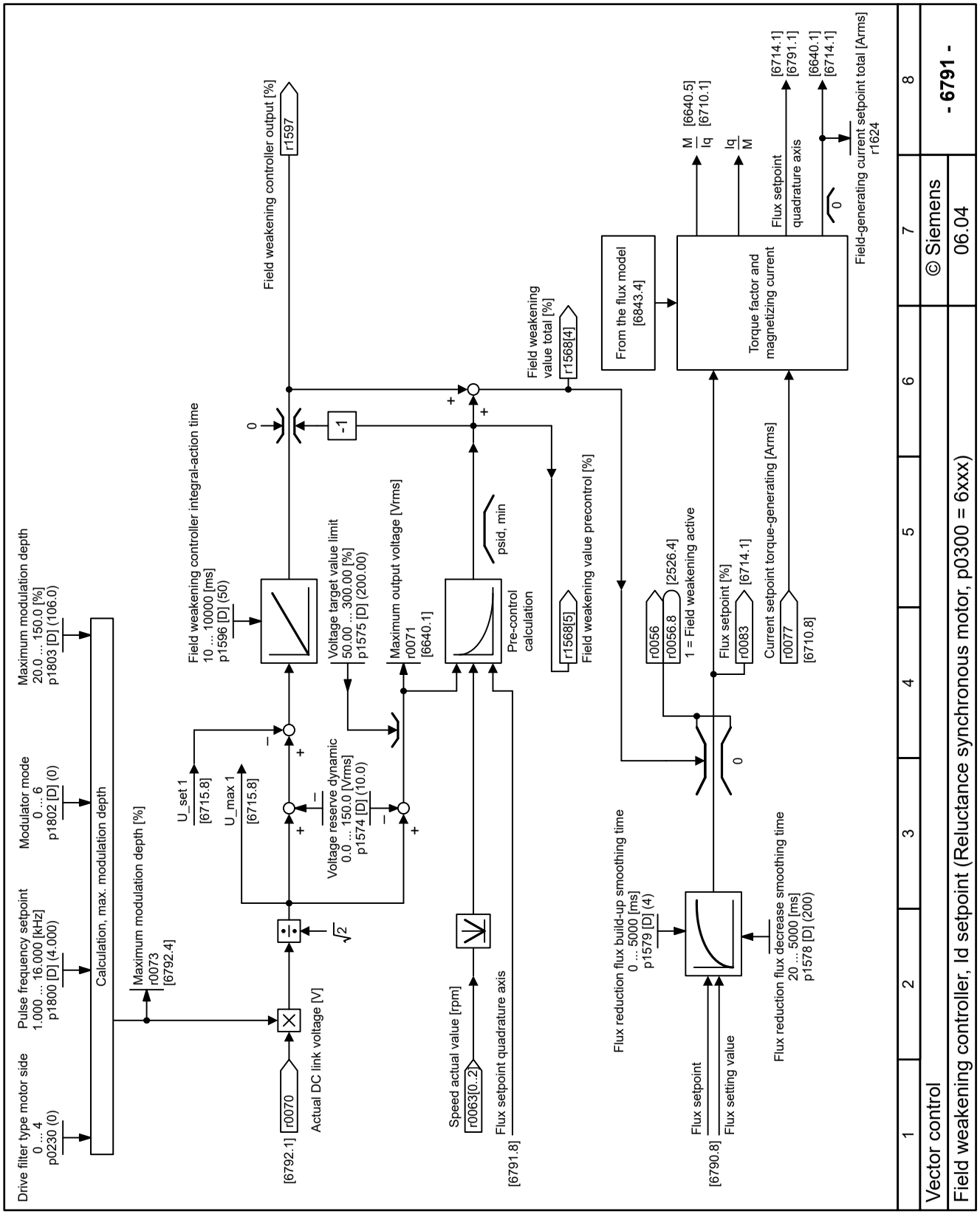


Figure 4-124 6791 - Field weakening controller, Id setpoint (synchronous reluctance motor)

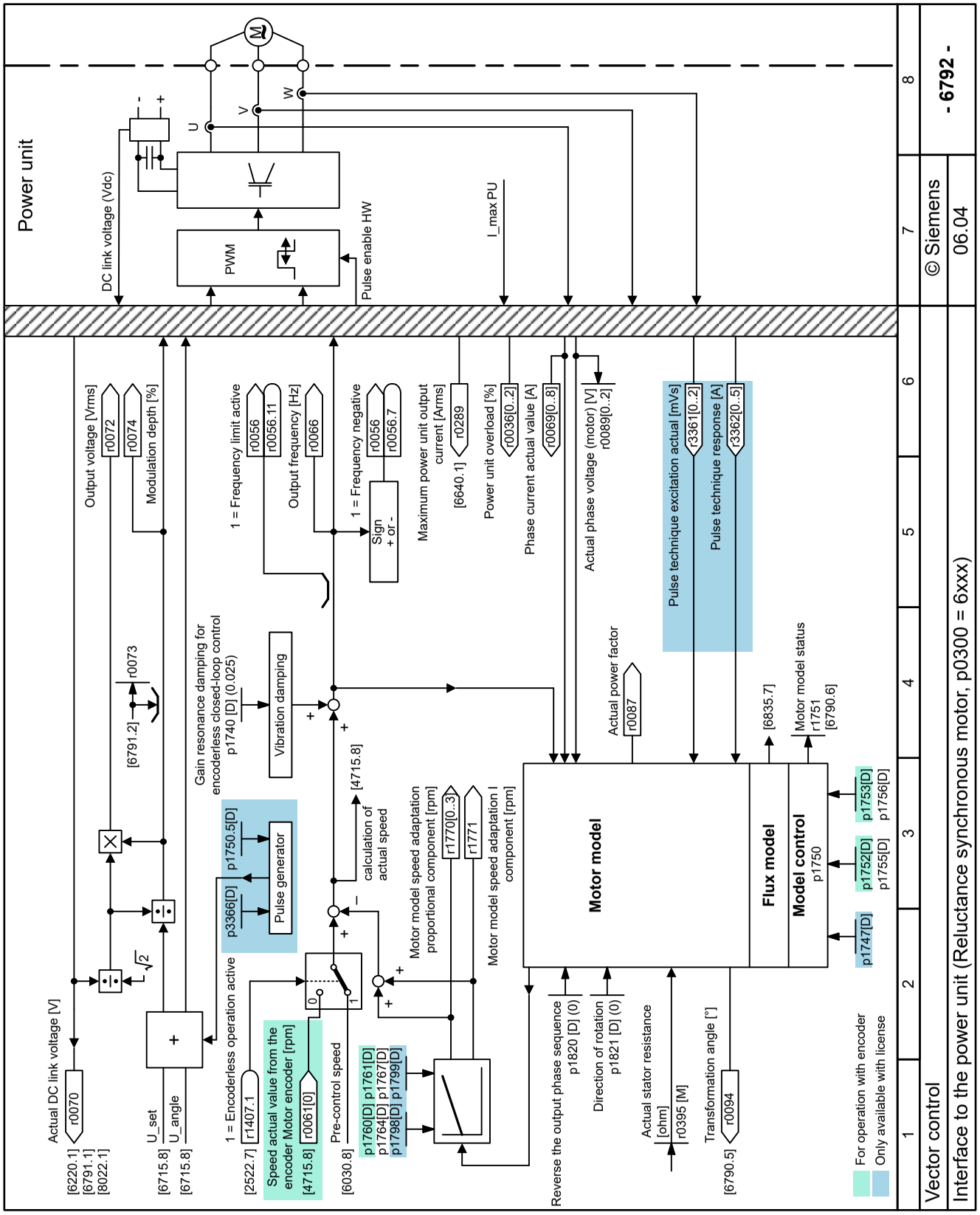


Figure 4-125 6792 - Interface to the power unit (synchronous reluctance motor)

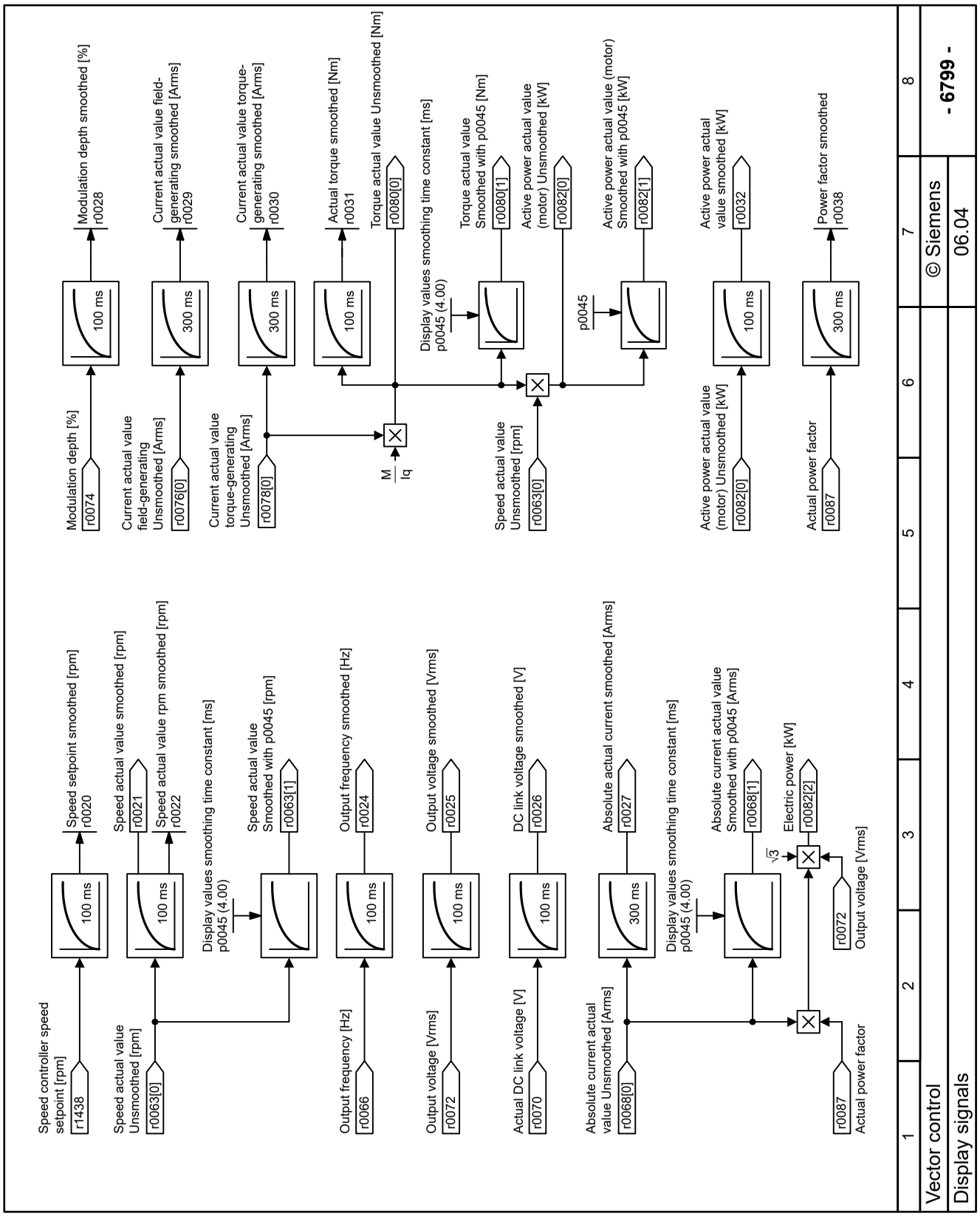


Figure 4-126 6799 - Display signals

4.13 U/f control

Overview

The following function diagrams describe the U/f control function.

Function diagrams

6300 – U/f control, overview (Page 1024)
6301 – Voltage boost (Page 1025)
6302 – U/f characteristic (Page 1026)
6310 – Resonance damping (Page 1027)
6311 – Slip compensation (U/f) (Page 1028)
6320 – Vdc_max controller and Vdc_min controller (U/f) (Page 1029)

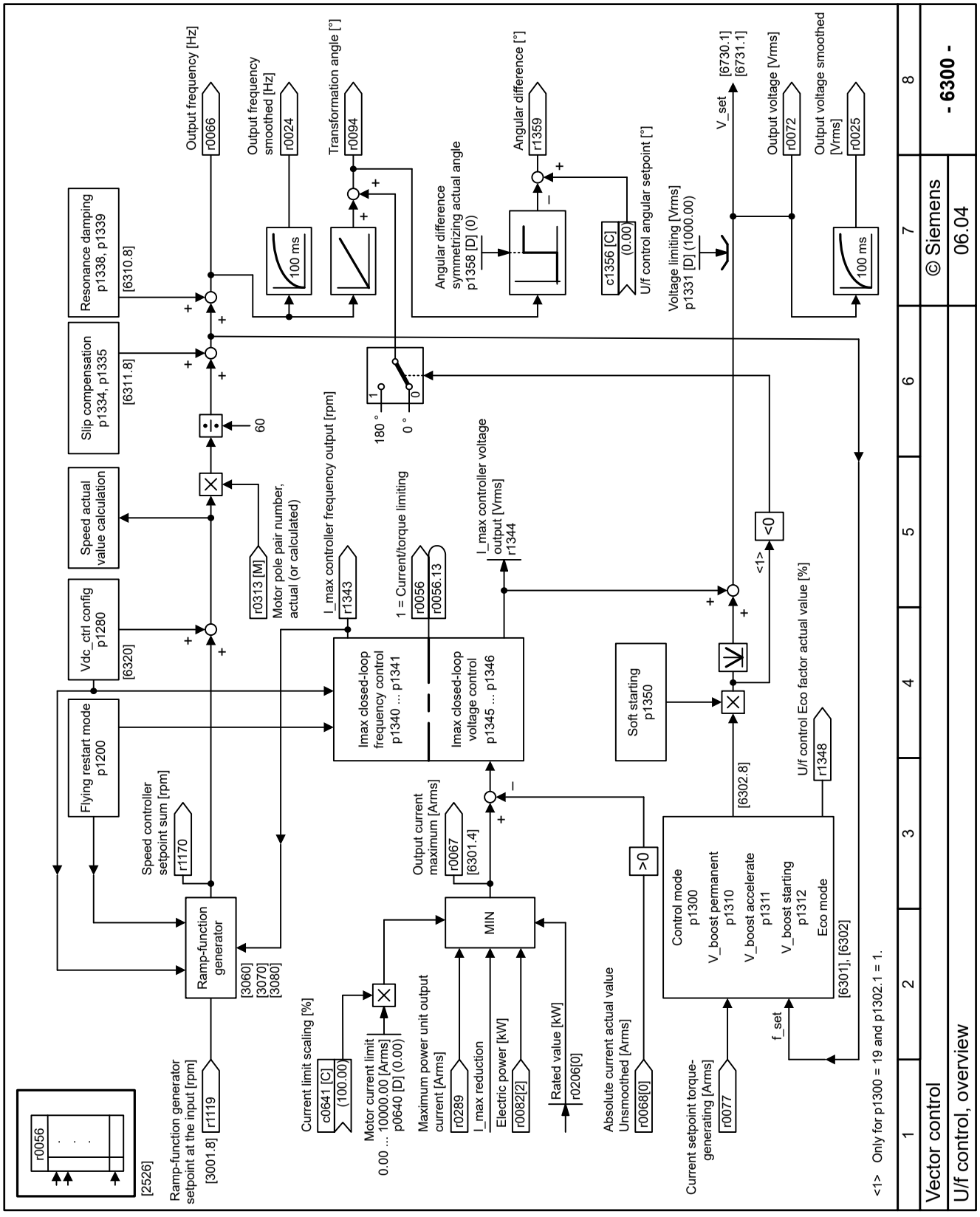


Figure 4-127 6300 – U/f control, overview

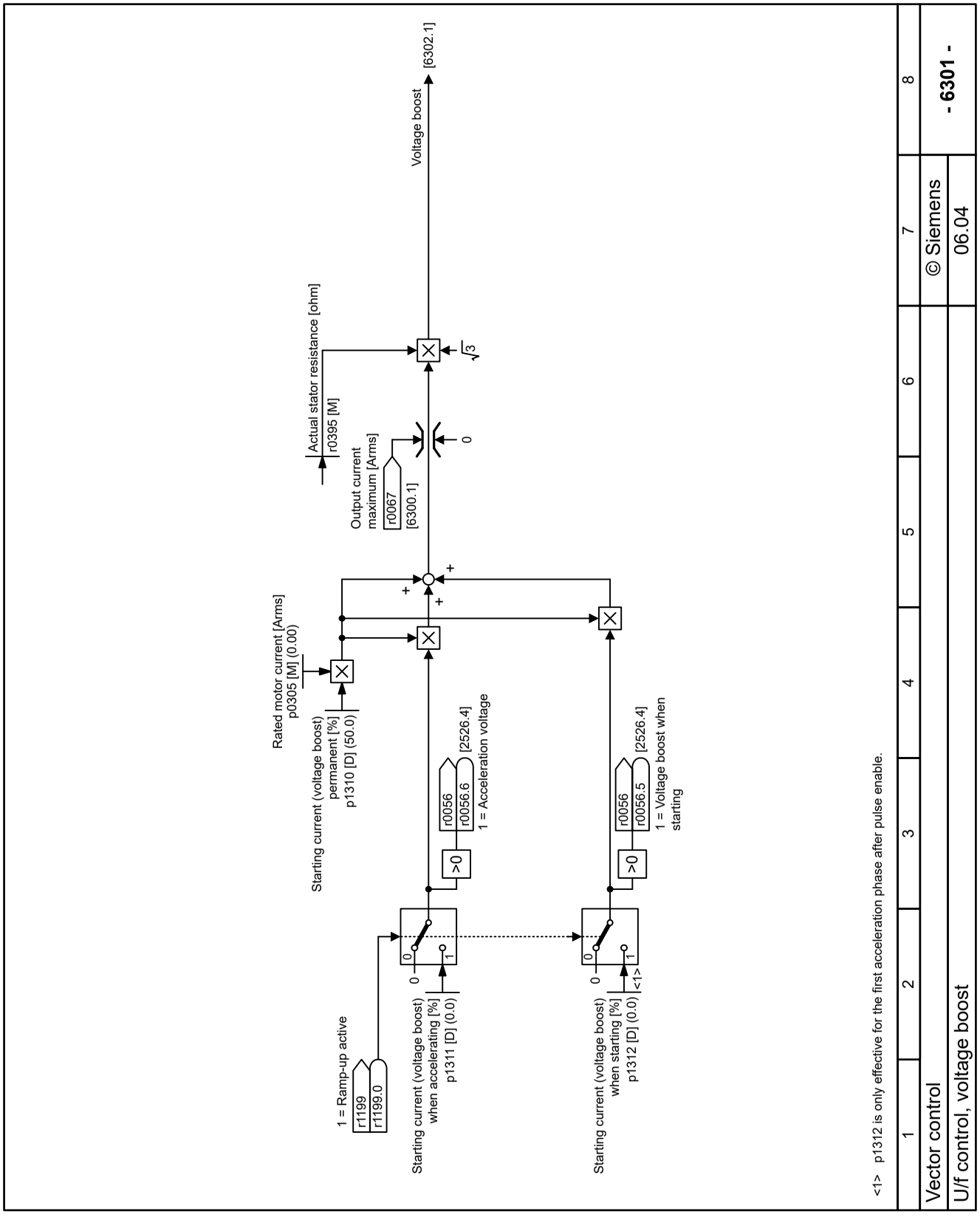


Figure 4-128 6301 - Voltage boost

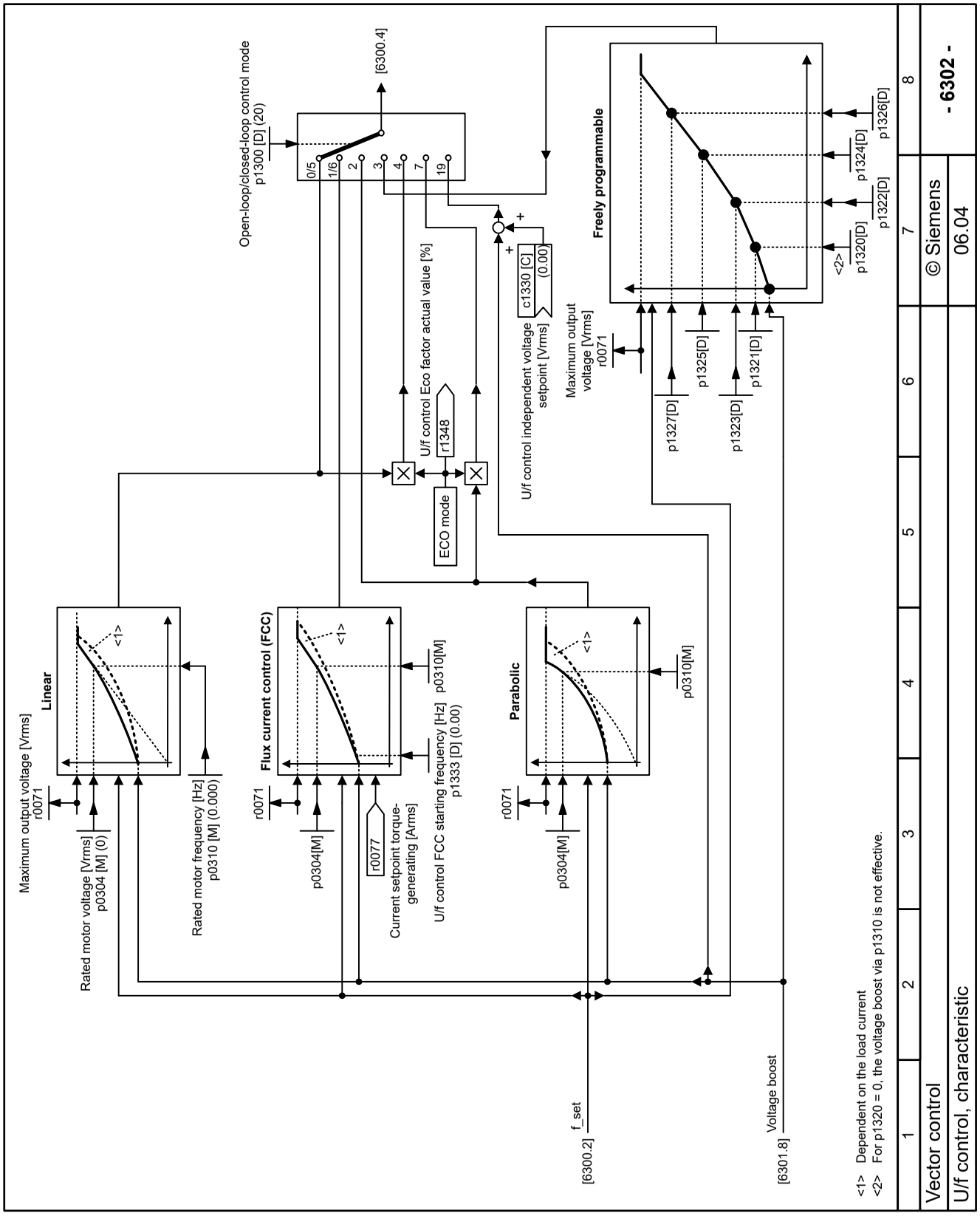


Figure 4-129 6302 - U/f characteristic

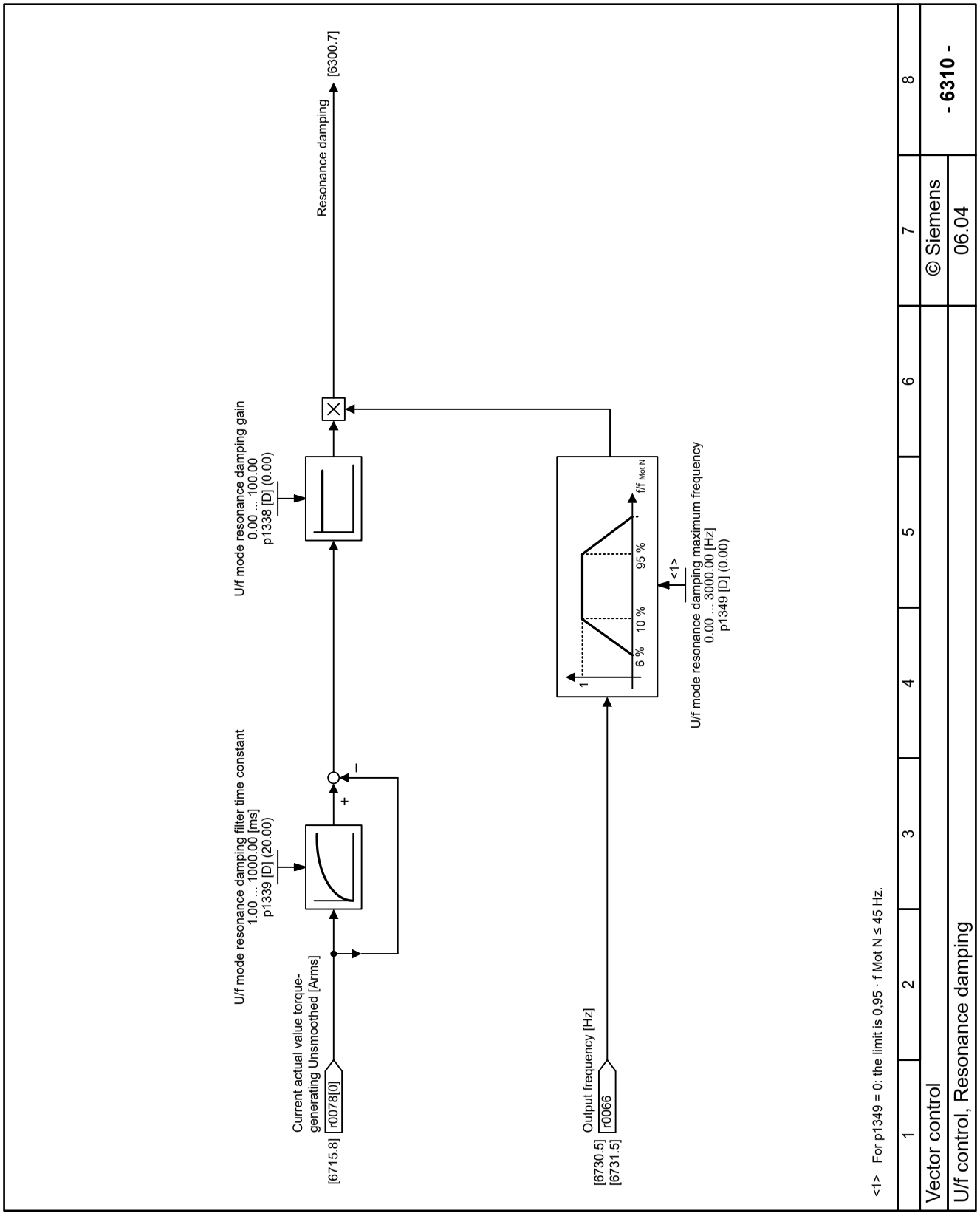


Figure 4-130 6310 - Resonance damping

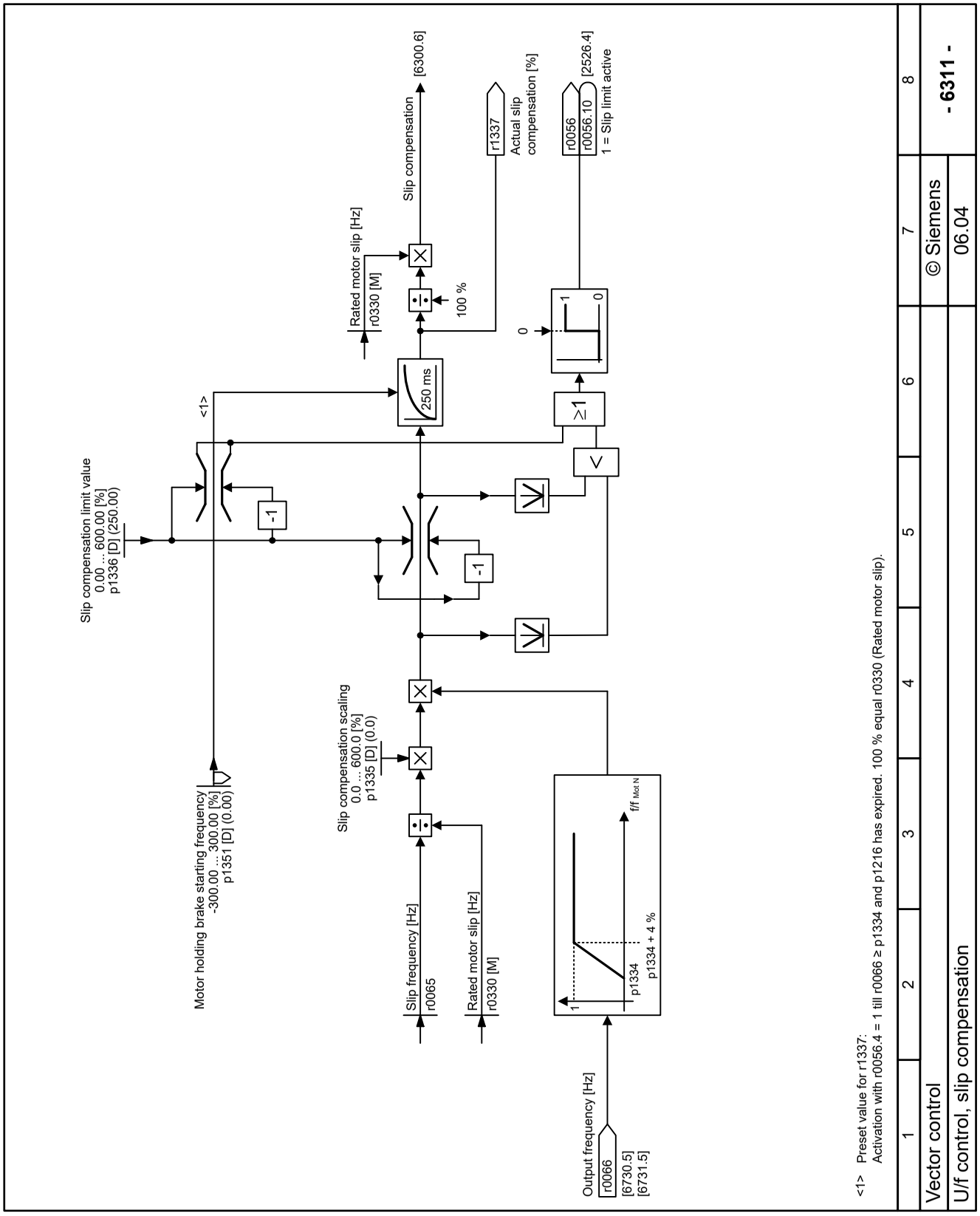


Figure 4-131 6311 - Slip compensation (U/f)

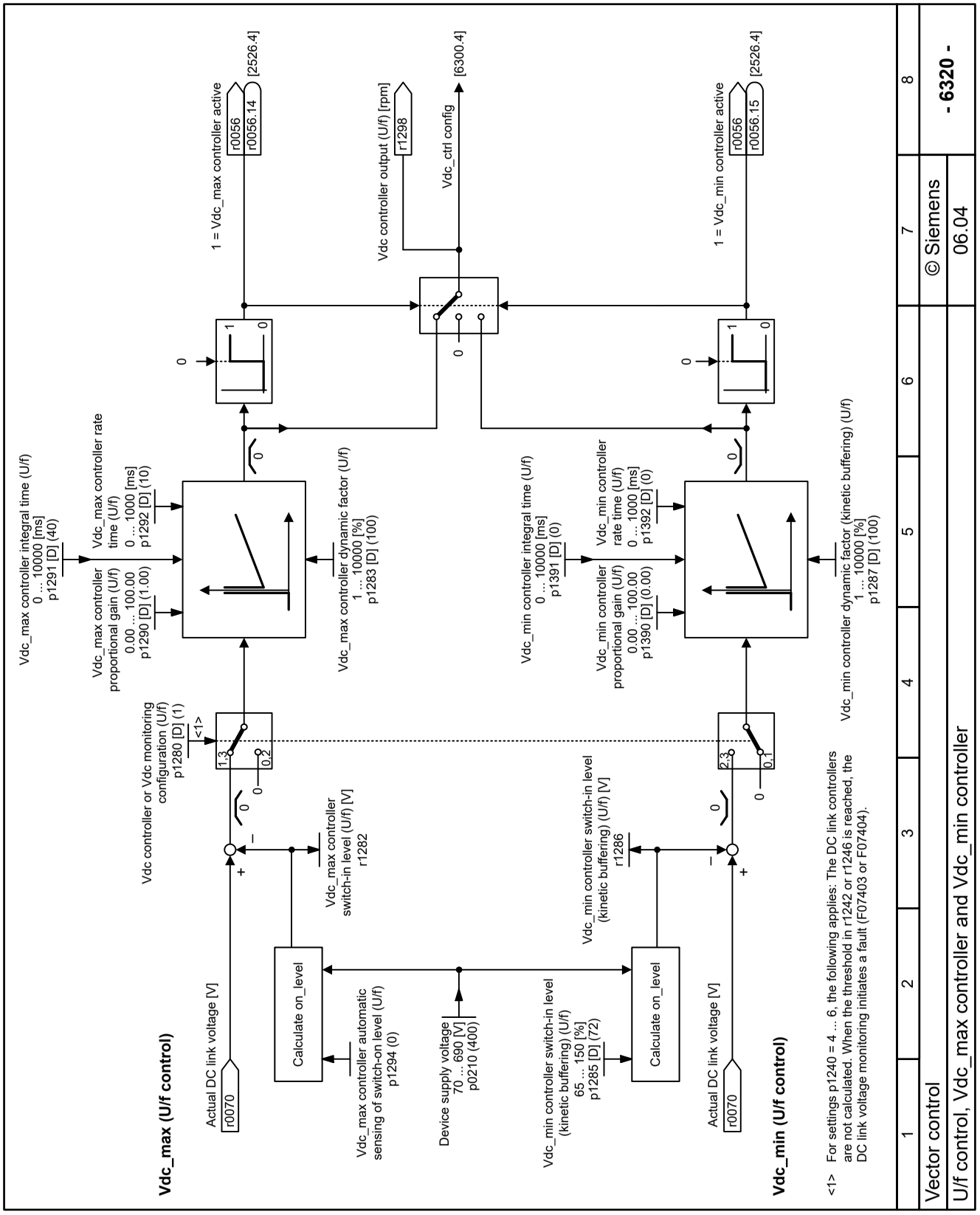


Figure 4-132 6320 - Vdc_max controller and Vdc_min controller (U/f)

4.14 Dynamic Drive Control

Overview

The following function diagrams describe the Dynamic Drive Control function.

Function diagrams

6820 – Speed control and generation of the torque limits, overview (Page 1031)
6821 – Current control, overview (Page 1032)
6822 – Speed setpoint, pre-control balancing, acceleration model (Page 1033)
6824 – Speed controller with Kp_n-/Tn_n adaptation (Page 1034)
6826 – Torque setpoint (Page 1035)
6828 – Upper/lower torque limit (Page 1036)
6829 – Current/power/torque limits (Page 1037)
6832 – Current setpoint filter (Page 1038)
6833 – Iq and Id controllers (Page 1039)
6834 – Flux setpoint (synchronous reluctance motor) (Page 1040)
6835 – Field weakening controller, Id setpoint (synchronous-reluctance motor) (Page 1041)
6836 – Id setpoint (permanent magnet synchronous motor) (Page 1042)
6837 – Field weakening characteristic, flux setpoint (induction motor) (Page 1043)
6838 – Field weakening controller, flux controller (induction motor) (Page 1044)
6839 – Field weakening controller (permanent-magnet synchronous motor) (Page 1045)
6841 – Interface to power unit (induction motor) (Page 1046)
6842 – Interface to the power unit (permanent magnet synchronous motor) (Page 1047)
6843 – Interface to the power unit (synchronous reluctance motor) (Page 1048)

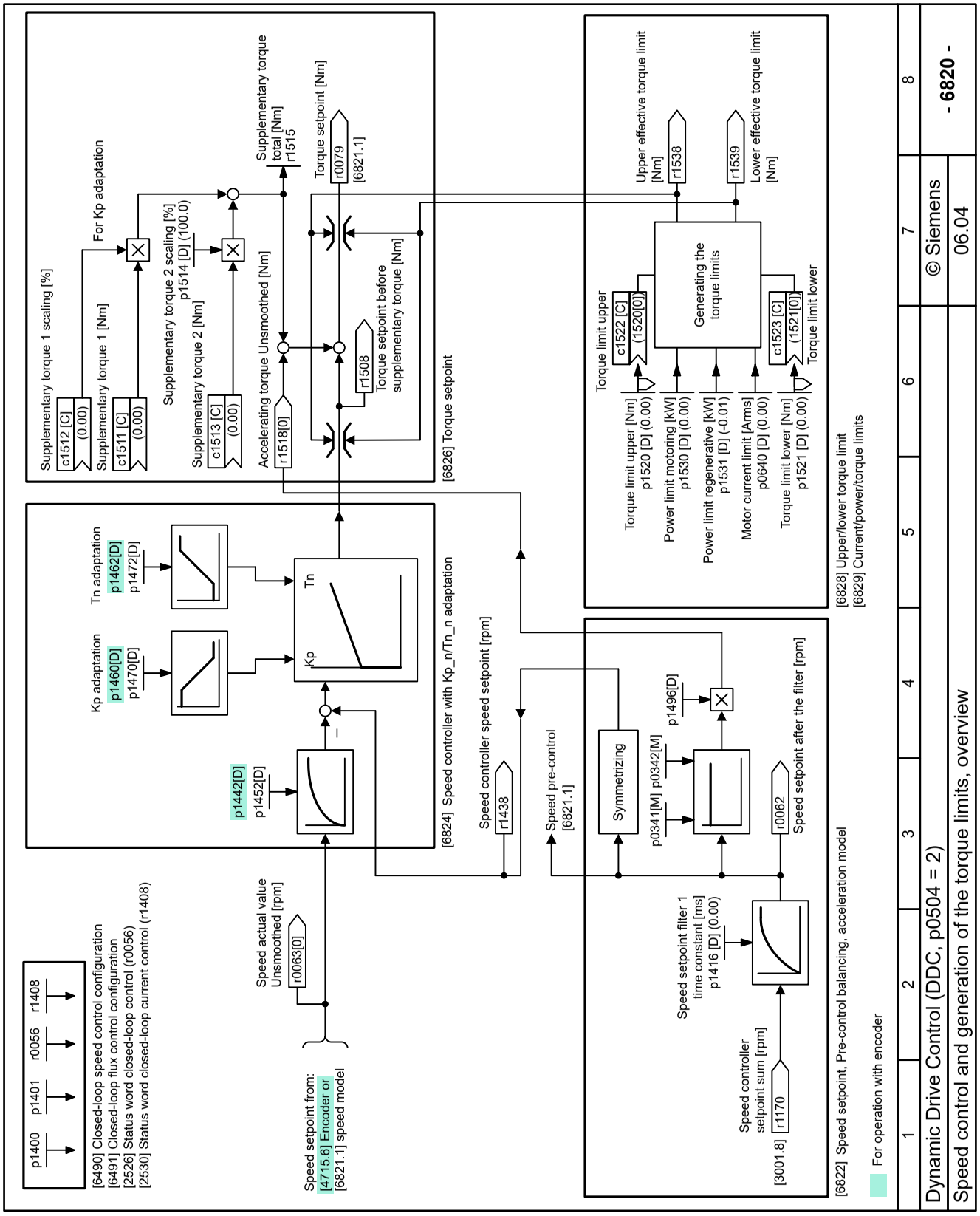


Figure 4-133 6820 - Speed control and generation of the torque limits, overview

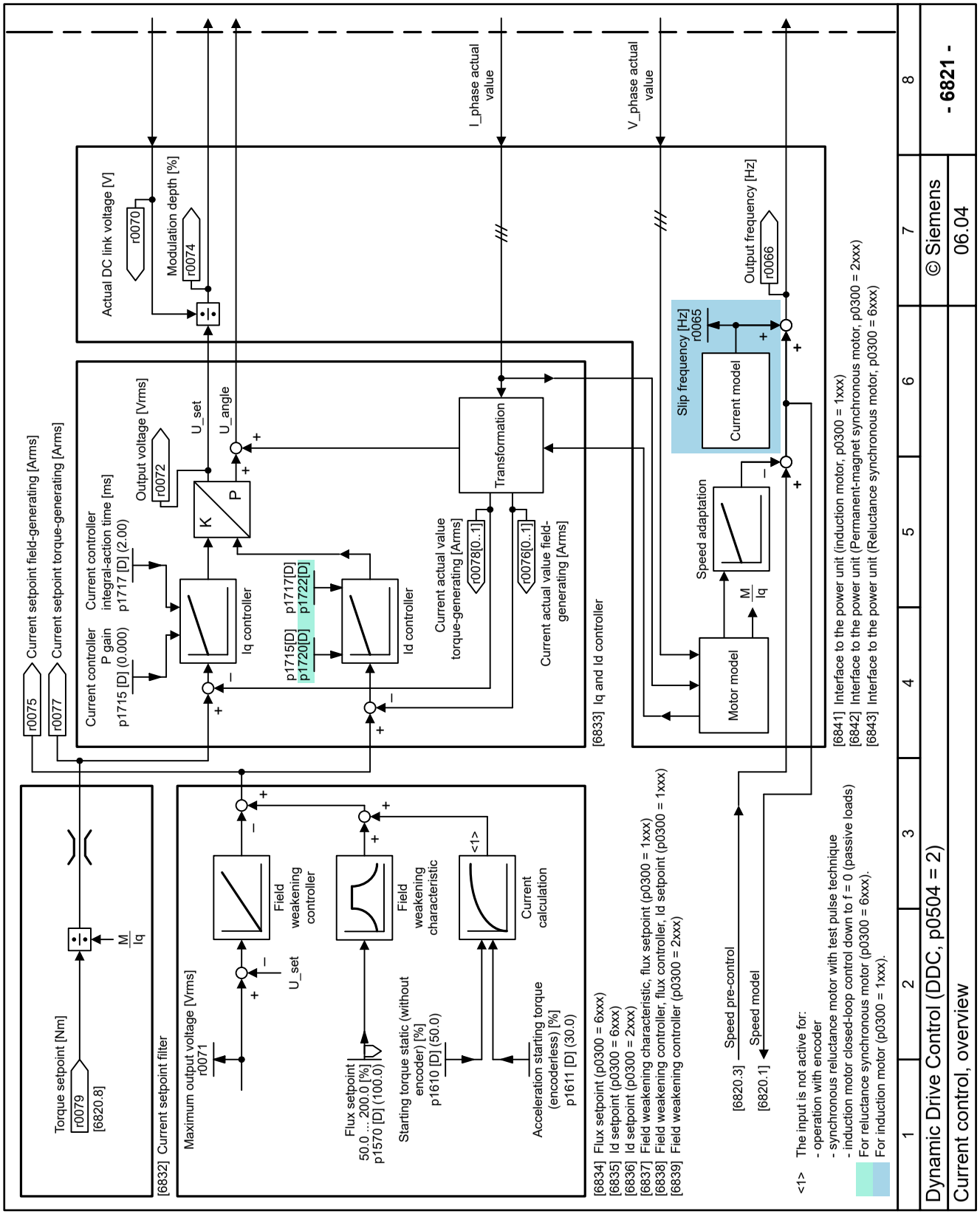


Figure 4-134 6821 - Current control, overview

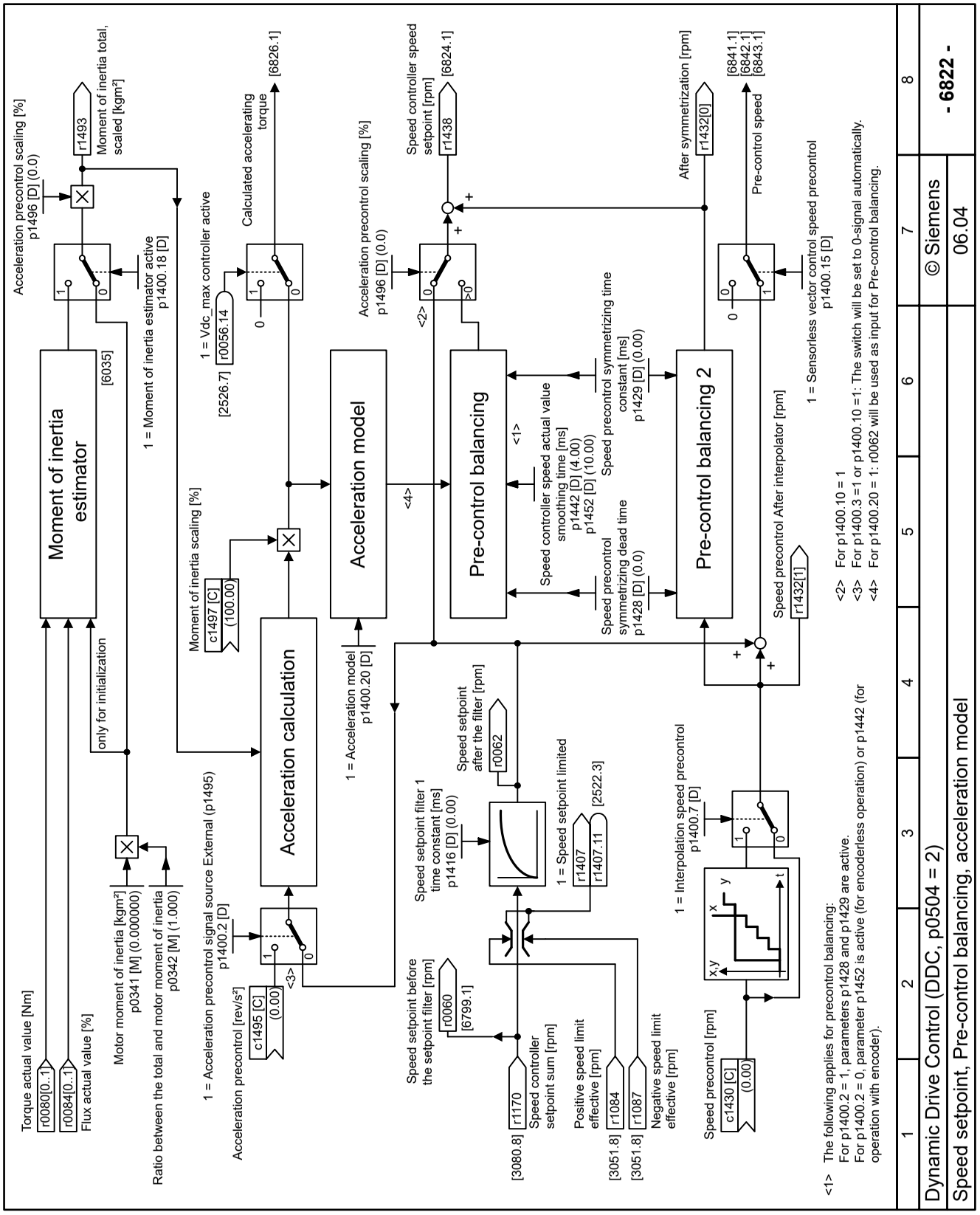


Figure 4-135 6822 - Speed setpoint, pre-control balancing, acceleration model

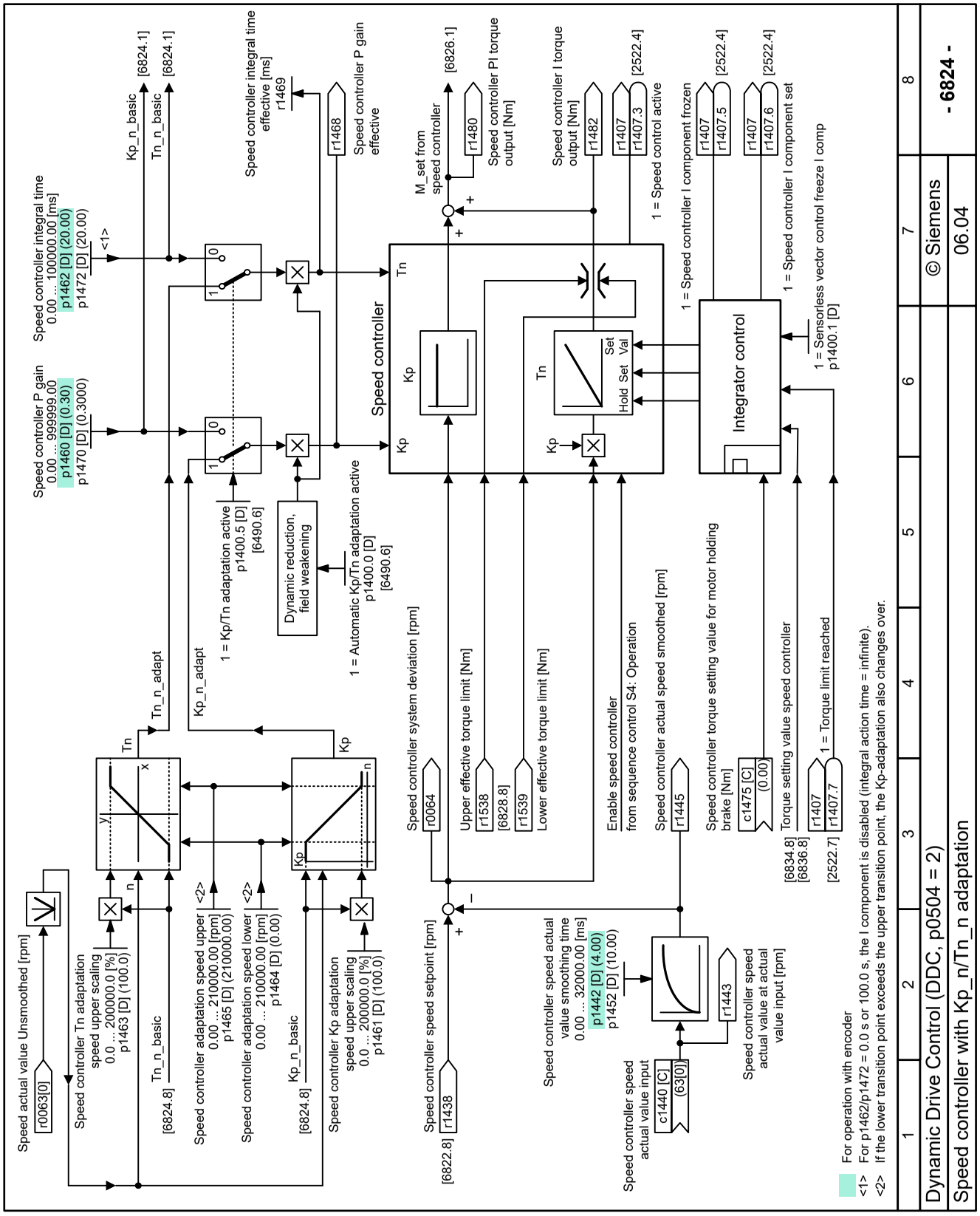


Figure 4-136 6824 - Speed controller with Kp_n-/Tn_n adaptation

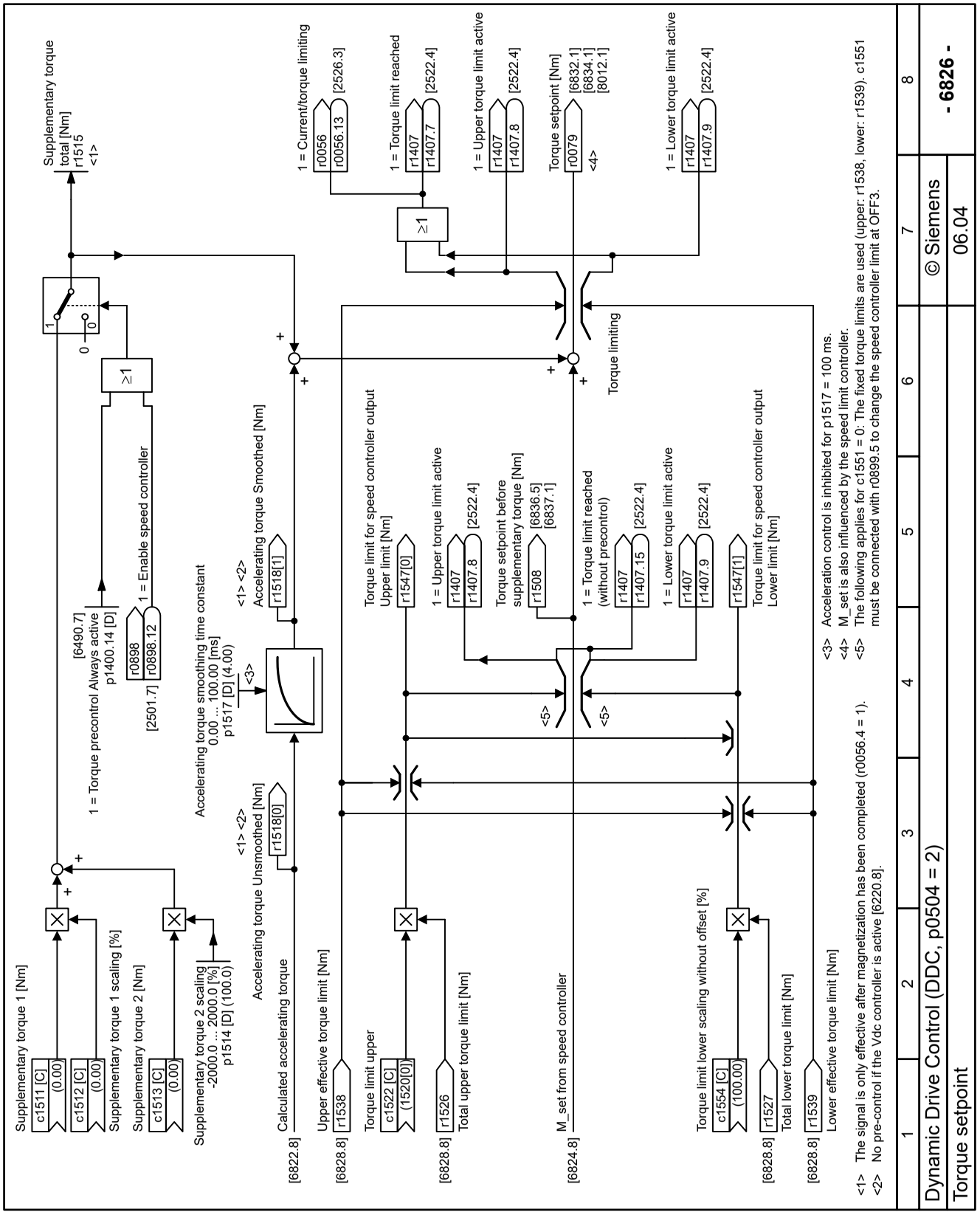
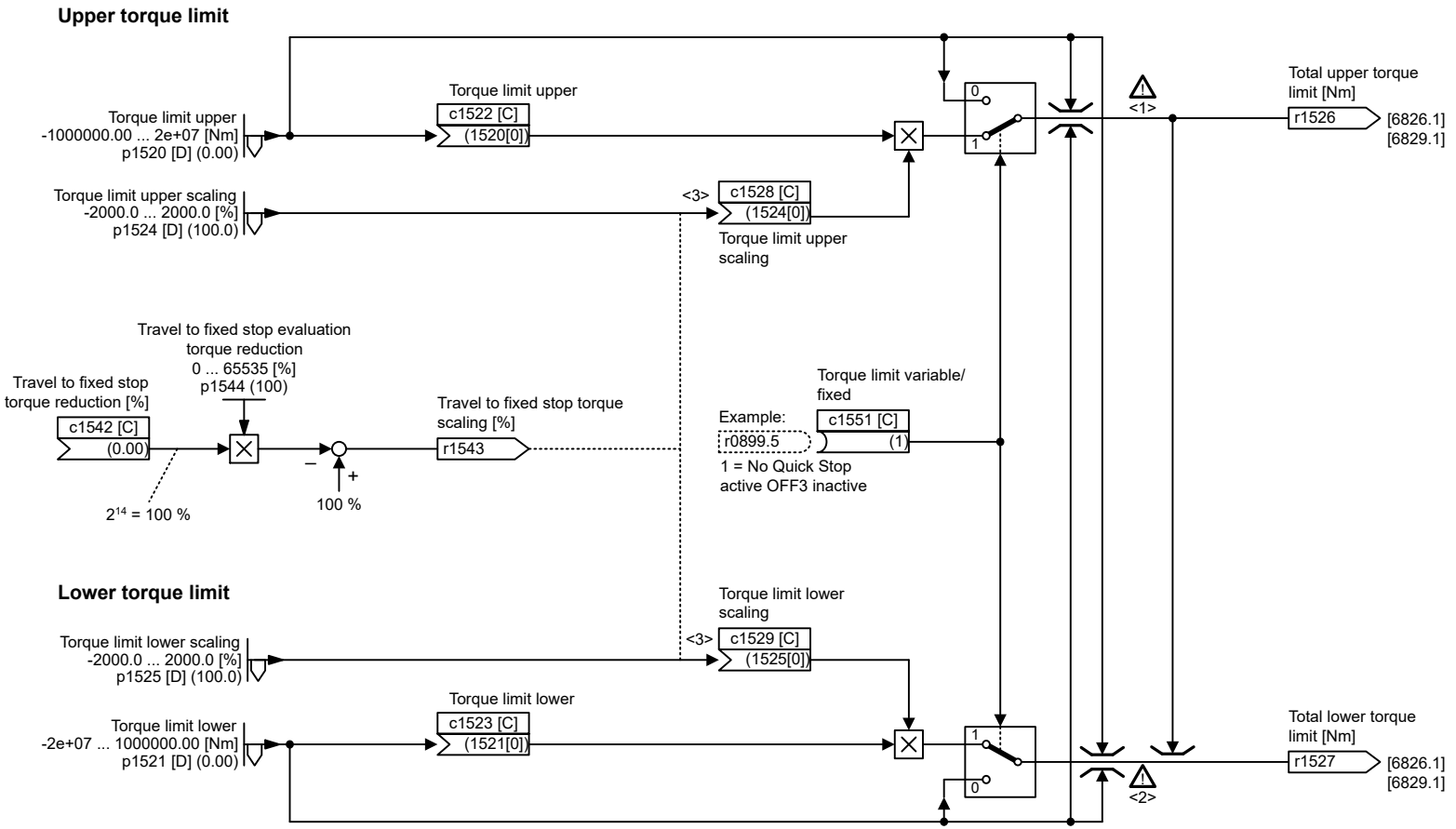


Figure 4-137 6826 - Torque setpoint

Figure 4-138 6828 - Upper/lower torque limit



<1> Danger: Negative values at <1> represent a minimum torque for the other torque direction and
<2> positive values at <2> can cause the motor to accelerate uncontrollably.
<3> For manufacturer-specific PROFIdrive telegrams with PZD5 = MOMRED (e.g. telegrams 102, 103), r1543 is connected here. The signal source in c1542 (travel to fixed stop torque reduction) is also set using the selected telegram.

1	2	3	4	5	6	7	8
Dynamic Drive Control (DDC, p0504 = 2)						© Siemens	- 6828 -
Upper/lower torque limit						06.04	

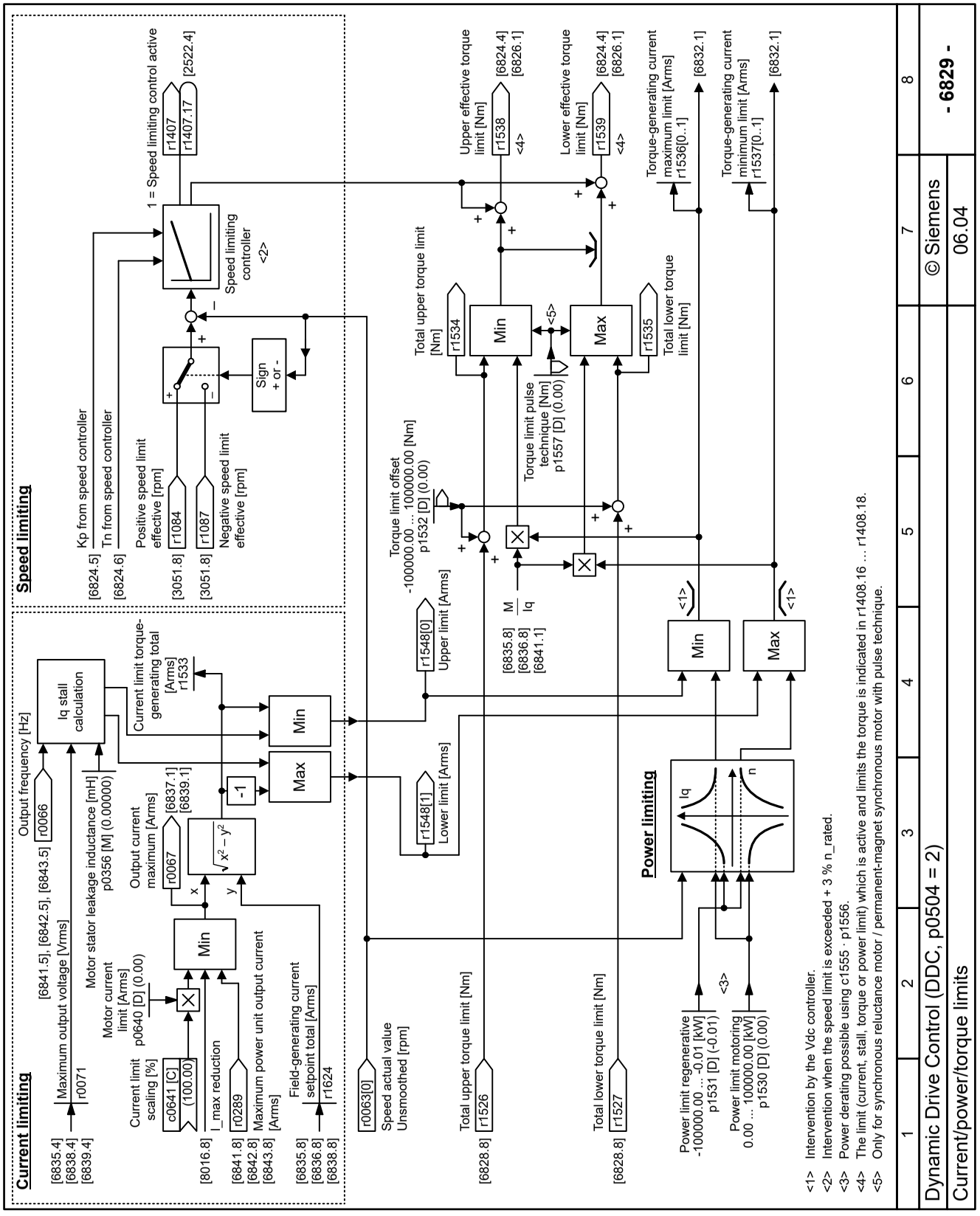


Figure 4-139 6829 - Current/power/torque limits

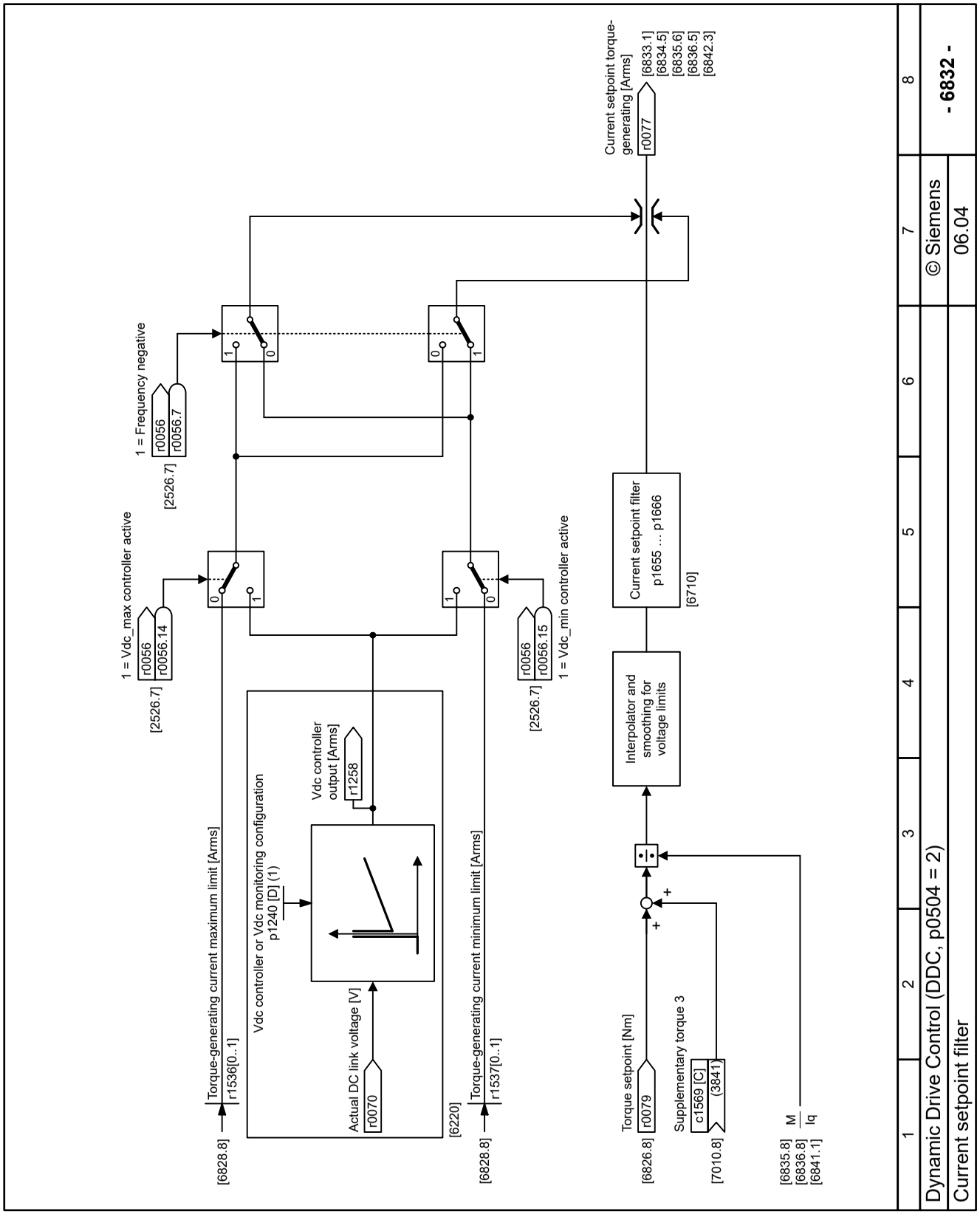


Figure 4-140 6832 - Current setpoint filter

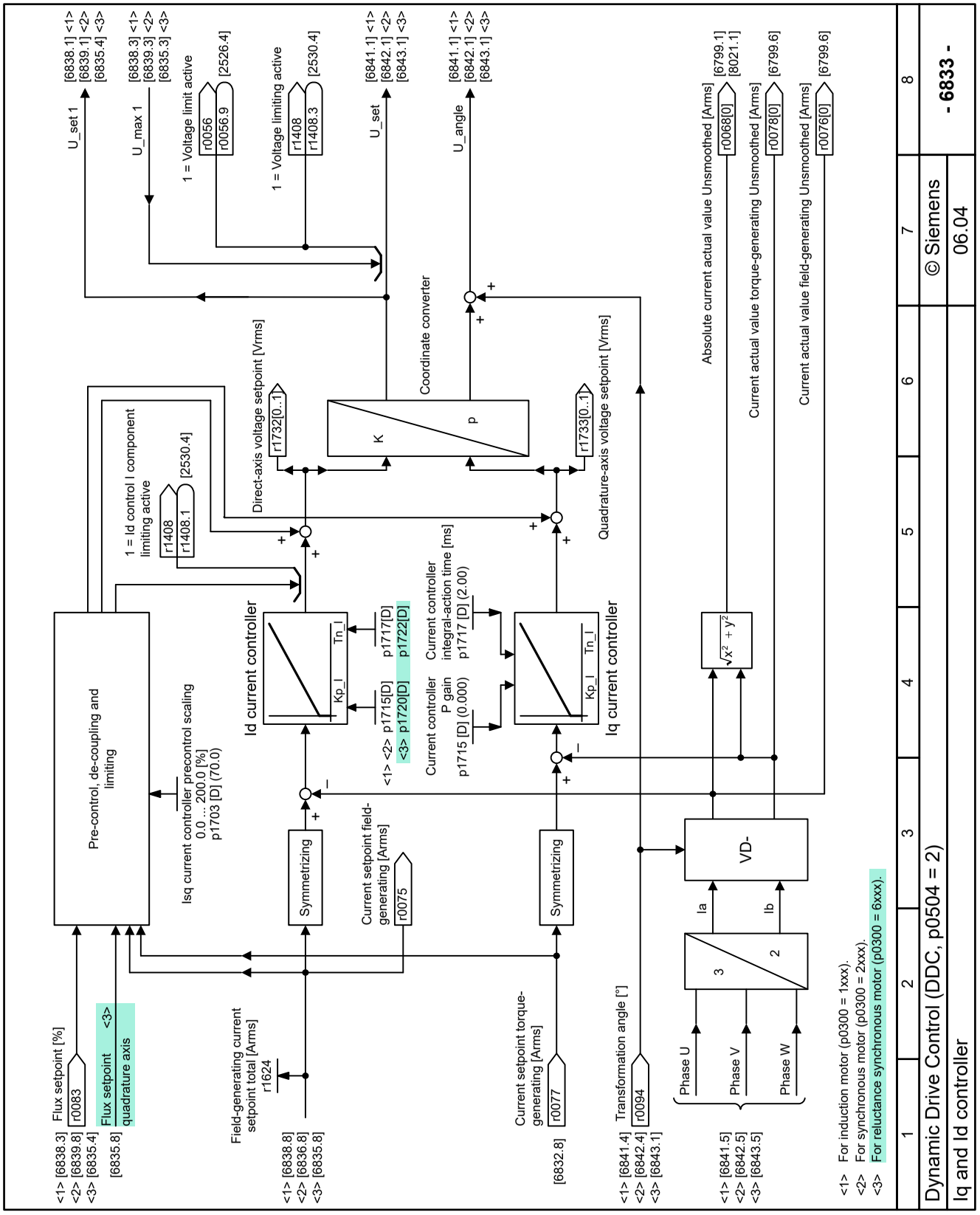


Figure 4-141 6833 - Iq and Id controllers

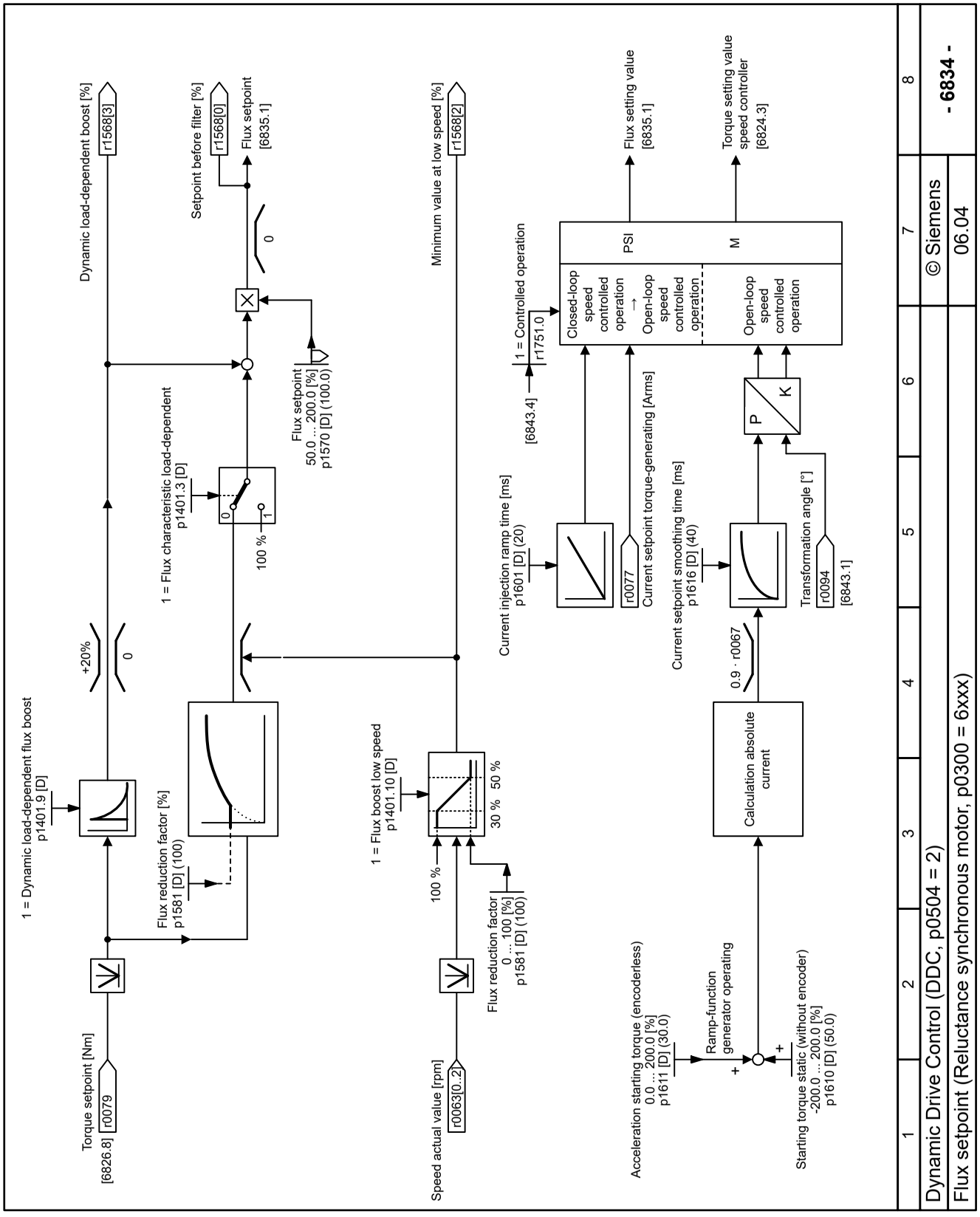


Figure 4-142 6834 - Flux setpoint (synchronous reluctance motor)

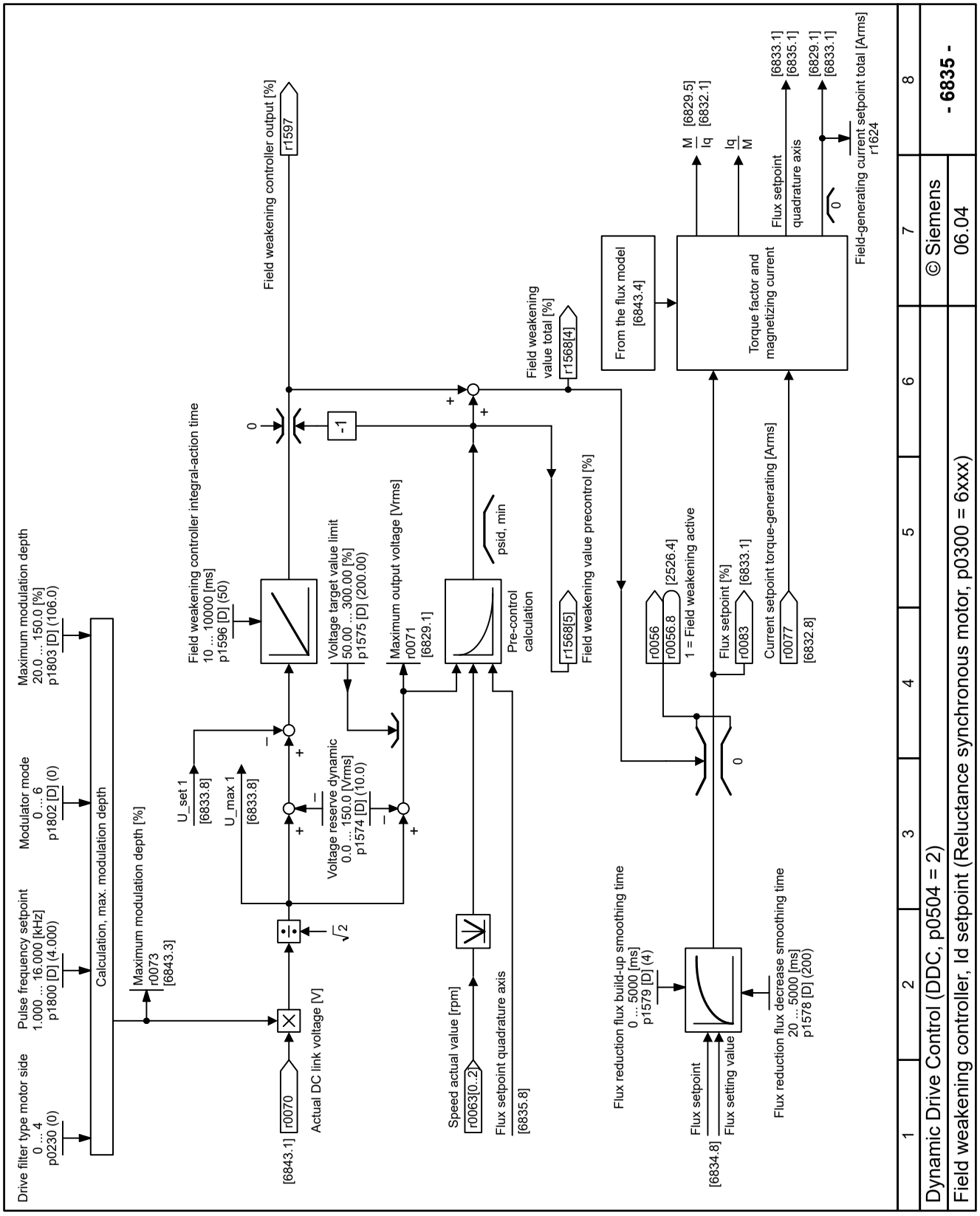


Figure 4-143 6835 – Field weakening controller, Id setpoint (synchronous reluctance motor)

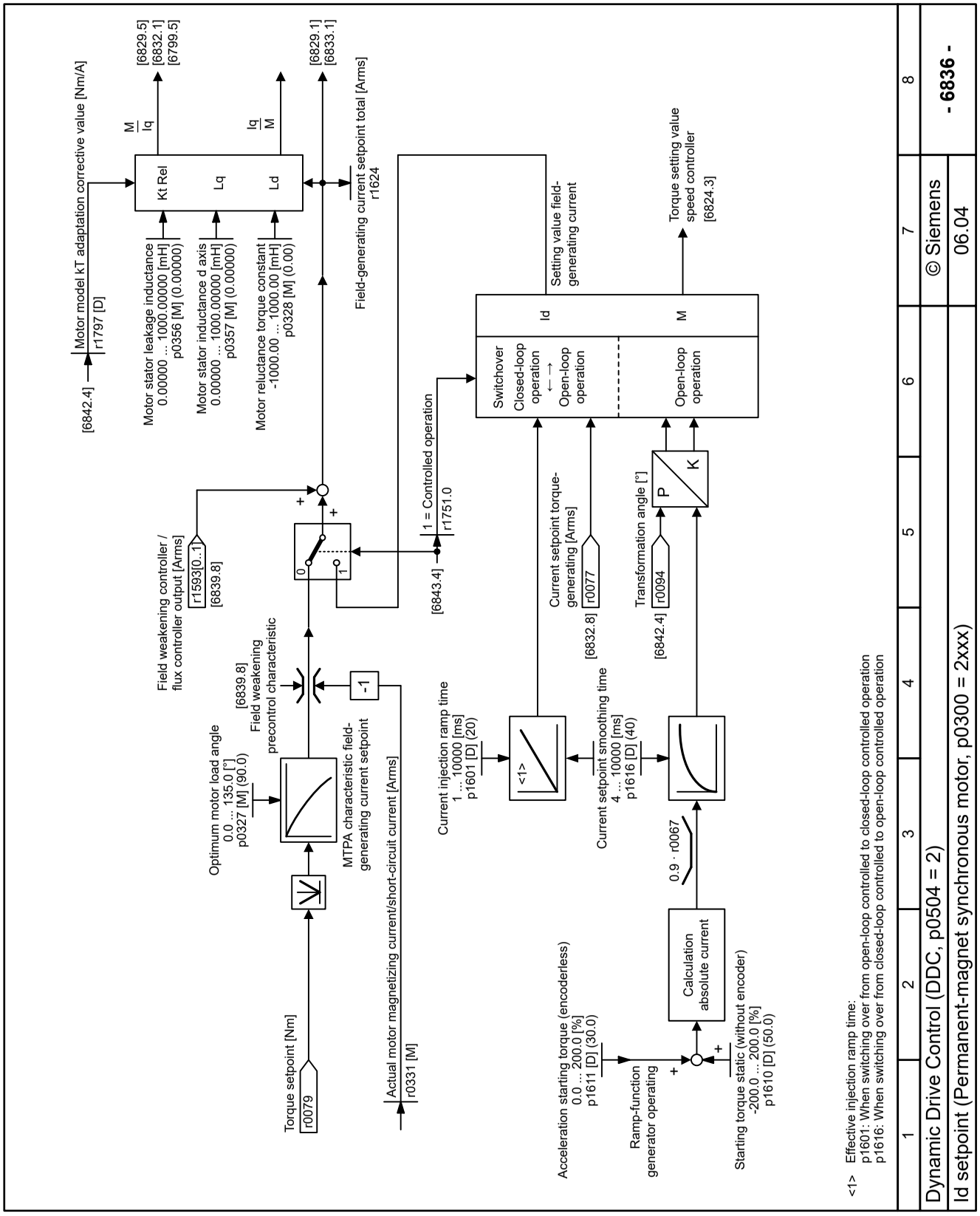


Figure 4-144 6836 - Id setpoint (permanent-magnet synchronous motor)

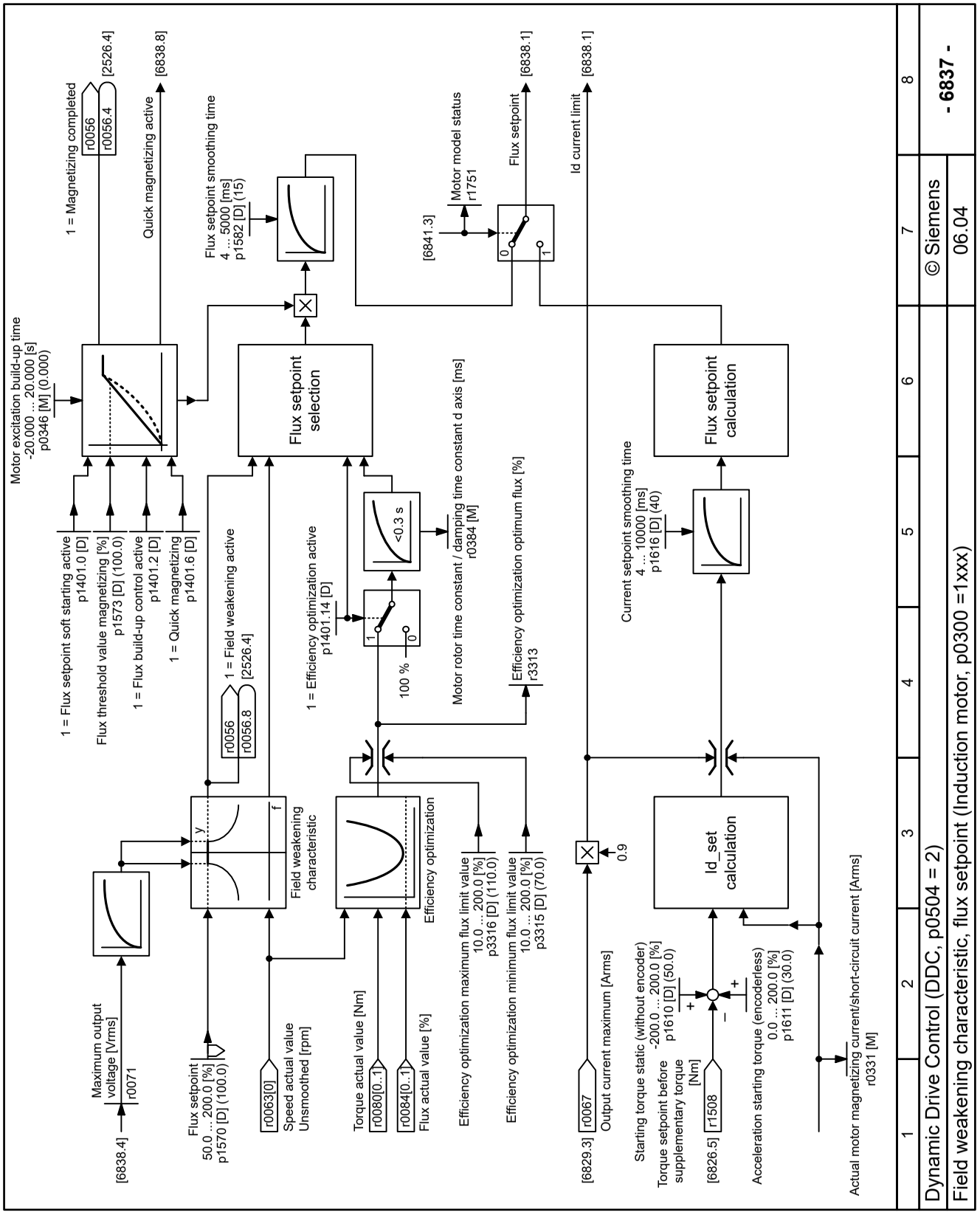


Figure 4-145 6837 – Field weakening characteristic, flux setpoint (induction motor)

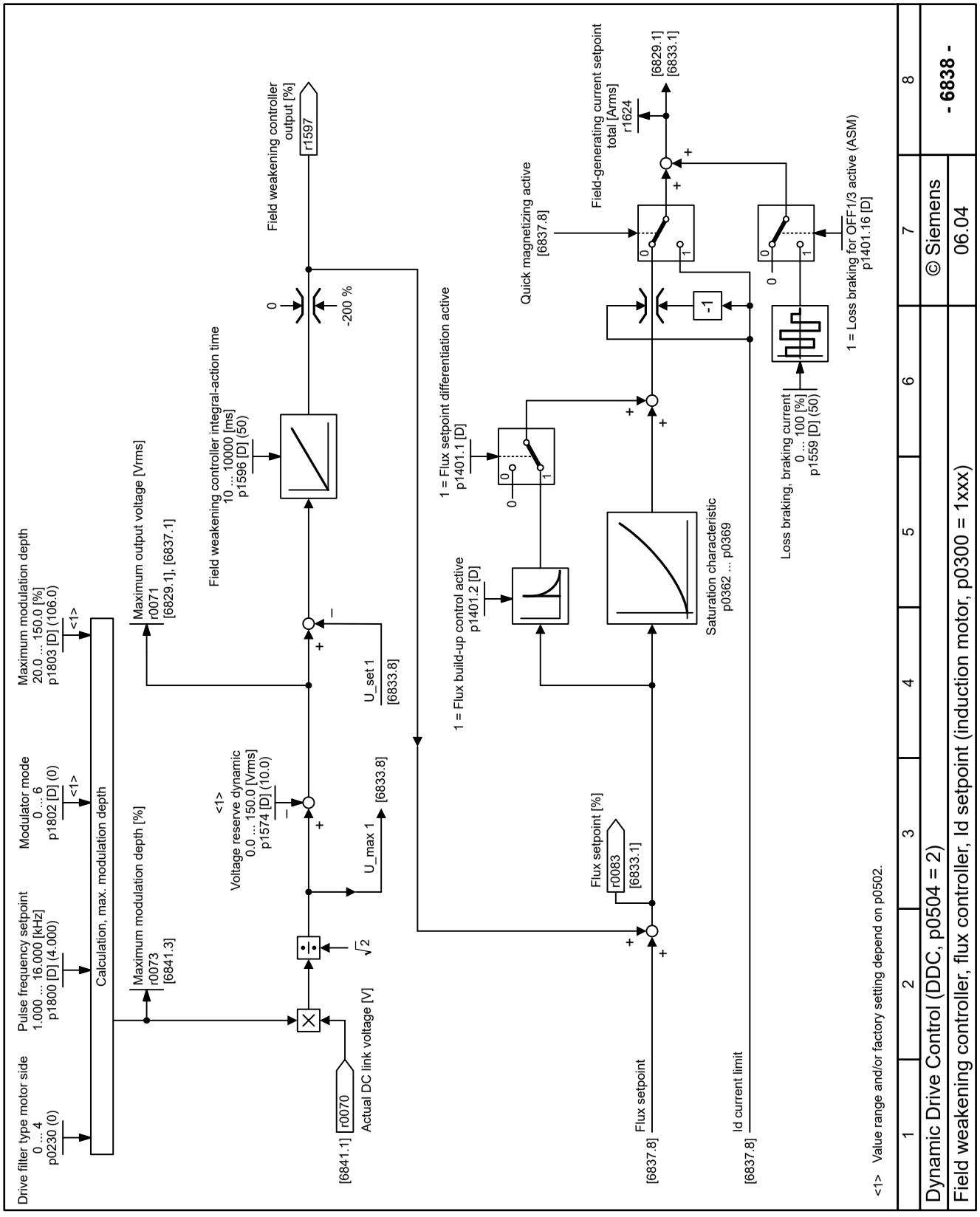


Figure 4-146 6838 – Field weakening controller, flux controller, Id setpoint (induction motor)

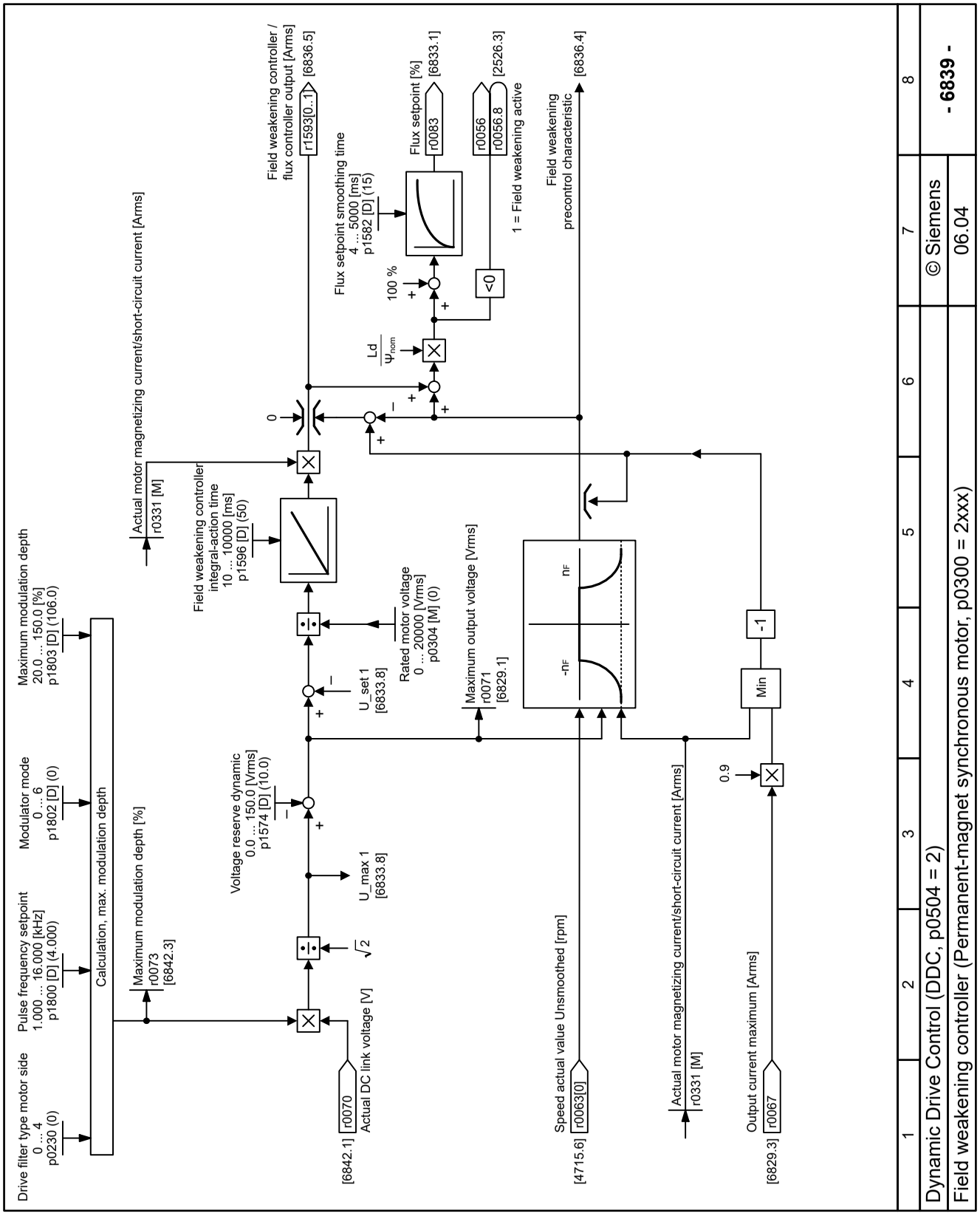


Figure 4-147 6839 - Field weakening controller (permanent-magnet synchronous motor)

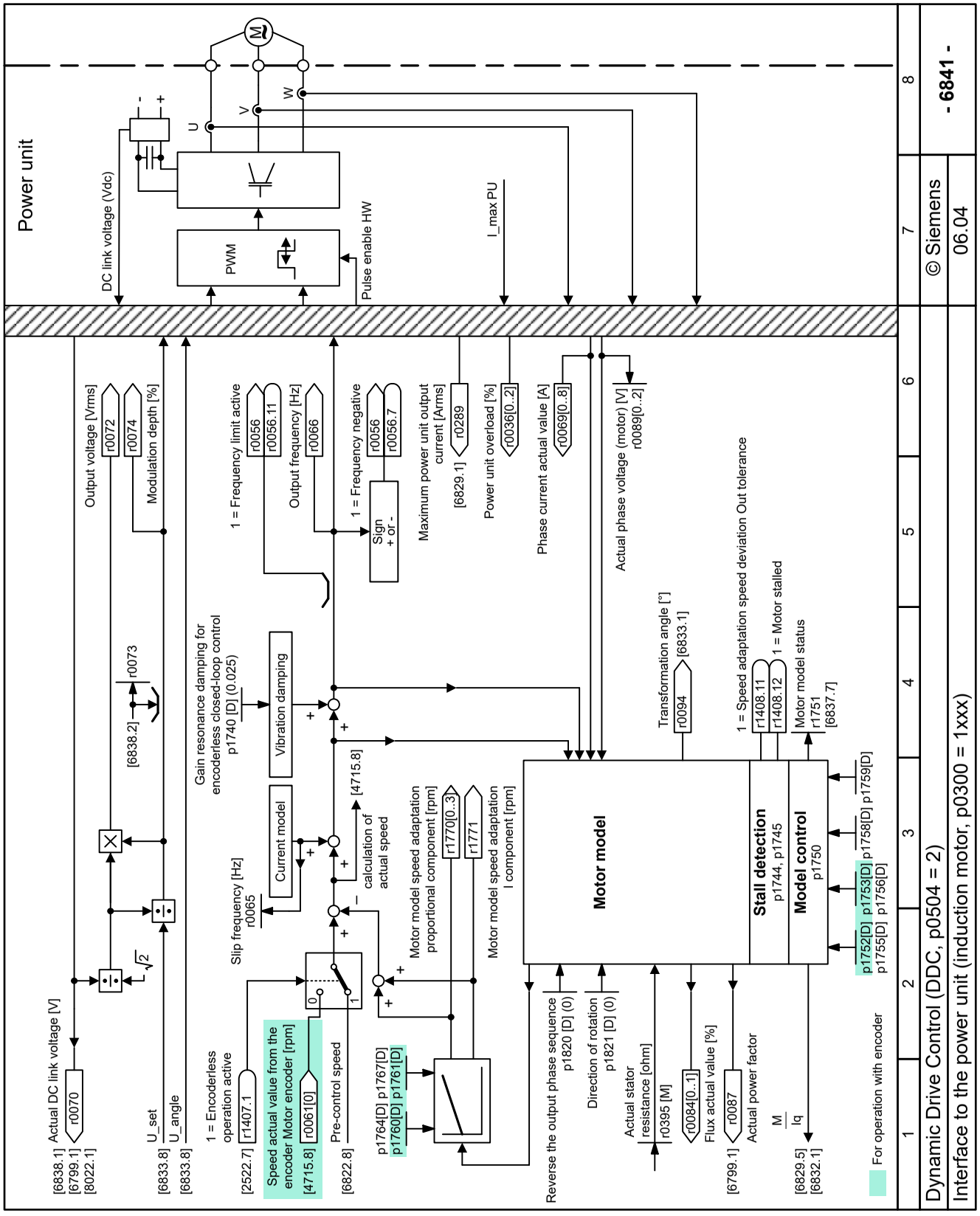


Figure 4-148 6841 - Interface to power unit (induction motor)

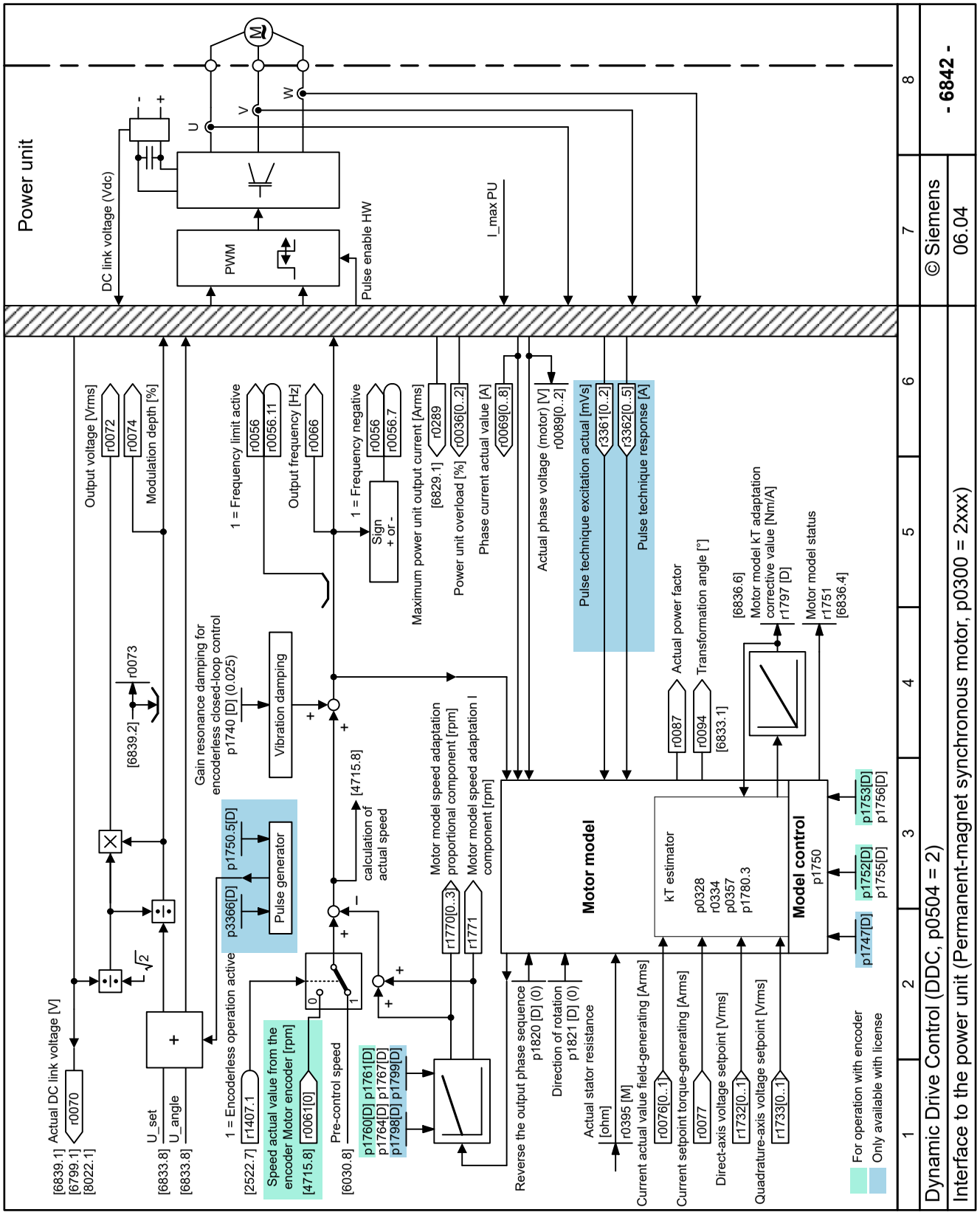


Figure 4-149 6842 - Interface to the power unit (permanent-magnet synchronous motor)

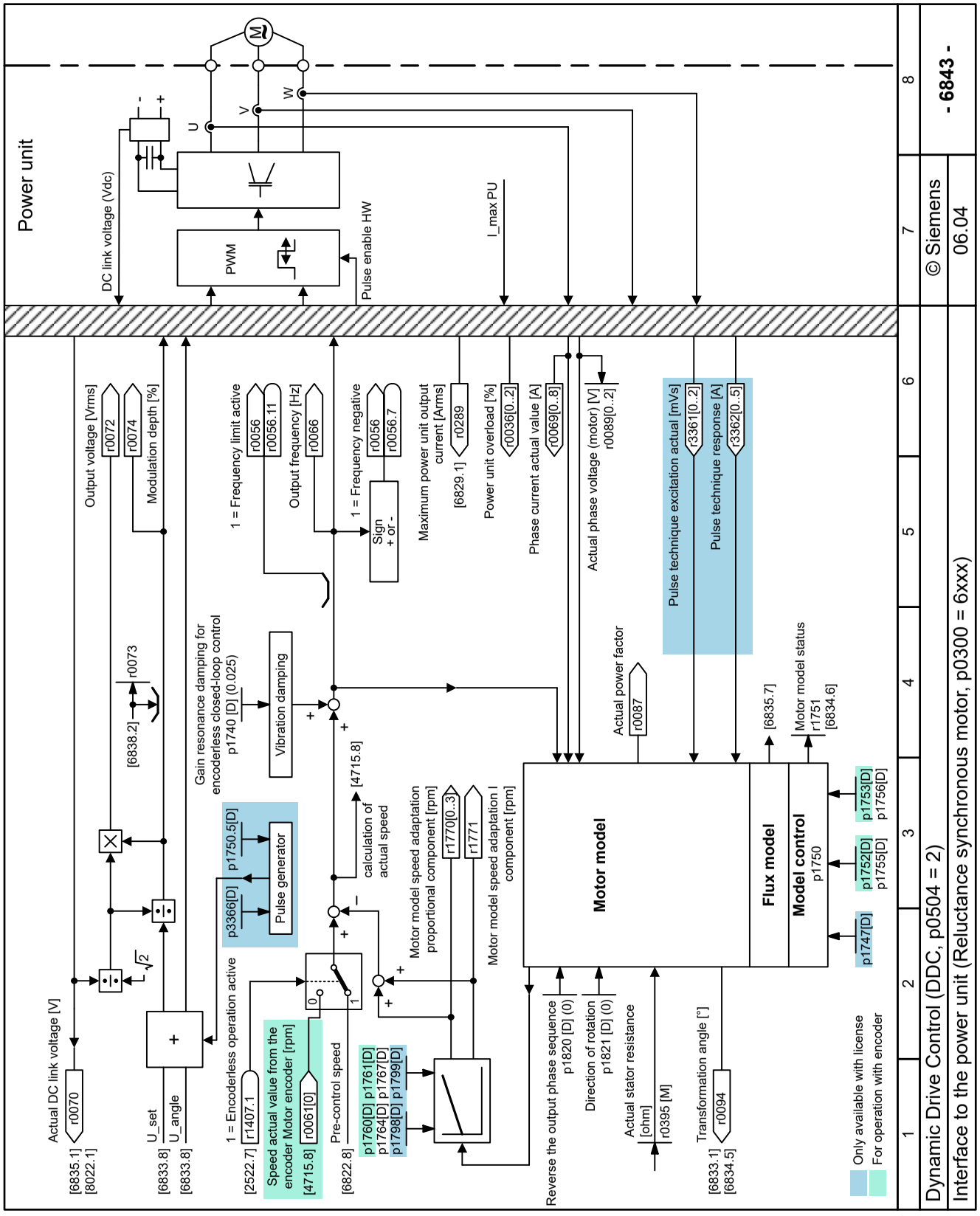


Figure 4-150 6843 - Interface to the power unit (synchronous reluctance motor)

4.15 Standard Drive Control

Overview

The following function diagrams describe the Standard Drive Control function.

Function diagrams

6850 – Overview (Page 1050)
6851 – U/f characteristic and voltage boost (Page 1051)
6852 – Current/power/torque limits (Page 1052)
6856 – Interface to power unit (induction motor) (Page 1053)

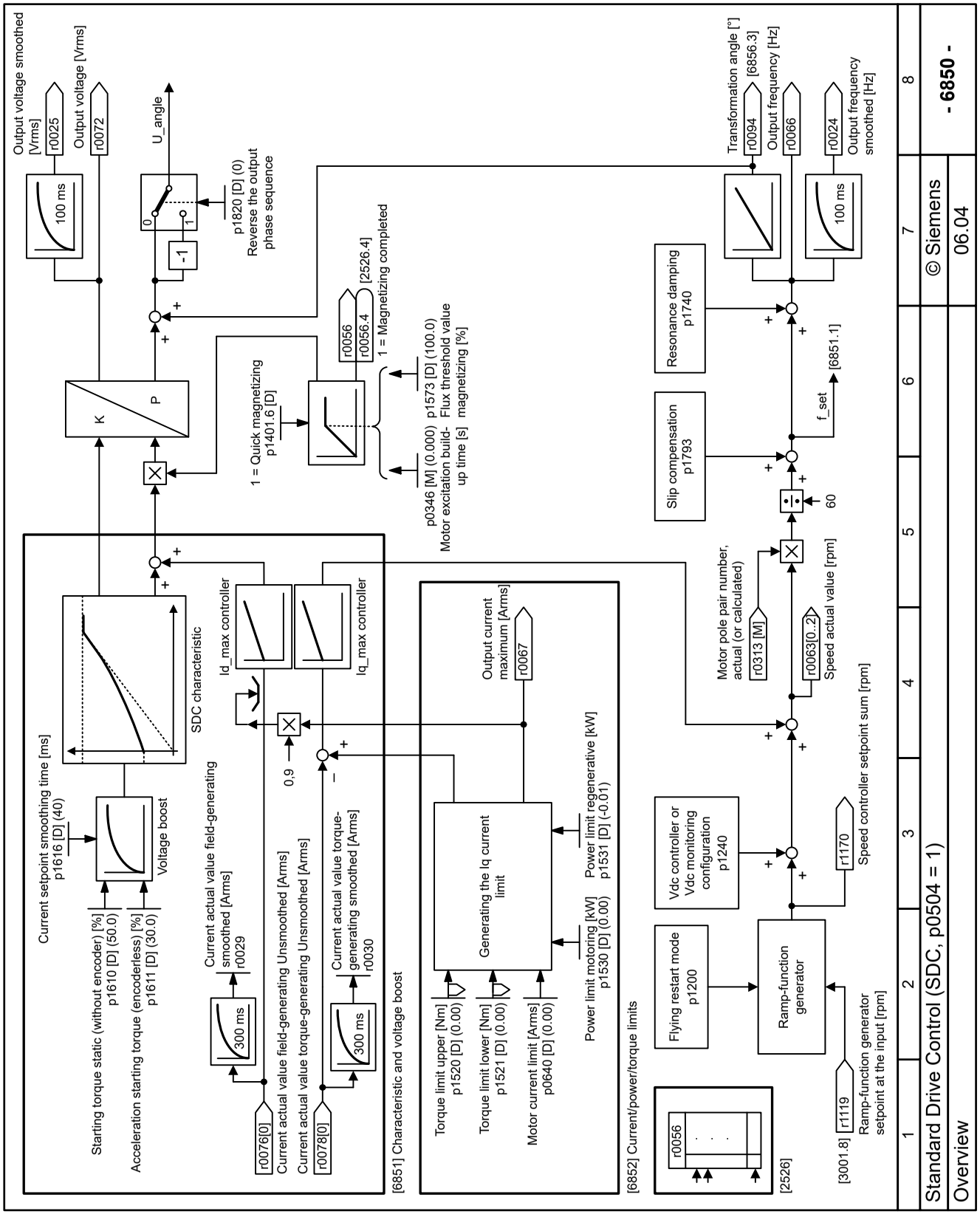


Figure 4-151 6850 - Overview

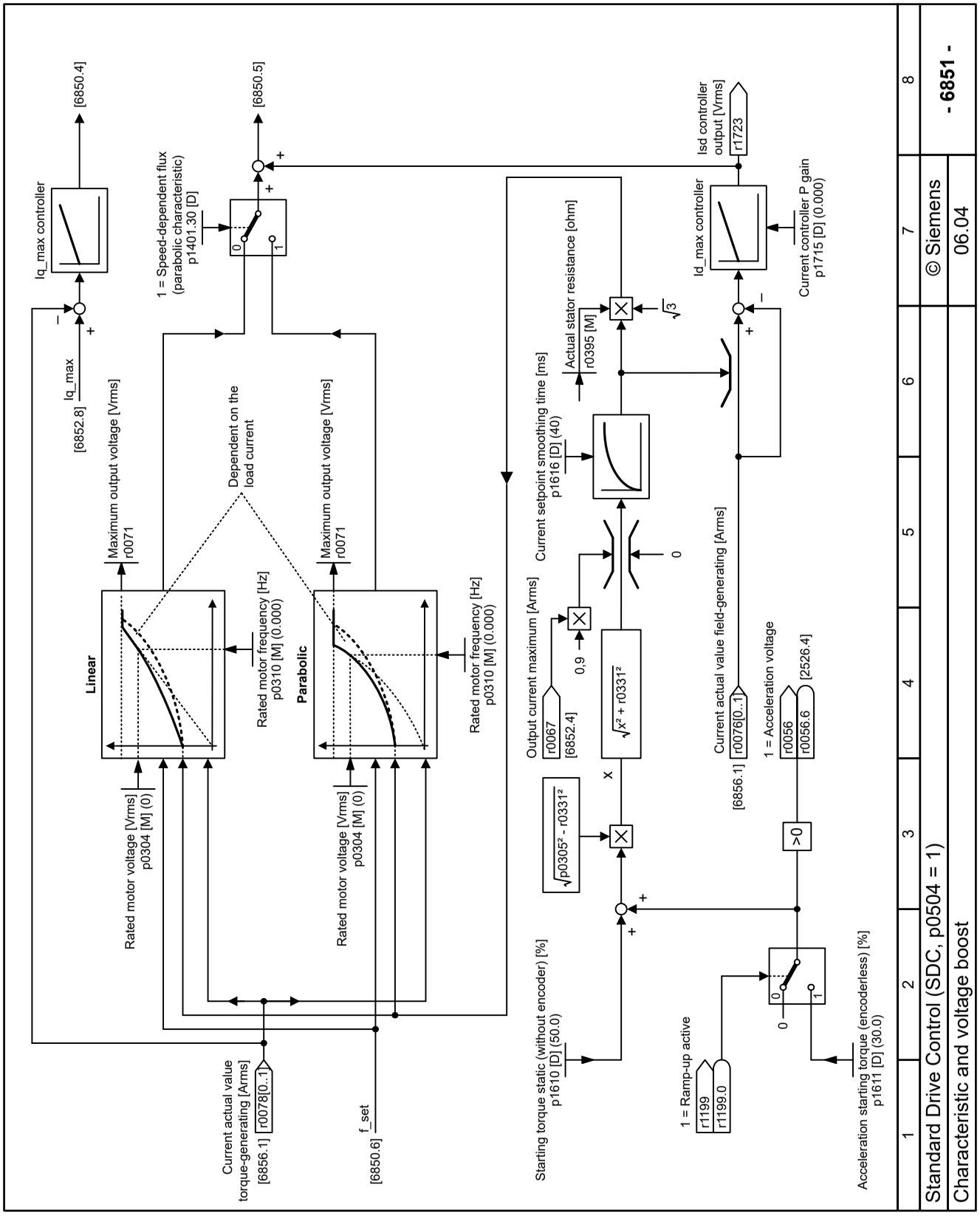


Figure 4-152 6851 - Characteristic and voltage boost

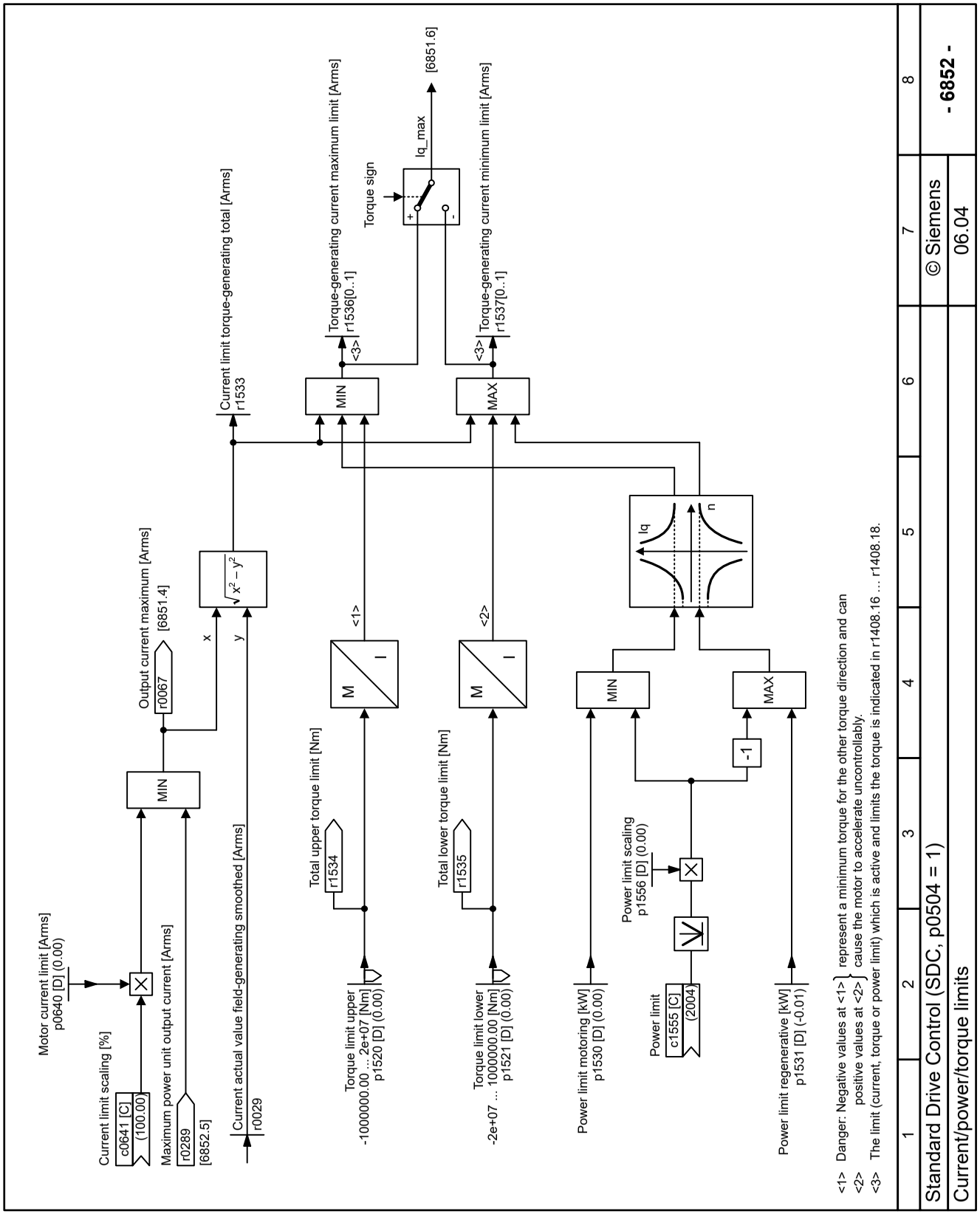


Figure 4-153 6852 - Current/power/torque limits

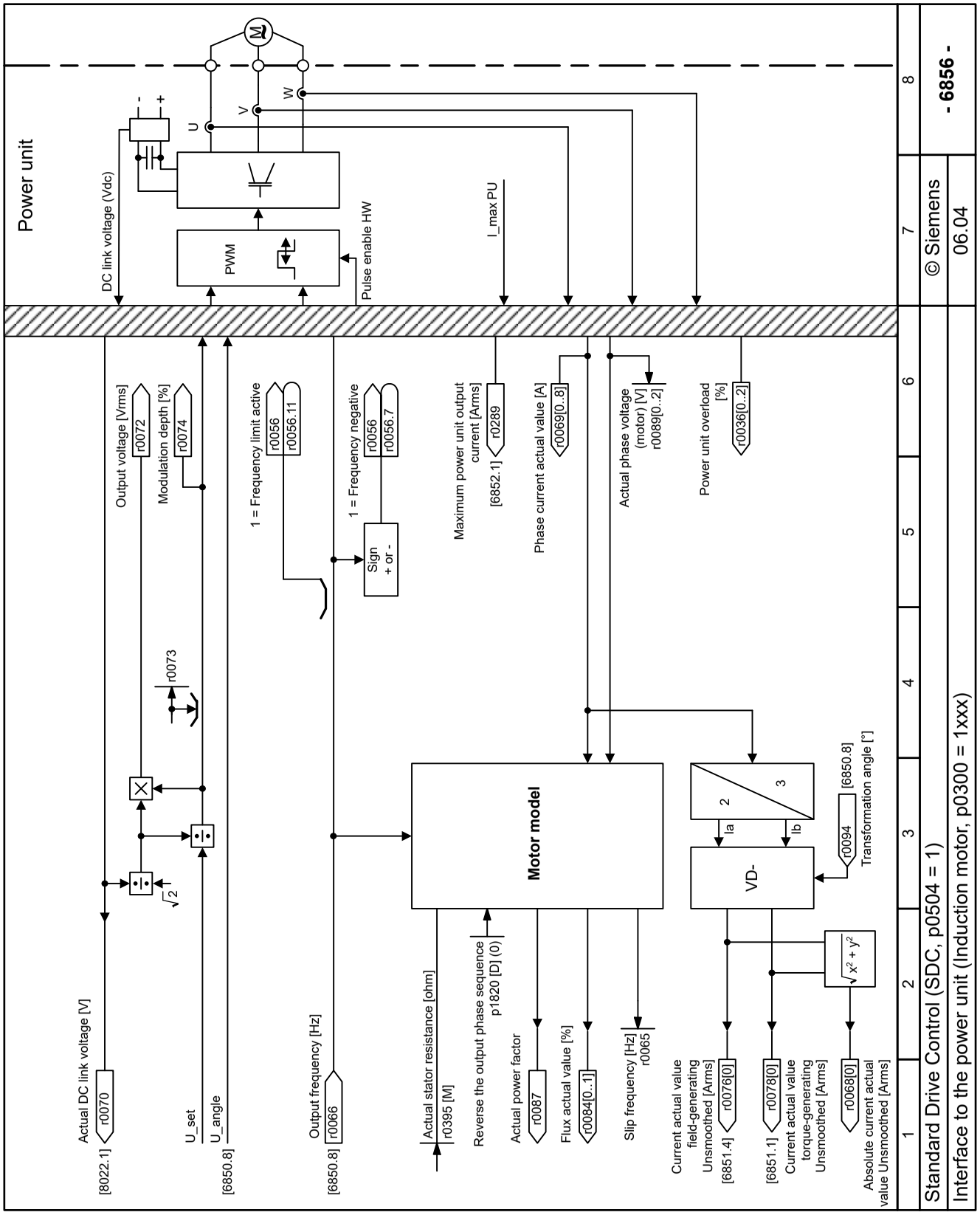


Figure 4-154 6856 - Interface to power unit (induction motor)

4.16 Technology functions

Overview

The following function diagrams describe the technology functions.

Function diagrams

7010 – Friction characteristic (Page 1055)

7014 – External armature short-circuit (EASC) (Page 1056)

7016 – Internal armature short-circuit (IASC) (Page 1057)

7017 – DC braking (Page 1058)

7020 – Synchronization (Page 1059)

7033 – Essential service mode (ESM): p3881 = 1 ... 5 (setpoint selection) (Page 1060)

7034 – Essential service mode (ESM): p3881 = 6 ... 7 (response enable), counter, status word (Page 1061)

7035 – Bypass: Overview, signal characteristic for bypass without synchronization (p1260 = 3) (Page 1062)

7036 – Bypass: Signal characteristic for bypass with synchronization (p1260 = 1, 2) (Page 1063)

7038 – Hibernation (Page 1064)

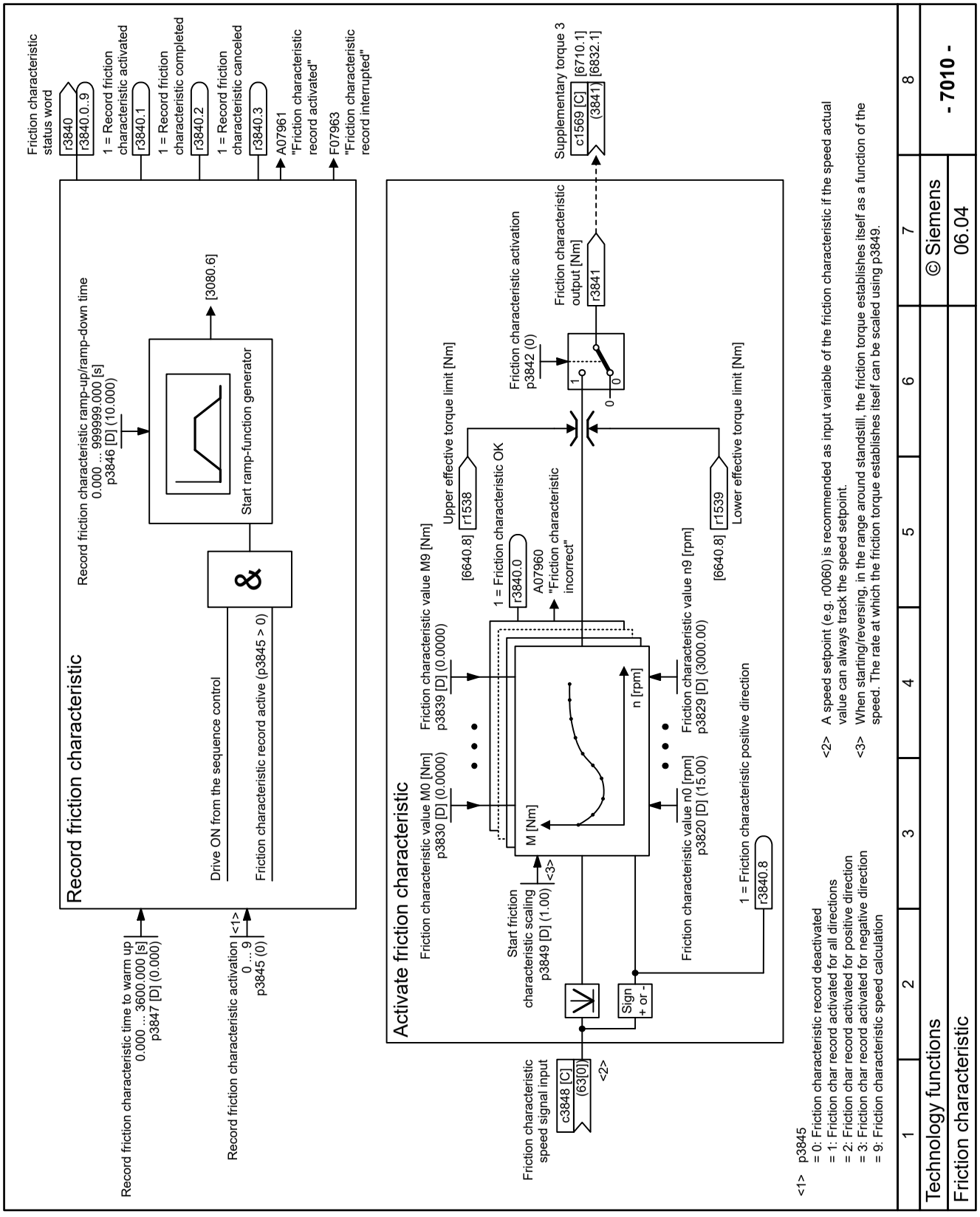


Figure 4-155 7010 - Friction characteristic

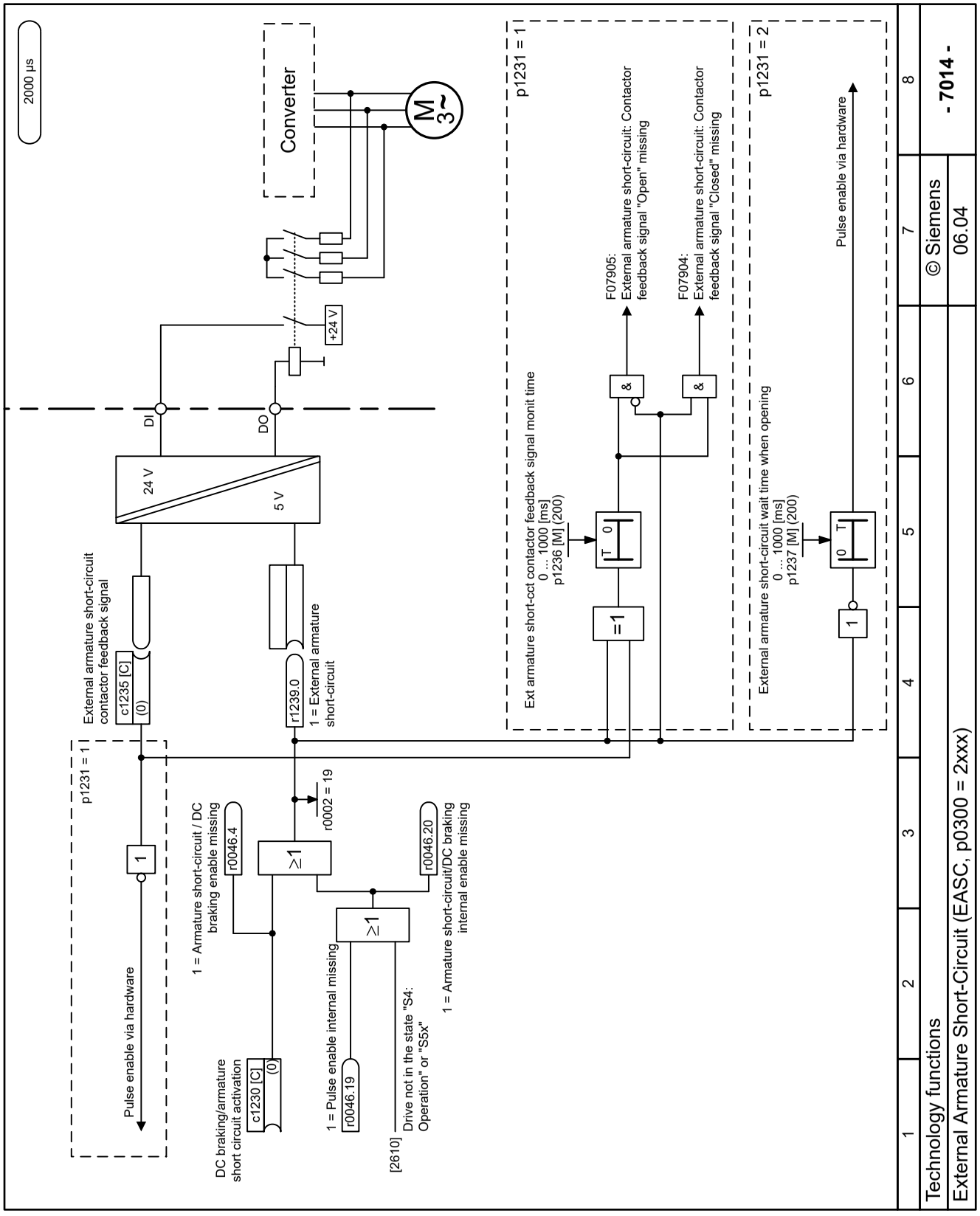


Figure 4-156 7014 – External armature short-circuit (EASC)

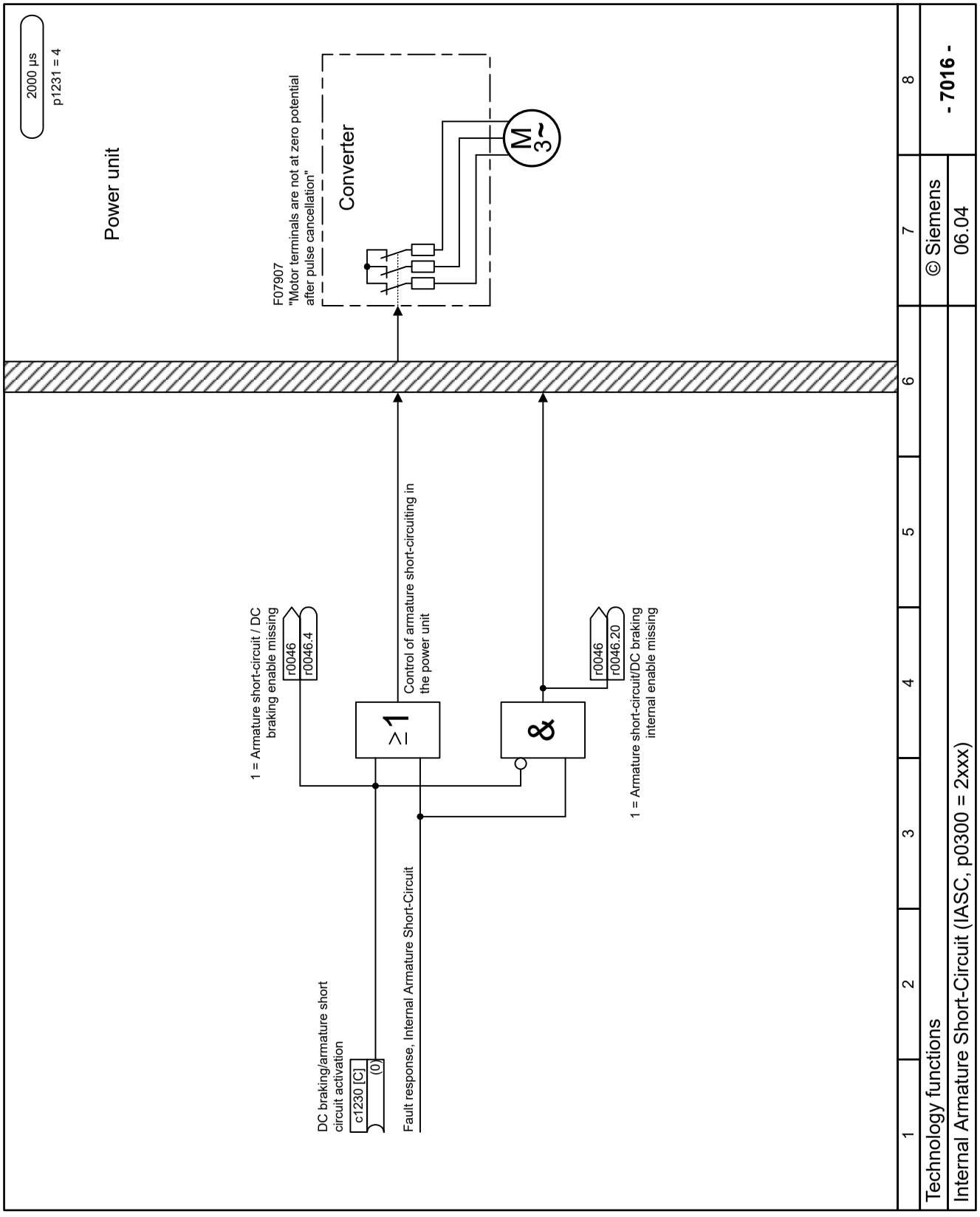
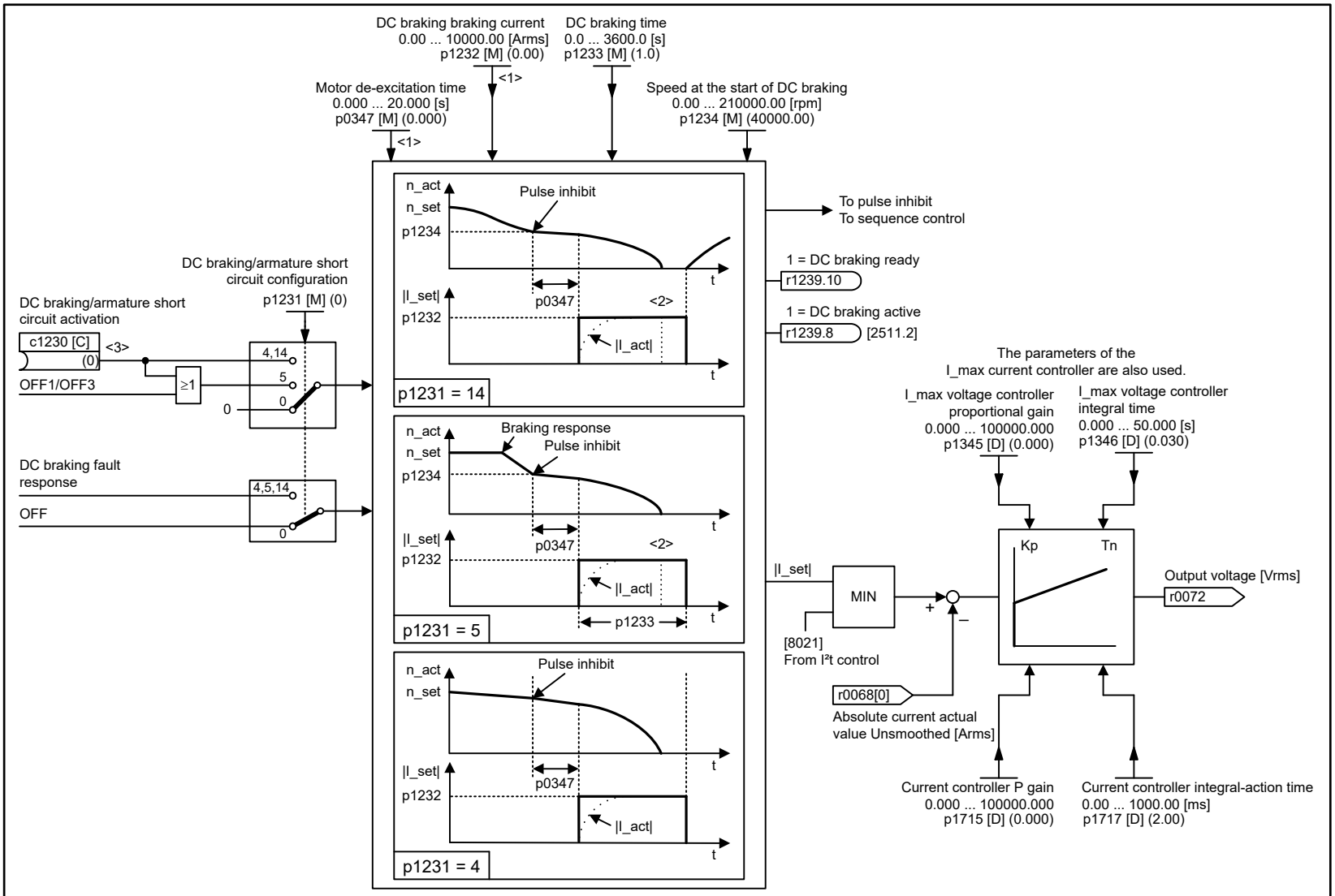


Figure 4-157 7016 – Internal armature short-circuit (IASC)



<1> The value is determined during automatic calculation.
<2> As soon as the standstill threshold (p1226) has been reached, the DC current injection will be aborted prematurely.
<3> DC brake upon falling below the starting speed for DC brake (p1234).

1	2	3	4	5	6	7	8
Technology functions						© Siemens	**- 7017 -**
DC braking (p0300 = 1xxx)						06.04	

Figure 4-158 7017 - DC braking

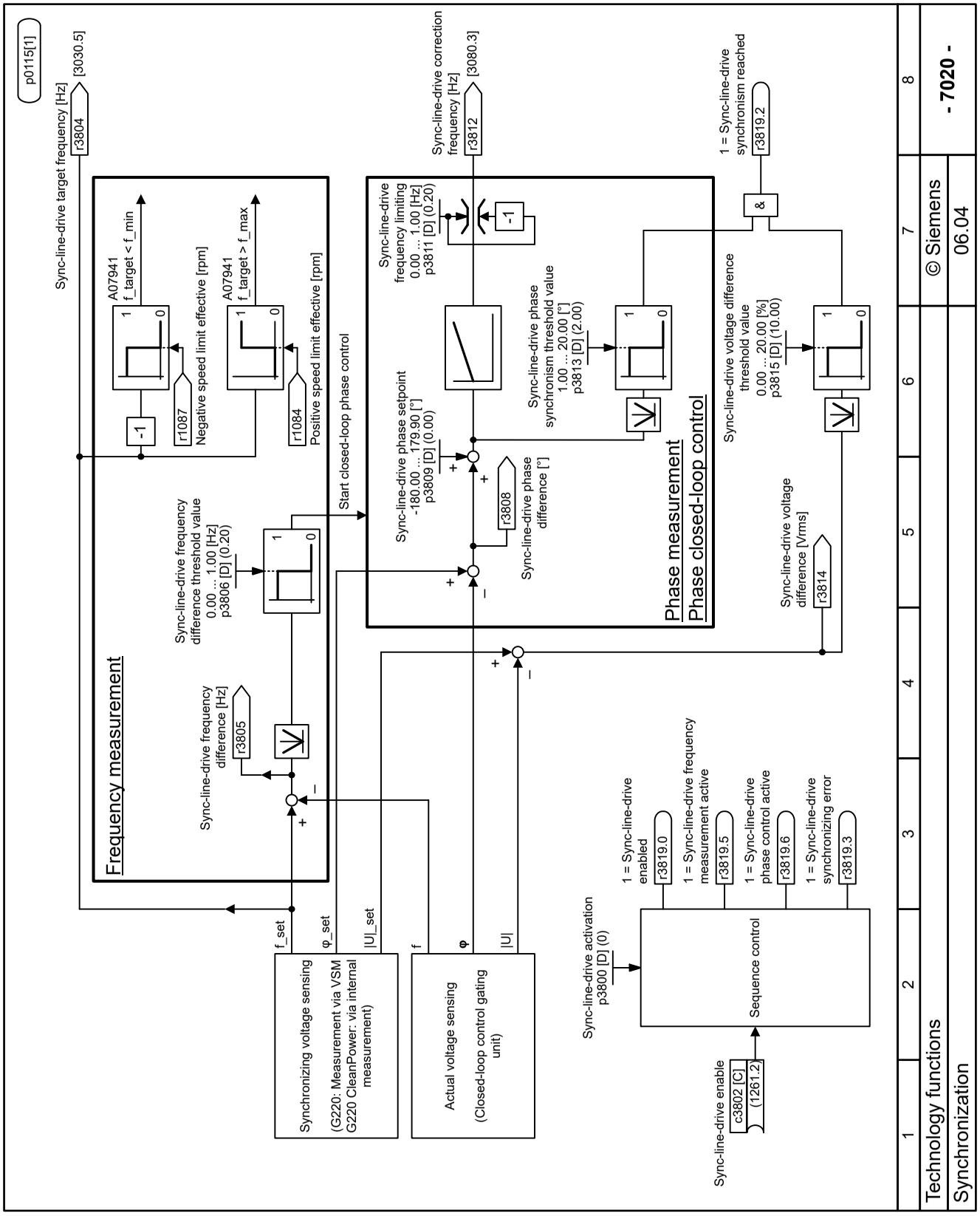


Figure 4-159 7020 – Synchronization

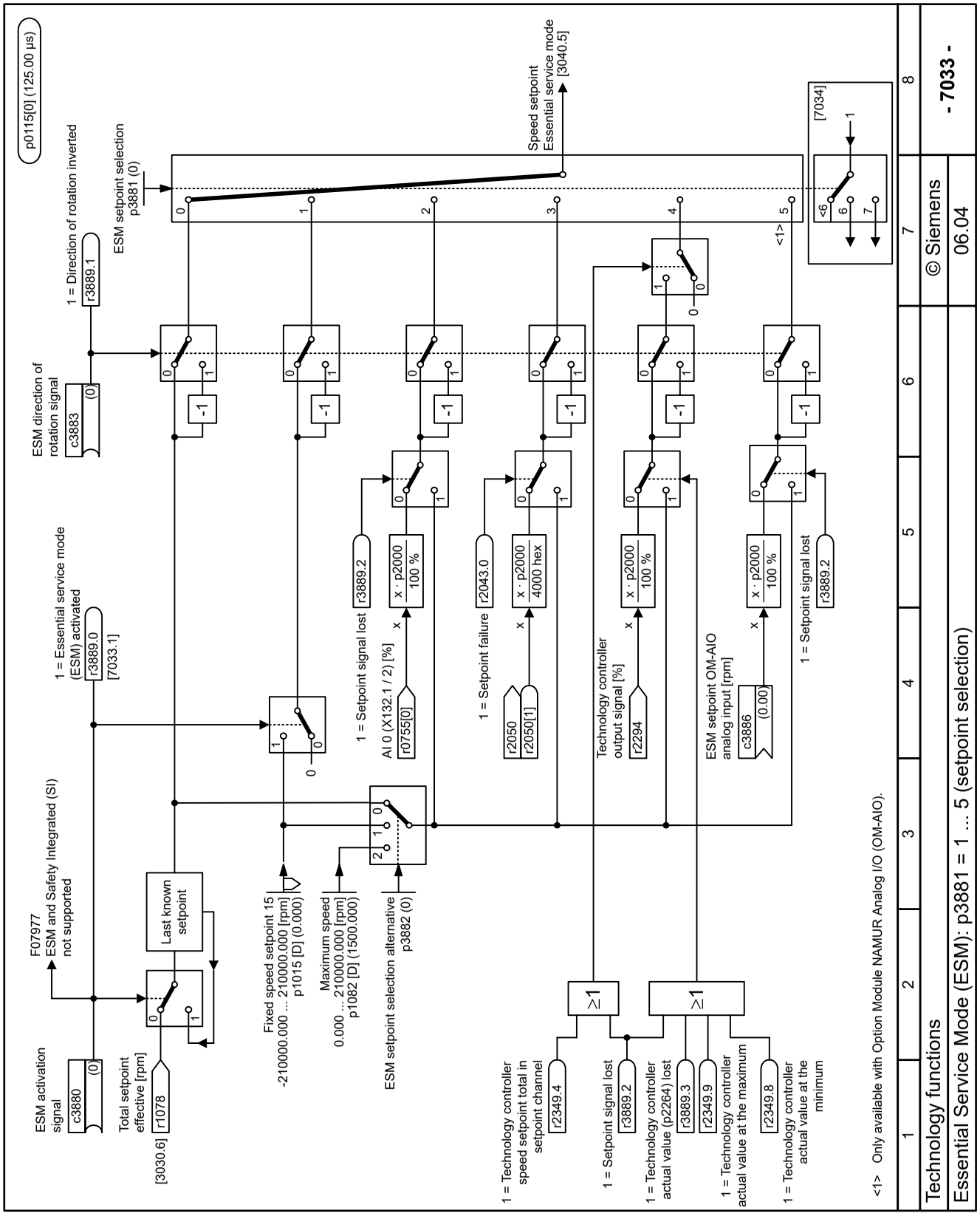


Figure 4-160 7033 - Essential service mode (ESM): p3881 = 1 ... 5 (setpoint selection)

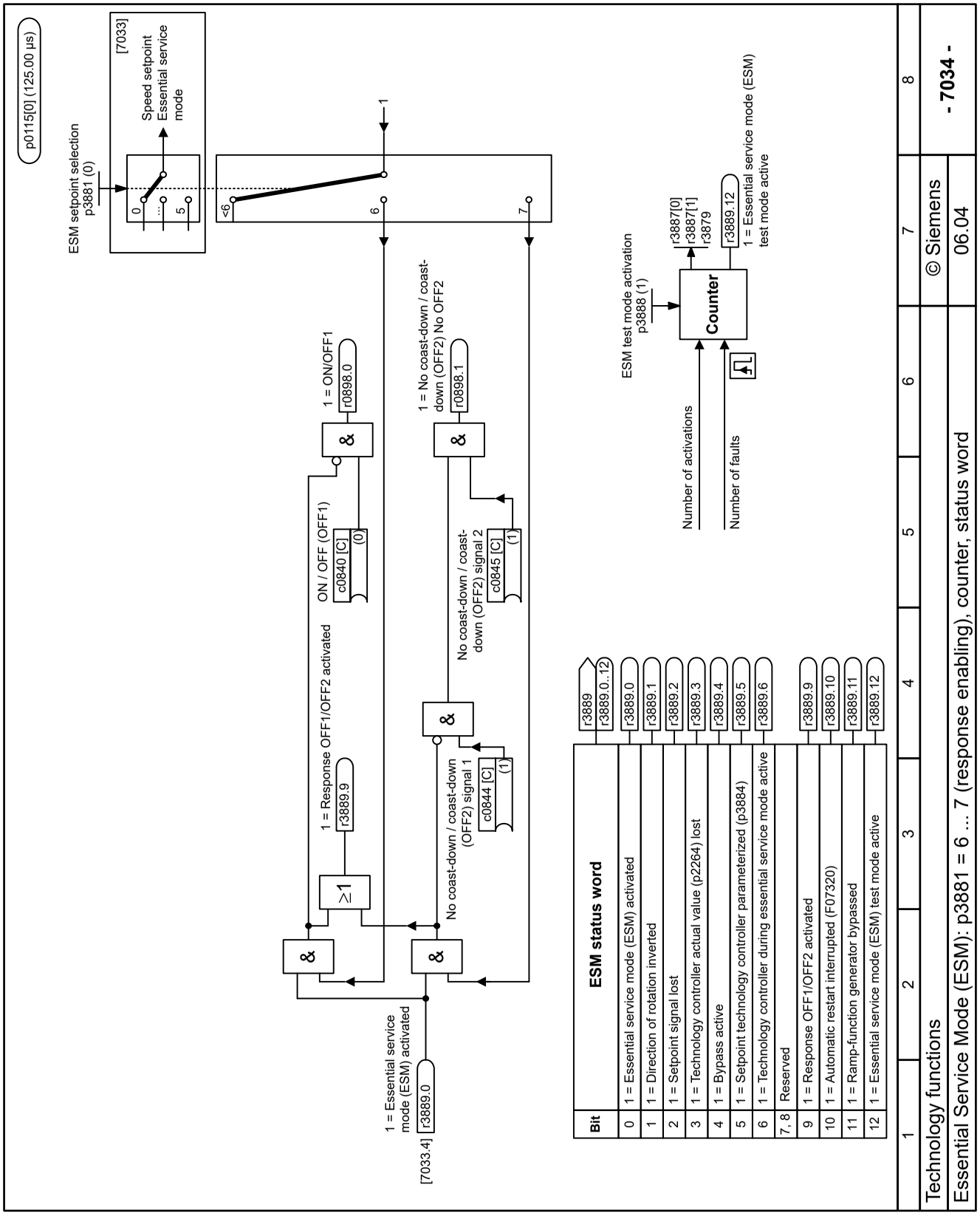


Figure 4-161 7034 - Essential service mode (ESM): p3881 = 6 ... 7 (response enable), counter, status word

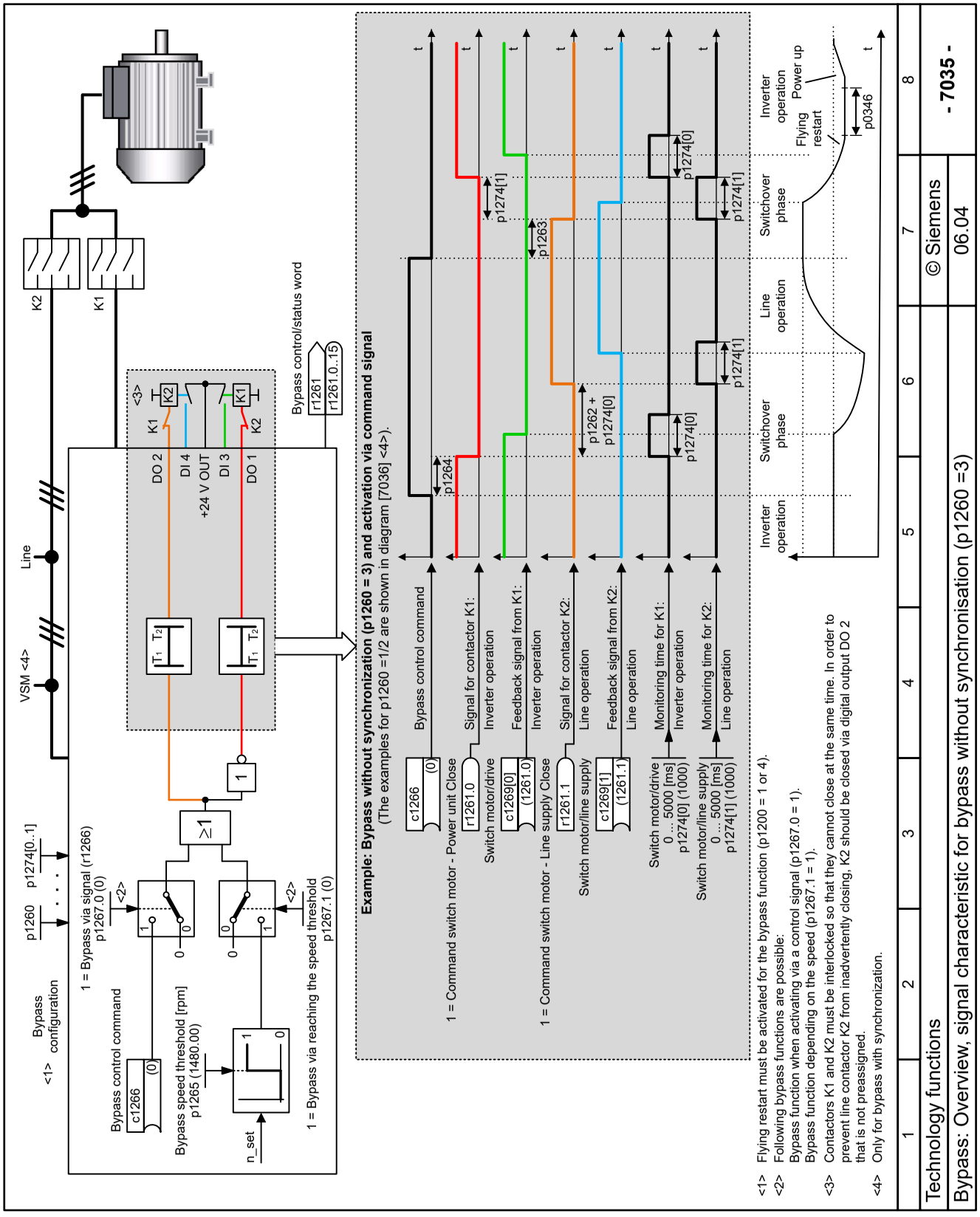


Figure 4-162 7035 – Bypass: Overview, signal characteristic for bypass without synchronization (p1260 = 3)

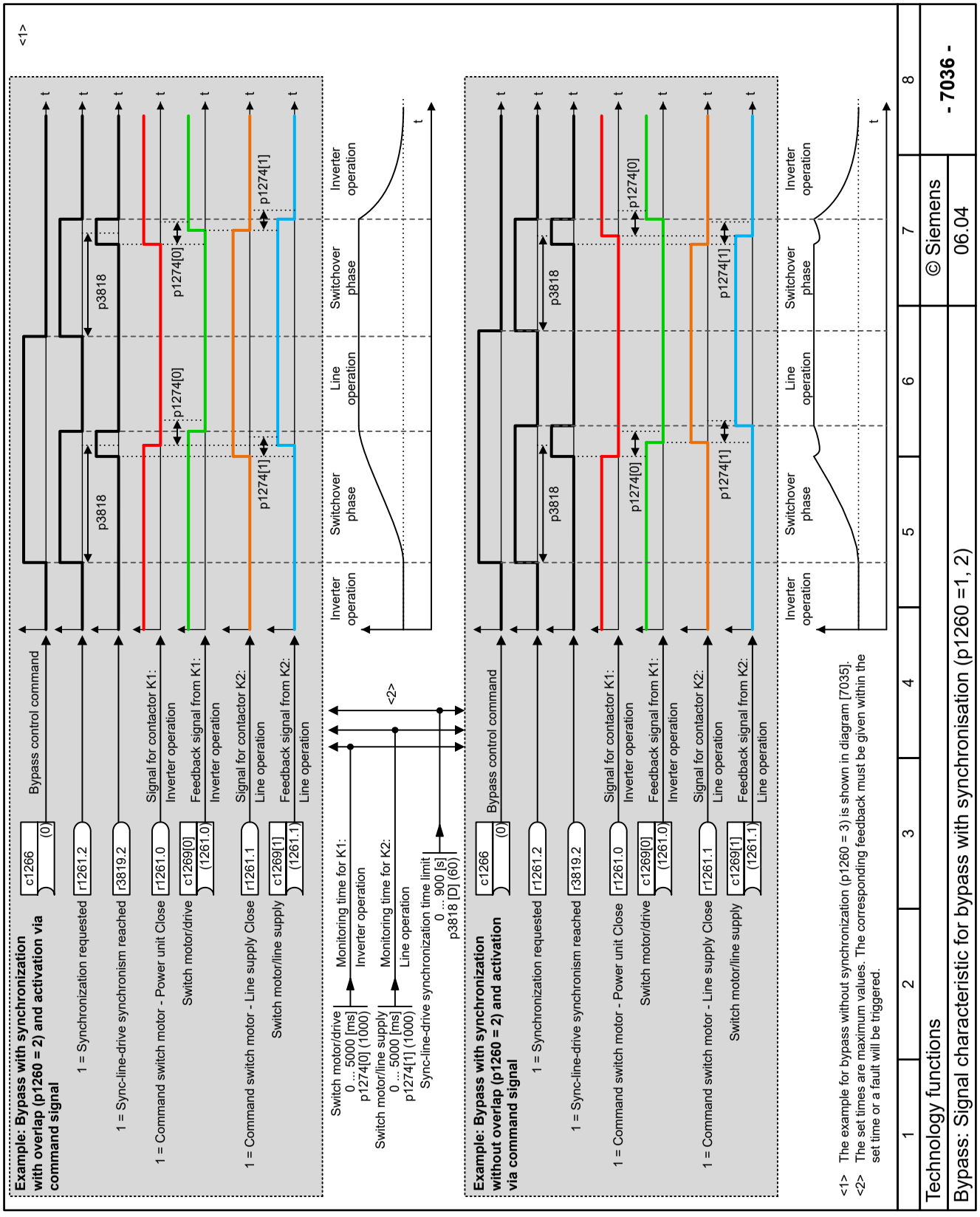
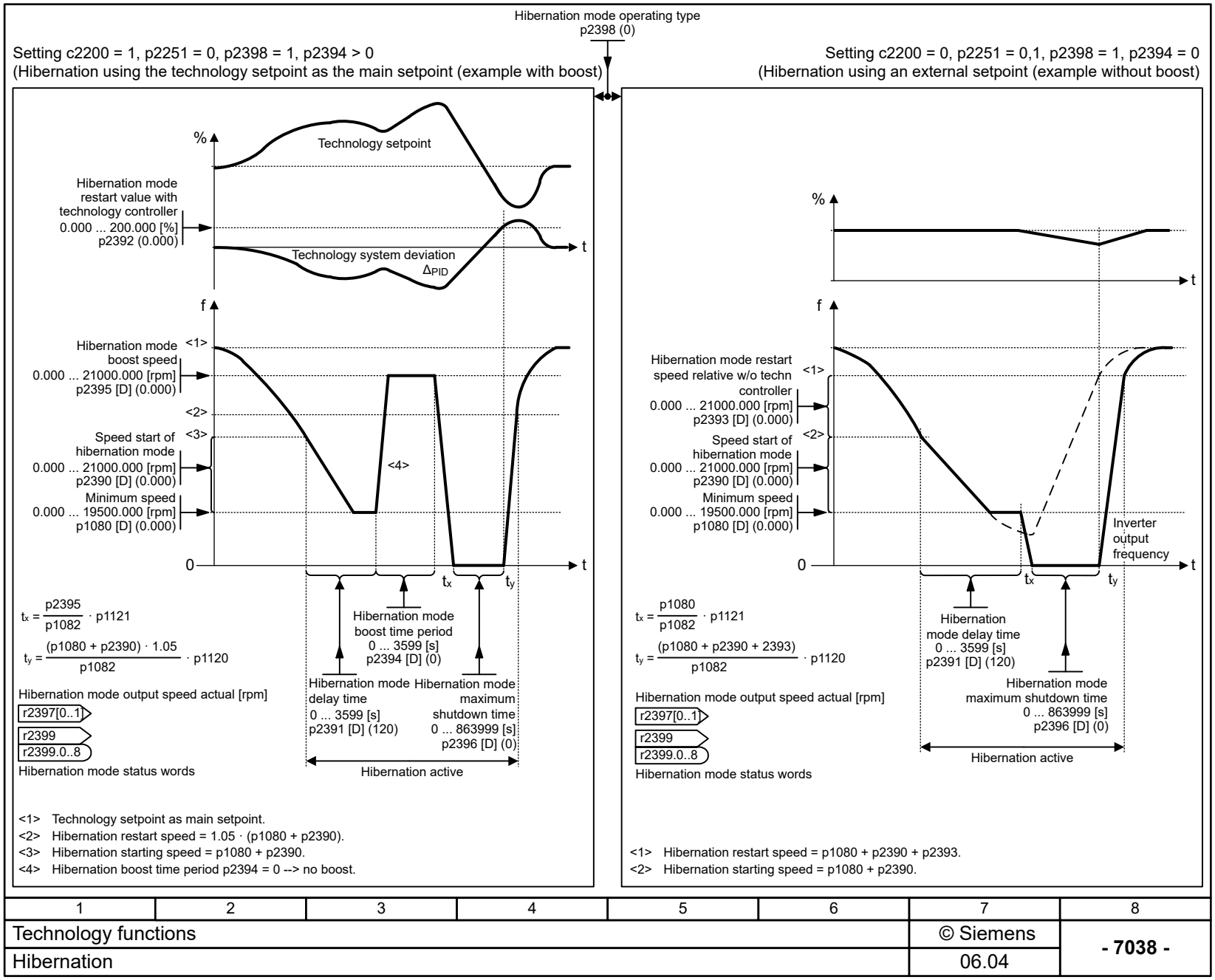


Figure 4-163 7036 – Bypass: Signal characteristic for bypass with synchronization (p1260 = 1, 2)



1	2	3	4	5	6	7	8
Technology functions						© Siemens	- 7038 -
Hibernation						06.04	

Figure 4-164 7038 – Hibernation

4.17 Technology controller

Overview

The following function diagrams describe the technology controller.

Function diagrams

7950 – Fixed values, binary selection (Page 1066)
7951 – Fixed values, direct selection (Page 1067)
7954 – Motorized potentiometer (Page 1068)
7957 – Closed-loop control, vector (Part 1) (Page 1069)
7958 – Closed-loop control, vector (Part 2) (Page 1070)
7959 – Kp/Tn adaptation (Page 1071)

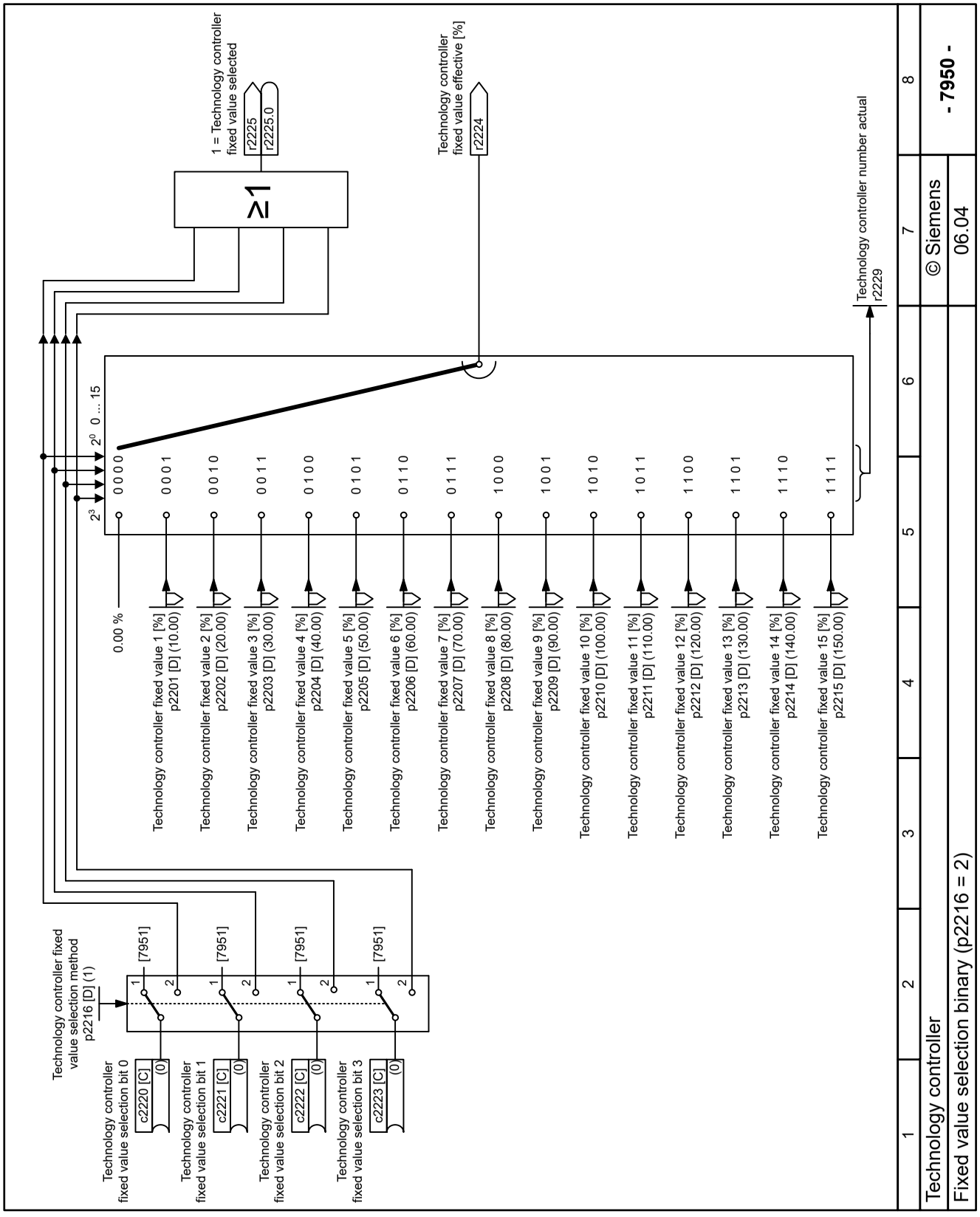


Figure 4-165 7950 - Fixed values, binary selection

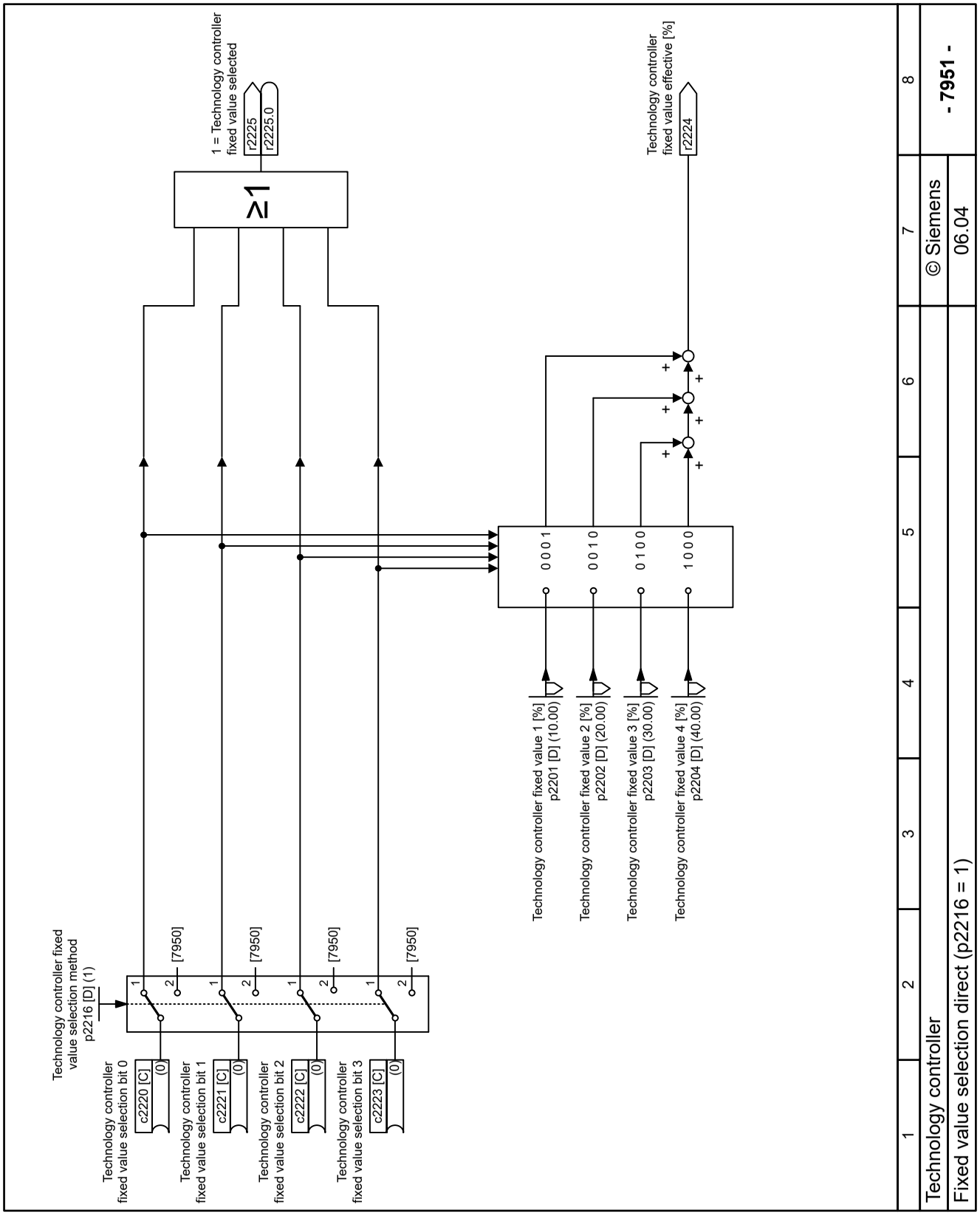


Figure 4-166 7951 - Fixed values, direct selection

Figure 4-167 7954 - Motorized potentiometer

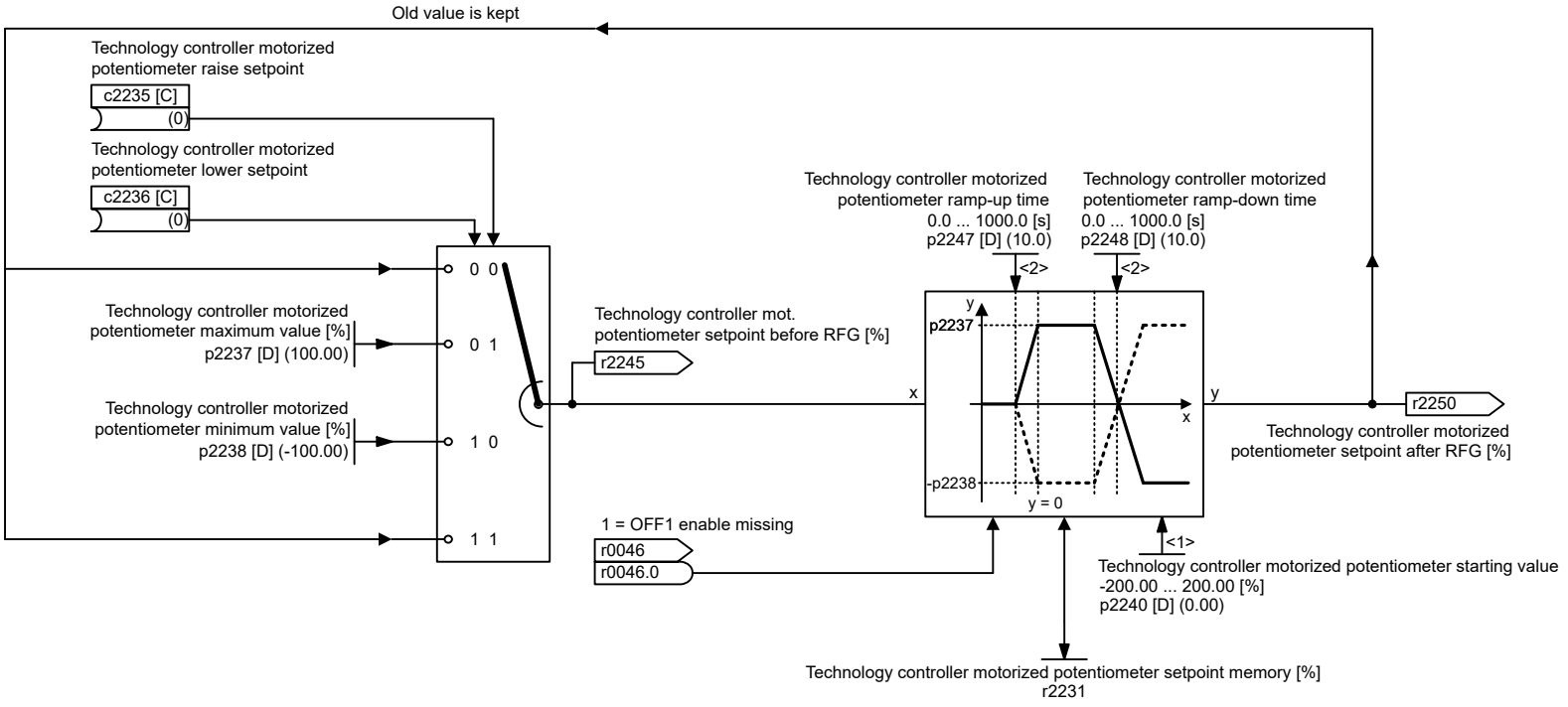
Technology controller motorized potentiometer configuration

1 = Data save active
p2230.0 [D]
- 0 The setpoint for the motorized potentiometer is not saved and after ON is entered using p2240.
- 1 The setpoint for the motorized potentiometer is saved after OFF and after ON is entered using r2231. In order to save in a non-volatile fashion, bit 03 should be set to 1.

1 = Initial rounding-off active
p2230.2 [D]
- 0 Without initial rounding.
- 1 With initial rounding. The ramp-up/down time set is exceeded accordingly.

1 = Non-volatile data save active for p2230.0 = 1
p2230.3 [D]
- 0 Non-volatile data save deactivated.
- 1 The setpoint for the motorized potentiometer is saved in a non-volatile fashion (for p2230.0 = 1).

1 = Ramp-function generator always active
p2230.4 [D]
- 0 Ramp-up encoder inactive with pulse inhibit.
- 1 The ramp-up encoder is calculated independently of the pulse enable.



<1> For p2230.0 = 0, this setpoint is entered after ON.
<2> If initial rounding-off is active (p2230.2 = 1), the selected ramp-up/down times are exceeded accordingly.

1	2	3	4	5	6	7	8
Technology controller						© Siemens	- 7954 -
Motorized potentiometer						06.04	

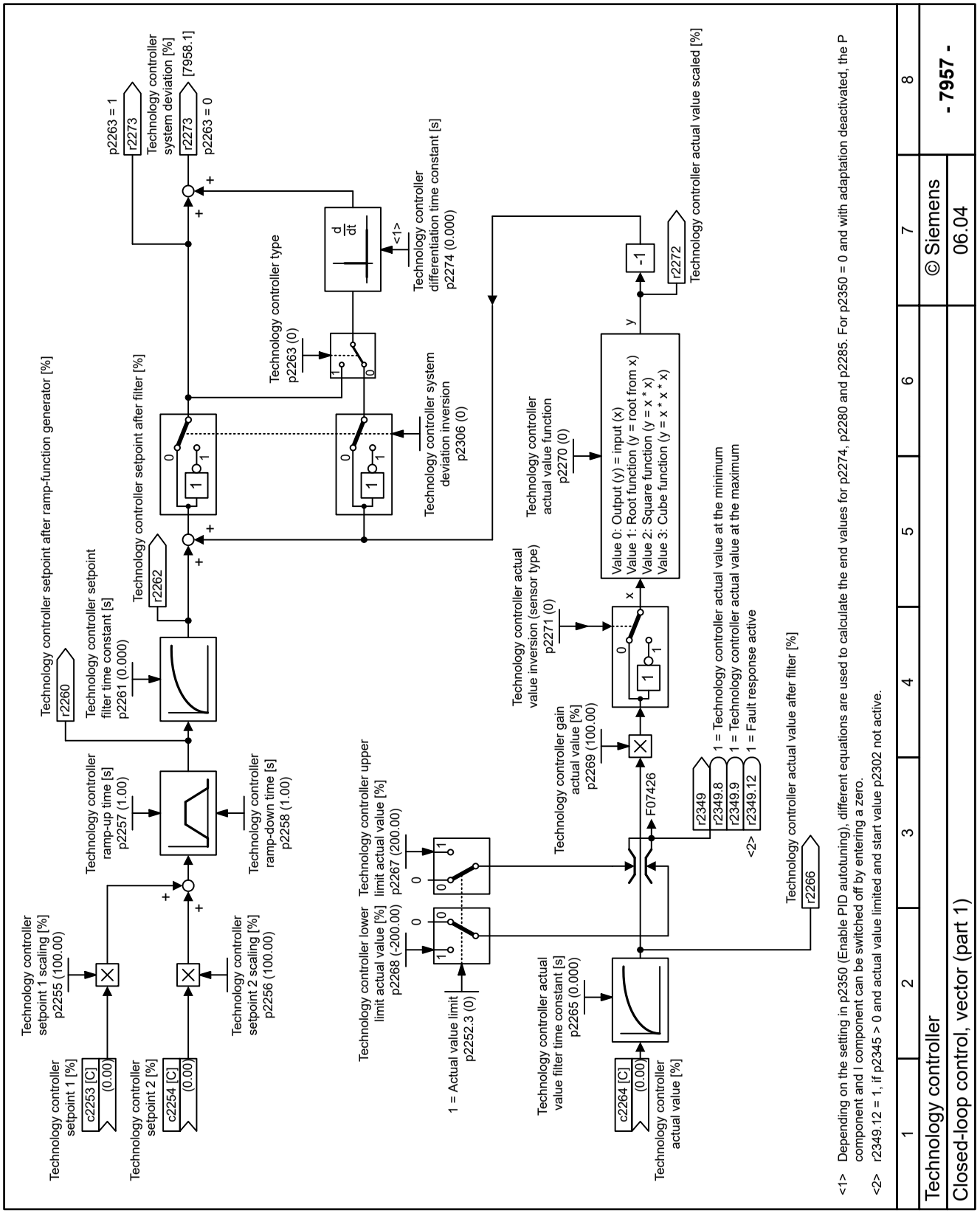


Figure 4-168 7957 – Closed-loop control, vector (Part 1)

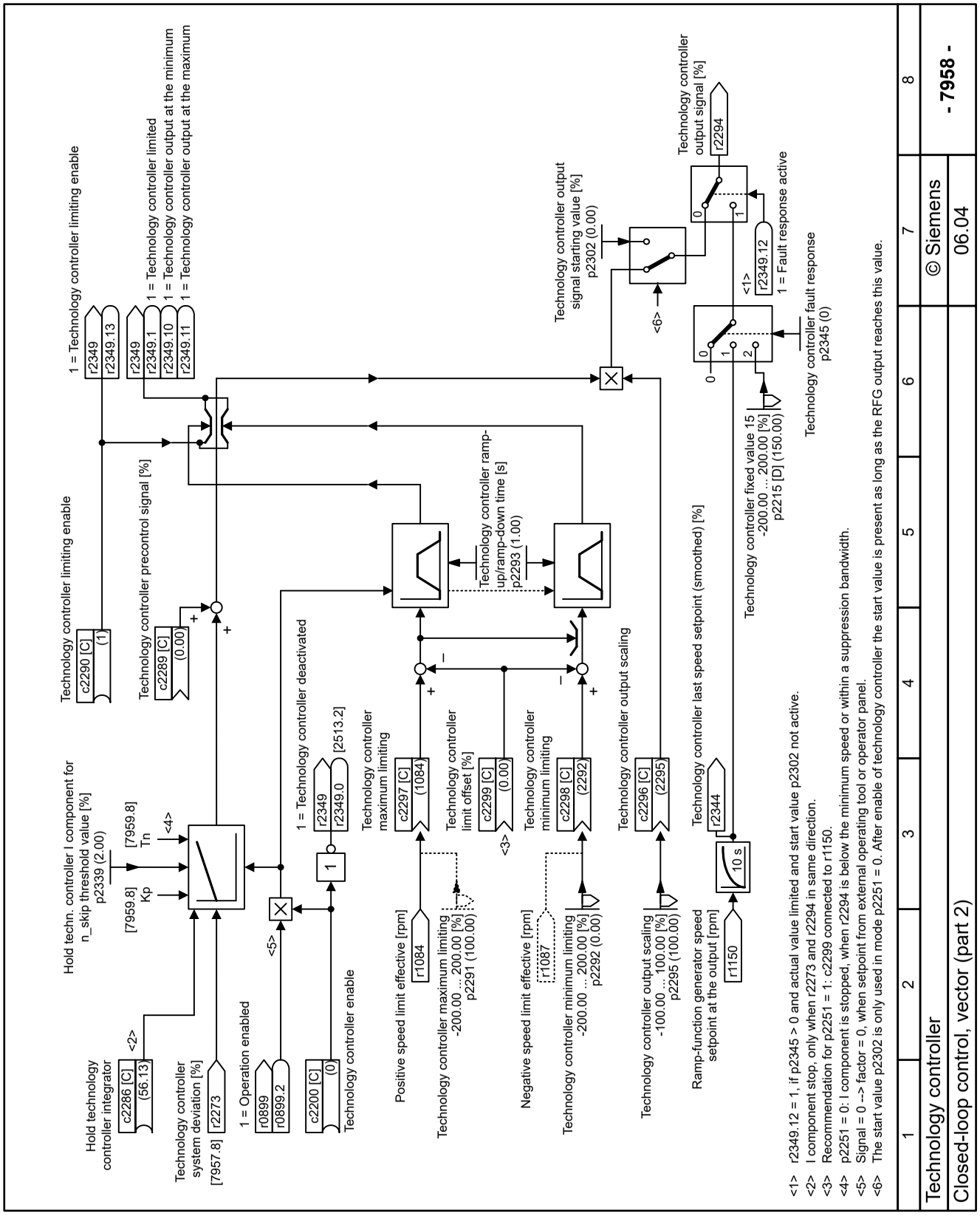


Figure 4-169 7958 – Closed-loop control, vector (Part 2)

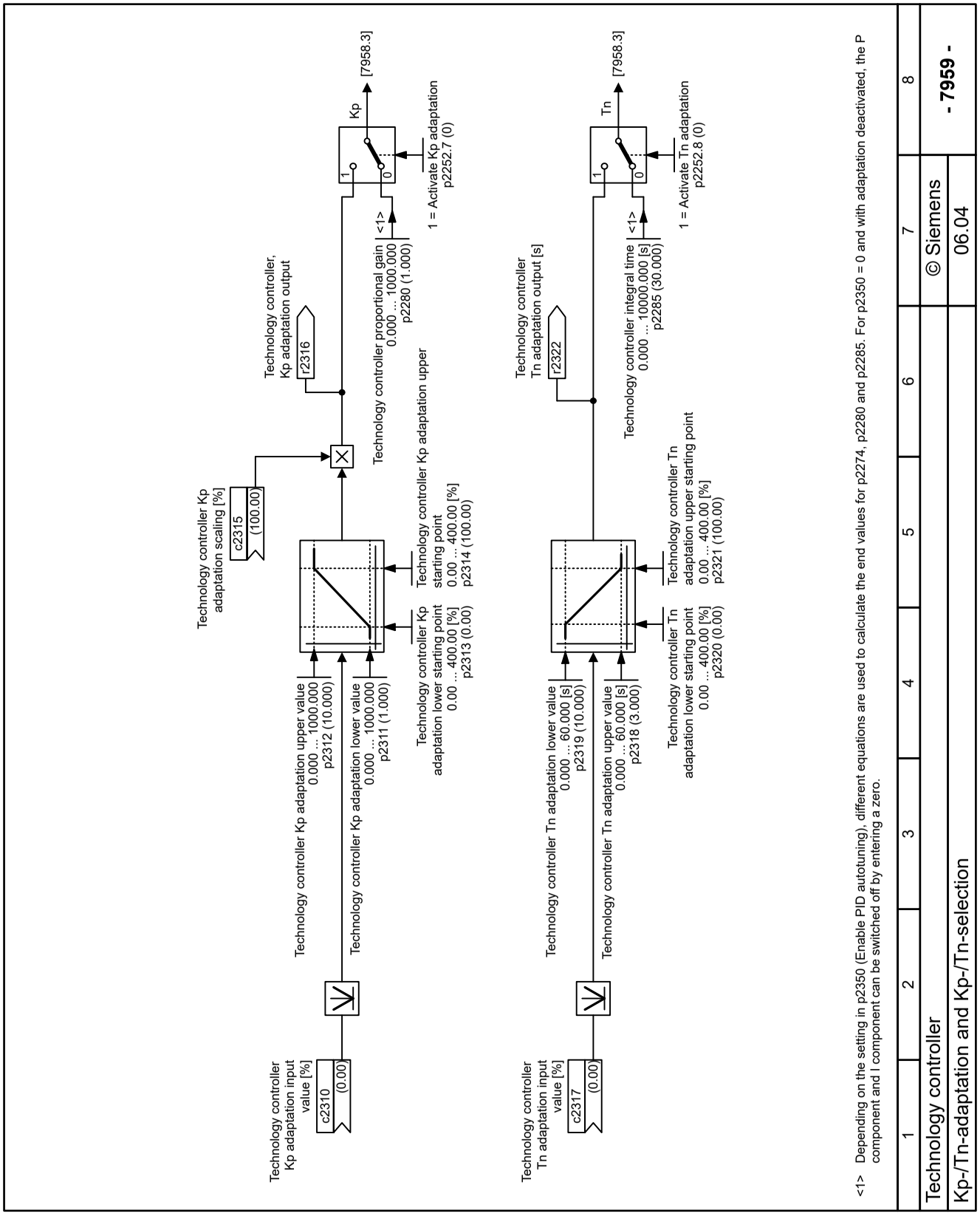


Figure 4-170 7959 – Kp/Tn adaptation and Kp/Tn selection

4.18 Signals and monitoring functions

Overview

The following function diagrams describe the signals and monitoring functions.

Function diagrams

8005 – Overview (Page 1073)
8010 – Speed messages (Part 1) (Page 1074)
8011 – Speed messages (Part 2) (Page 1075)
8012 – Torque messages (Page 1076)
8013 – Load monitoring (Part 1) (Page 1077)
8014 – Load monitoring (Part 2) (Page 1078)
8015 – Blocking and stall monitoring (Page 1079)
8016 – Thermal monitoring motor (Page 1080)
8017 – Motor temperature model 1 (I2t) (Page 1081)
8018 – Motor temperature model 2 (Page 1082)
8019 – Motor temperature model 3 (Page 1083)
8020 – ZSW motor temperature (Page 1084)
8021 – Thermal monitoring power unit (Page 1085)
8022 – Monitoring functions (Part 1) (Page 1086)
8023 – Monitoring functions (Part 2) (Page 1087)
8024 – Variable message function 1, 2, 3 (Page 1088)

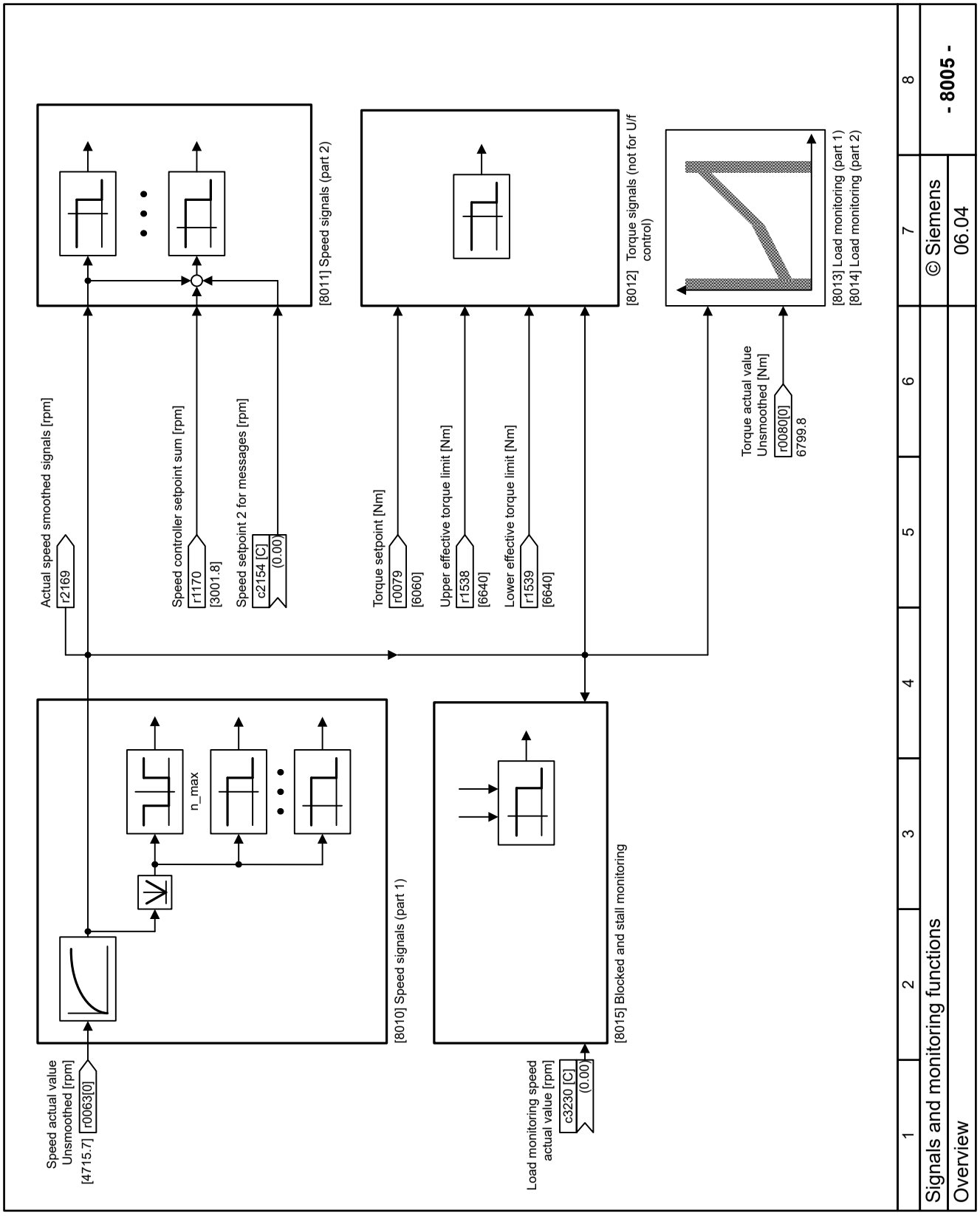


Figure 4-171 8005 – Overview

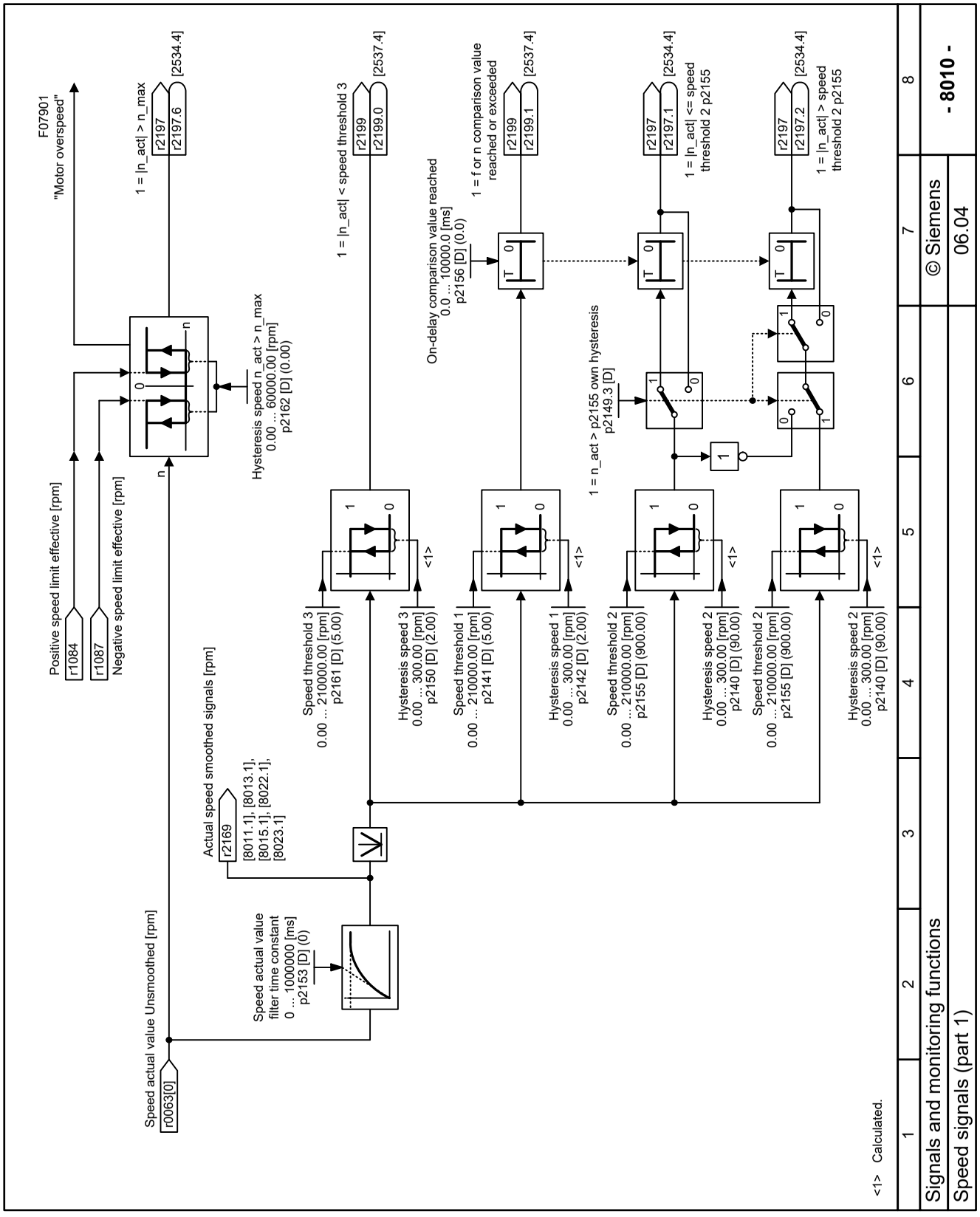


Figure 4-172 8010 – Speed messages (Part 1)

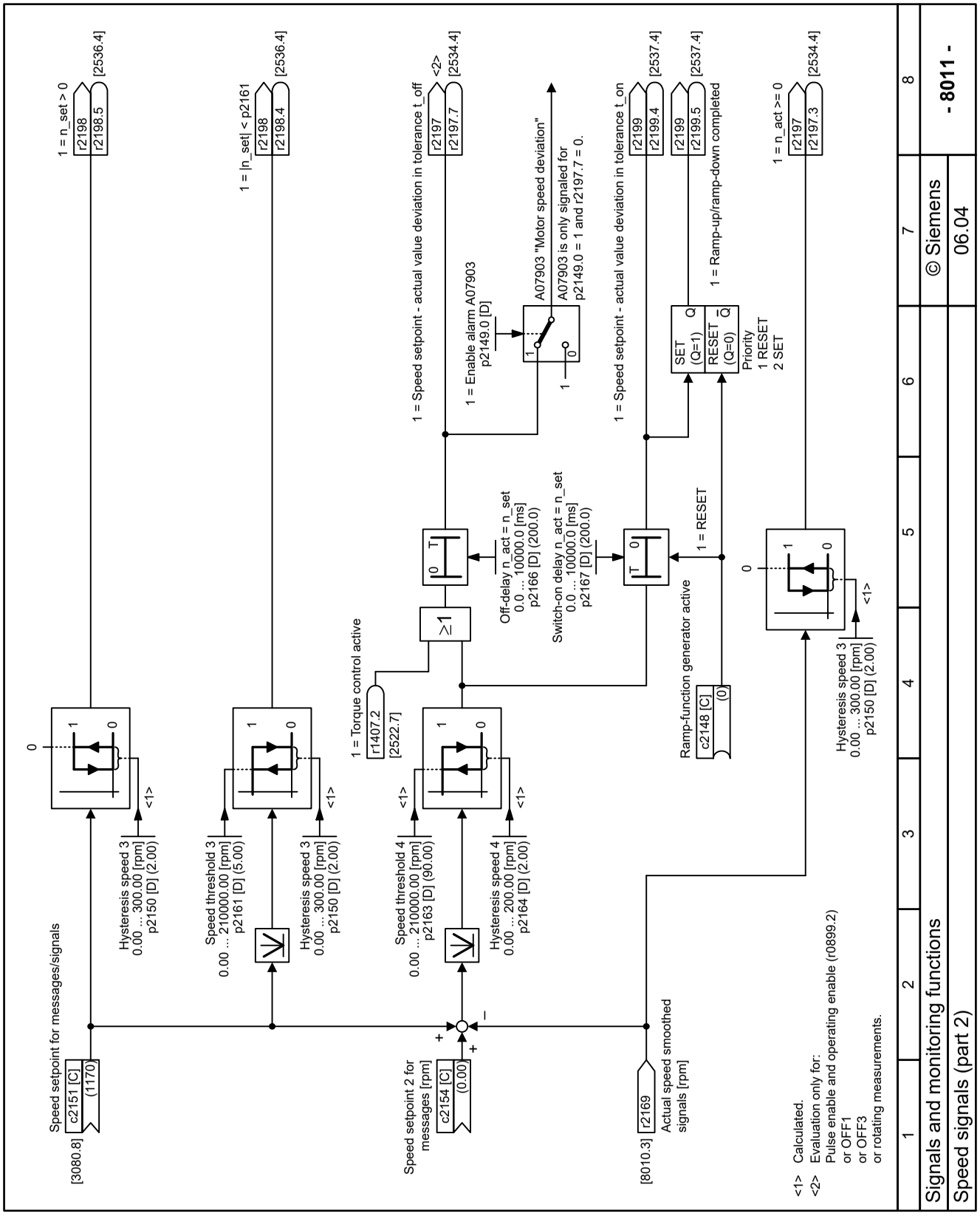


Figure 4-173 8011 – Speed messages (Part 2)

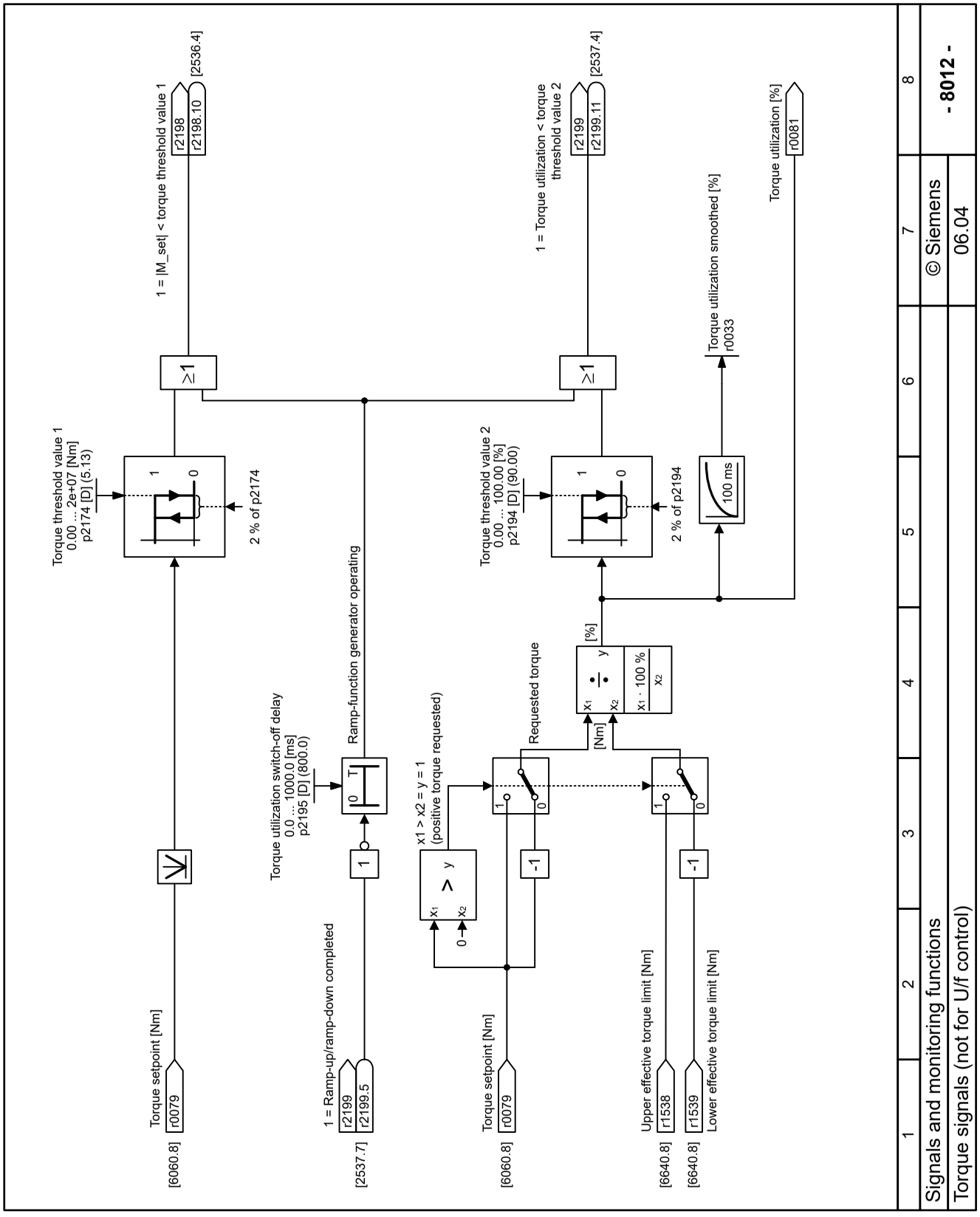


Figure 4-174 8012 - Torque messages

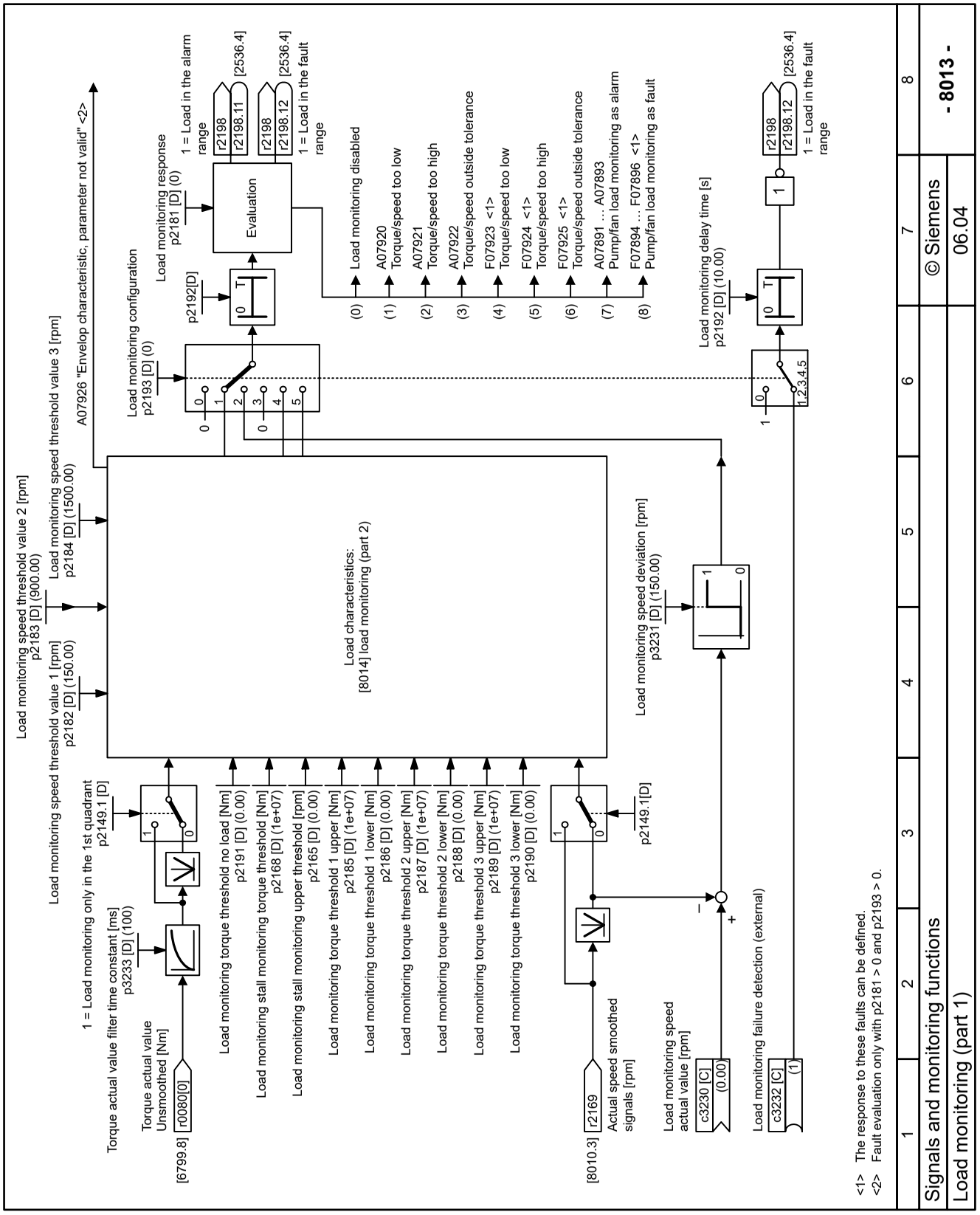


Figure 4-175 8013 - Load monitoring (Part 1)

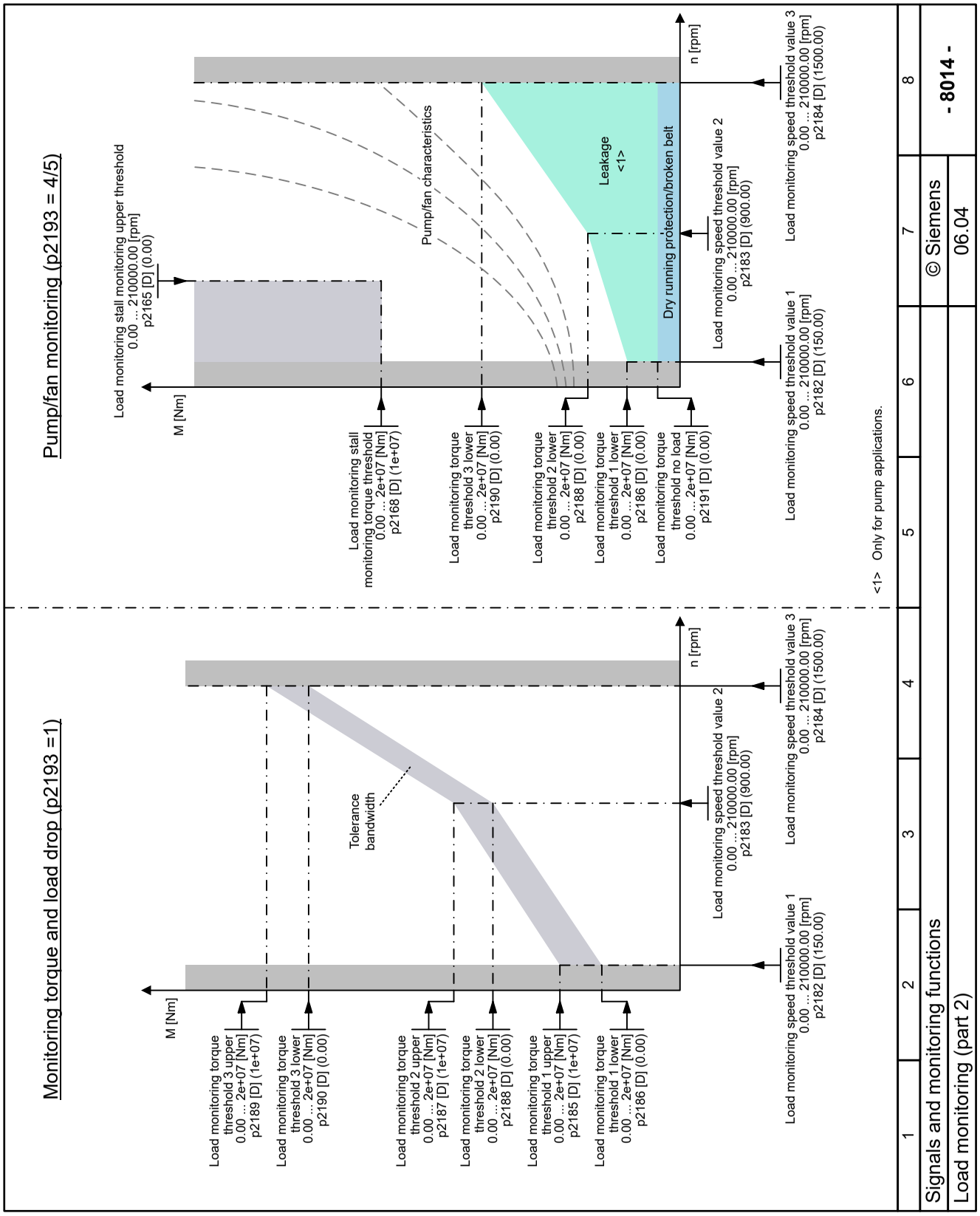
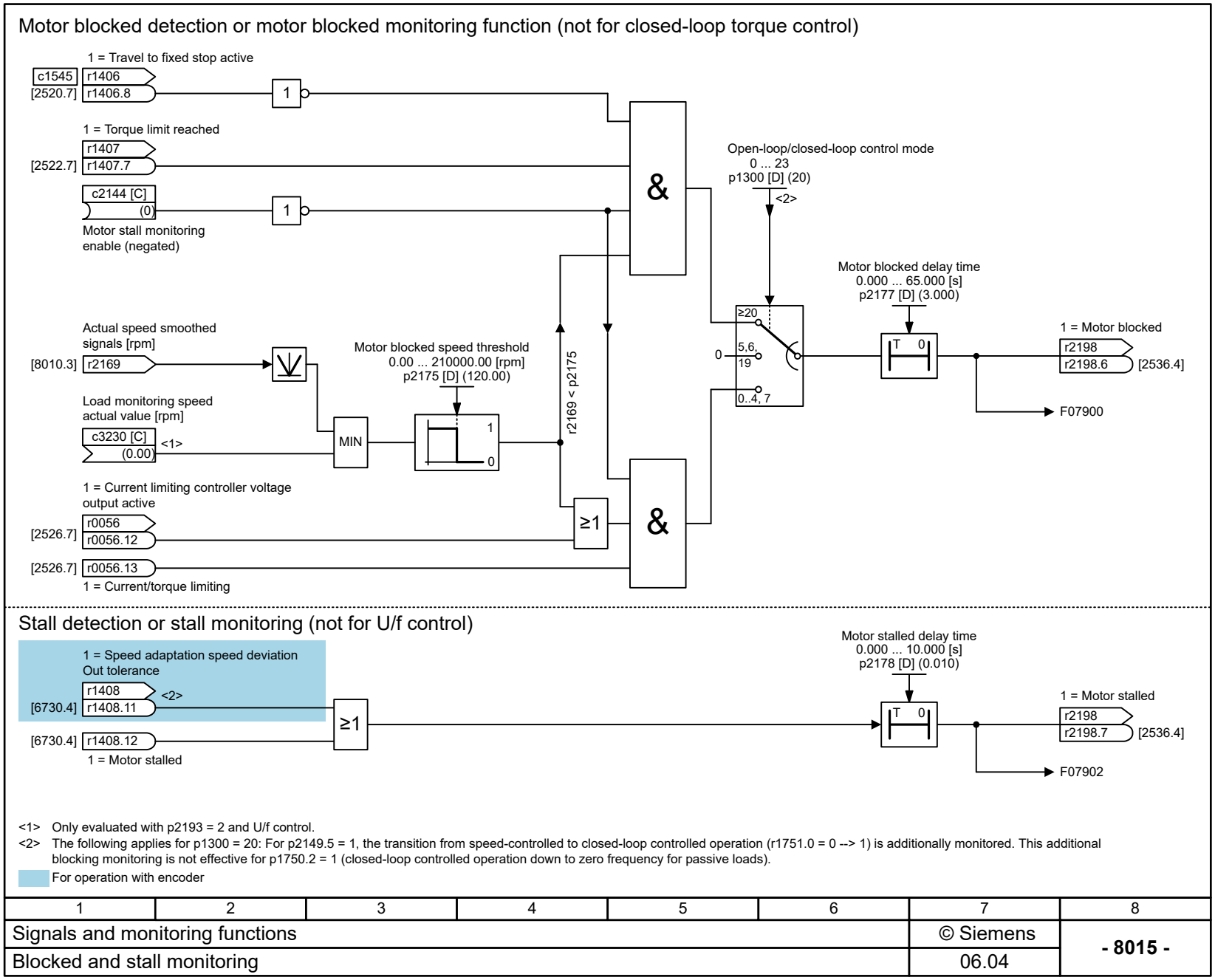


Figure 4-176 8014 - Load monitoring (Part 2)

Figure 4-177 8015 – Blocking and stall monitoring

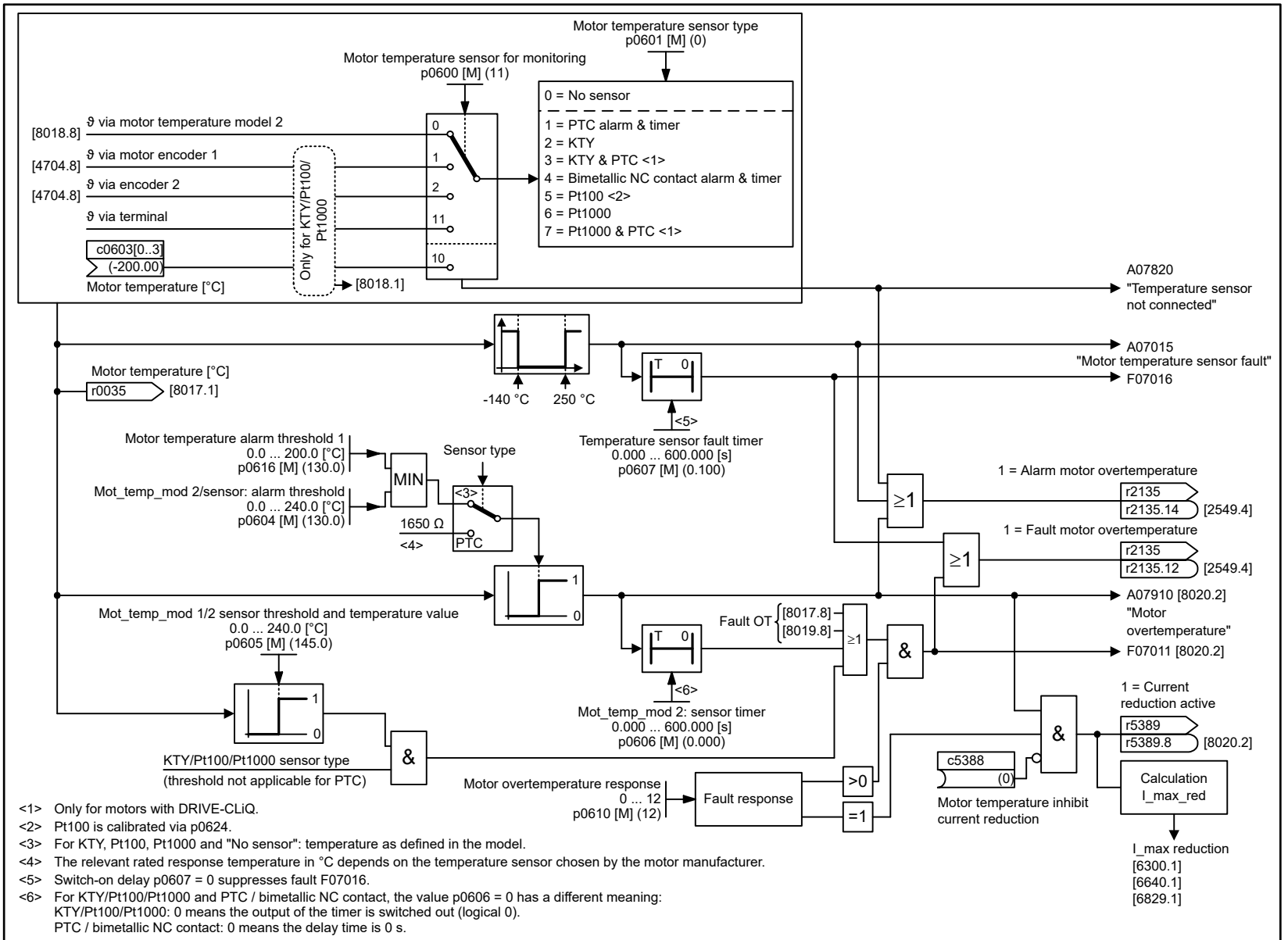


<1> Only evaluated with p2193 = 2 and U/f control.

<2> The following applies for p1300 = 20: For p2149.5 = 1, the transition from speed-controlled to closed-loop controlled operation (r1751.0 = 0 --> 1) is additionally monitored. This additional blocking monitoring is not effective for p1750.2 = 1 (closed-loop controlled operation down to zero frequency for passive loads).

For operation with encoder

1	2	3	4	5	6	7	8
Signals and monitoring functions						© Siemens	- 8015 -
Blocked and stall monitoring						06.04	



<1> Only for motors with DRIVE-CLiQ.
<2> Pt100 is calibrated via p0624.
<3> For KTY, Pt100, Pt1000 and "No sensor": temperature as defined in the model.
<4> The relevant rated response temperature in °C depends on the temperature sensor chosen by the motor manufacturer.
<5> Switch-on delay p0607 = 0 suppresses fault F07016.
<6> For KTY/Pt100/Pt1000 and PTC / bimetallic NC contact, the value p0606 = 0 has a different meaning:
KTY/Pt100/Pt1000: 0 means the output of the timer is switched out (logical 0).
PTC / bimetallic NC contact: 0 means the delay time is 0 s.

1	2	3	4	5	6	7	8
Signals and monitoring functions						© Siemens	- 8016 -
Thermal monitoring, motor						06.04	

Figure 4-178 8016 - Thermal monitoring motor

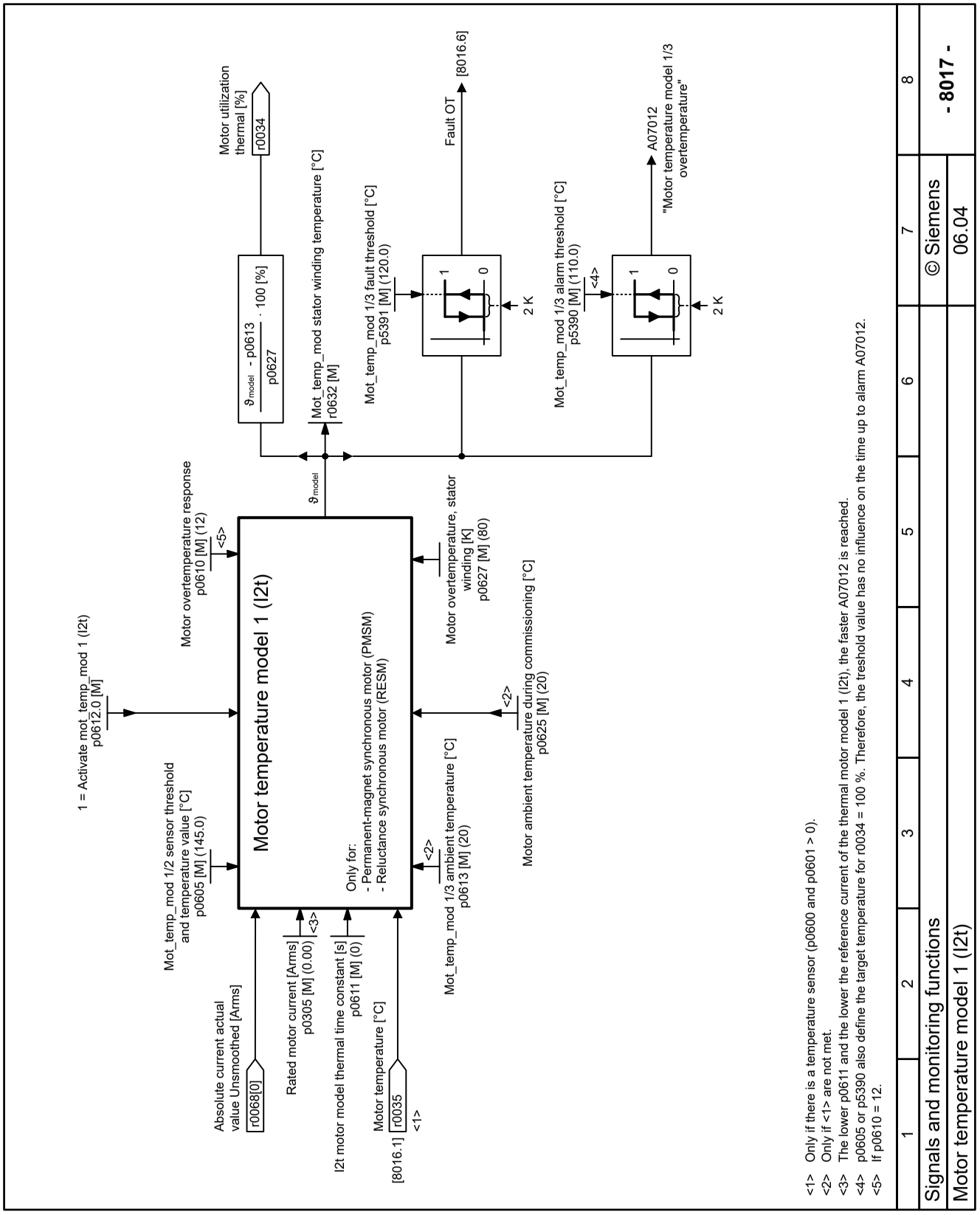


Figure 4-179 8017 - Motor temperature model 1 (I2t)

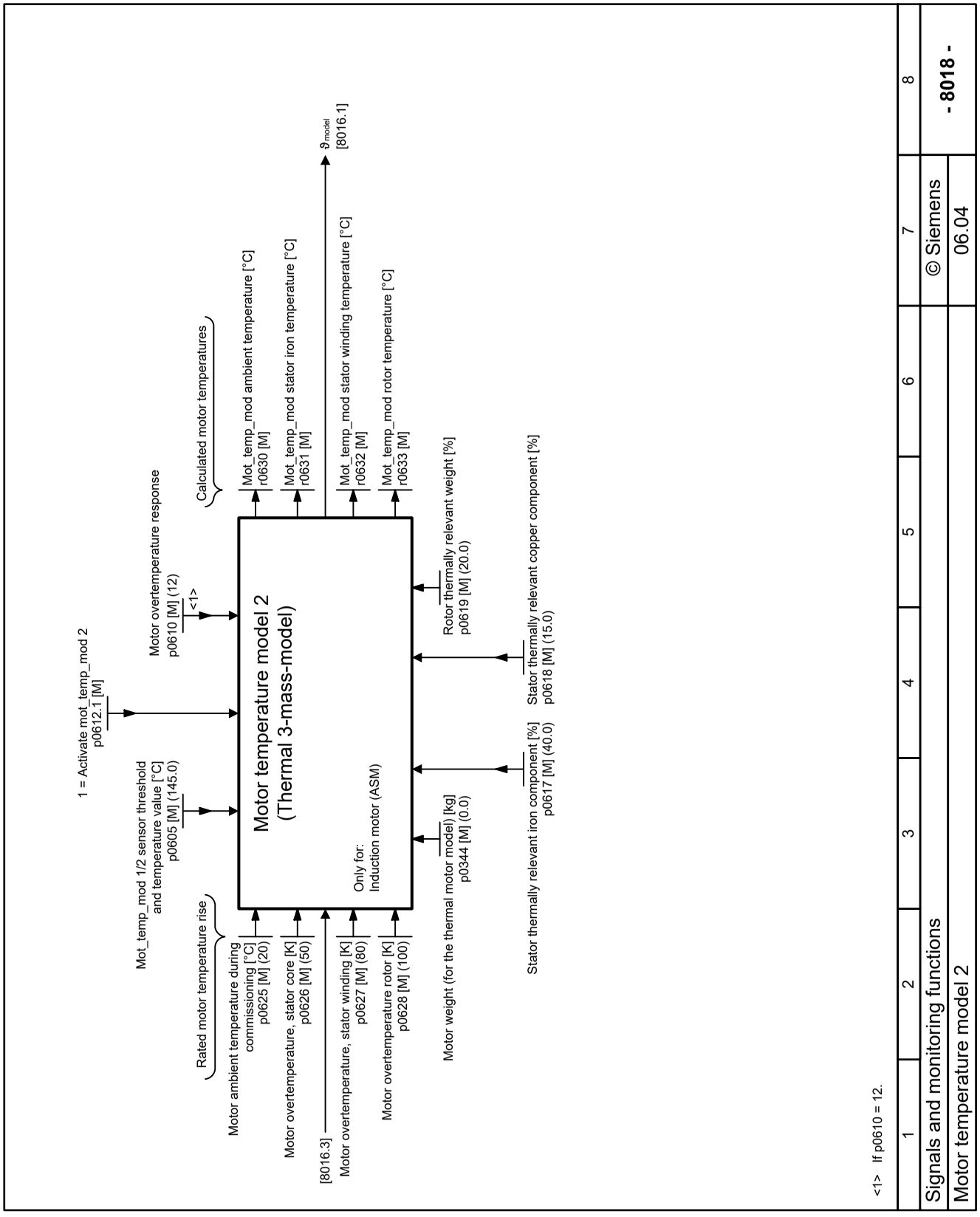


Figure 4-180 8018 - Motor temperature model 2

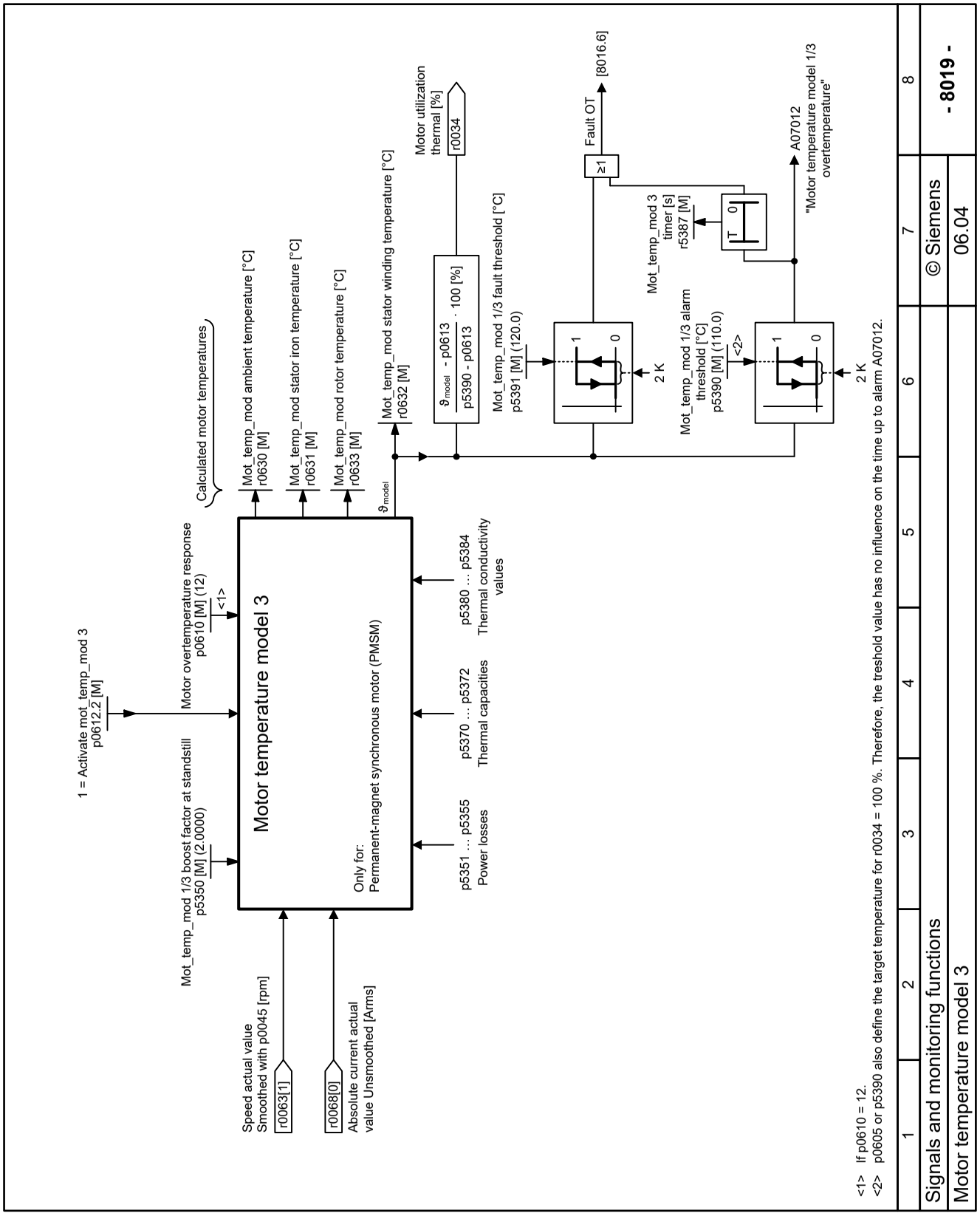


Figure 4-181 8019 – Motor temperature model 3

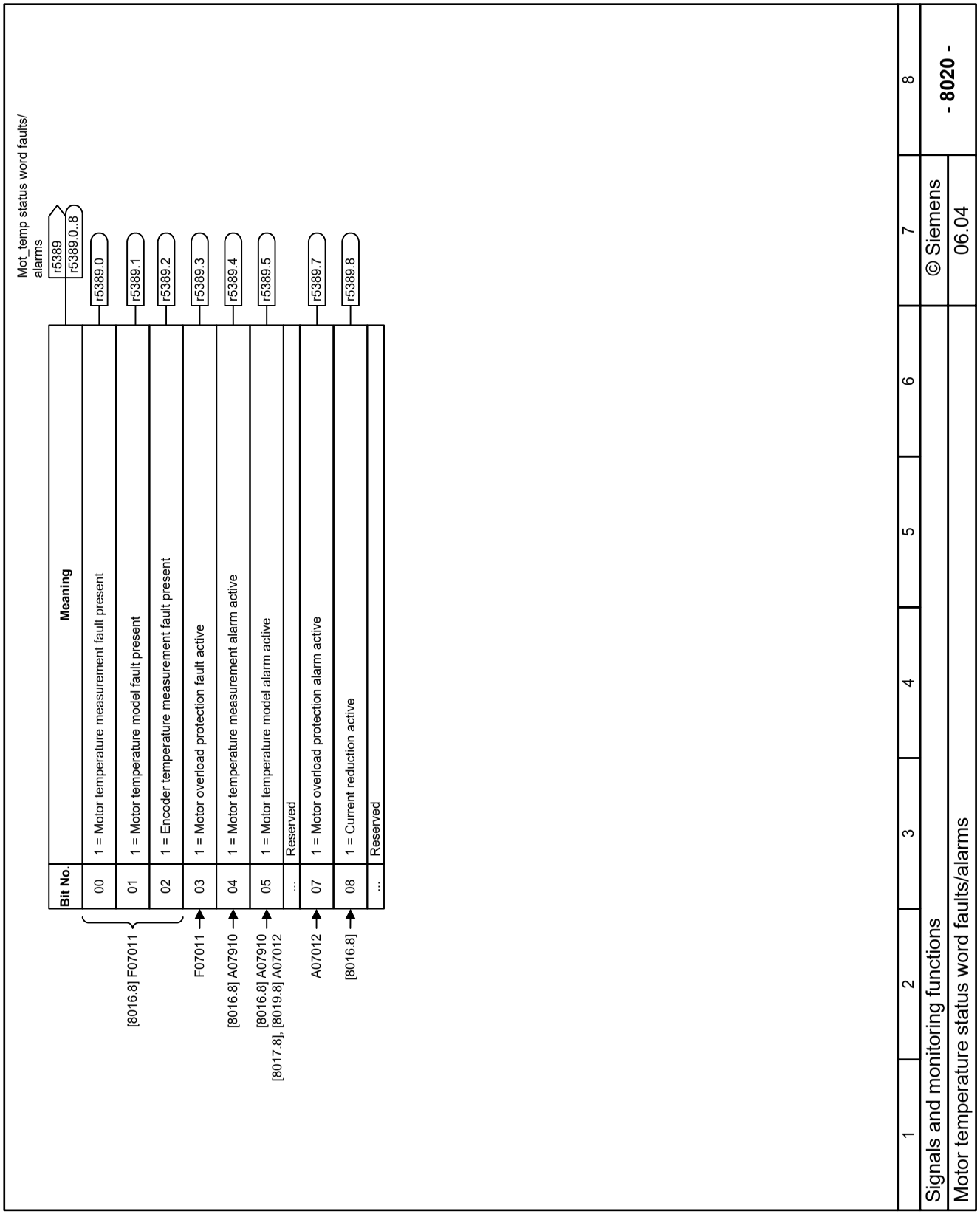


Figure 4-182 8020 - Motor temperature status word faults/alarms

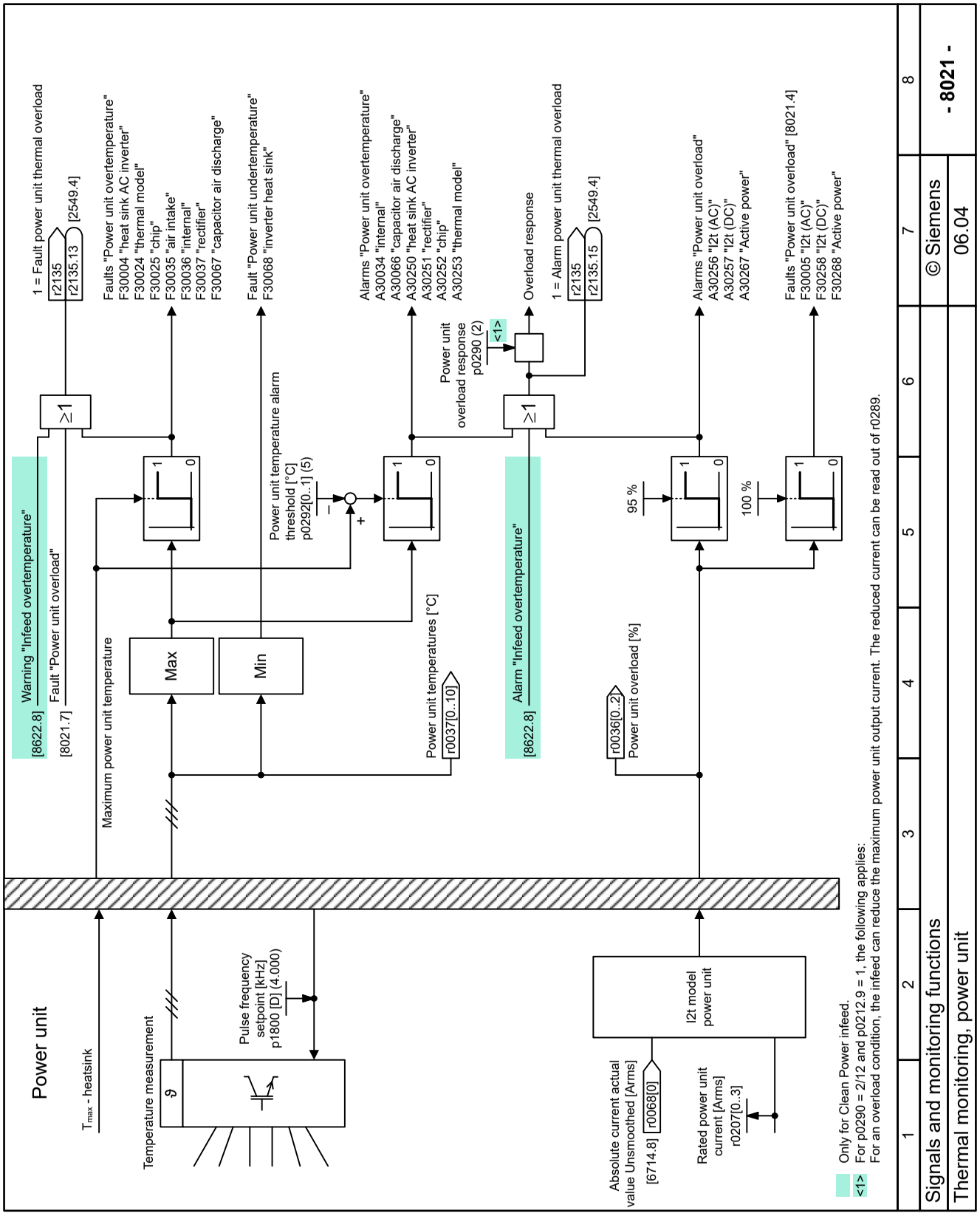


Figure 4-183 8021 - Thermal monitoring power unit

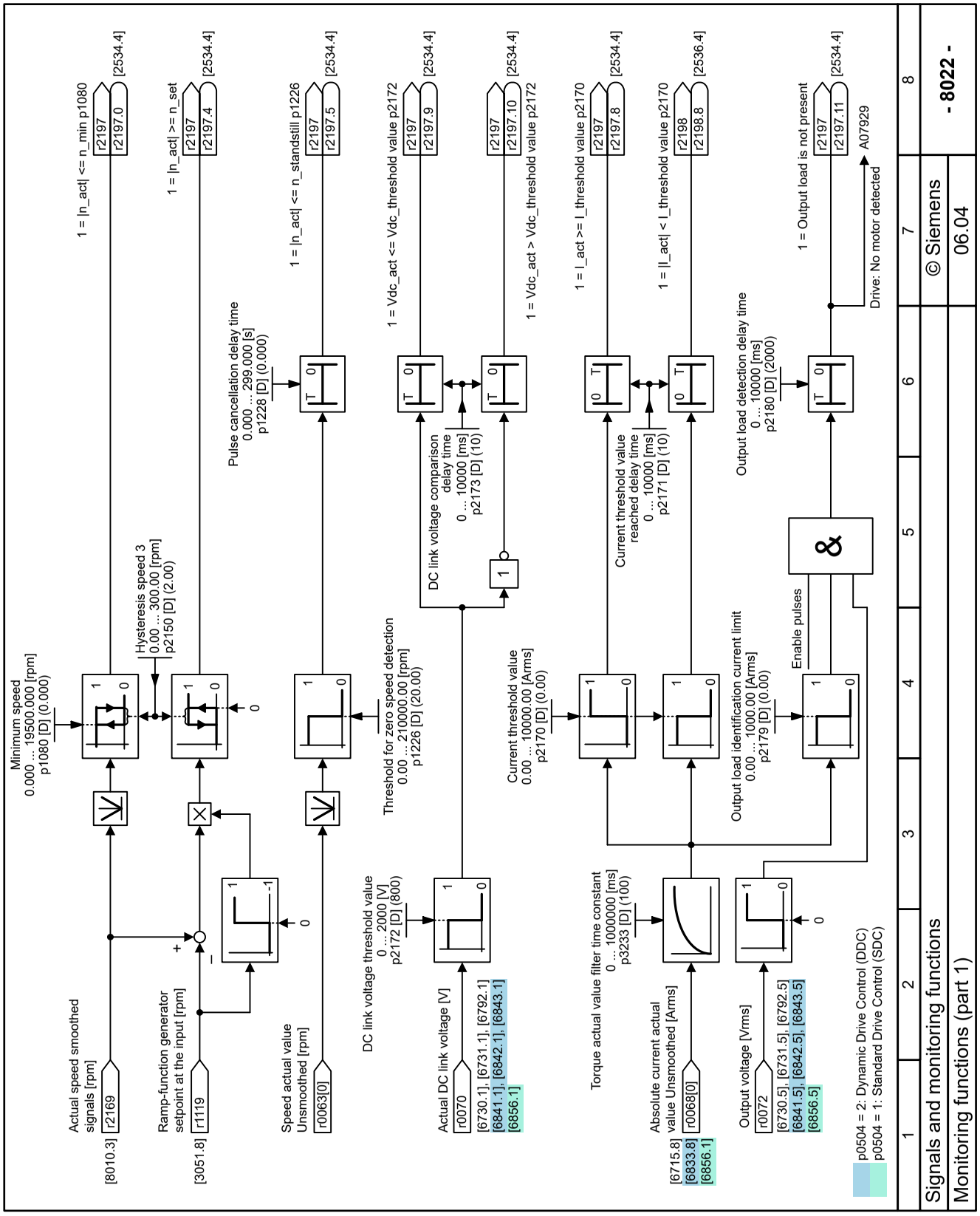


Figure 4-184 8022 – Monitoring functions (Part 1)

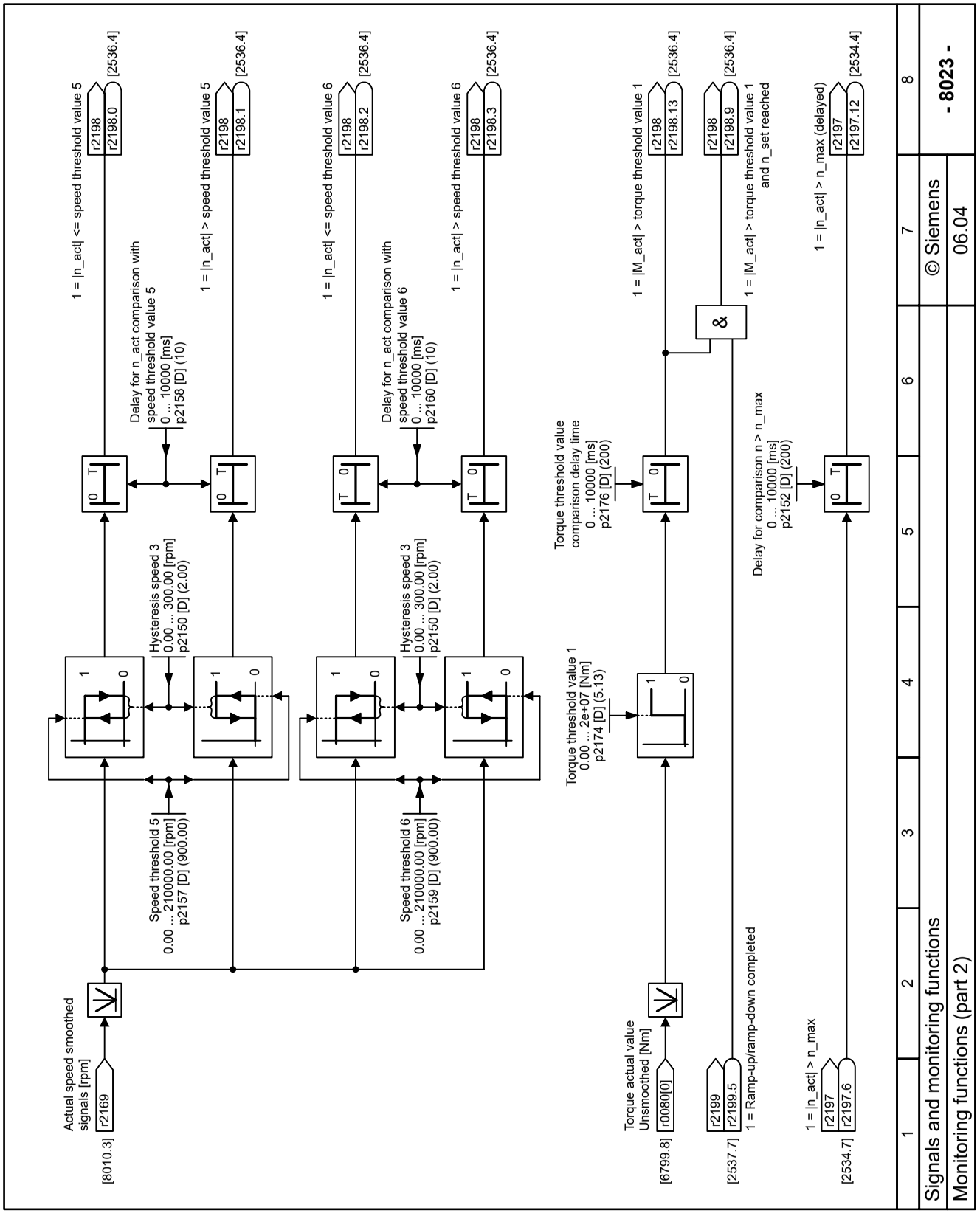


Figure 4-185 8023 – Monitoring functions (Part 2)

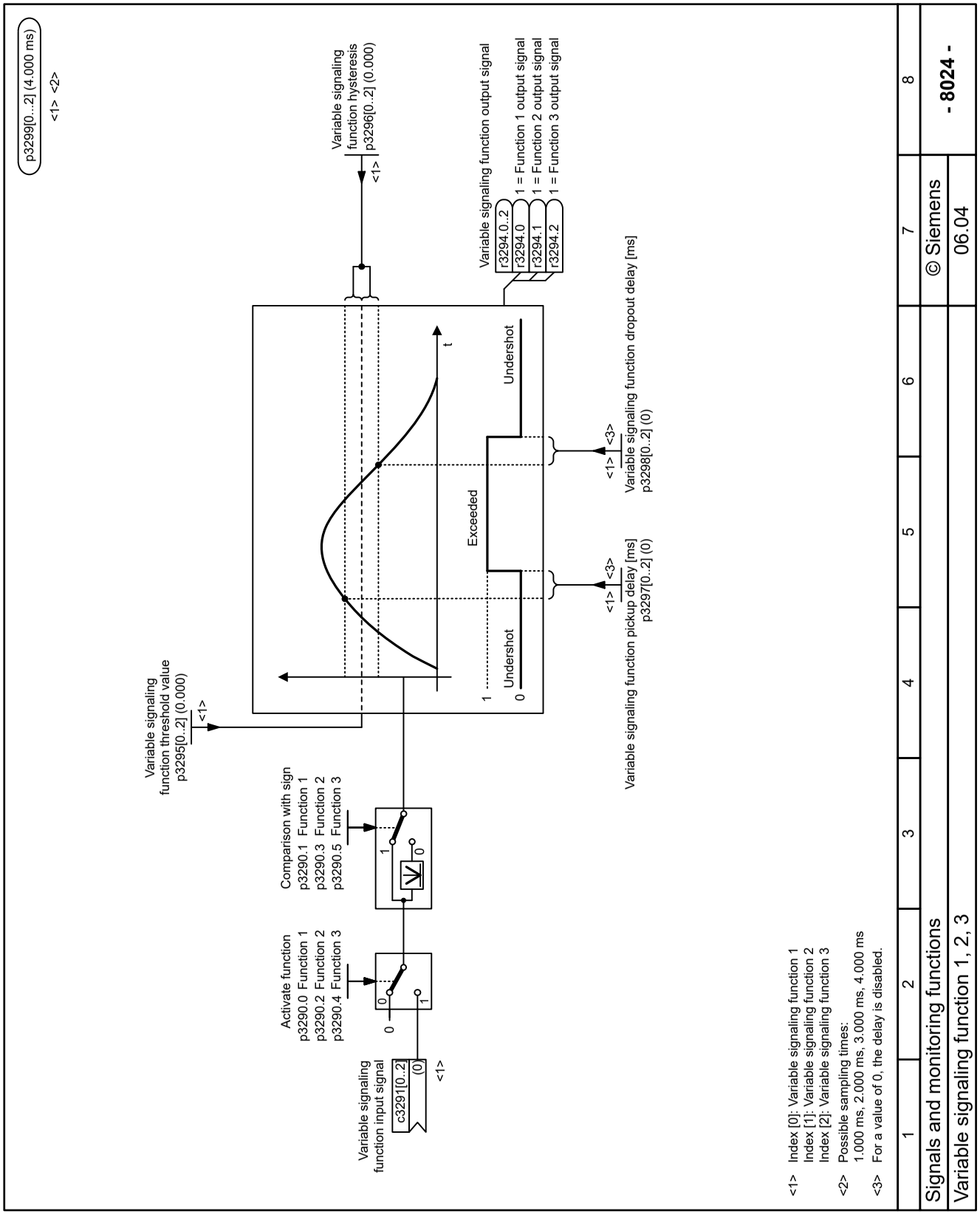


Figure 4-186 8024 – Variable message function 1, 2, 3

4.19 Diagnostics

Overview

The following function diagrams describe the diagnostics.

Function diagrams

8050 – Overview (Page 1090)
8060 – Fault buffer (Page 1091)
8065 – Alarm buffer (Page 1092)
8070 – Safety buffer (Page 1093)

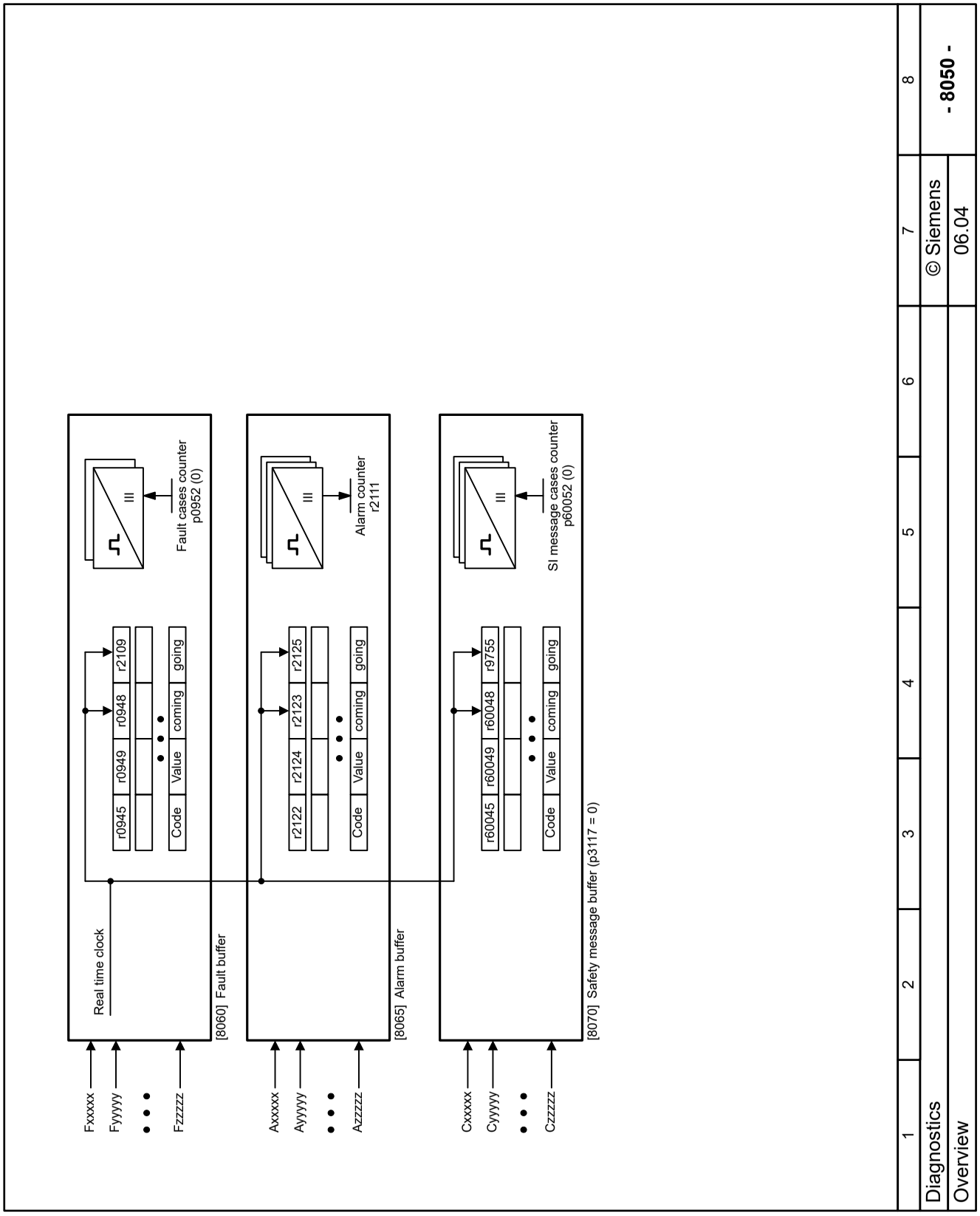


Figure 4-187 8050 – Overview

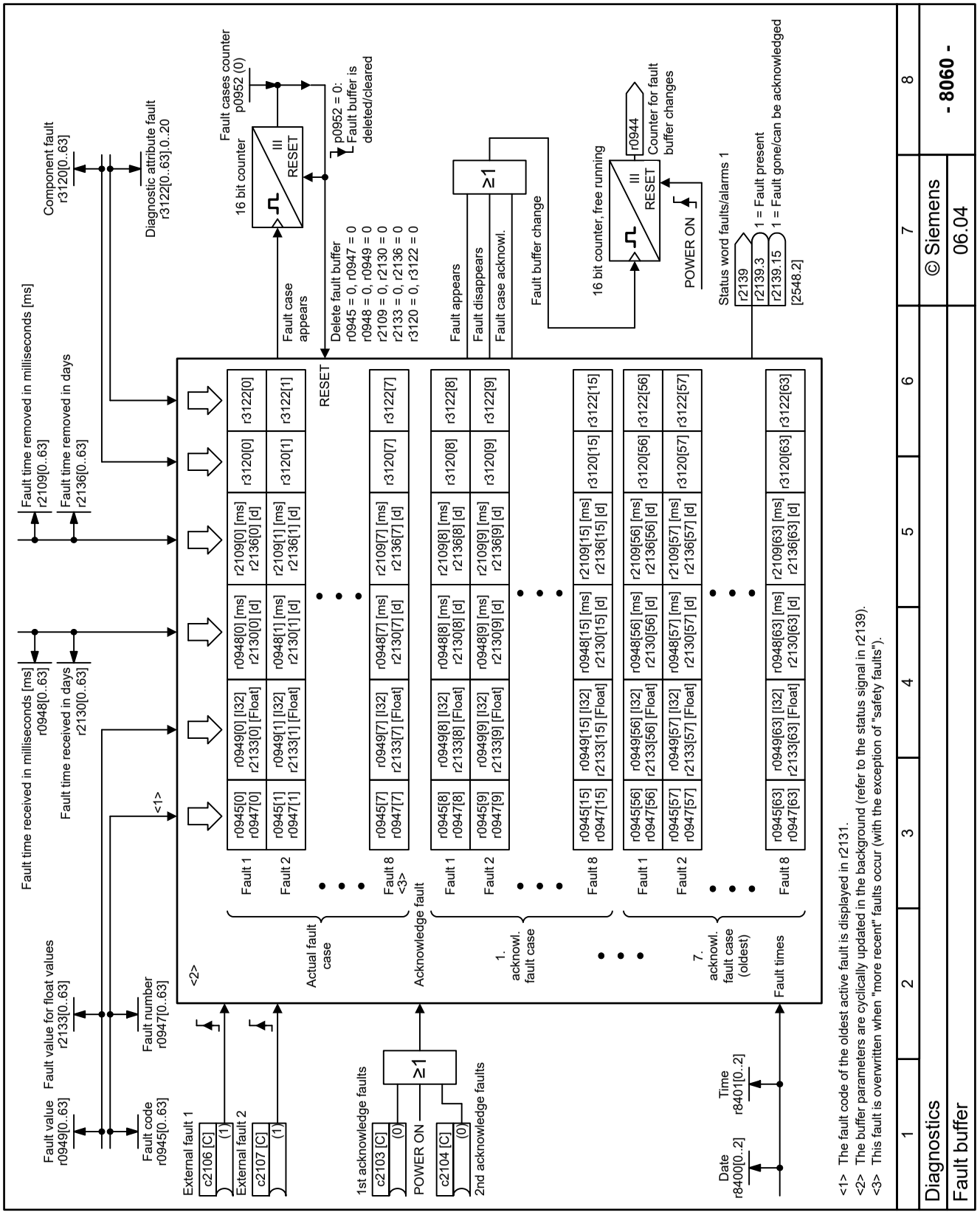


Figure 4-188 8060 - Fault buffer

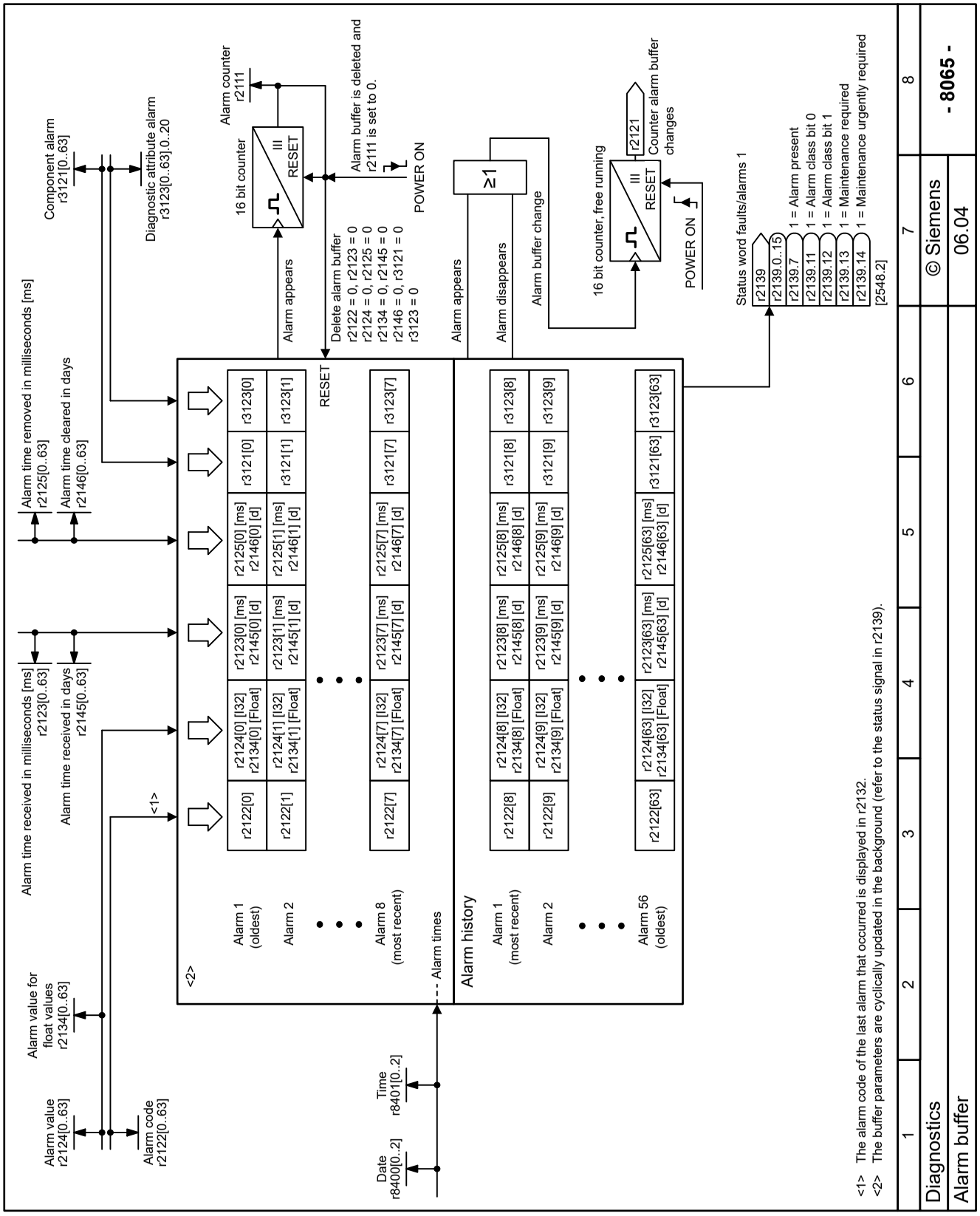


Figure 4-189 8065 - Alarm buffer

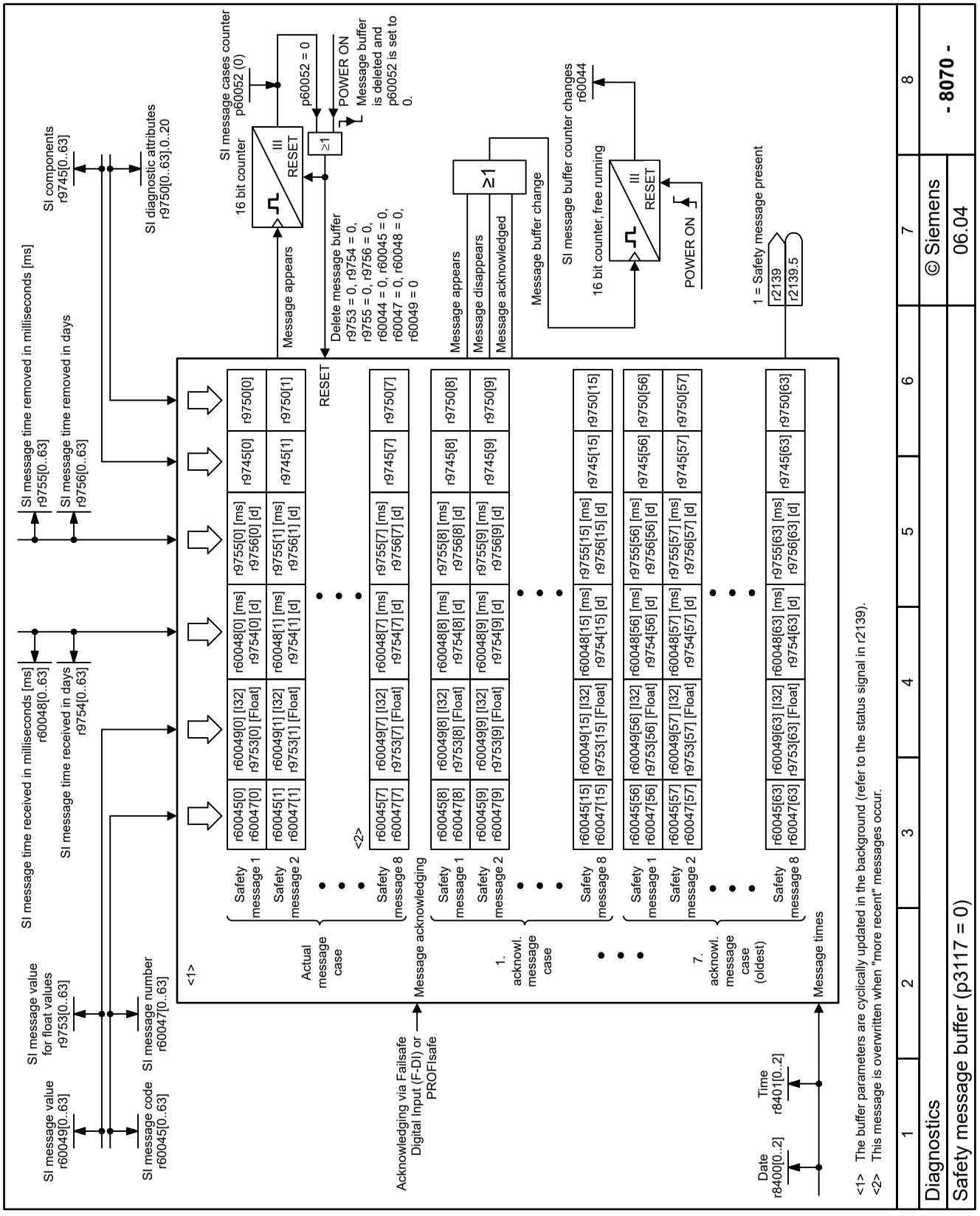


Figure 4-190 8070 - Safety message buffer

4.20 Data sets

Overview

The following function diagrams describe the data sets.

Function diagrams

8560 – Command Data Sets (CDS) (Page 1095)
8565 – Drive Data Sets (DDS) (Page 1096)
8570 – Encoder Data Sets (EDS) (Page 1097)
8575 – Motor Data Sets (MDS) (Page 1098)

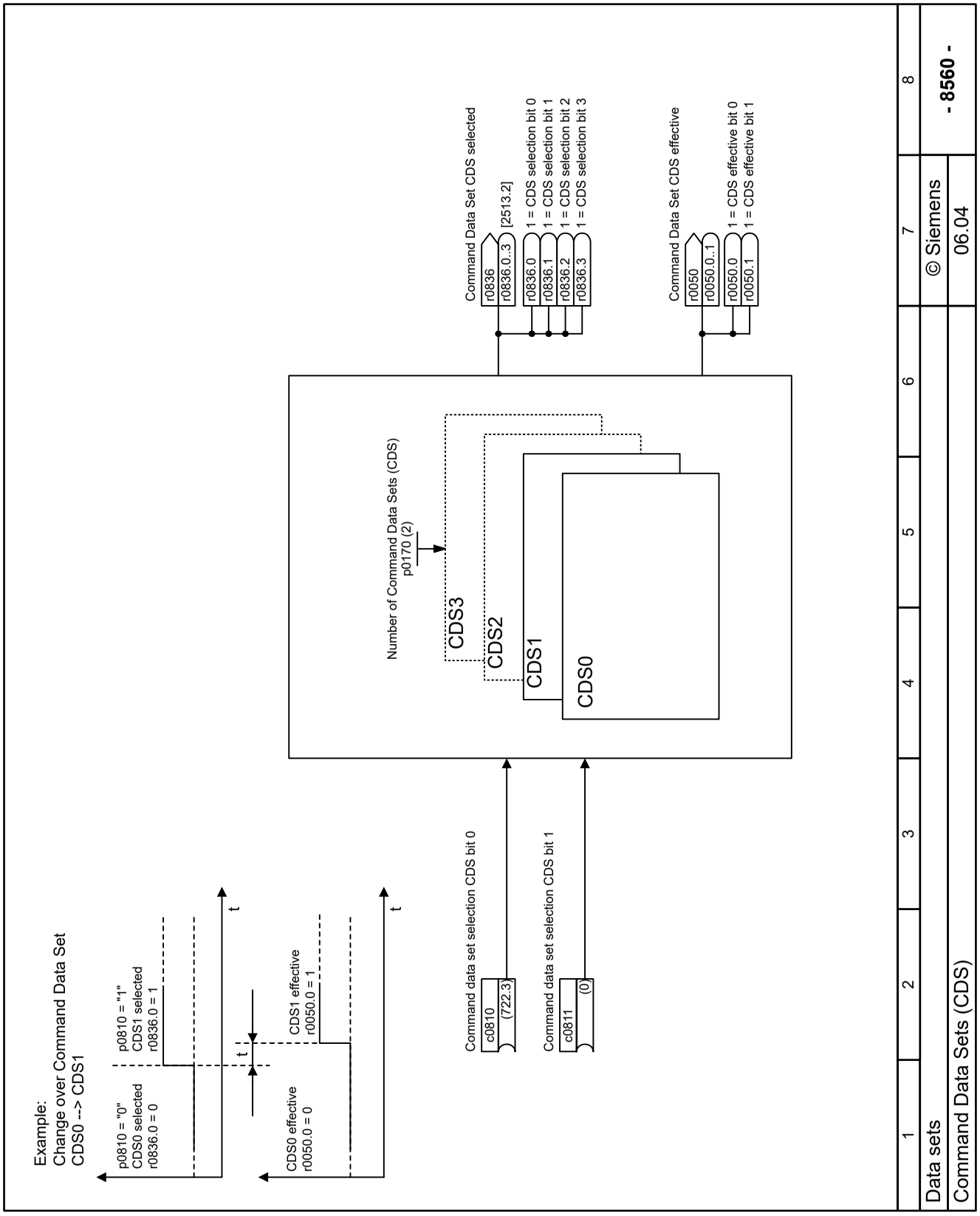


Figure 4-191 8560 - Command Data Sets (CDS)

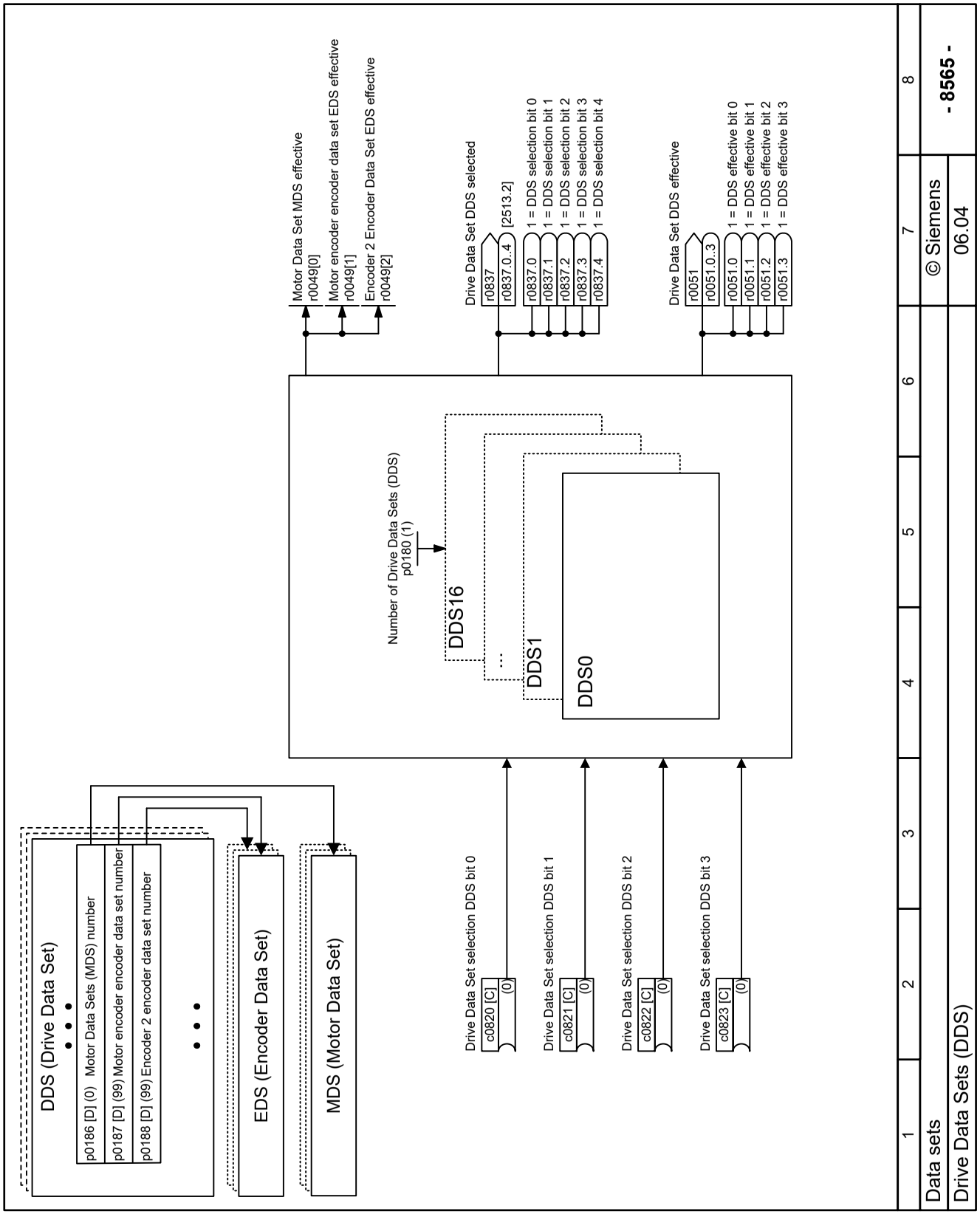


Figure 4-192 8565 - Drive Data Sets (DDS)

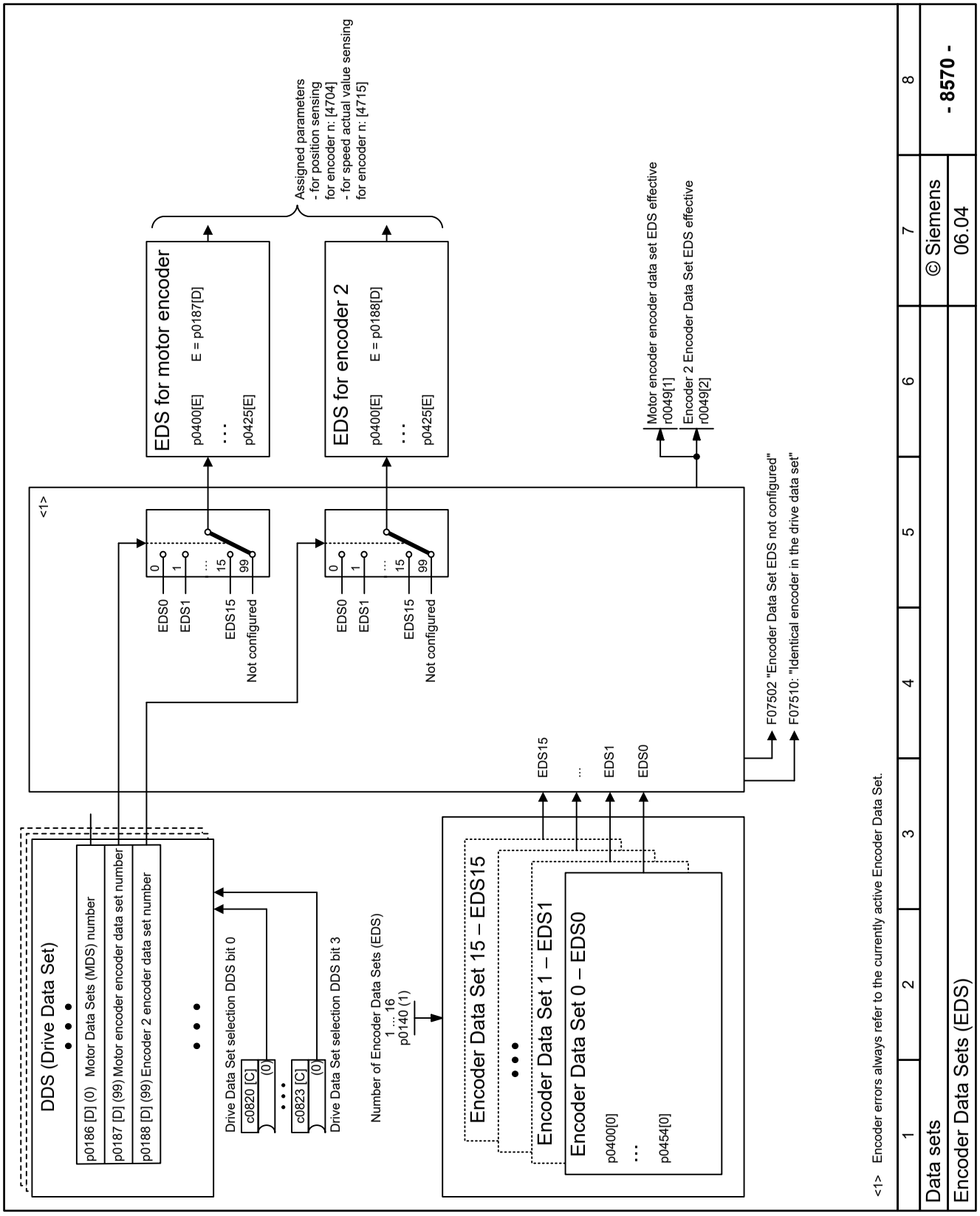


Figure 4-193 8570 - Encoder Data Sets (EDS)

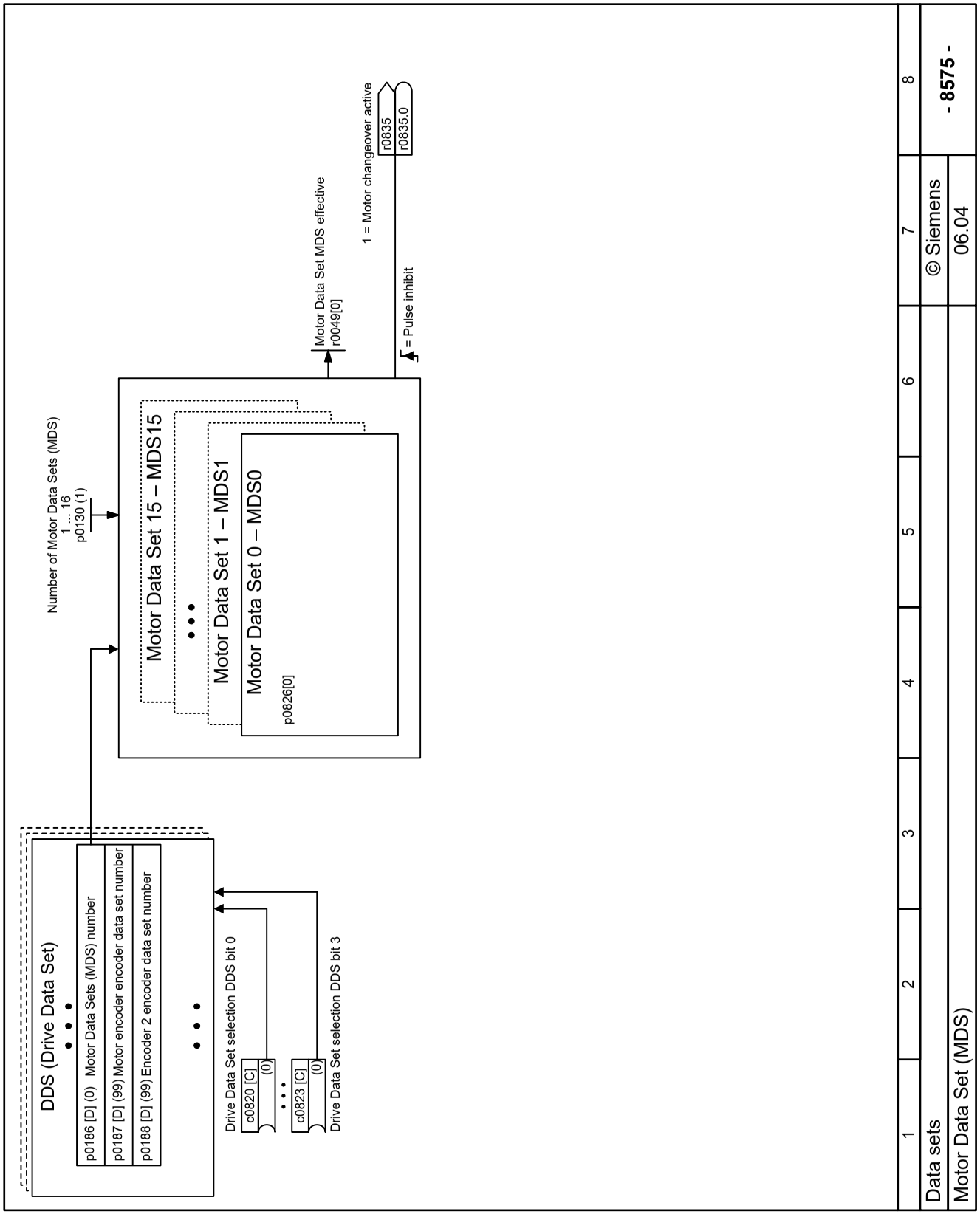


Figure 4-194 8575 - Motor Data Sets (MDS)

4.21 Clean Power infeed

Overview

The following function diagrams describe the Clean Power infeed.

Function diagrams

8601 – Overview (Page 1100)
8605 – Control word sequence control infeed (Page 1101)
8606 – Status word sequence control infeed (Page 1102)
8608 – Status word infeed (Page 1103)
8610 – Sequencer (Page 1104)
8612 – Missing enables, line contactor control (Page 1105)
8615 – Controller modulation depth reserve/DC link voltage (Page 1106)
8617 – Current precontrol/current controller/gating unit (Page 1107)
8619 – Interface to the power unit, control signals, actual values (Page 1108)
8620 – Line voltage monitoring (Page 1109)
8621 – Monitoring line frequency, DC link voltage and precharging (Page 1110)
8622 – Thermal monitoring power unit infeed (Page 1111)

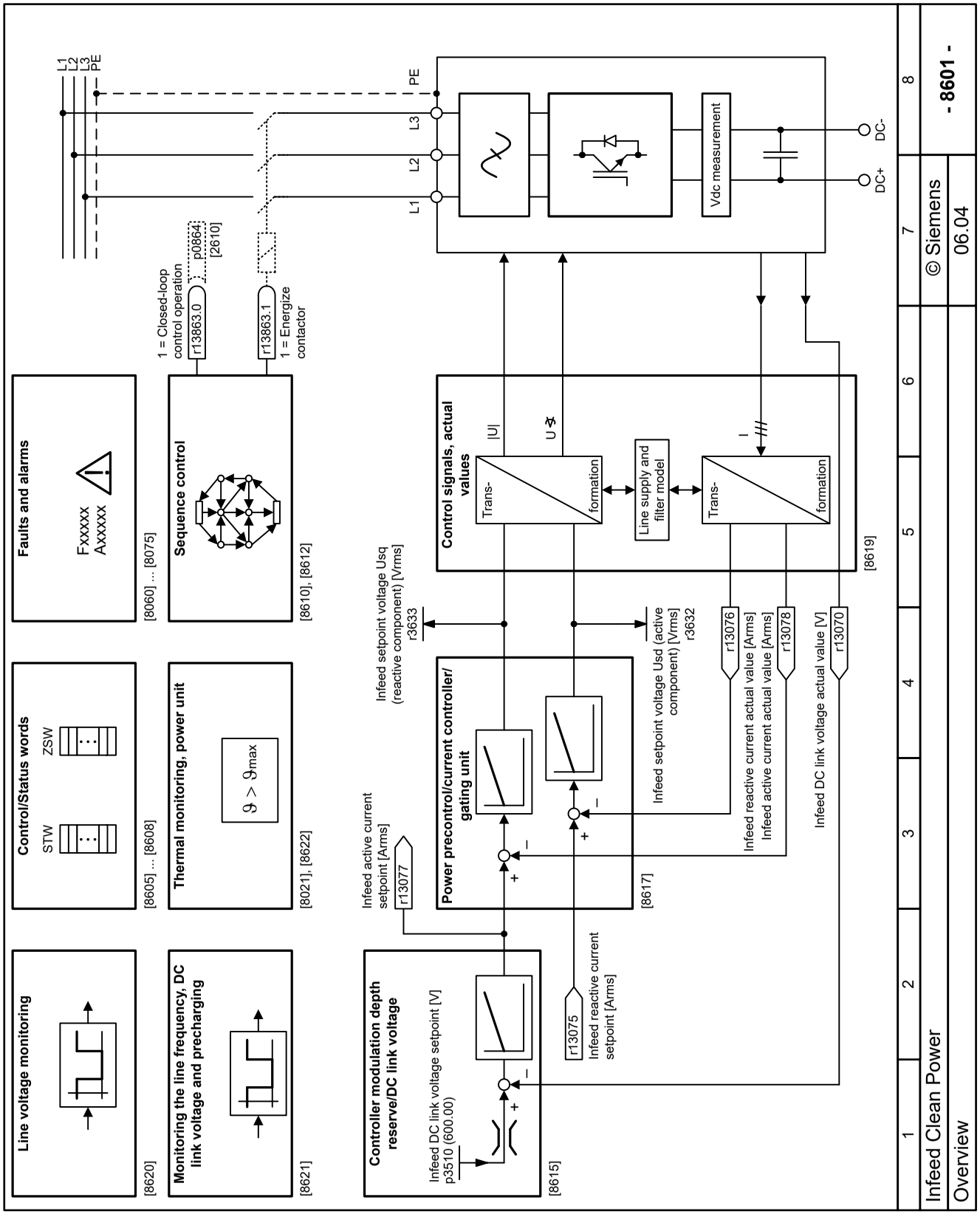


Figure 4-195 8601 – Overview

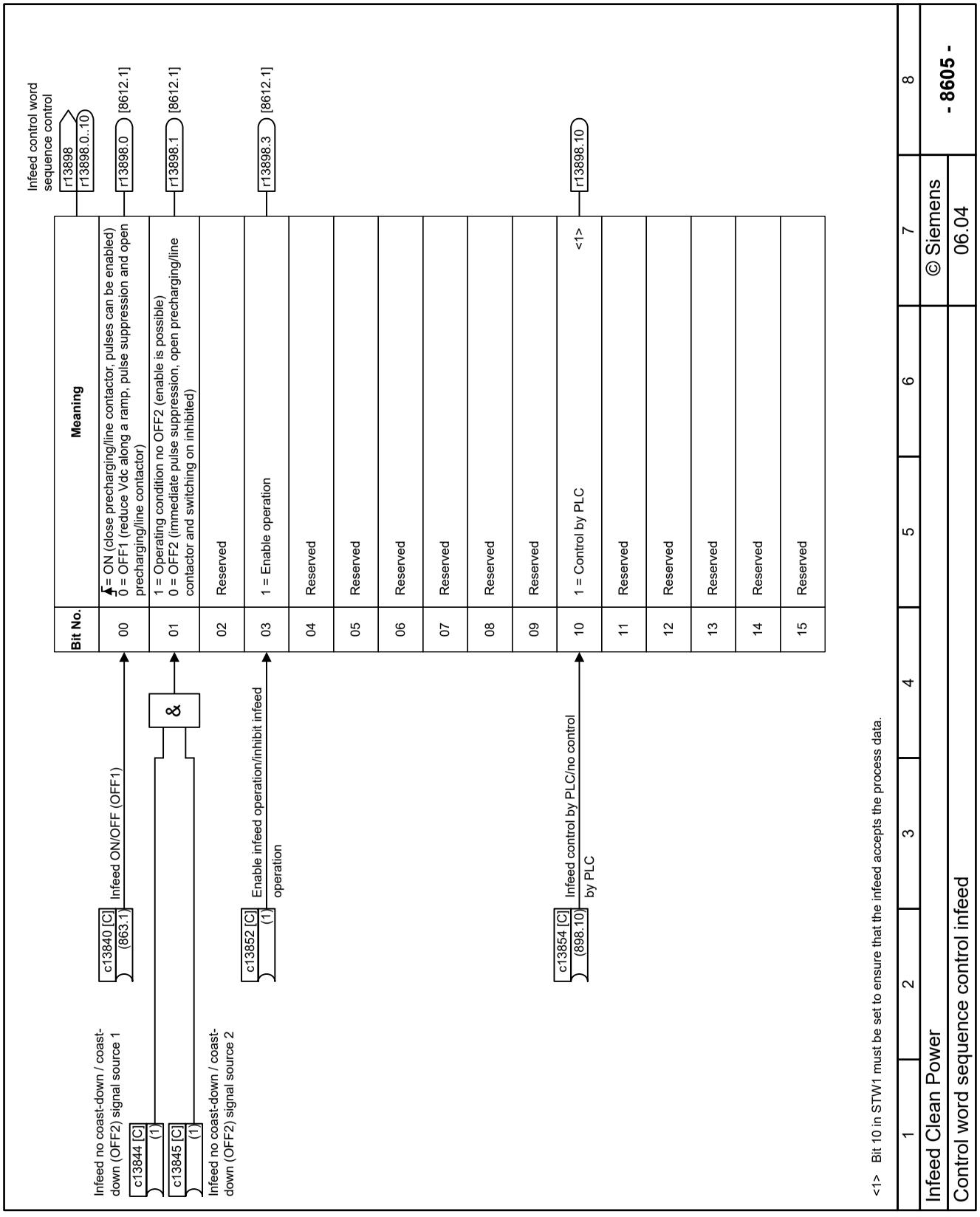


Figure 4-196 8605 – Control word sequence control infeed

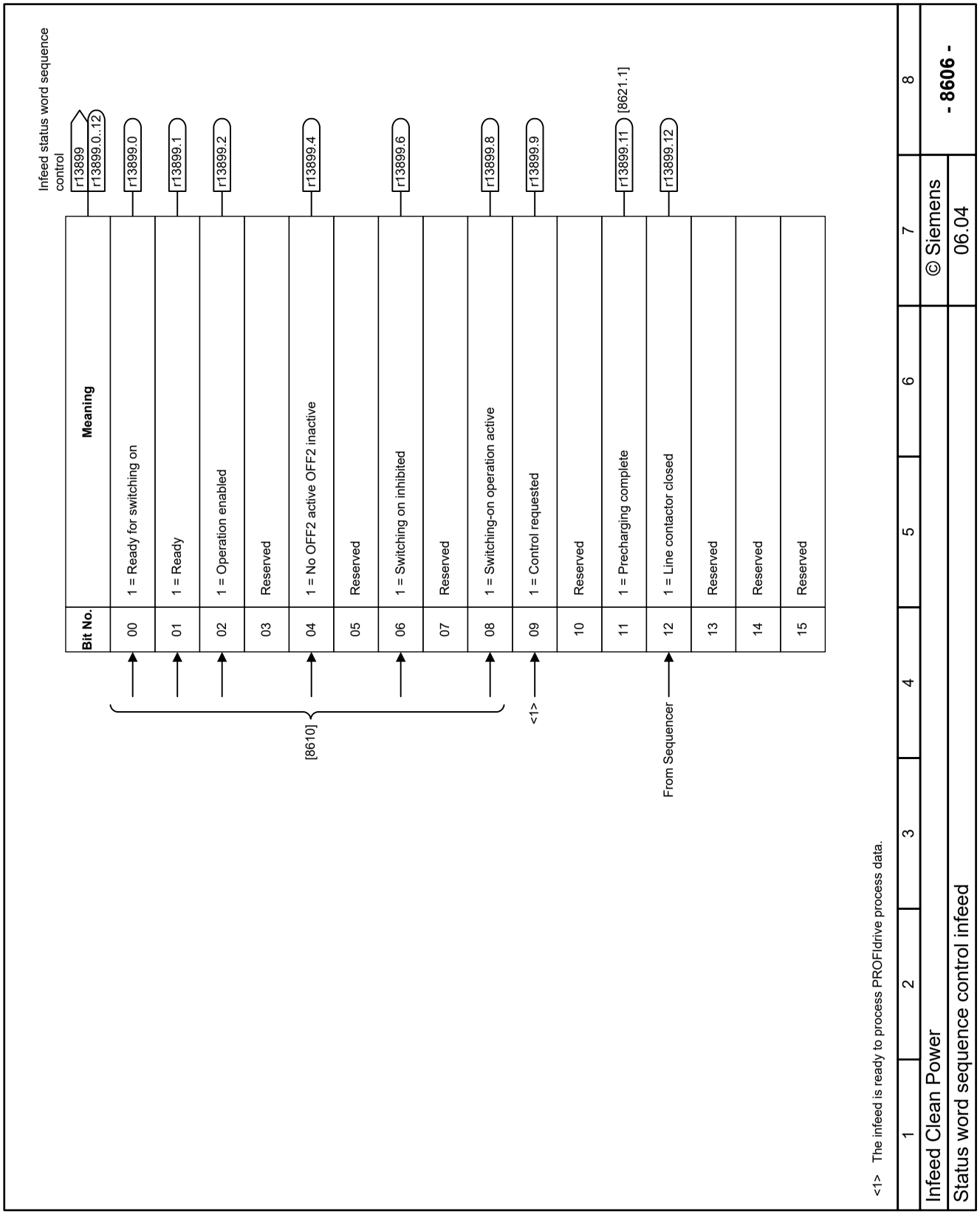


Figure 4-197 8606 – Status word sequence control infeed

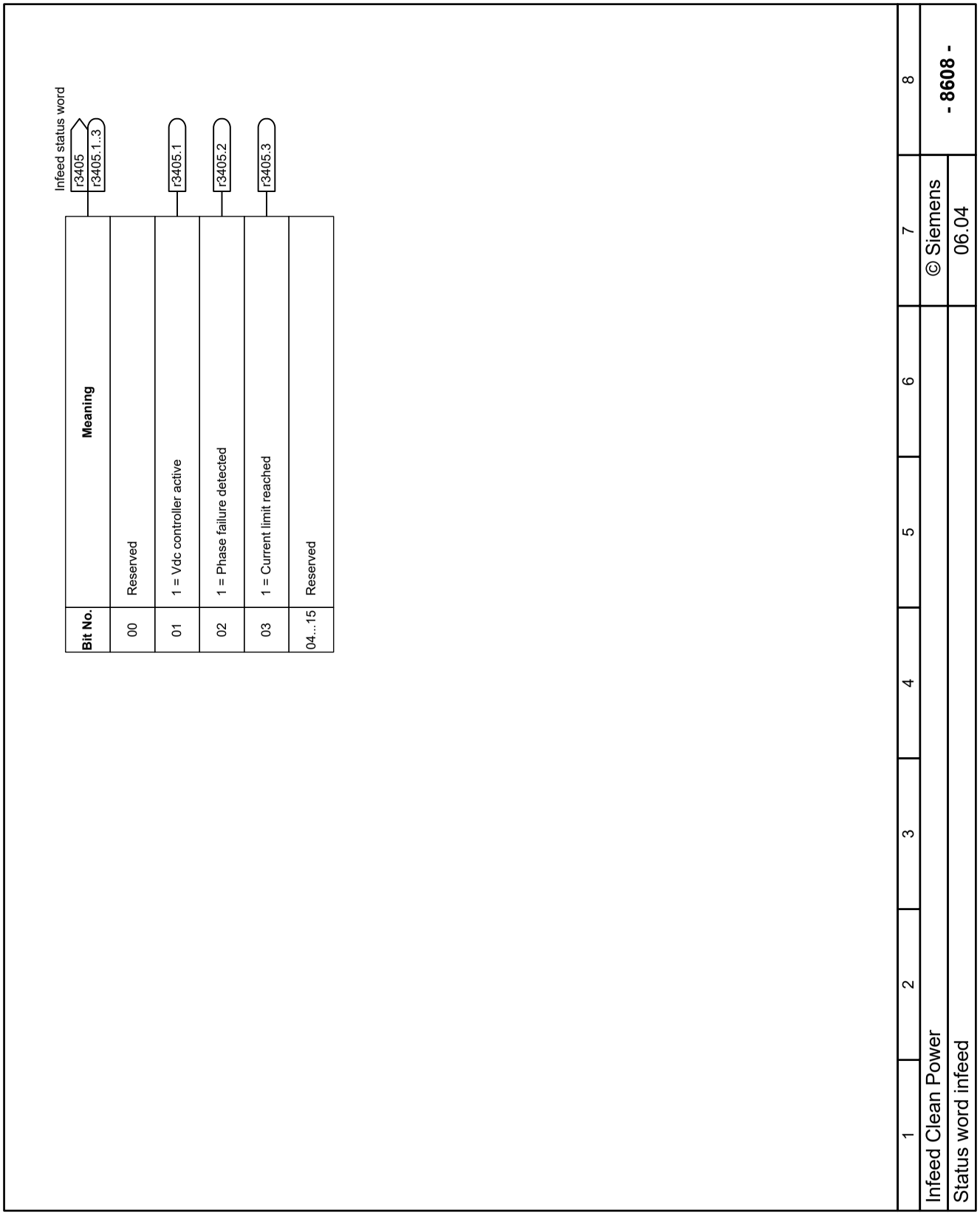


Figure 4-198 8608 – Status word infeed

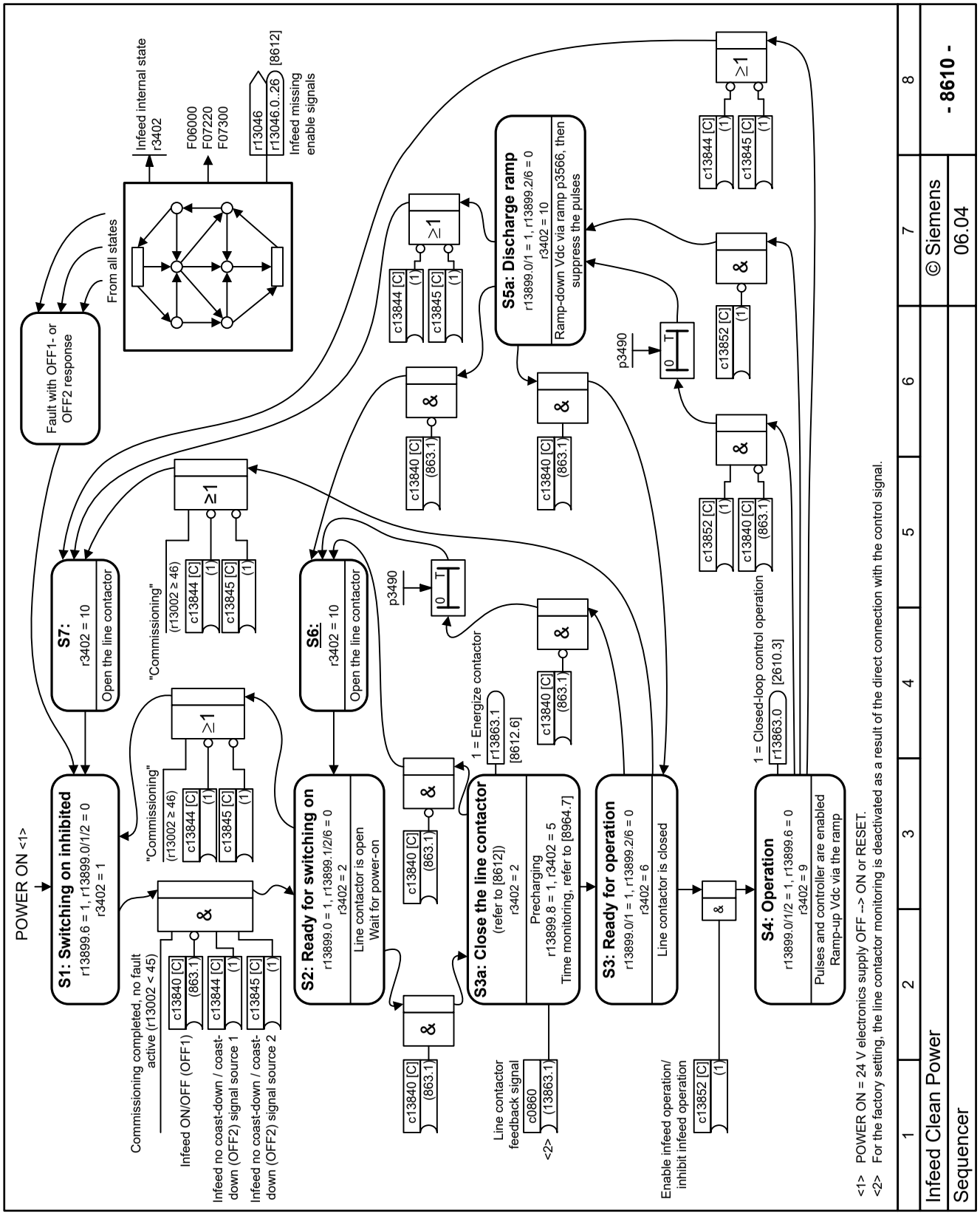


Figure 4-199 8610 – Sequencer

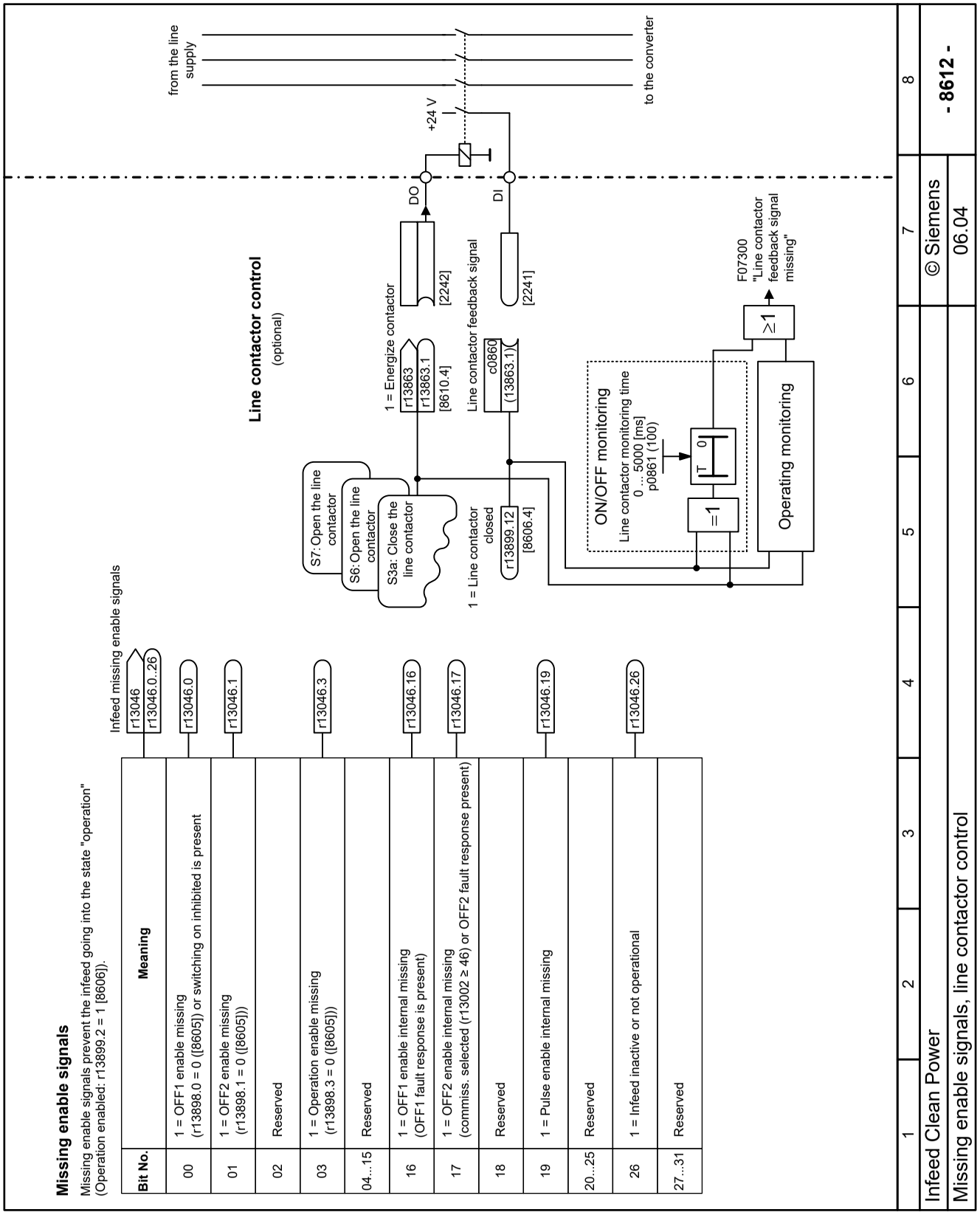


Figure 4-200 8612 – Missing enables, line contactor control

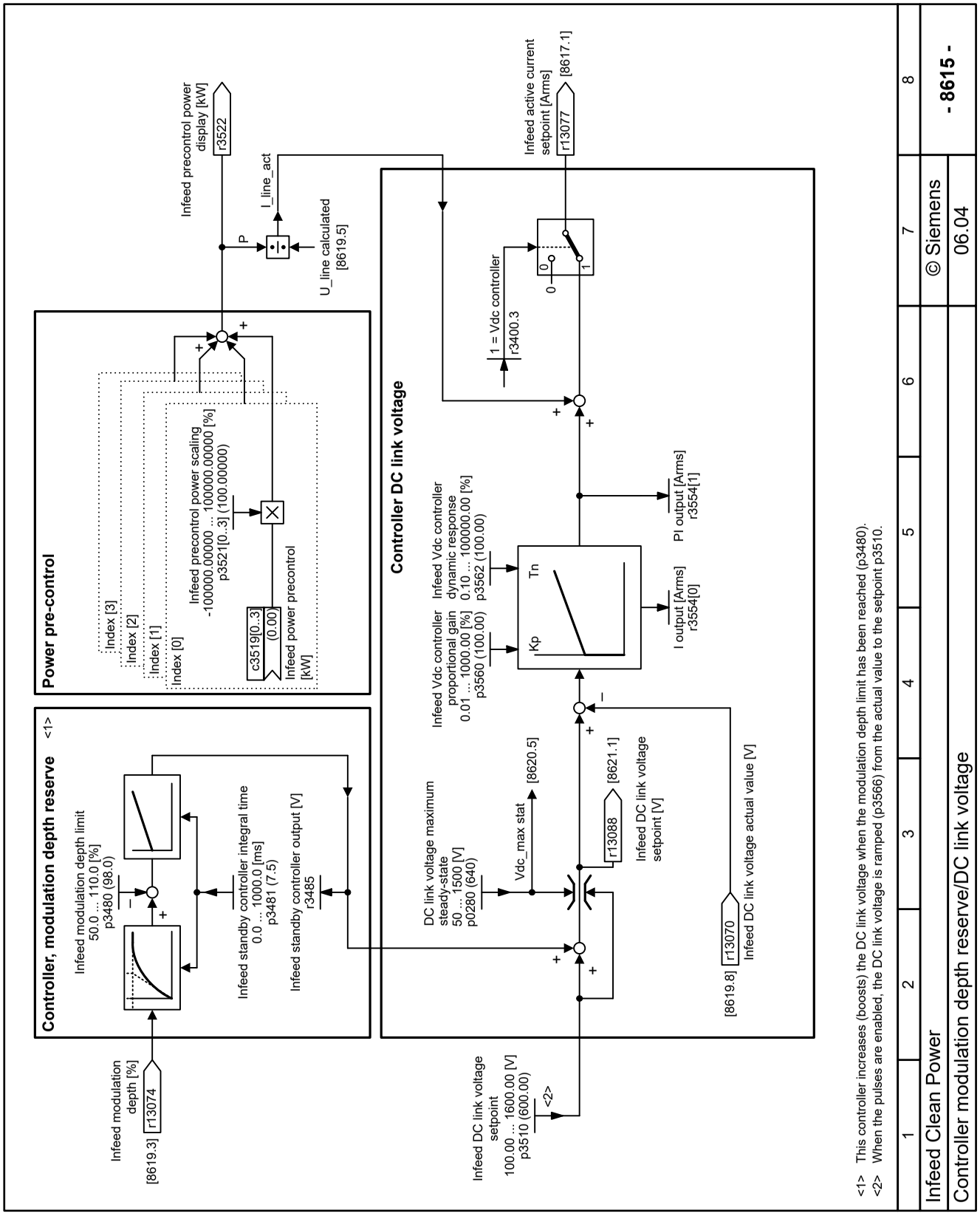


Figure 4-201 8615 – Controller modulation depth reserve/DC link voltage

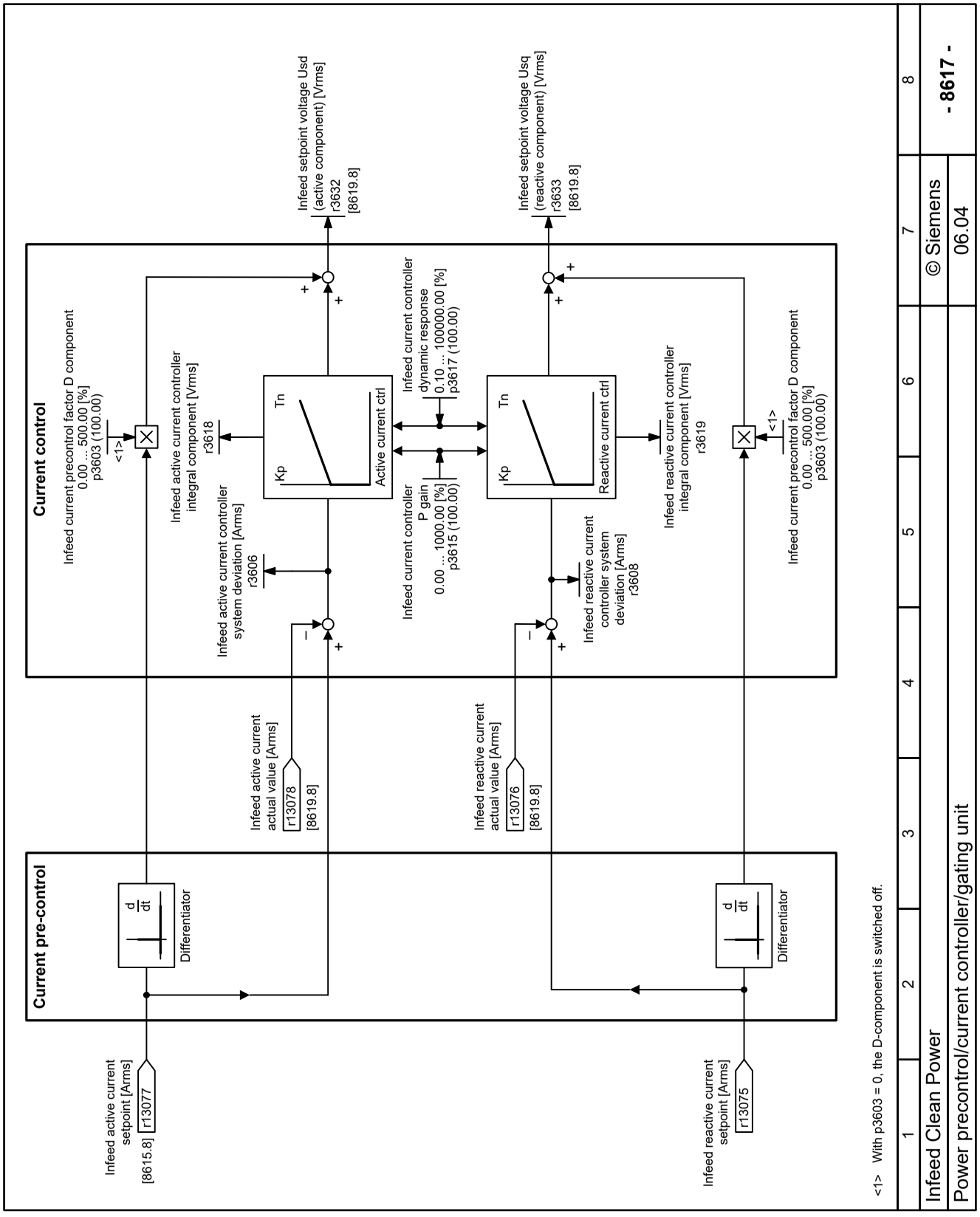


Figure 4-202 8617 – Current precontrol/current controller/gating unit

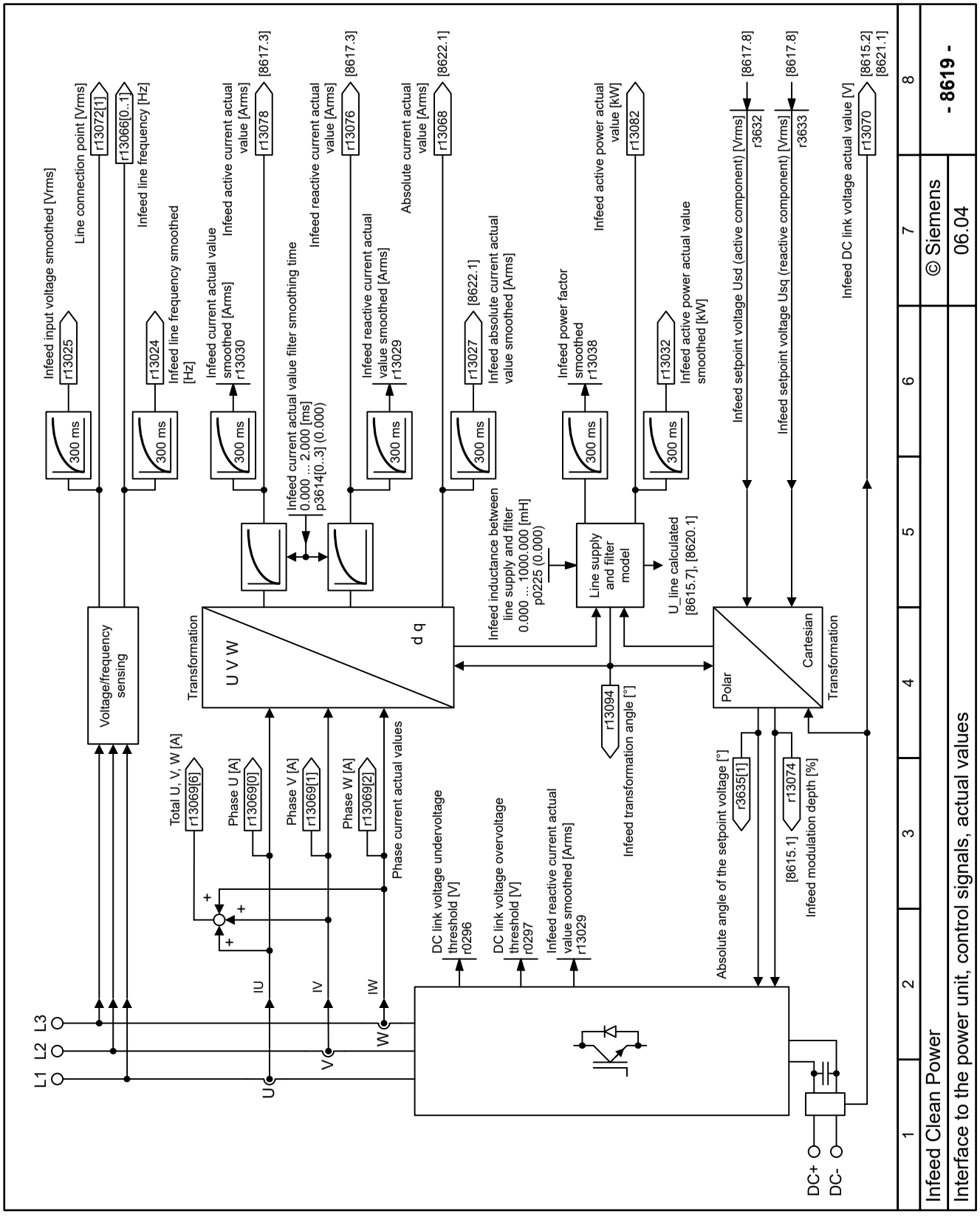


Figure 4-203 8619 – Interface to the power unit, control signals, actual values

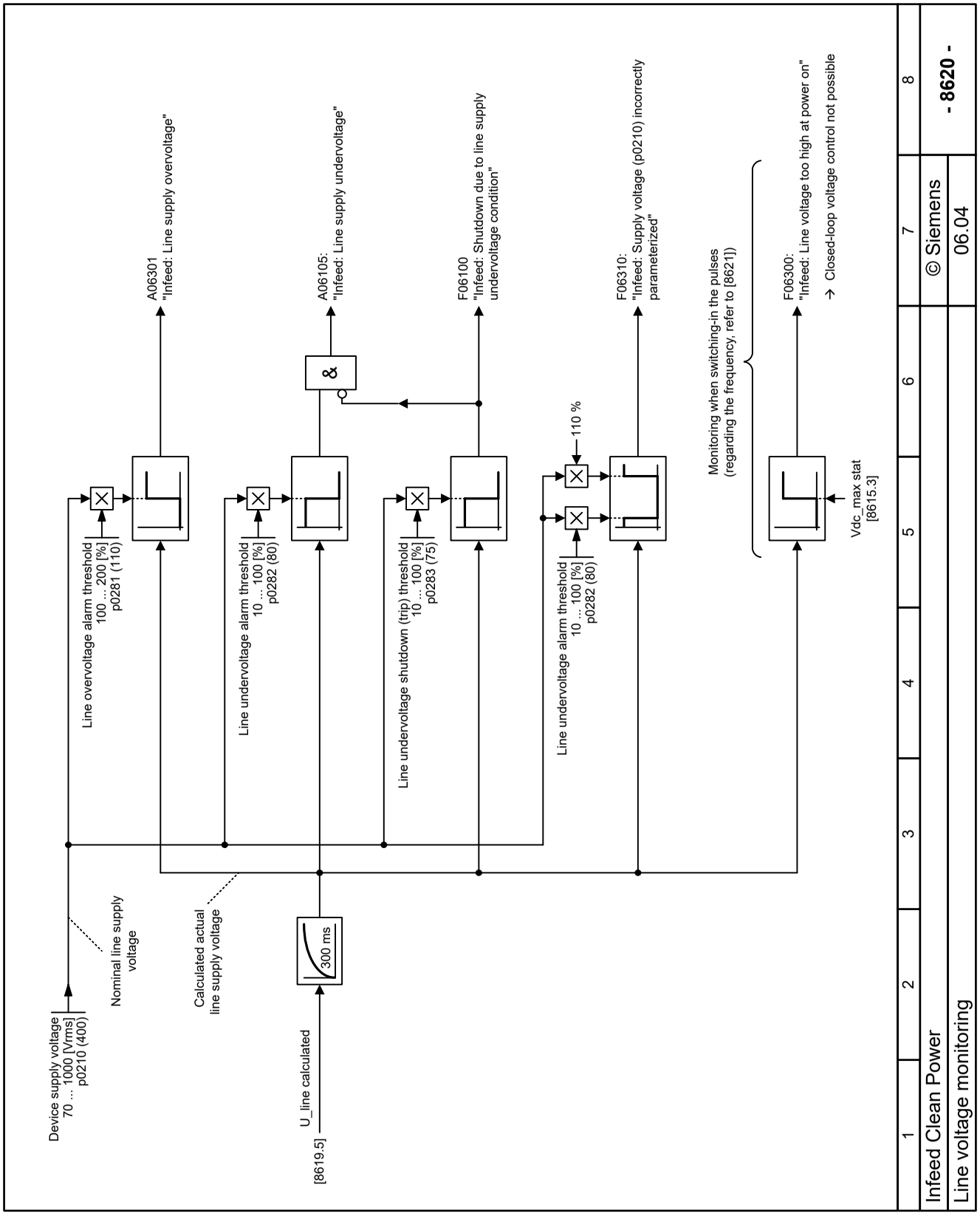


Figure 4-204 8620 – Line voltage monitoring

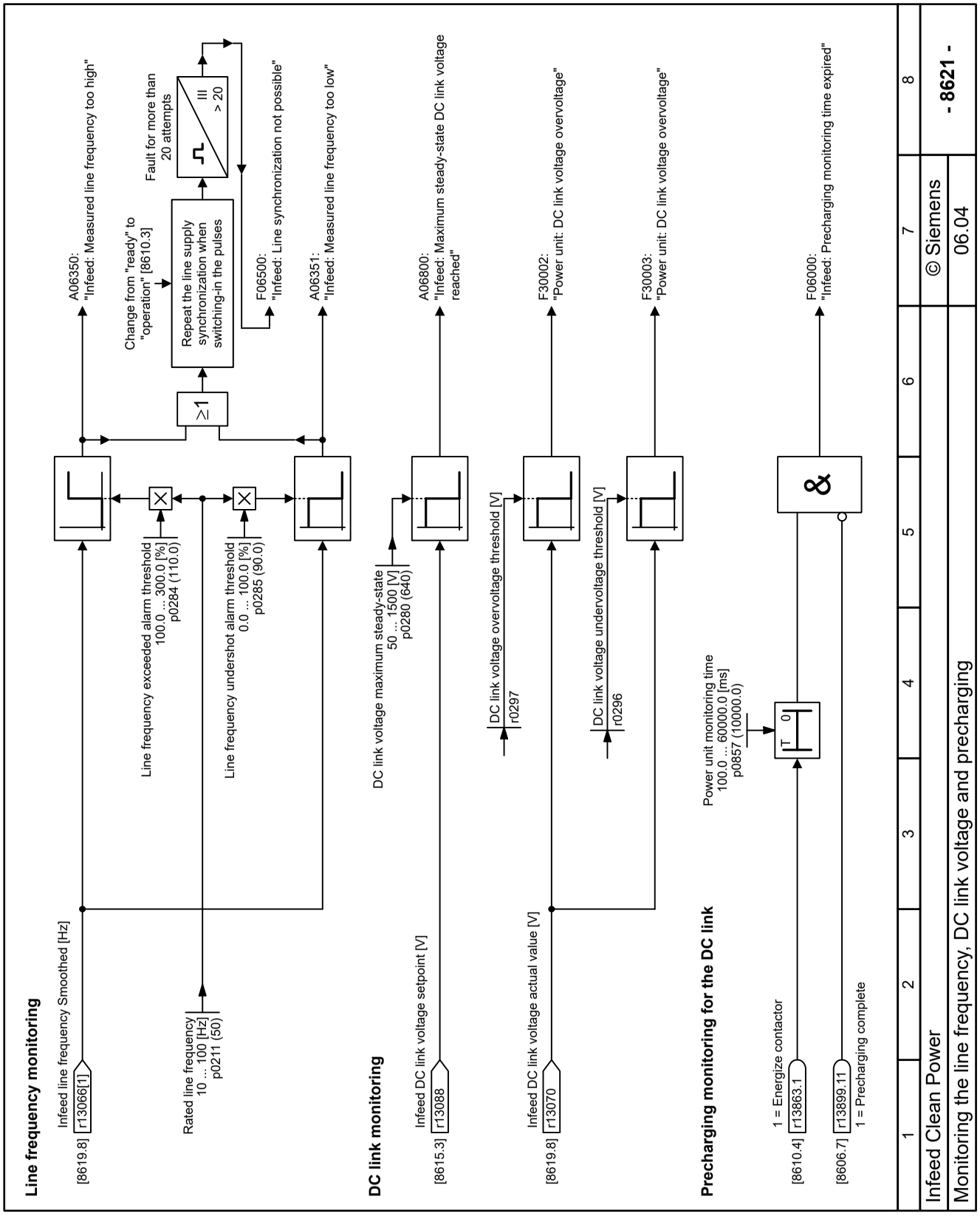


Figure 4-205 8621 – Monitoring line frequency, DC link voltage and precharging

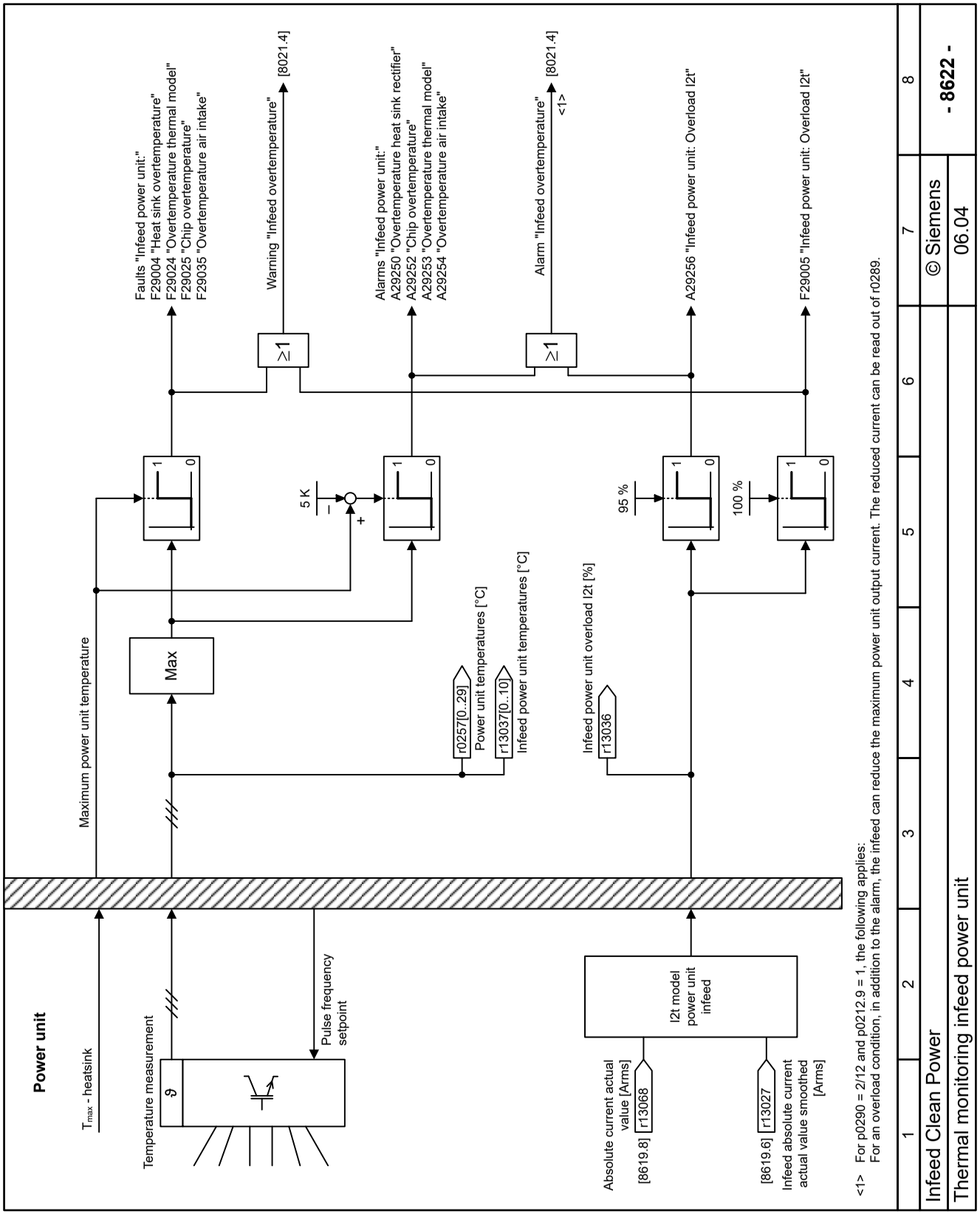


Figure 4-206 8622 – Thermal monitoring power unit infeed

Faults and alarms

5

5.1 Overview of faults and alarms

5.1.1 Display of faults/alarms (messages)

Description

In the case of a fault, the converter signals the corresponding fault(s) and/or alarm(s).

The texts about faults and alarms are displayed via the following interfaces:

- Output of messages via the fault and alarm buffer with a fieldbus connection to the higher-level controller.
- Output of messages via the commissioning interface.

5.1.2 Differences between faults and alarms

Overview

An alarm reports an operating state which is non-critical at present. A fault means that it is normally no longer possible to run the motor. The converter therefore responds to alarms and faults differently.

Description of function

The differences between faults and alarms are as follows:

Message type	Response to a message and removal of the message
Fault	How does a converter respond when a fault occurs? • Initiate the appropriate fault response • Set the status signal ZSW1.3 • Enter the fault into the fault buffer How are faults eliminated? • Remove the cause of the fault • Acknowledge fault What happens when the converter is switched off and switched on? • Faults are saved retentively.
Alarm	How does a converter respond when an alarm occurs? • Set the status signal ZSW1.7 • Enter the alarm into the alarm buffer How are alarms eliminated? • Alarms are self-acknowledging. If the cause of the alarm is no longer present, then the converter resets the alarm. What happens when the converter is switched off and switched on? • The alarm buffer is lost when the supply voltage is switched off.

You can find the current status of faults and alarms in parameters r2135 and r2139.

You can change the message type for individual messages using parameters p2118 and p2119. You change the fault response using p2100 and p2101.

Note:

Messages from encoders whose signal is not used for control purposes are output by the converter as a warning.

5.1.3 Message buffer

5.1.3.1 Fault buffer

Overview

The converter stores a limited number of faults as incidents in a fault buffer. As a consequence, acknowledged faults are kept for diagnostic purposes.

Description of function

A fault includes a fault code, a fault value and 2 fault times. The associated parameters are shown in the following diagram.

The fault code and fault value describe the cause of the fault. The fault value provides additional and more detailed information about the fault.

The fault times indicate when the fault occurred and when the fault was eliminated.

Fault buffer

The converter stores up to 8 incidents in the fault buffer. The fault buffer comprises the current incident and the fault history.

The fault buffer is kept when the converter supply voltage is switched off.

		Fault code	Fault value		Fault time received		Fault time removed		Component fault	Diagnostic attribute fault
			I32	float	Days	ms	Days	ms		
Current incident	Fault 1	r0945[0]	r0949[0]	r2133[0]	r2130[0]	r0948[0]	r2136[0]	r2109[0]	r3120[0]	r3122[0]
	Fault 2	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]
	...	...	...	...	...	...	...	...	...	...
	Fault 8	[7]	[7]	[7]	[7]	[7]	[7]	[7]	[7]	[7]
1st acknowledged incident	Fault 1	r0945[8]	r0949[8]	r2133[8]	r2130[8]	r0948[8]	r2136[8]	r2109[8]	r3120[8]	r3122[8]
	Fault 2	[9]	[9]	[9]	[9]	[9]	[9]	[9]	[9]	[9]
	...	...	...	...	...	...	...	...	...	...
	Fault 8	[15]	[15]	[15]	[15]	[15]	[15]	[15]	[15]	[15]
...										
7. Acknowledged incident [oldest]	Fault 1	r0945[56]	r0949[56]	r2133[56]	r2130[56]	r0948[56]	r2136[56]	r2109[56]	r3120[56]	r3122[56]
	Fault 2	[57]	[57]	[57]	[57]	[57]	[57]	[57]	[57]	[57]
	...	...	...	...	...	...	...	...	...	...
	Fault 8	[63]	[63]	[63]	[63]	[63]	[63]	[63]	[63]	[63]

Figure 5-1 Structure of the fault buffer

Current incident

The current incident contains up to 8 active faults.

The faults are sorted by "Fault time received". If the current incident is full and an additional fault occurs, then the converter overwrites the values with Index [7].

	Fault code	Fault value		Fault time received			Fault time removed	
		I32	float	Days	ms		Days	ms
Fault 1	r0945[0]	r0949[0]	r2133[0]	r2130[0]	r0948[0]	old	r2136[0]	r2109[0]
Fault 2	[1]	[1]	[1]	[1]	[1]		[1]	[1]
	[2]	[2]	[2]	[2]	[2]		[2]	[2]
	[3]	[3]	[3]	[3]	[3]		[3]	[3]
...	[4]	[4]	[4]	[4]	[4]		[4]	[4]
	[5]	[5]	[5]	[5]	[5]		[5]	[5]
	[6]	[6]	[6]	[6]	[6]		[6]	[6]
Fault 8	[7]	[7]	[7]	[7]	[7]	new	[7]	[7]

Figure 5-2 Current incident

Acknowledging faults

Once the cause of the fault has been eliminated and the fault has been acknowledged, the converter writes the time to "Fault time resolved". The "Fault time resolved" of the faults

that have not been resolved remains at 0. To acknowledge a fault, the converter offers the following options:

- Acknowledge via PROFIdrive control signal (STW1 bit 7): r2090.7 = change from 0 signal to 1 signal.
- Acknowledge via binary signal sink:
  r2103 (signal 1 for acknowledging faults)
  r2104 (signal 2 for acknowledging faults)
  r2103 and r2104 are equivalent interconnection options for acknowledging faults.
- Acknowledgement via a digital input
- Acknowledgement via an operating unit or via the commissioning tool
- Acknowledging by switching off/switching on the converter power supply
  The faults active before switch-off are automatically moved to the history when the converter runs up.

Faults detected during converter-internal monitoring of hardware and firmware can be acknowledged only by switching the supply voltage off and on again.

Resolved and acknowledged faults are cleared from the active incident. Unresolved faults remain stored in the active incident.

If more than 8 faults are active, then these faults are added to the active incident.

Fault history

Up to 7 incidents, each with 8 already acknowledged faults, are stored in the fault history.

The converter moves the acknowledged faults from the current incident to the fault history as follows:

1. The converter shifts the values previously saved in the fault history by 8 indices.
   The converter deletes the faults that were saved in the indexes [56 ... 63] before acknowledgement.
2. The converter copies the actual incident together with the acknowledged faults to the fault history. The fault history can include acknowledged faults that have still not been resolved (fault time resolved = 0). These faults remain as active faults until they are resolved.

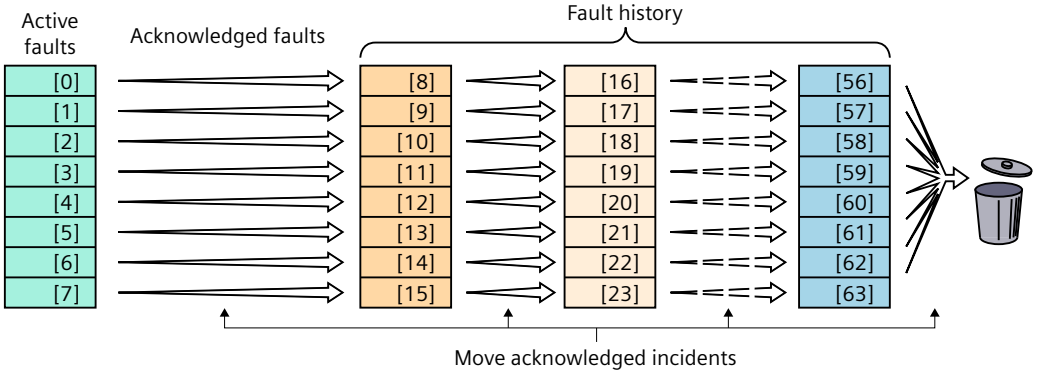


Figure 5-3 Movement of acknowledged faults to the fault history

Parameters

The following list contains the parameters of the "Fault buffer and fault history" function.

Number	Name	Unit
r0945[0...63]	Fault code	
r0948[0...63]	Fault time received in milliseconds	[ms]
r0949[0...63]	Fault value	
p2100[0...19]	Change fault response fault number	
p2101[0...19]	Change fault response response	
r2109[0...63]	Fault time removed in milliseconds	[ms]
p2118[0...19]	Change message type message number	
p2119[0...19]	Change message type type	
r2130[0...63]	Fault time received in days	
r2131	Actual fault code	
r2133[0...63]	Fault value for float values	
r2136[0...63]	Fault time removed in days	
r3120[0...63]	Component fault	
r3122[0...63].0...20	Diagnostic attribute fault	

5.1.3.2 Clear fault buffer

Requirement

None

Procedure

Set p0952 = 0 to clear the fault buffer.

The fault history is completely cleared. Active faults in the current incident are kept.

More information

For the following events, the converter deletes the fault buffer:

- Restore factory settings
- Download with modified drive topology

5.1.3.3 Safety message buffer

Overview

The converter stores a limited number of safety messages in a safety message buffer. As a consequence, acknowledged messages are kept for diagnostic purposes.

Description of function

A safety message includes message code, message value and 2 message times. The associated parameters are shown in the following diagram.

In the delivery state (p3117 = 0), safety messages have message type "C" and the safety message buffer is active. With p3117 = 1, safety messages are assigned message types Alarm (A) or Fault (F) and are stored in the fault buffer or the alarm buffer.

The message code and the message value describe the message cause. The message value provides additional and more detailed information about the safety message. The message times indicate when the message occurred and when the message was resolved.

Safety message buffer

The entry into the safety message buffer takes place with a delay. Reading out the safety message buffer only makes sense when the converter signals "Safety message active" (r2139.5) and detects a changed safety message buffer (r60044).

The converter stores up to 8 message cases in the safety message buffer. The safety message buffer comprises the current message case and the message history.

The safety message buffer is kept when the converter supply voltage is switched off.

The current message case before the supply voltage is switched off is acknowledged when the supply voltage is switched on again, and it is then in the message history.

		Message code	Message value I32	Message value float	Message time received Days	Message time received ms	Message time acknowledged Days	Message time acknowledged ms	Component	Diagnostic attributes
Current message case	Message 1	r60045[0]	r60049[0]	r9753[0]	r9754[0]	r60048[0]	r9756[0]	r9755[0]	r9745[0]	r9750[0]
	Message 2	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]	[1]
	...	...	...	...	...	...	...	...	...	...
	Message 8	[7]	[7]	[7]	[7]	[7]	[7]	[7]	[7]	[7]
1st acknowledged message case	Message 1	r60045[8]	r60049[8]	r9753[8]	r9754[8]	r60048[8]	r9756[8]	r9755[8]	r9745[8]	r9750[8]
	Message 2	[9]	[9]	[9]	[9]	[9]	[9]	[9]	[9]	[9]
	...	...	...	...	...	...	...	...	...	...
	Message 8	[15]	[15]	[15]	[15]	[15]	[15]	[15]	[15]	[15]
...										
7th acknowledged message case [oldest]	Message 1	r60045[56]	r60049[56]	r9753[56]	r9754[56]	r60048[56]	r9756[56]	r9755[56]	r9745[56]	r9750[56]
	Message 2	[57]	[57]	[57]	[57]	[57]	[57]	[57]	[57]	[57]
	...	...	...	...	...	...	...	...	...	...
	Message 8	[63]	[63]	[63]	[63]	[63]	[63]	[63]	[63]	[63]

Figure 5-4 Structure of the safety message buffer

Current message case

The current message case contains up to 8 active messages.

The safety messages are sorted by "Message time received". If the current message case is full and an additional safety message is received, then the converter overwrites the values with Index [7]. Resolved messages are moved to the safety message history.

	Message code	Message value		Message time received			Message time acknowledged	
		I32	float	Days	ms		Days	ms
Message 1	r60045[0]	r60049[0]	r9753[0]	r9754[0]	r60048[0]	old	r9756[0]	r9755[0]
Message 2	[1]	[1]	[1]	[1]	[1]		[1]	[1]
	[2]	[2]	[2]	[2]	[2]		[2]	[2]
	[3]	[3]	[3]	[3]	[3]		[3]	[3]
...	[4]	[4]	[4]	[4]	[4]		[4]	[4]
	[5]	[5]	[5]	[5]	[5]		[5]	[5]
	[6]	[6]	[6]	[6]	[6]		[6]	[6]
Message 8	[7]	[7]	[7]	[7]	[7]	new	[7]	[7]

Figure 5-5 Current message case

Acknowledgment of safety messages

Once the cause of the safety message has been eliminated, the converter writes the time to "Message time resolved". The "Message time resolved" of the unresolved safety messages retains the value 0.

Safety messages are acknowledged via a fail-safe digital input (F-DI) or via PROFIsafe.

Resolved and acknowledged safety messages are cleared from the current message case. Unresolved safety messages remain stored in the current message case. If more than 8 messages are active, then these messages are added to the actual message case.

Safety message history

Up to 7 message cases each with 8 already acknowledged safety messages are saved in the safety message history.

The converter moves the acknowledged safety messages from the current message case to the safety message history as follows:

1. The converter shifts the values previously saved in the safety message history by 8 indices. The converter deletes the safety messages that were saved in the indices [56 ... 63] before acknowledgement.
2. The converter copies the actual message case with the acknowledged messages to the safety message history.
   The safety message history can include acknowledged messages that have still not been resolved (fault time resolved = 0) These messages remain as active message until they are resolved.

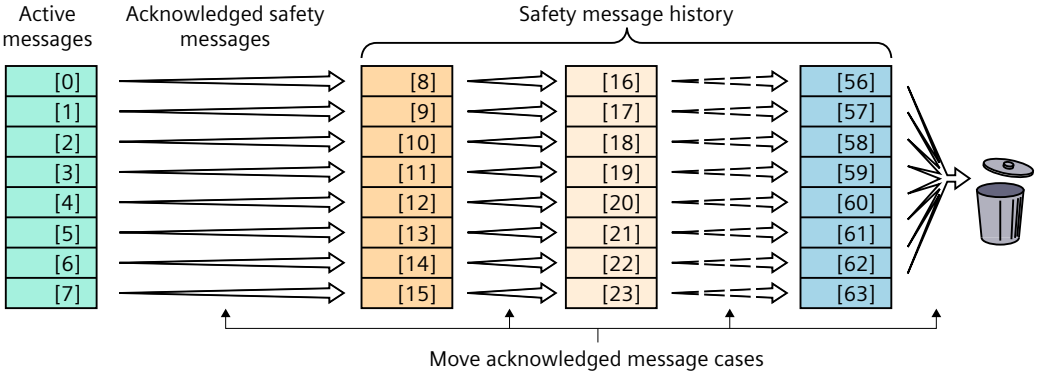


Figure 5-6 Movement of the acknowledged safety messages to the safety message history

Parameters

The following list contains the parameters of the "Safety message buffer and safety message history" function.

Number	Name	Unit
p3117	Change safety message type	
r9745[0...63]	SI components	
r9750[0...63].0...20	SI diagnostic attributes	
r9753[0...63]	SI message value for float values	
r9754[0...63]	SI message time received in days	
r9755[0...63]	SI message time removed in milliseconds	[ms]
r9756[0...63]	SI message time removed in days	
r60044	SI message buffer counter changes	
r60045[0...63]	SI message code	
r60047[0...63]	SI message number	
r60048[0...63]	SI message time received in milliseconds	[ms]
r60049[0...63]	SI message value	
p60052	SI message cases counter	

5.1.3.4 Deleting a safety message buffer

Procedure

Set p60052 = 0 to delete the safety message buffer.

The message history is deleted entirely. Active safety messages in the current message case are retained.

More information

The converter deletes the safety message buffer if the following events occur:

- Restore factory settings
- Download with modified drive topology

5.1.3.5 Alarm buffer

Overview

The converter stores the most recent alarms in an alarm buffer.

Description of function

An alarm includes an alarm code, an alarm value, and 2 alarm times (for parameters, see the following diagram).
The alarm code and the alarm value describe the alarm cause. The alarm value provides additional and more detailed information about the alarm.

Alarm times indicate when the alarm occurred and when the alarm was resolved.

Alarm buffer

The converter saves up to 8 active alarms in the alarm buffer.

In the alarm buffer, the alarms are sorted according to "Alarm time received". If the alarm buffer is completely filled and an additional alarm occurs, the converter overwrites the values with index [7]. Resolved alarms are moved to the alarm history.

Once the cause of the alarm has been eliminated, the converter writes the time to "Alarm time resolved". The "Alarm time resolved" value for unresolved faults remains at 0.

	Alarm code	Alarm value		Alarm time received			Alarm time removed		Component alarm	Diagnostic attribute alarm
		I32	float	Days	ms		Days	ms		
Alarm 1	r2122[0]	r2124[0]	r2134[0]	r2145[0]	r2123[0]	old	r2146[0]	r2125[0]	r3121[0]	r3123[0]
Alarm 2	[1]	[1]	[1]	[1]	[1]		[1]	[1]	[1]	[1]
	[2]	[2]	[2]	[2]	[2]		[2]	[2]	[2]	[2]
	[3]	[3]	[3]	[3]	[3]		[3]	[3]	[3]	[3]
...	[4]	[4]	[4]	[4]	[4]		[4]	[4]	[4]	[4]
	[5]	[5]	[5]	[5]	[5]		[5]	[5]	[5]	[5]
	[6]	[6]	[6]	[6]	[6]		[6]	[6]	[6]	[6]
Alarm 8	[7]	[7]	[7]	[7]	[7]	new	[7]	[7]	[7]	[7]

Figure 5-7 Alarm buffer

Alarm history

The alarm history saves up to 56 past alarms.

In the alarm history, alarms are sorted according to the "Alarm time resolved". The last alarm that was resolved has index[8].

The converter moves resolved alarms from the alarm buffer to the alarm history as follows:

1. To create space after position [8] in the alarm history, the converter shifts the alarms already stored in the alarm history "down" by one or more positions.
   If the alarm history is completely full, the converter will delete the oldest alarms.
2. The converter moves the removed alarms from the alarm buffer to the now freed up positions of the alarm history.
   Alarms that have not been resolved remain in the alarm buffer.
3. Gaps can appear in the alarm buffer as a result of resolved alarms being moved to the alarm history. The converter closes these gaps by moving unresolved alarms up. If there are more than 8 active alarms, active alarms not previously visible are added to the alarm buffer. The alarm buffer is resorted.

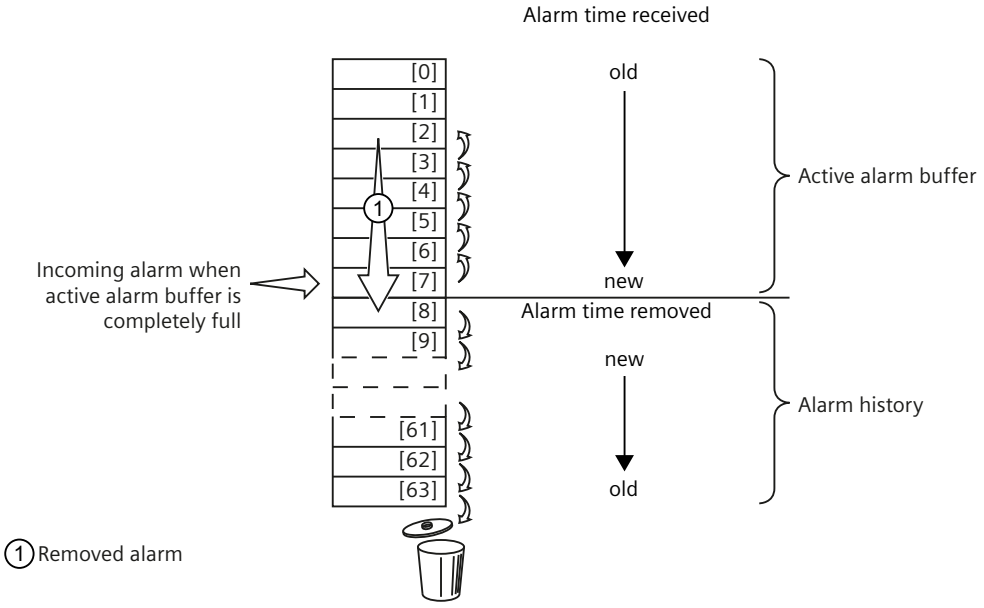


Figure 5-8 Alarm history

Parameters

The following list contains the parameters of the "Alarm buffer and alarm history" function.

Number	Name	Unit
r2111	Alarm counter	
p2118[0...19]	Change message type message number	
p2119[0...19]	Change message type type	
r2122[0...63]	Alarm code	
r2123[0...63]	Alarm time received in milliseconds	[ms]
r2124[0...63]	Alarm value	
r2125[0...63]	Alarm time removed in milliseconds	[ms]
r2132	Actual alarm code	
r2134[0...63]	Alarm value for float values	
r3121[0...63]	Component alarm	
r3123[0...63].0...20	Diagnostic attribute alarm	

5.1.4 Explanation of the list of faults and alarms

Description

The messages are displayed according to the following pattern.

Fxxxxx (A, N) **Fault location (optional): Name**

Message class: Text of the message class (number according to PROFIdrive)
Message value: Component number: %1, fault cause: %2
Variant: Product variant
Component: Hardware component
Response: NONE
Acknowledgment: POWER ON
Explanation of the message value: For %2

Value	Cause	Remedy
11	Fault cause for value = 11	Remedy for value = 11
15	Fault cause for value = 15	Remedy for value = 15

Cause Description of possible causes.
Fault value (r0949, interpret <format>):
or alarm value (r2124, interpret <format>): (optional)
Information about fault and alarm values (optional).

Remedy Description of possible remedies
Response for A: NONE
Acknowledgement for N: IMMEDIATELY
Response for N: NONE
Acknowledgment for N: NONE

The representation of a message comprises as a maximum the information listed below. Depending on the message, some information can be omitted.

- **Fxxxxx (A, N)**
  A message comprises a letter followed by the relevant number.
  The meaning of the letters is as follows:
  - A means "Alarm"
  - F means "Fault"
  - N means "No message" or "Internal message"
  - C means "Safety message" (dedicated message buffer)

  The optional brackets indicate whether the type specified for this message can be changed and which message types can be adjusted via parameters (p2118, p2119).
  For a message with a message type that can be changed, information about response and acknowledgment is specified independently (e.g. response for F, acknowledgment for F).
- **Fault location (optional): Name**
  The fault location (optional), the name of the fault or alarm and the message number are all used to identify the message (e.g. with the commissioning software).

- **Message class**
  Every message is assigned a message class using the following structure:
  Text of the message class (number according to PROFIdrive)
  The message classes are transferred at different interfaces to the higher-level controller and their associated display and operating units.
  The message classes that are available are listed in the following table. In addition to the text of the message class and its number according to PROFIdrive – as well as a brief info text regarding the cause and remedy – they also include information about the various diagnostic interfaces:

  – PN (hex)
    Specifies the "Channel error type" of the PROFINET channel diagnostics.
    When activating the channel diagnostics, using the GSDML file, the texts listed in the table can be displayed.

  – DS1 (dec)
    Specifies the bit number in data set DS1 of the diagnostic alarm for SIMATIC S7.
    When the diagnostic alarms are activated, the texts listed in the table can be displayed.

  – NAMUR (r3113.x)
    Specifies the bit number in parameter r3113.

  For a NAMUR interface, in some instances, the message classes are combined.

Text of the message class (number according to PROFIdrive)	**Diagnostics interface**			
Cause and remedy	**PN (hex)**	**DS1 (dec)**	**DP (dec)**	**NAMUR (r3113.x)**
Hardware/software errors (1) A hardware or software malfunction was detected. • Carry out a POWER ON for the relevant component. • If it occurs again, contact the hotline.	9000	0	16	0
Line fault (2) A line supply fault has occurred (phase failure, voltage level, ...). • Check the line supply/fuses. • Check the supply voltage. • Check the wiring.	9001	1	17	1
Supply voltage fault (3) An electronics supply voltage fault (48 V, 24 V, 5 V...) was detected. • Check the wiring. • Check the voltage level.	9002	2	2 (undervoltage) 3 (overvoltage)	15
DC link overvoltage (4) The DC link voltage has assumed an inadmissibly high value. • Check the dimensioning of the system (line supply, reactor, voltages). • Check the infeed settings.	9003	3	18	2

Text of the message class (number according to PROFIdrive)	Diagnostics interface			
Cause and remedy	PN (hex)	DS1 (dec)	DP (dec)	NAMUR (r3113.x)
Power electronics fault (5) An inadmissible operating state of the power electronics has been identified (overcurrent, overtemperature, IGBT failure ...). • Check that the permissible duty cycles are complied with. • Check the ambient temperatures (fan).	9004	4	19	3
Overtemperature of the electronic component (6) The temperature in the component has exceeded the highest permissible limit. • Check the ambient temperature/control cabinet cooling.	9005	5	20	4
Ground fault / interphase short-circuit detected (7) A ground fault/interphase short-circuit was detected in the power cables or in the motor windings. • Check the power cables (connection). • Check the motor.	9006	6	21	5
Motor overload (8) The motor was operated outside the permissible limits (temperature, current, torque...). • Check the duty cycles and set limits. • Check the ambient temperature / motor cooling.	9007	7	22	6
Communication to the higher-level controller faulted (9) The communication to the higher-level controller (internal coupling, PROFIBUS, PROFINET ...) is faulted or interrupted. • Check the state of the higher-level control system. • Check the communication connection/wiring. • Check the bus configuration/clock cycles.	9008	8	23	7
Safety monitoring channel has detected an error (10) A safe operation monitoring function (Safety) has detected an error.	9009	9	24	8
Actual position/speed value incorrect or not available (11) An illegal signal state was detected while evaluating the encoder signals (track signals, zero marks, absolute values, ...). • Check the encoder / status of the encoder signals. • Observe the maximum permissible frequencies.	900A	10	25	9

Text of the message class (number according to PROFIdrive)	Diagnostics interface			
Cause and remedy	**PN (hex)**	**DS1 (dec)**	**DP (dec)**	**NAMUR (r3113.x)**
Internal (DRIVE-CLiQ) communication faulted (12) The internal communication between the SINAMICS components is faulted or interrupted. • Check the DRIVE-CLiQ wiring. • Ensure an EMC-compliant design. • Observe the maximum quantity structure/cycles.	900B	11	26	10
Infeed fault (13) The infeed is faulted or has failed. • Check the infeed and its environment (line supply, filters, reactors, fuses...). • Check the infeed control.	900C	12	27	11
Braking controller / Braking Module faulted (14) The internal or external Braking Module is faulted or overloaded (temperature). • Check the connection/state of the Braking Module. • Comply with the permissible number of braking operations and their duration.	900D	13	28	15
Line filter fault (15) The line filter monitoring has identified an excessively high temperature or other inadmissible state. • Check the temperature / temperature monitoring. • Check the configuration to ensure that it is permissible (filter type, infeed, thresholds).	900E	14	17	15
External measured value / signal state outside of the permissible range (16) A measured value / signal state read in via the input area (digital/analog/temperature) has assumed an inadmissible value/state. • Determine and check the relevant signal. • Check the set thresholds.	900F	15	29	15
Application / technological function fault (17) The application / technological function has exceeded a (set) limit (position, speed, torque, ...). • Determine and check the relevant limit. • Check the setpoint specified by the higher-level control.	9010	16	30	15

Text of the message class (number according to PROFIdrive)	Diagnostics interface			
Cause and remedy	**PN (hex)**	**DS1 (dec)**	**DP (dec)**	**NAMUR (r3113.x)**
Error in the parameterization/configuration/ commissioning procedure (18) An error has been identified in the parameterization or in a commissioning procedure, or the parameterization does not match the actual device configuration. • Determine the precise cause of the fault using the commissioning tool. • Adapt the parameterization or device configuration.	9011	17	31	15
General drive fault (19) Group fault. • Determine the precise cause of the fault using the commissioning tool.	9012	18	9	15
Auxiliary unit fault (20) The monitoring of an auxiliary unit (incoming transformer, cooling unit ...) has identified an inadmissible state. • Determine the exact cause of the fault and check the device involved.	9013	19	29	15

- **Message value**
  Provides information about the composition of the fault/alarm value.
  Example:
  Message value: Component number: %1, fault cause: %2
  In this example, the message value contains information about the component number and cause of the fault. Entries %1 and %2 are placeholders. If the commissioning software is connected to the converter, then these placeholders are populated with the appropriate values.
- **Variant**
  Specifies the product variant in which the message exists. This information is not applicable if an alarm is the same for all product variants.
- **Component**
  Type of hardware component that has triggered the fault or alarm. For "None", it is not possible to assign the message to a hardware component.

- **Response**
  Specifies the response in the event of a fault.
  The following table lists all fault responses and their meanings used for the entire SINAMICS drive family.

List	PROFIdrive	Response	Description
NONE	–	None	No response when a fault occurs.
OFF1	ON/OFF	Brake along the ramp-function generator deceleration ramp followed by pulse inhibit	**Closed-loop speed control (p1300 = 20, 21)** • The motor is braked by immediately specifying n_set = 0 at the ramp-function generator deceleration ramp (p1121). • The pulses are suppressed when standstill has been identified. • Switching on inhibited is activated. **Torque control (p1300 = 23)** • The following applies for torque control: Response as for OFF2. • When switching into torque control via r1501, the following applies: There is no dedicated braking response. The pulses are suppressed when standstill has been identified. • Switching on inhibited is activated.
OFF1_DELAYED	–	As for OFF1, however delayed	Faults with this fault response only become effective after the delay time in p3136 has expired. The remaining time up to OFF1 is displayed in r3137. Switching on inhibited is activated.
OFF2	COAST-STOP	Internal/external pulse inhibit	**Closed-loop speed and torque control** • Immediate pulse cancellation, the motor "coasts down " to a standstill. • Switching on inhibited is activated.
OFF3	QUICK-STOP	Braking along the OFF3 deceleration ramp followed by pulse inhibit	**Closed-loop speed control (p1300 = 20, 21)** • The motor is braked along the OFF3 deceleration ramp (p1135) by immediately entering n_set = 0. • The pulses are suppressed when standstill has been identified. • Switching on inhibited is activated. **Torque control (p1300 = 23)** • Switchover to closed-loop speed control and other responses as described for closed-loop speed control.
STOP2	–	STOP2	• The motor is braked along the OFF3 deceleration ramp (p1135) by immediately entering n_set = 0. • The drive remains in closed-loop speed control.

List	PROFI-drive	Response	Description
IASC/ DCBRK	–	–	• For synchronous motors, the following applies: An internal armature short circuit is initiated if a fault occurs with this fault response. The conditions for p1231 = 4 must be complied with. • For induction motors, the following applies: If a fault occurs with this fault response, DC braking is initiated. DC braking must have already been commissioned (p1232, p1233, p1234). The pulses are suppressed when standstill has been identified. Switching on inhibited is activated.
ENCODER	–	Internal/external pulse inhibit (p0491)	The fault response ENCODER acts as a function of the setting in p0491. Factory setting: p0491 = 0 + encoder fault results in an OFF2 **Notice** When changing p0491, it is imperative that you carefully observe the information provided in the description of this parameter.

- **Acknowledgment**
  A fault can only be acknowledged if the cause has been resolved.
  The acknowledgment specifies when the fault can be acknowledged.

Acknowledgment	Description
IMMEDIATELY	Acknowledgment can be immediately realized after the cause has been resolved.
PULSE INHIBIT	Once the cause has been resolved, the fault can only be acknowledged when the pulses are inhibited (r0899.11 = 0).
POWER ON	The fault can only be acknowledged using POWER ON (the converter is switched-off/ switched-on).
NONE	Acknowledgment can be immediately realized without the cause having been resolved.

- **Explanation of the message value**
  Explains the possible values of the variables (%n) in the message value. In this case, detailed information can be specified regarding the cause and remedy for specific values.
- **Cause**
  Describes the possible causes of the fault or alarm. Optionally, a message value, fault value or alarm value can be additionally specified (more information on message value, fault value and alarm value is provided under Message buffer).
- **Remedy**
  Generally explains possible procedures to resolve the cause of this active fault or alarm.

5.2 List of faults and alarms

Faults and alarms

The following list contains faults and alarms of product G220.

Product: SINAMICS G220, Version: 604037002, Language: eng
Objects: G220, G220 Clean Power

F01000 Internal software error

Message class: Hardware/software error (1)
Message value: Module: %1, line: %2
Component: Control Unit (CU)
Propagation: Global
Response: OFF2
Acknowledgment: POWER ON
Cause: An internal software error has occurred.
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Remedy: - Evaluate fault buffer (r0945).
- Carry out a POWER ON (switch-off/switch-on) for all components.
- If required, check the data on the non-volatile memory (e.g. memory card).
- Upgrade firmware to later version.
- Contact Technical Support.
- Replace the converter.

F01001 FloatingPoint exception

Message class: Hardware/software error (1)
Message value: %1
Component: Control Unit (CU)
Propagation: Global
Response: OFF2
Acknowledgment: POWER ON
Cause: An exception occurred for an operation with the FloatingPoint data type.
The error can be caused by the basic system or a technology function.
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Remedy: - Carry out a POWER ON (switch-off/switch-on) for all components.
- Check configuration and signals of the blocks in FBLOCKS.
- Check configuration and signals of DCC charts.
- Check configuration and signals of TEC charts.
- Upgrade firmware to later version.
- Contact Technical Support.

F01002 Internal software error

Message class: Hardware/software error (1)
Message value: %1
Component: Control Unit (CU)
Propagation: Global
Response: OFF2

Acknowledgment: IMMEDIATELY
Cause: An internal software error has occurred.
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Remedy: - Carry out a POWER ON (switch-off/switch-on) for all components.
- Upgrade firmware to later version.
- Contact Technical Support.

F01003 Acknowledgment delay when accessing the memory

Message class: Hardware/software error (1)
Message value: %1
Component: Control Unit (CU)
Propagation: Global
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: A memory area was accessed that does not return a "READY".
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Remedy: - Carry out a POWER ON (switch-off/switch-on) for all components.
- Contact Technical Support.

N01004 (F, A) Internal software error

Message class: Hardware/software error (1)
Message value: %1
Component: Control Unit (CU)
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: An internal software error has occurred.
Fault value (r0949, hexadecimal):
Only for internal Siemens troubleshooting.
Remedy: - Contact Technical Support.
Response upon: F: OFF2
Acknowl. upon F: POWER ON
Response upon: A: NONE
Acknowl. upon A: NONE

F01005 Firmware download for DRIVE-CLiQ component unsuccessful

Message class: Hardware/software error (1)
Message value: Component number: %1, fault cause: %2
Component: None
Propagation: Local
Response: NONE

Acknowledgment: IMMEDIATELY

Explanation of the message value: For %2

Value	Cause	Remedy
11	DRIVE-CLiQ component has detected a checksum error.	After POWER ON has been carried out again for the DRIVE-CLiQ component, download firmware again.
15	The selected DRIVE-CLiQ component did not accept the contents of the firmware file.	Use a suitable firmware version.
18	Firmware version is too old and is not accepted by the component.	Use a suitable firmware version.
19	Firmware version is not suitable for the hardware release of the component.	Use a suitable firmware version.
101	After several communication attempts, no response from the DRIVE-CLiQ component.	Check the DRIVE-CLiQ wiring.
139	Initially, only one new boot loader was loaded.	After POWER ON has been carried out again for the DRIVE-CLiQ component, download firmware again.
140	Firmware file for the DRIVE-CLiQ component not available on the memory card.	Use a suitable firmware version.
141	An inconsistent length of the firmware file was signaled.	Use a suitable firmware version.
142	Component has not changed to the mode for firmware download.	After POWER ON has been carried out again for the DRIVE-CLiQ component, download firmware again.
156	Selected component is not available.	Check the selected component number.

Cause: It was not possible to download the firmware to a DRIVE-CLiQ component.
Fault value (r0949, interpret hexadecimal):
yyxxxx hex: yy = component number, xxxx = fault cause
Example: xxxx = 000B hex = 11 dec:
xxxx = 008D hex = 141 dec:
The firmware download may have been caused by a loss of connection to the firmware file.
In the case of a converter, this can occur during a project download/reset, for example.

Remedy:
- Check the selected component number.
- Check the DRIVE-CLiQ wiring.
- Use a component with a suitable hardware version.
- After POWER ON has been carried out again for the DRIVE-CLiQ component, download firmware again.

A01006 Firmware update for DRIVE-CLiQ component required

Message class: General drive fault (19)

Message value: Component number: %1

Component: None

Propagation: Local

Response: NONE

Acknowledgment: NONE

Explanation of the message value: For %1
Component in target topology

Cause: The firmware of a DRIVE-CLiQ component must be updated as there is no suitable firmware or firmware version in the component for operation with the converter.
Alarm value (r2124, interpret decimal):
Component number of the DRIVE-CLiQ component.

Remedy: Repeat the firmware update by switching off the device and switching on again.

A01007 POWER ON for DRIVE-CLiQ component required

Message class: General drive fault (19)

Message value: Component number: %1
Component: None
Propagation: Local
Response: NONE
Acknowledgment: NONE
Explanation of the message value: For %1
Component in target topology
Cause: A DRIVE-CLiQ component must be switched on again (POWER ON) (e.g. due to a firmware update).
Alarm value (r2124, interpret decimal):
Component number of the DRIVE-CLiQ component.
Note:
For a component number = 1, a POWER ON of the converter is required.
Remedy: - Switch off the power supply of the specified DRIVE-CLiQ component and switch it on again.
- For SINUMERIK, auto commissioning is prevented. In this case, a POWER ON is required for all components and the auto commissioning must be restarted.

A01009 (N) Control Unit overtemperature

Message class: Overtemperature of the electronic components (6)
Message value: %1
Component: Control Unit (CU)
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The temperature of the converter has exceeded the specified limit value.
Remedy: - Check the ambient temperature at the converter installation location
- Check the converter air intake.
- Check the converter fan.
Note:
The alarm is automatically withdrawn once the limit value has been fallen below.
Response upon: N: NONE
Acknowl. upon N: NONE

F01011 (N) Download interrupted

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: The project download was interrupted.
Fault value (r0949, interpret decimal):
1: The user prematurely interrupted the project download.
2: The communication cable was interrupted (e.g. cable breakage, cable withdrawn).
3: The project download was prematurely exited by the commissioning tool.
100: Different versions between the firmware version and project files which were loaded by loading into the file system "Download from memory card".
Note:
The response to an interrupted download is the state "first commissioning".

Remedy: - Check the communication cable.
- Download the project again.
- Boot from previously saved files (switch-off/switch-on or p0976).
- When loading into the file system (download from memory card), use the matching version.

Response upon: N: NONE
Acknowl. upon N: NONE

F01014 Topology: DRIVE-CLiQ component property changed

Message class: Hardware/software error (1)
Message value: Component number: %1
Component: None
Propagation: Local
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: The properties of the DRIVE-CLiQ component have fundamentally changed.
Fault value (r0949, interpret hexadecimal):
Component number.
Remedy: - Check the DRIVE-CLiQ component, and if required replace.
- Carry out a restart, reload parameters.

F01015 Internal software error

Message class: Hardware/software error (1)
Message value: %1
Component: Control Unit (CU)
Propagation: Global
Response: OFF2
Acknowledgment: POWER ON
Cause: An internal software error has occurred.
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.
Remedy: - Carry out a POWER ON (switch-off/switch-on) for all components.
- Upgrade firmware to later version.
- Contact Technical Support.

A01019 Writing to the removable data medium unsuccessful

Message class: Hardware/software error (1)
Message value: -
Component: Control Unit (CU)
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: The write access to the removable data medium was unsuccessful.
Remedy: - Check the removable data medium and if required replace.
- Repeat the data backup.

A01020 Writing to RAM disk unsuccessful

Message class: Hardware/software error (1)
Message value: -
Component: Control Unit (CU)

Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: A write access to the internal RAM disk was unsuccessful.
Remedy: Adapt the file size for the system logbook to the internal RAM disk (p9930).

F01022 Bios Update

Message class: Hardware/software error (1)
Message value: -
Component: Control Unit (CU)
Propagation: Global
Response: OFF2
Acknowledgment: POWER ON
Cause:
Remedy:

F01023 Software timeout (internal)

Message class: Hardware/software error (1)
Message value: %1
Component: Control Unit (CU)
Propagation: Global
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: An internal software timeout has occurred.
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.
Remedy: - Carry out a POWER ON (switch-off/switch-on) for all components.
- Upgrade firmware to later version.
- Contact Technical Support.

F01030 Sign-of-life failure for master control

Message class: Communication error to the higher-level control system (9)
Message value: -
Component: None
Propagation: Global
Response: OFF3 (IASC/DCBRK, NONE, OFF1, OFF2, STOP2)
Acknowledgment: IMMEDIATELY
Cause: For active PC master control of the PC, no sign-of-life was received within the monitoring time.
The master control was returned to the drive.
Remedy: Set the monitoring time higher at the PC or, if required, completely disable the monitoring function.
The monitoring time is set as follows using the commissioning tool:
<Drive> -> Commissioning -> Control panel -> Button "Fetch master control" -> A window is displayed to set the monitoring time in milliseconds.
Notice:
The monitoring time should be set as short as possible. A long monitoring time means a late response when the communication fails!

A01032 (F) All parameters must be saved

Message class: Hardware/software error (1)

Message value: %1
Component: Control Unit (CU)
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: Data backup is incomplete
The partially saved parameters are not loaded the next time the system runs up.
For the system to successfully power up, all of the parameters must have been completely backed up.
Alarm value (r2124, interpret decimal):
Only for internal Siemens troubleshooting.
Remedy: Save all parameters.
See also: p0977 (Save all parameters)
Response upon: F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

F01033 Units changeover: Reference parameter value invalid

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Parameter: %1
Variant: G220
Component: None
Propagation: Global
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: When changing over the units to the referred representation type, it is not permissible for any of the required reference parameters to be equal to 0.0
Fault value (r0949, parameter):
Reference parameter whose value is 0.0.
See also: p0349 (System of units motor equivalent circuit diagram data), p0505 (Selecting the system of units), p0595 (Technological unit selection)
Remedy: Set the value of the reference parameter to a number different than 0.0.
See also: p0304, p0305, p0310, p0596, p2000, p2001, p2002, p2003, p2004

F01033 Units changeover: Reference parameter value invalid

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Parameter: %1
Variant: G220 Clean Power
Component: None
Propagation: Global
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: When changing over the units to the referred representation type, it is not permissible for any of the required reference parameters to be equal to 0.0
Fault value (r0949, parameter):
Reference parameter whose value is 0.0.
See also: p0349 (System of units motor equivalent circuit diagram data), p0505 (Selecting the system of units), p0595 (Technological unit selection)
Remedy: Set the value of the reference parameter to a number different than 0.0.
See also: p0304, p0305, p0310, p0596, p2000, p2001, p2002, p2003, p2004, p2008

F01034 Units changeover: Calculation parameter values after reference value change unsuccessful

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Parameter: %1
Variant: G220
Component: None
Propagation: Global
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: The change of a reference parameter meant that for an involved parameter the set value was not able to be re-calculated in the per unit representation. The change was rejected and the original parameter value restored.
Fault value (r0949, parameter):
Parameter whose value was not able to be re-calculated.
See also: p0304, p0305, p0310, p0596, p2000, p2001, p2002, p2003, p2004
Remedy: - Select the value of the reference parameter such that the parameter involved can be calculated in the per unit representation.

F01034 Units changeover: Calculation parameter values after reference value change unsuccessful

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Parameter: %1
Variant: G220 Clean Power
Component: None
Propagation: Global
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: The change of a reference parameter meant that for an involved parameter the set value was not able to be re-calculated in the per unit representation. The change was rejected and the original parameter value restored.
Fault value (r0949, parameter):
Parameter whose value was not able to be re-calculated.
See also: p0304, p0305, p0310, p0596, p2000, p2001, p2002, p2003, p2004, p2008
Remedy: - Select the value of the reference parameter such that the parameter involved can be calculated in the per unit representation.

A01035 (F) Parameter backup files corrupted

Message class: Hardware/software error (1)
Message value: %1
Component: Control Unit (CU)
Propagation: Local
Response: NONE
Acknowledgment: NONE

Cause: When the converter runs up, no complete data set was found from the parameter backup files. The last time that the parameterization was saved, it was not completely carried out.
It is possible that the backup was interrupted by switching off or withdrawing the memory card.
Alarm value (r2124, interpret hexadecimal):
ddccbbaa hex:
aa = 01 hex:
Run-up was realized without data backup. The drive is in the factory setting.
aa = 02 hex:
The last available backup data record was loaded. The parameterization must be checked. It is recommended that the parameterization is downloaded again.
aa = 03 hex: An external card with valid parameter backup was found and copied to the converter. Run-up is realized from this project.
aa = 04 hex: An external card with incomplete or defective parameter backup was found. Run-up was realized without data backup. The drive is in the factory setting.
dd, cc, bb:
Only for internal Siemens troubleshooting.
See also: p0977 (Save all parameters)

Remedy: - Download the project again using the commissioning tool.
- Retentively save parameters (save all parameters p0977 = 1)
See also: p0977 (Save all parameters)

Response upon: F: NONE (OFF1, OFF2, OFF3)

Acknowl. upon F: IMMEDIATELY

F01036 (A) Parameter backup file missing

Message class: Hardware/software error (1)

Message value: %1

Component: Control Unit (CU)

Propagation: Local

Response: NONE (OFF1, OFF2, OFF3)

Acknowledgment: IMMEDIATELY

Cause: When loading the device parameterization, a parameter backup file cannot be found.

Remedy: If the project data are backed up using the commissioning tool, then the project must be downloaded again.
Retentively save parameters (save all parameters, p0977 = 1), as a consequence, parameter files are completely written back to the non-volatile memory.
Note:
If the project data have not been backed up, then a new first commissioning is required.

Response upon: A: NONE

Acknowl. upon A: NONE

F01038 (A) Loading the parameter backup file unsuccessful

Message class: Hardware/software error (1)

Message value: %1

Component: Control Unit (CU)

Propagation: Local

Response: NONE (OFF1, OFF2, OFF3)

Acknowledgment: IMMEDIATELY

Cause: An error has occurred when loading parameter backup files from the non-volatile memory.

Remedy: - If you have saved the project data using the commissioning tool, then download the project again. Retentively save the data or set p0977 = 1. This means that the parameter files are again completely written to the non-volatile memory.
- Replace the memory card or the converter.

Response upon: A: NONE
Acknowl. upon A: NONE

F01039 (A) Writing to the parameter back-up file unsuccessful

Message class: Hardware/software error (1)
Message value: %1
Component: Control Unit (CU)
Propagation: Local
Response: NONE (OFF1, OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: Writing to at least one parameter backup file in the non-volatile memory was unsuccessful.
- A parameter backup file has the "read only" file attribute and cannot be overwritten.
- There is not sufficient free memory space available.
- The non-volatile memory is defective and cannot be written to.

Remedy:
- Check the free memory space in the non-volatile memory.
- Replace the memory card or the converter.

Response upon: A: NONE
Acknowl. upon A: NONE

F01041 Parameter save necessary

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Local
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: Defective or missing files were detected on the memory card when booting.
Fault value (r0949, interpret decimal):
1: Source file cannot be opened.
2: Source file cannot be read.
3: Target directory cannot be set up.
4. Target file cannot be set up/opened.
5. Target file cannot be written to.
Additional values:
Only for internal Siemens troubleshooting.

Remedy:
- Save the parameters.
- Reload the project into the converter.
- Update the firmware
- If required, replace the converter and/or memory card.

F01042 Parameter error during project download

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Parameter: %1, index: %2, fault cause: %3
Component: None
Propagation: Local
Response: OFF2 (NONE, OFF1, OFF3)
Acknowledgment: IMMEDIATELY

Cause:

An error was detected when downloading a project using the commissioning software (e.g. incorrect parameter value). It is possible that the parameter limits are dependent on other parameters.
The detailed cause of the fault can be determined using the fault value.
Fault value (r0949, interpret hexadecimal):
ccbbaaaa hex
aaaa = Parameter
bb = Index
cc = fault cause
0: Parameter number illegal.
1: Parameter value cannot be changed.
2: Lower or upper value limit exceeded.
3: Sub-index incorrect.
4: No array, no sub-index.
5: Data type incorrect.
6: Setting not permitted (only resetting).
7: Descriptive element cannot be changed.
9: Descriptive data not available.
11: No master control.
15: No text array available.
17: Task cannot be executed due to operating state.
20: Illegal value.
21: Response too long.
22: Parameter address illegal.
23: Format illegal.
24: Number of values not consistent.
25: Drive object does not exist.
101: Presently deactivated.
104: Illegal value.
107: Write access not permitted when controller enabled.
108: Unit unknown.
109: Write access only in the commissioning status, encoder.
110: Write access only in the commissioning status, motor.
111: Write access only in the commissioning status, power unit.
112: Write access only in the quick commissioning mode.
113: Write access only in the ready mode.
114: Write access only in the commissioning status, parameter reset.
115: Write access only in the Safety Integrated commissioning status.
116: Write access only in the commissioning status, technological application/units.
117: Write access only in the commissioning status.
118: Write access only in the commissioning status, download.
119: Parameter may not be written in download.
120: Write access only in the commissioning status, drive basis configuration.
121: Write access only in the commissioning status, define drive type.
122: Write access only in the commissioning status, data set basis configuration.
123: Write access only in the commissioning status, device configuration.
124: Write access only in the commissioning status, device download.
125: Write access only in the commissioning status, device parameter reset.
126: Write access only in the commissioning status, device ready.
127: Write access only in the commissioning status, device.
129: Parameter may not be written in download.
131: Requested signal interconnection not possible as the signal source does not supply float value.
132: Free signal interconnection via PROFIdrive telegram setting inhibited.

133: Access method not defined.
200: Below the valid values.
201: Above the valid values.
202: Cannot be accessed from the Basic Operator Panel (BOP).
203: Cannot be read from the Basic Operator Panel (BOP).
204: Write access not permitted.

Remedy:
- Correct the parameterization in the commissioning tool and download the project again.
- Enter the correct value in the specified parameter.
- Identify the parameter that restricts the limits of the specified parameter.

F01043 Fatal error at project download

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Fault cause: %1
Component: None
Propagation: Local
Response: NONE (OFF1, OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: A fatal error was detected when downloading a project using the commissioning tool.
Fault value (r0949, interpret decimal):
14: Drive status cannot be changed to "ready for operation" (r0947 and r0949).
Additional values:
Only for internal Siemens troubleshooting.
Remedy:
- Use the current version of the commissioning tool.
- Modify the offline project and carry out a new download (e.g. compare the number of drive objects, motors, encoders, power units in the offline project and at the drive).
- Change the drive state (is a drive rotating or is there a message/signal?).
- Observe additional active messages/signals and remove their cause (e.g. correct any incorrectly set parameters).
- Automatically calculate the control parameters.
- Boot from previously saved files (switch-off/switch-on or p0976).
- Before a new download, restore the factory setting.

F01044 Descriptive data error

Message class: Hardware/software error (1)
Message value: %1
Component: Control Unit (CU)
Propagation: Global
Response: OFF2
Acknowledgment: POWER ON
Cause: An error was detected when loading the descriptive data saved in the non-volatile memory.
Remedy: Replace the memory card or the converter.

F01045 Configuring data invalid

Message class: Hardware/software error (1)
Message value: %1
Component: None
Propagation: Local
Response: NONE
Acknowledgment: IMMEDIATELY

Cause: The run-up from the loaded project was unsuccessful.
Possible projects:
- Download with commissioning tool
- Run-up from data backup after retentively saving
- Run-up from data backup after cloning created from external card
- Restart

Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.

Remedy: - Restore the factory setting (p0976 = 1) and reload the project into the converter.
Then retentively save the parameterization or set p0977 = 1. This overwrites the incorrect parameter files in the non-volatile memory – and this alarm is withdrawn.

F01046 Parameter value from the project not accepted

Message class: Hardware/software error (1)
Message value: Parameter: %1
Component: None
Propagation: Local
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: When running up from the loaded project, a parameter value was not accepted.
Possible projects:
- Download with commissioning tool
- Run-up from data backup after retentively saving
- Run-up from data backup after cloning created from external card
- Run-up from an old project or upgrade the firmware
- Restart

Fault value (r0949, interpret decimal):
Parameter number whose value was not accepted.

Remedy: Check the parameter value of the parameter that was not accepted and, if required, correct.

F01047 It is not possible to restore the drive data from the backup file

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Local
Response: NONE
Acknowledgment: IMMEDIATELY

Cause: An error occurred when restoring the drive data from the backup file.
An unsuitable or incorrect backup file was detected under path BACKUPFILE_NEXT_START on the memory card.

Fault value (r0949, interpret decimal):
1: The backup file has the incorrect format. Only files are supported with extension .zip or .ZIP.
2: Several files were found in path BACKUPFILE_NEXT_START. It cannot be determined from which backup file the drive data should be restored.
3: The backup file name is too long.
4: The backup file was unsuccessfully unzipped.
5, 6, 7, 8 or 9: The content of the backup file is invalid or the backup file was generated with encryption.
10: The backup file was generated with an incompatible (older) firmware version. Restoring the drive data is not supported.
11: The backup file version is newer than the converter firmware version being used.
12: The backup file was generated for a different converter family.
Additional values: Only for internal Siemens troubleshooting.

Remedy: For fault value = 1: Use a file with .zip or .ZIP extension.
For fault value = 2: Only save the required backup file under BACKUPFILE_NEXT_START, remove other files.
For fault value = 3: Rename backup file Notice: Special characters can be longer than a visible character.
For fault value = 4, 5, 6, 7, 8 or 9: Use the backup file which was created using a SIEMENS commissioning tool (Startdrive, web server).
Before a backup file is created, encryption of the drive data must be deactivated.
For fault value = 10: Only converter backup files with firmware versions greater than or equal to V6.1 are supported. Use a suitable backup file.
For fault value = 11: Use the converter backup file that was created with a lower firmware version or the same firmware version.
For fault value = 12: Use the backup file for the matching converter family.

A01049 It is not possible to write to file

Message class: Hardware/software error (1)
Message value: %1
Component: Control Unit (CU)
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: It is not possible to write to a write-protected parameter backup file. The write request was interrupted.
Alarm value (r2124, interpret decimal):
Number drive object
Remedy: Check whether the "write protected" attribute has been set for the files in the non-volatile memory.
When required, remove write protection and repeat the save operation (e.g. set p0977 = 1).

F01050 Memory card and device incompatible

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: Control Unit (CU)
Propagation: Global
Response: OFF2 (NONE, OFF1, OFF3)
Acknowledgment: IMMEDIATELY
Cause: The memory card and the device type do not match (e.g. a memory card for SINAMICS S is inserted in SINAMICS G).
Remedy: - Insert the matching memory card.
- Use the matching converter or power unit.

F01054 System limit exceeded

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: Control Unit (CU)
Propagation: Global
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: At least one system overload has been identified.
Fault value (r0949, interpret decimal):
1: Computing time load too high.
5: Peak load too high.
Note:
As long as this fault is present, it is not possible to save the parameters (p0977).
Remedy: - Reduce the computing time load of the converter to less than 100 %.
- Deactivate functions.
- Deactivate drive objects.
- Remove drive objects from the target topology.
- Note the DRIVE-CLiQ topology rules and if required, change the DRIVE-CLiQ topology.

F01068 Data memory memory overflow

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: Control Unit (CU)
Propagation: Global
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The utilization for a data memory area is too large.
Fault value (r0949, interpret binary):
Bit 0 = 1: High-speed data memory 1 overloaded
Bit 1 = 1: High-speed data memory 2 overloaded
Bit 2 = 1: High-speed data memory 3 overloaded
Bit 3 = 1: High-speed data memory 4 overloaded
Remedy: - Deactivate function.
- Deactivate drive object.
- Remove drive object from the target topology.

A01069 Parameter backup and device incompatible

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: Control Unit (CU)
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The parameter backup on the memory card and in the converter do not match.
The module boots with the factory settings.
Example:
Devices A and B. are not compatible and a memory card with the parameter backup for device A is inserted in device B.

Remedy: - Insert a memory card with compatible parameter backup and carry out a POWER ON.
- Insert a memory card without parameter backup and carry out a POWER ON.
- Save the parameters (p0977 = 1).

F01070 Project/firmware is being downloaded to the memory card

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: Control Unit (CU)
Propagation: Global
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: An upgrade (project/firmware download) was initiated on the memory card.
While this fault is active, the corresponding update takes place with plausibility and consistency checks. After this, depending on the command option, a new boot (reset) for the converter is initiated.
Caution:
While upgrading and while this fault is active, it is not permissible to switch off the converter.
If the operation is interrupted, this can destroy the file system on the memory card. The memory card will then no longer work properly and must be repaired.
Remedy: Not necessary.
The fault is automatically withdrawn after the upgrade has been completed.

A01073 (N) POWER ON required for backup copy on memory card

Message class: General drive fault (19)
Message value: -
Component: Control Unit (CU)
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: The parameter assignment on the visible partition of the memory card has changed.
In order that the backup copy on the memory card is updated on the non-visible partition, it is necessary to carry out a POWER ON or hardware reset (p0972) of the converter.
Note:
It is possible that a new POWER ON is requested via this alarm.
Remedy: - Carry out a POWER ON for the converter (switch off/switch on).
- Carry out a hardware reset (RESET button, p0972).
Response upon: N: NONE
Acknowl. upon N: NONE

F01082 Parameter error when running up from data backup

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Parameter: %1, index: %2, fault cause: %3
Component: None
Propagation: Local
Response: OFF2 (NONE, OFF1, OFF3)
Acknowledgment: IMMEDIATELY

Cause:

Parameterizing errors have been detected (e.g. incorrect parameter value). It is possible that the parameter limits are dependent on other parameters.
The detailed cause of the fault can be determined using the fault value.
Fault value (r0949, interpret hexadecimal):
ccbbaaaa hex
aaaa = Parameter
bb = Index
cc = fault cause
0: Parameter number illegal.
1: Parameter value cannot be changed.
2: Lower or upper value limit exceeded.
3: Sub-index incorrect.
4: No array, no sub-index.
5: Data type incorrect.
6: Setting not permitted (only resetting).
7: Descriptive element cannot be changed.
9: Descriptive data not available.
11: No master control.
15: No text array available.
17: Task cannot be executed due to operating state.
20: Illegal value.
21: Response too long.
22: Parameter address illegal.
23: Format illegal.
24: Number of values not consistent.
25: Drive object does not exist.
101: Presently deactivated.
104: Illegal value.
107: Write access not permitted when controller enabled.
108: Unit unknown.
109: Write access only in the commissioning status, encoder.
110: Write access only in the commissioning status, motor.
111: Write access only in the commissioning status, power unit.
112: Write access only in the quick commissioning mode.
113: Write access only in the ready mode.
114: Write access only in the commissioning status, parameter reset.
115: Write access only in the Safety Integrated commissioning status.
116: Write access only in the commissioning status, technological application/units.
117: Write access only in the commissioning status.
118: Write access only in the commissioning status, download.
119: Parameter may not be written in download.
120: Write access only in the commissioning status, drive basis configuration.
121: Write access only in the commissioning status, define drive type.
122: Write access only in the commissioning status, data set basis configuration.
123: Write access only in the commissioning status, device configuration.
124: Write access only in the commissioning status, device download.
125: Write access only in the commissioning status, device parameter reset.
126: Write access only in the commissioning status, device ready.
127: Write access only in the commissioning status, device.
129: Parameter may not be written in download.
131: Requested signal interconnection not possible as the signal source supplies non-float value.
132: Free signal interconnection via PROFIdrive telegram setting inhibited.

133: Access method not defined.
200: Below the valid values.
201: Above the valid values.
202: Cannot be accessed from the Basic Operator Panel (BOP).
203: Cannot be read from the Basic Operator Panel (BOP).
204: Write access not permitted.

Remedy:
- Based on the fault value, identify the parameter that caused the fault.
- Correct the value in the specified parameter.
- Download the project again using the commissioning tool and retentively save parameters. Or retentively save parameters and carry out a POWER ON (switch-off/switch-on).

A01100 Memory card withdrawn

Message class: General drive fault (19)
Message value: -
Component: Control Unit (CU)
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: The memory card (non-volatile memory) was withdrawn during operation.
Notice:
It is not permissible for the memory card to be withdrawn or inserted under voltage.
Remedy:
- Switch off the drive system.
- Re-insert the memory card that was withdrawn - This card must match the drive system.
- Switch on the drive system again.

F01105 (A) Insufficient memory

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: Control Unit (CU)
Propagation: Global
Response: OFF1
Acknowledgment: POWER ON
Cause: The functionality on this converter is too extensive (e.g. too many drives, functions, data sets, Technology Extensions, blocks, etc.).
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.
Remedy:
- Change the configuration on this converter, e.g.
-- Use fewer axes
-- Reduce the number of optional functions
-- Use fewer data sets
-- Reduce Technology Extensions and blocks
- Use an additional converter.

Response upon: A: NONE
Acknowl. upon A: NONE

F01107 Save to memory card unsuccessful

Message class: Hardware/software error (1)
Message value: %1
Component: Control Unit (CU)
Propagation: Local

Response: NONE
Acknowledgment: IMMEDIATELY
Cause: A data save in the non-volatile memory was not able to be successfully carried out.
- Non-volatile memory is defective.
- Insufficient space in the non-volatile memory.
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.
Remedy:
- Try to save again.
- Replace the memory card or the converter.

F01112 Power unit not permissible

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: The connected power unit cannot be used together with this converter.
Fault value (r0949, interpret decimal):
1: Power unit is not supported (e.g. PM240).
2: DC/AC power unit connected to CU310 not permissible.
3: Power unit (S120M) not permitted for vector control.
Remedy: Replace the power unit that is not permissible by a component that is permissible.

F01120 (A) Terminal initialization has failed

Message class: Hardware/software error (1)
Message value: %1
Component: None
Propagation: Interconnection
Response: OFF1 (OFF2)
Acknowledgment: IMMEDIATELY
Cause: An internal software error occurred when initializing the software functionality for terminals.
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Remedy:
- Carry out a POWER ON (switch-off/switch-on) for all components.
- Upgrade firmware to later version.
- Contact Technical Support.
- Replace the converter.

Response upon: A: NONE
Acknowl. upon A: NONE

F01122 (A) Frequency at the measuring probe input too high

Message class: Application/technological function faulted (17)
Message value: %1
Component: None
Propagation: Interconnection
Response: OFF1 (OFF2)
Acknowledgment: IMMEDIATELY

Cause: The frequency of the pulses at the measuring probe input is too high.
Fault value (r0949, interpret decimal):
1: DI/DO 9 (X122.8)
2: DI/DO 10 (X122.10)
4: DI/DO 11 (X122.11)
8: DI/DO 13 (X132.8)
16: DI/DO 14 (X132.10)
32: DI/DO 15 (X132.11)
64: DI/DO 8 (X122.7)
128: DI/DO 12 (X132.7)
Remedy: Reduce the frequency of the pulses at the measuring probe input.
Response upon: A: NONE
Acknowl. upon A: NONE

F01151 Number of drive objects of a category exceeded

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Drive object category: %1, number permitted: %2, actual number: %3
Component: None
Propagation: Local
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: The maximum permissible number of drive objects of a category was exceeded.

Fault value (r0949, interpret hexadecimal)
ddccbbaa hex:
aa = drive object category:
- Drive object category, for which the maximum permissible number of drive objects was exceeded.
bb = number permitted:
- Maximum permissible number for this drive object category.
cc = actual number:
- Actual number for this drive object category.
dd = no significance

Remedy:
- Switch off the unit.
- Suitably restrict the number of drive objects of the specified category by reducing the number of inserted components.
- Re-commission the unit.

F01205 Time slice overflow

Message class: Hardware/software error (1)
Message value: %1
Component: Control Unit (CU)
Propagation: Global
Response: OFF2
Acknowledgment: POWER ON
Cause: Insufficient processing time is available for the existing topology.
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Remedy:
- Reduce the number of drives.

F01250	EEPROM incorrect read-only data
Message class:	Hardware/software error (1)
Message value:	%1
Component:	Control Unit (CU)
Propagation:	Local
Response:	NONE (OFF2)
Acknowledgment:	POWER ON
Cause:	Error when reading the read-only data of the EEPROM in the converter. Fault value (r0949, interpret decimal): Only for internal Siemens troubleshooting.
Remedy:	- Carry out a POWER ON (switch-off/switch-on). - Replace the converter.

A01251	EEPROM incorrect read-write data
Message class:	Hardware/software error (1)
Message value:	%1
Component:	Control Unit (CU)
Propagation:	Global
Response:	NONE
Acknowledgment:	NONE
Cause:	Error when reading the read-write data of the EEPROM in the converter. Alarm value (r2124, interpret decimal): Only for internal Siemens troubleshooting.
Remedy:	For alarm value < 256, the following applies: - Carry out a POWER ON (switch-off/switch-on). - Replace the converter. For alarm value >= 256, the following applies: - For the converter with this alarm, clear the fault memory (p0952 = 0). - Replace the converter.

F01255	Option Board EEPROM read-only data error
Message class:	Hardware/software error (1)
Message value:	%1
Component:	None
Propagation:	Local
Response:	NONE (OFF2)
Acknowledgment:	POWER ON
Cause:	Error when reading the read-only data of the EEPROM in the Option Board. Fault value (r0949, interpret decimal): Only for internal Siemens troubleshooting.
Remedy:	- Carry out a POWER ON (switch-off/switch-on). - Replace the converter.

A01256	Option Board EEPROM read-write data error
Message class:	Hardware/software error (1)
Message value:	%1
Component:	None
Propagation:	Local
Response:	NONE

Acknowledgment: NONE

Cause: Error when reading the read-write data of the EEPROM in the Option Board.
Alarm value (r2124, interpret decimal):
Only for internal Siemens troubleshooting.

Remedy: - Carry out a POWER ON (switch-off/switch-on).
- Replace the converter.

F01303 Component does not support the required function

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Message value: %1

Component: None

Propagation: Interconnection

Response: OFF2

Acknowledgment: IMMEDIATELY

Cause: A function requested by the converter is not supported by a DRIVE-CLiQ component.
Fault value (r0949, interpret decimal):
1: The component does not support the deactivation.
101: The converter does not support an internal armature short-circuit.
102: The converter does not support deactivation.
201: The Sensor Module does not support actual value inversion (p0410.0 = 1) when using a Hall sensor (p0404.6 = 1) for the commutation.
202: The Sensor Module does not support parking/unparking.
203: The Sensor Module does not support the deactivation.
204: The firmware of this Terminal Module 15 (TM15) does not support the application TM15DI/DO.
205: The Sensor Module does not support the selected temperature evaluation (r0458, r0459).
206: The firmware of this Terminal Modules TM41/TM31/TM15 refers to an old firmware version. It is urgently necessary to upgrade the firmware to ensure disturbance-free operation.
207: The power unit with this hardware version does not support operation with device supply voltages of less than 380 V.
208: The Sensor Module does not support deselection of commutation with zero mark (via p0430.23).
211: The Sensor Module does not support single-track encoders (r0459.10).
215: The Terminal Module does not support temperature evaluation via Pt1000.

Remedy: Upgrade the firmware of the DRIVE-CLiQ component involved.
For fault value = 205, 215:
- Check parameter p0600 and p0601 and if required, adapt.
For fault value = 207:
- Replace the power unit or if required set the device supply voltage higher (p0210).
For fault value = 208:
- Check parameter p0430.23 and reset if necessary.

A01304 (F) Firmware version of DRIVE-CLiQ component is not up-to-date

Message class: General drive fault (19)

Message value: %1

Component: None

Propagation: Local

Response: NONE

Acknowledgment: NONE

Cause: The non-volatile memory has a more recent firmware version than the one in the connected DRIVE-CLiQ component.
Alarm value (r2124, interpret decimal):
Component number of the DRIVE-CLiQ component involved.

Remedy: Repeat the firmware update by switching off the device and switching on again.
Response upon: F: NONE
Acknowl. upon F: IMMEDIATELY

A01306 Firmware of the DRIVE-CLiQ component being updated

Message class: General drive fault (19)
Message value: %1
Component: None
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: Firmware update is active for at least one DRIVE-CLiQ component.
Alarm value (r2124, interpret decimal):
Component number of the DRIVE-CLiQ component.
Remedy: Not necessary.
This alarm is automatically withdrawn after the firmware update has been completed.

A01314 Topology: Component must not be present

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1, to %2, %3, connection: %4
Component: None
Propagation: Local
Response: NONE

Acknowledgment: NONE

Explanation of the message value: For %1, %2

Value	Cause	Remedy
0	Component unknown	
1	Control Unit	
2	Motor Module	
3	Line Module	
4	Sensor Module	
5	Voltage Sensing Module	
6	Terminal Module	
7	DRIVE-CLiQ Hub Module	
8	Controller Extension	
9	Filter module	
10	Hydraulic Module	
49	DRIVE-CLiQ component	
50	Option slot	
60	Encoder	
70	DRIVE-CLiQ motor	
71	Hydraulic cylinder	
72	Hydraulic valve	
80	Motor	

For %3

Component in target topology

For %4

Value	Cause	Remedy
0	Port 0	
1	Port 1	
2	Port 2	
3	Port 3	
4	Port 4	
5	Port 5	
6	Port 6	
7	Port 7	
8	Port 8	
9	Port 9	
10	X100	
11	X101	
12	X102	
13	X103	
14	X104	
15	X105	
20	X200	
21	X201	
22	X202	
23	X203	
24	X204	
25	X205	
40	X400	

41	X401
42	X402
50	X500
51	X501
52	X502
53	X503
54	X504
55	X505
56	X506
57	X507

Cause: For a component, "deactivate and not present" is set but this component is still in the topology.
Alarm value (r2124, interpret hexadecimal):
ddccbbaa hex:
aa = component number
bb = component class of the component
cc = connection number
Note:
Component class and connection number are described in F01375.

Remedy: - Remove the corresponding component.
- Change the setting "deactivate and not present".
Note:
Under "Topology --> Topology view", the commissioning tool where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01317 (N) Deactivated component again present

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: If a component of the target topology for an active drive object is inserted and the associated parameter of the component is set to "deactivate" (p0125, p0145, p0155, p0165).
Note:
This is the only message that is displayed for a deactivated component.
Remedy: The alarm is automatically withdrawn for the following actions:
- Activate the components involved (p0125 = 1, p0145 = 1, p0155 = 1, p0165 = 1).
- Again withdraw the component involved.
Response upon: N: NONE
Acknowl. upon N: NONE

A01319 Inserted component not initialized

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: Initialization is required for at least one inserted component.
This is only possible if the pulse inhibit is active on all drive objects.

Remedy: Activate pulse inhibit for all drive objects.

F01325 Topology: Component number not included in target topology

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Component number: %1
Component: None
Propagation: Local
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: The component homed in a data set (e.g. PDS, MDS or EDS) is not contained in the target topology.
Fault value (r0949, interpret decimal)
Remedy: Establish consistency between the topology and data set configuration.

A01330 Topology: Quick commissioning not possible

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Fault cause: %1, supplementary information: %2, preliminary component number: %3
Component: None
Propagation: Local
Response: NONE
Acknowledgment: NONE

Cause:

Unable to carry out a quick commissioning. The existing actual topology does not fulfill the requirements.
Alarm value (r2124, interpret hexadecimal):
ccccbbaa hex:
cccc = preliminary component number,
bb = supplementary information,
aa = fault cause

aa = 01 hex = 1 dec:
On one component illegal connections were detected.
- bb = 01 hex = 1 dec: For the converter, more than one motor with DRIVE-CLiQ was detected.
- bb = 02 hex = 2 dec: For a motor with DRIVE-CLiQ, the DRIVE-CLiQ cable is not connected to the converter.

aa = 02 hex = 2 dec:
The topology contains too many components of a particular type.
- bb = 02 hex = 2 dec: There is more than 1 infeed (8 for a parallel connection).
- bb = 03 hex = 3 dec: There are more than 10 Motor Modules (8 for a parallel connection).
- bb = 04 hex = 4 dec: There are more than 9 encoders.
- bb = 05 hex = 5 dec: There are more than 8 Terminal Modules.
- bb = 07 hex = 7 dec: Unknown component type.
- bb = 08 hex = 8 dec: There are more than 6 DRIVE-CLiQ components.
- bb = 09 hex = 9 dec: Not permitted to connect a DRIVE-CLiQ component.
- bb = 0a hex = 10 dec: There is no drive master.
- bb = 0b hex = 11 dec: There is more than one motor with DRIVE-CLiQ for a parallel connection.
- bb = 0c hex = 12 dec: Different power units are being used in a parallel connection.
- bb = 0d hex = 13 dec: There are more than 2 encoders.
- cccc: Not used.

aa = 03 hex = 3 dec:
More than 16 components are connected at a DRIVE-CLiQ socket of the converter.
- bb = 0, 1, 2, 3 means e.g. detected at the DRIVE-CLiQ socket X100, X101, X102, X103.
- cccc: Not used.

aa = 04 hex = 4 dec:
The number of components connected one after the other is greater than 125.
- bb: Not used.
- cccc = preliminary component number of the first component and component that resulted in the fault.

aa = 06 hex = 6 dec:
On one component illegal EEPROM data was detected. These must be corrected before the system continues to boot.
- bb = 01 hex = 1 dec: The Article No. [MLFB] of the power unit that was replaced includes a space retainer. The space retainer (*) must be replaced by a correct character.
- cccc = preliminary component number of the component with illegal EEPROM data.

aa = 07 hex = 7 dec:
The actual topology contains an illegal combination of components.
- bb = 01 hex = 1 dec: Active Line Module (ALM) and Basic Line Module (BLM).
- bb = 02 hex = 2 dec: Active Line Module (ALM) and Smart Line Module (SLM).
- bb = 03 hex = 3 dec: SIMOTION control (e.g. SIMOTION D445) and SINUMERIK component (e.g. NX15).
- bb = 04 hex = 4 dec: SINUMERIK control (e.g. SINUMERIK 730.net) and SIMOTION component (e.g. CX32).
- cccc: Not used.

aa = 08 hex = 8 dec:
The motor is not completely connected.
- bb: Not used.
- cccc: Not used.

Note:
Connection type and connection number are described in F01375.

Remedy: - Adapt the output topology to the permissible requirements.
- Commission the device using the commissioning tool.
For aa = 06 hex = 6 dec and bb = 01 hex = 1 dec:
Correct the Article No. when commissioning using the commissioning tool.

A01331 Topology: At least one component not assigned to a converter

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Component number: %1
Component: None
Propagation: Local
Response: NONE
Acknowledgment: NONE
Explanation of the message value: For %1
Component in target topology
Cause: At least one component is not assigned to a converter.
- When commissioning, a component was not able to be automatically assigned to a converter.
- The parameters for the data sets are not correctly set.
Alarm value (r2124, interpret decimal):
Component number of the unassigned component.
Remedy: Assign this component to a converter.

F01341 Topology: Maximum number of DRIVE-CLiQ components exceeded

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Local
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: Too many DRIVE-CLiQ components were defined in the actual topology.
Note:
Pulse enable is withdrawn and prevented.
Remedy: - Check the DRIVE-CLiQ wiring.
- Reduce the number components on the DRIVE-CLiQ line involved in order to maintain the maximum quantity structure.

F01354 Topology: Actual topology indicates an illegal component

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Fault cause: %1, component number: %2
Component: None
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The actual topology indicates at least one illegal component.
Fault value (r0949, interpret hexadecimal):
yyxx hex: yy = component number, xx = cause.
xx = 1: Component at this converter is not permissible.
xx = 2: Component in combination with another component not permissible.
Note:
Pulse enable is prevented.
Remedy: Remove the illegal components and restart the system.

F01356 Topology: There is a defective DRIVE-CLiQ component

Message class: Hardware/software error (1)
Message value: Fault cause: %1, component number: %2, connection number: %3
Component: None
Propagation: Local
Response: NONE (OFF2)
Acknowledgment: IMMEDIATELY
Cause: The actual topology indicates at least one defective DRIVE-CLiQ component.
Fault value (r0949, interpret hexadecimal):
zzyyxx hex:
zz = connection number of the component at which the defective component is connected
yy = component number of the component at which the defective component is connected
xx = fault cause
xx = 1: Component at this converter is not permissible.
xx = 2: Component with communication defect.
Note:
Pulse enable is withdrawn and prevented.
Remedy: Replace the defective component and restart the system.

F01357 Topology: Two converters identified on the DRIVE-CLiQ line

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Component number: %1, connection number: %2
Component: None
Propagation: Local
Response: NONE (OFF2)
Acknowledgment: IMMEDIATELY
Cause: In the actual topology, 2 converters are connected with one another through DRIVE-CLiQ.
As standard, this is not permitted.
Fault value (r0949, interpret hexadecimal):
yyxx hex:
yy = connection number of the converter to which the second converter is connected
xx = component number of the converter to which the second converter is connected
Note:
Pulse enable is withdrawn and prevented.
Remedy: - Remove the connection to the second converter and restart.

A01358 Topology: Line termination not available

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: CU connection number: %1, component number: %2, connection number: %3
Component: None
Propagation: Local
Response: NONE
Acknowledgment: NONE

Cause: At least one line with distributed drives is not terminated. The last participant on the line must be terminated with a line termination connector.
This therefore ensures the degree of protection of the distributed drives.
Alarm value (r2124, interpret hexadecimal):
zzyyxx hex:
zz = connection number of the distributed drive where there is no terminating connector
yy = component number
xx = CU connection number

Remedy: Install the line terminating connector for the last distributed drive.

F01359 Topology: DRIVE-CLiQ performance not sufficient

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Local
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: The DRIVE-CLiQ performance is not sufficient at one line in order to identify an inserted component.
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Remedy: - Carry out a POWER ON (switch-off/switch-on).
- Distribute components across several DRIVE-CLiQ lines.
Note:
For this topology, do not withdraw and insert components in operation.

F01360 Topology: Actual topology not permissible

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Fault cause: %1, preliminary component number: %2
Component: None
Propagation: Local
Response: NONE
Acknowledgment: IMMEDIATELY

Cause:
The detected actual topology is not permissible.
Fault value (r0949, interpret hexadecimal):
ccccbbaa hex:
cccc = preliminary component number, bb = no significance, aa = fault cause
aa = 01 hex = 1 dec:
Too many components were detected at the converter. A maximum of 199 components is permissible.
aa = 02 hex = 2 dec:
The component type of a component is not known.
aa = 03 hex = 3 dec:
It is illegal to combine ALM and BLM.
aa = 04 hex = 4 dec:
It is illegal to combine ALM and SLM.
aa = 05 hex = 5 dec:
It is illegal to combine BLM and SLM.
aa = 06 hex = 6 dec:
A CX32 is not permitted at this converter.
aa = 07 hex = 7 dec:
An NX10 or NX15 is not permitted at this converter.
aa = 08 hex = 8 dec:
A component is not permitted at this converter.
aa = 09 hex = 9 dec:
One component was connected at the converter. The converter has an out-of-date firmware version.
aa = 0A hex = 10 dec:
Too many components of a particular type detected.
aa = 0B hex = 11 dec:
Too many components of a particular type detected on a single line.
Note:
The drive system is no longer booted. In this state, the drive control (closed-loop) cannot be enabled.

Remedy:
For fault cause = 1:
Change the configuration. Connect less than 199 components to the converter.
For fault cause = 2:
Remove the component with unknown component type.
For fault cause = 3, 4, 5, 6, 7:
Remove component
For fault cause = 8:
Remove component or use a permissible component.
For fault cause = 9:
Upgrade the converter firmware to a later version.
For fault cause = 10, 11:
Reduce the number of components.

A01362 Topology: Topology rule(s) broken

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Local
Response: NONE
Acknowledgment: NONE

Cause: At least one topology rule for the SINAMICS S120 Combi has been broken.

In the event of a fault, the ramping up of the drive system is aborted and closed-loop drive control is not enabled.

Alarm value (r2124, interpret decimal):

The alarm value indicates which rule has been violated.

1: The S120 Combi may only be wired via DRIVE-CLiQ socket X200 to X100 on the NCU.

2: In DRIVE-CLiQ socket X101 on the NCU, only one Single Motor Module (SMM) may be connected via X200, one Double Motor Module (DMM) via X200, one Terminal Module 54F (TM54F) via X500 or one DRIVE-CLiQ Hub Module (DMC20, DME20) via X500.

3: In DRIVE-CLiQ socket X102 on the NCU, only one Terminal Module 54F (TM54F) may be connected via X500, one DRIVE-CLiQ Hub Module (Hub) via X500 or one NX15 via X100.

4: Only Sensor Modules may be connected to DRIVE-CLiQ sockets X201 up to X203 (3-axis) or X204 (4-axis) on the S120 Combi.

5: In DRIVE-CLiQ socket X205 (X204 is not available for 3 axes), only SMC / SME Sensor Modules and DRIVE-CLiQ encoders may be connected.

6: In the case of a Single Motor Module as first expansion axis, only one additional Single Motor Module may be connected in the DRIVE-CLiQ socket X201 via X200, one Terminal Module 54F (TM54F) via X500 or one DRIVE-CLiQ Hub Module (DMC20, DME20) via X500.

7: Only Sensor Modules or DRIVE-CLiQ encoders may be connected in the DRIVE-CLiQ socket X202 on possibly available Single Motor Modules.

8: For a second Single Motor Module or for a Double Motor Module, at X201 a 54F Terminal Module (TM54F) or a DRIVE-CLiQ Hub Module (DMC20, DME20) may be connected via X500.

9: If a Double Motor Module is used as an expansion axis, only Sensor Modules may be connected to X202 and X203.

10: If a Terminal Module 54F (TM54F) is configured, only one DRIVE-CLiQ Hub Module (DMC20, DME20) may be connected to X501 of the TM54F module via DRIVE-CLiQ socket X500. In this case, it is not permissible that an existing Hub Module is connected elsewhere.

11: For DRIVE-CLiQ Hub Modules, only Sensor Modules (SMC, SME) and DRIVE-CLiQ encoders may be connected to X501 to X505.

12: Only certain Motor Modules may be used for expansion axes.

13: For an S120 Combi with 3 axes, nothing must be connected at the DRIVE-CLiQ Hub Module at X503.

14: A maximum of one Terminal Module 54F (TM54F) is permitted.

15: A maximum of one DRIVE-CLiQ Hub Module (DMC20, DME20) is permitted.

16: DRIVE-CLiQ socket X100 of NX15 must be connected with the NCU via X102.

17: The S120 Combi may only be connected to X101 of the NX15 via the DRIVE-CLiQ socket X200.

18: In DRIVE-CLiQ socket X102 on the NX15, only one Single Motor Module (SMM) may be connected via X200, one Double Motor Module (DMM) via X200, one Terminal Module 54F (TM54F) via X500 or one DRIVE-CLiQ Hub Module (DMC20, DME20) via X500.

19: It is not permissible that anything is connected at DRIVE-CLiQ socket X103 on the NX15.

Remedy: Evaluate the alarm value and ensure compliance with the corresponding topology rule(s).

F01375 Topology: Connection duplicated between two components

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Message value: Component: %1, %2, connection: %3

Component: None

Propagation: Local

Response: NONE

Acknowledgment: IMMEDIATELY

Explanation of the message value: For %2

Value	Cause	Remedy
0	Component unknown	
1	Control Unit	
2	Motor Module	
3	Line Module	
4	Sensor Module	
5	Voltage Sensing Module	
6	Terminal Module	
7	DRIVE-CLiQ Hub Module	
8	Controller Extension	
9	Filter module	
10	Hydraulic Module	
49	DRIVE-CLiQ component	
50	Option slot	
60	Encoder	
70	DRIVE-CLiQ motor	
71	Hydraulic cylinder	
72	Hydraulic valve	
80	Motor	

For %3

Value	Cause	Remedy
0	Port 0	
1	Port 1	
2	Port 2	
3	Port 3	
4	Port 4	
5	Port 5	
6	Port 6	
7	Port 7	
8	Port 8	
9	Port 9	
10	X100	
11	X101	
12	X102	
13	X103	
14	X104	
15	X105	
20	X200	
21	X201	
22	X202	
23	X203	
24	X204	
25	X205	
40	X400	
41	X401	
42	X402	

50	X500
51	X501
52	X502
53	X503
54	X504
55	X505
56	X506
57	X507

Cause: When checking the actual topology, a ring-type connection was detected.
The fault value describes a component contained in the ring.
Fault value (r0949, interpret hexadecimal):
ccbbaaaa hex:
cc = connection number (%3)
bb = component class (%2)
aaaa = preliminary component number (%1)

Remedy: Output the fault value and remove the specified connection.
Note:
Under "Topology --> Topology view" the commissioning tool where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

F01380 Topology: Actual topology EEPROM defective

Message class: Hardware/software error (1)
Message value: Preliminary component number: %1
Component: None
Propagation: Local
Response: NONE
Acknowledgment: POWER ON
Cause: When detecting the actual topology, a component with a defective EEPROM was detected.
Fault value (r0949, interpret hexadecimal):
bbbbaaaa hex:
bbbb = reserved
aaaa = preliminary component number of the defective components
Remedy: Output the fault value and remove the defected component.

A01382 Topology: Sensor Module incorrectly inserted

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Component: %1, to %2, %3, connection: %4
Component: None
Propagation: Local
Response: NONE

Acknowledgment: NONE

Explanation of the message value: For %1
Component in target topology
For %2

Value	Cause	Remedy
0	Component unknown	
1	Control Unit	
2	Motor Module	
3	Line Module	
4	Sensor Module	
5	Voltage Sensing Module	
6	Terminal Module	
7	DRIVE-CLiQ Hub Module	
8	Controller Extension	
9	Filter module	
10	Hydraulic Module	
49	DRIVE-CLiQ component	
50	Option slot	
60	Encoder	
70	DRIVE-CLiQ motor	
71	Hydraulic cylinder	
72	Hydraulic valve	
80	Motor	

For %3
Component in actual topology
For %4

Value	Cause	Remedy
0	Port 0	
1	Port 1	
2	Port 2	
3	Port 3	
4	Port 4	
5	Port 5	
6	Port 6	
7	Port 7	
8	Port 8	
9	Port 9	
10	X100	
11	X101	
12	X102	
13	X103	
14	X104	
15	X105	
20	X200	
21	X201	
22	X202	
23	X203	
24	X204	
25	X205	

40	X400
41	X401
42	X402
50	X500
51	X501
52	X502
53	X503
54	X504
55	X505
56	X506
57	X507

Cause: The topology comparison has detected a Sensor Module in the actual topology that has been incorrectly inserted with respect to the target topology.
Alarm value (r2124, interpret hexadecimal):
ddccbbaa hex:
dd = connection number (%4)
cc = component number (%3)
bb = component class (%2)
aa = component number of the incorrectly inserted component (%1)
Note:
The component is described in dd, cc and bb, where the component involved is incorrectly inserted.
Component class and connection number are described in F01375.
The drive system is no longer booted. In this state, the drive control (closed-loop) cannot be enabled.

Remedy: Adapting topologies:
- Insert the components involved at the right connection (correct the actual topology).
- Adapt the project/parameterizing in the commissioning tool (correct the target topology).
- Automatically resolve the topology error.

Note:
Under "Topology --> Topology view" the commissioning tool where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01383 Topology: Terminal Module incorrectly inserted

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Component: %1, to %2, %3, connection: %4
Component: None
Propagation: Local
Response: NONE

Acknowledgment: NONE

Explanation of the message value: For %1
Component in target topology
For %2

Value	Cause	Remedy
0	Component unknown	
1	Control Unit	
2	Motor Module	
3	Line Module	
4	Sensor Module	
5	Voltage Sensing Module	
6	Terminal Module	
7	DRIVE-CLiQ Hub Module	
8	Controller Extension	
9	Filter module	
10	Hydraulic Module	
49	DRIVE-CLiQ component	
50	Option slot	
60	Encoder	
70	DRIVE-CLiQ motor	
71	Hydraulic cylinder	
72	Hydraulic valve	
80	Motor	

For %3
Component in actual topology
For %4

Value	Cause	Remedy
0	Port 0	
1	Port 1	
2	Port 2	
3	Port 3	
4	Port 4	
5	Port 5	
6	Port 6	
7	Port 7	
8	Port 8	
9	Port 9	
10	X100	
11	X101	
12	X102	
13	X103	
14	X104	
15	X105	
20	X200	
21	X201	
22	X202	
23	X203	
24	X204	
25	X205	

40	X400
41	X401
42	X402
50	X500
51	X501
52	X502
53	X503
54	X504
55	X505
56	X506
57	X507

Cause: The topology comparison has detected a Terminal Module in the actual topology that has been incorrectly inserted with respect to the target topology.
Alarm value (r2124, interpret hexadecimal):
ddccbbaa hex:
dd = connection number (%4)
cc = component number (%3)
bb = component class (%2)
aa = component number of the incorrectly inserted component (%1)
Note:
The component is described in dd, cc and bb, where the component involved is incorrectly inserted.
Component class and connection number are described in F01375.
The drive system is no longer booted. In this state, the drive control (closed-loop) cannot be enabled.

Remedy: Adapting topologies:
- Insert the components involved at the right connection (correct the actual topology).
- Adapt the project/parameterizing in the commissioning tool (correct the target topology).
- Automatically resolve the topology error.

Note:
Under "Topology --> Topology view" the commissioning tool where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01384 Topology: DRIVE-CLiQ Hub Module incorrectly inserted

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Component: %1, to %2, %3, connection: %4
Component: None
Propagation: Local
Response: NONE

Acknowledgment: NONE

Explanation of the message value: For %1
Component in target topology
For %2

Value	Cause	Remedy
0	Component unknown	
1	Control Unit	
2	Motor Module	
3	Line Module	
4	Sensor Module	
5	Voltage Sensing Module	
6	Terminal Module	
7	DRIVE-CLiQ Hub Module	
8	Controller Extension	
9	Filter module	
10	Hydraulic Module	
49	DRIVE-CLiQ component	
50	Option slot	
60	Encoder	
70	DRIVE-CLiQ motor	
71	Hydraulic cylinder	
72	Hydraulic valve	
80	Motor	

For %3
Component in actual topology
For %4

Value	Cause	Remedy
0	Port 0	
1	Port 1	
2	Port 2	
3	Port 3	
4	Port 4	
5	Port 5	
6	Port 6	
7	Port 7	
8	Port 8	
9	Port 9	
10	X100	
11	X101	
12	X102	
13	X103	
14	X104	
15	X105	
20	X200	
21	X201	
22	X202	
23	X203	
24	X204	
25	X205	

40	X400
41	X401
42	X402
50	X500
51	X501
52	X502
53	X503
54	X504
55	X505
56	X506
57	X507

Cause: The topology comparison has detected a DRIVE-CLiQ Hub Module in the actual topology that has been incorrectly inserted with respect to the target topology.
Alarm value (r2124, interpret hexadecimal):
ddccbbaa hex:
dd = connection number (%4)
cc = component number (%3)
bb = component class (%2)
aa = component number of the incorrectly inserted component (%1)
Note:
The component is described in dd, cc and bb, where the component involved is incorrectly inserted.
Component class and connection number are described in F01375.
The drive system is no longer booted. In this state, the drive control (closed-loop) cannot be enabled.

Remedy: Adapting topologies:
- Insert the components involved at the right connection (correct the actual topology).
- Adapt the project/parameterizing in the commissioning tool (correct the target topology).
- Automatically resolve the topology error.

Note:
Under "Topology --> Topology view" the commissioning tool where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01385 Topology: Controller Extension incorrectly inserted

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Component: %1, to %2, %3, connection: %4
Component: None
Propagation: Local
Response: NONE

Acknowledgment: NONE

Explanation of the message value: For %1
Component in target topology
For %2

Value	Cause	Remedy
0	Component unknown	
1	Control Unit	
2	Motor Module	
3	Line Module	
4	Sensor Module	
5	Voltage Sensing Module	
6	Terminal Module	
7	DRIVE-CLiQ Hub Module	
8	Controller Extension	
9	Filter module	
10	Hydraulic Module	
49	DRIVE-CLiQ component	
50	Option slot	
60	Encoder	
70	DRIVE-CLiQ motor	
71	Hydraulic cylinder	
72	Hydraulic valve	
80	Motor	

For %3
Component in actual topology
For %4

Value	Cause	Remedy
0	Port 0	
1	Port 1	
2	Port 2	
3	Port 3	
4	Port 4	
5	Port 5	
6	Port 6	
7	Port 7	
8	Port 8	
9	Port 9	
10	X100	
11	X101	
12	X102	
13	X103	
14	X104	
15	X105	
20	X200	
21	X201	
22	X202	
23	X203	
24	X204	
25	X205	

40	X400
41	X401
42	X402
50	X500
51	X501
52	X502
53	X503
54	X504
55	X505
56	X506
57	X507

Cause: The topology comparison has detected a controller extension 32 (CX32) in the actual topology that has been incorrectly inserted with respect to the target topology.
Alarm value (r2124, interpret hexadecimal):
ddccbbaa hex:
dd = connection number (%4)
cc = component number (%3)
bb = component class (%2)
aa = component number of the incorrectly inserted component (%1)
Note:
The component is described in dd, cc and bb, where the component involved is incorrectly inserted.
Component class and connection number are described in F01375.
The drive system is no longer booted. In this state, the drive control (closed-loop) cannot be enabled.

Remedy: Adapting topologies:
- Insert the components involved at the right connection (correct the actual topology).
- Adapt the project/parameterizing in the commissioning tool (correct the target topology).
- Automatically resolve the topology error.

Note:
Under "Topology --> Topology view" the commissioning tool where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01386 Topology: DRIVE-CLiQ component incorrectly inserted

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Component: %1, to %2, %3, connection: %4
Component: None
Propagation: Local
Response: NONE

Acknowledgment: NONE

Explanation of the message value: For %1
Component in target topology
For %2

Value	Cause	Remedy
0	Component unknown	
1	Control Unit	
2	Motor Module	
3	Line Module	
4	Sensor Module	
5	Voltage Sensing Module	
6	Terminal Module	
7	DRIVE-CLiQ Hub Module	
8	Controller Extension	
9	Filter module	
10	Hydraulic Module	
49	DRIVE-CLiQ component	
50	Option slot	
60	Encoder	
70	DRIVE-CLiQ motor	
71	Hydraulic cylinder	
72	Hydraulic valve	
80	Motor	

For %3
Component in actual topology
For %4

Value	Cause	Remedy
0	Port 0	
1	Port 1	
2	Port 2	
3	Port 3	
4	Port 4	
5	Port 5	
6	Port 6	
7	Port 7	
8	Port 8	
9	Port 9	
10	X100	
11	X101	
12	X102	
13	X103	
14	X104	
15	X105	
20	X200	
21	X201	
22	X202	
23	X203	
24	X204	
25	X205	

40	X400
41	X401
42	X402
50	X500
51	X501
52	X502
53	X503
54	X504
55	X505
56	X506
57	X507

Cause: The topology comparison has detected a DRIVE-CLiQ component in the actual topology that has been incorrectly inserted with respect to the target topology.
Alarm value (r2124, interpret hexadecimal):
ddccbbaa hex:
dd = connection number (%4)
cc = component number (%3)
bb = component class (%2)
aa = component number of the incorrectly inserted component (%1)
Note:
The component is described in dd, cc and bb, where the component involved is incorrectly inserted.
Component class and connection number are described in F01375.
The drive system is no longer booted. In this state, the drive control (closed-loop) cannot be enabled.

Remedy: Adapting topologies:
- Insert the components involved at the right connection (correct the actual topology).
- Adapt the project/parameterizing in the commissioning tool (correct the target topology).
- Automatically resolve the topology error.

Note:
Under "Topology --> Topology view" the commissioning tool where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01389 Topology: Motor with DRIVE-CLiQ incorrectly inserted

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Component: %1, to %2, %3, connection: %4
Component: None
Propagation: Local
Response: NONE

Acknowledgment: NONE

Explanation of the message value: For %1
Component in target topology
For %2

Value	Cause	Remedy
0	Component unknown	
1	Control Unit	
2	Motor Module	
3	Line Module	
4	Sensor Module	
5	Voltage Sensing Module	
6	Terminal Module	
7	DRIVE-CLiQ Hub Module	
8	Controller Extension	
9	Filter module	
10	Hydraulic Module	
49	DRIVE-CLiQ component	
50	Option slot	
60	Encoder	
70	DRIVE-CLiQ motor	
71	Hydraulic cylinder	
72	Hydraulic valve	
80	Motor	

For %3
Component in actual topology
For %4

Value	Cause	Remedy
0	Port 0	
1	Port 1	
2	Port 2	
3	Port 3	
4	Port 4	
5	Port 5	
6	Port 6	
7	Port 7	
8	Port 8	
9	Port 9	
10	X100	
11	X101	
12	X102	
13	X103	
14	X104	
15	X105	
20	X200	
21	X201	
22	X202	
23	X203	
24	X204	
25	X205	

40	X400
41	X401
42	X402
50	X500
51	X501
52	X502
53	X503
54	X504
55	X505
56	X506
57	X507

Cause: The topology comparison has detected a motor with DRIVE-CLiQ in the actual topology that has been incorrectly inserted with respect to the target topology.
Alarm value (r2124, interpret hexadecimal):
ddccbbaa hex:
dd = connection number (%4)
cc = component number (%3)
bb = component class (%2)
aa = component number of the incorrectly inserted component (%1)
Note:
The component is described in dd, cc and bb, where the component involved is incorrectly inserted.
Component class and connection number are described in F01375.
The drive system is no longer booted. In this state, the drive control (closed-loop) cannot be enabled.

Remedy: Adapting topologies:
- Insert the components involved at the right connection (correct the actual topology).
- Adapt the project/parameterizing in the commissioning tool (correct the target topology).
- Automatically resolve the topology error.

Note:
Under "Topology --> Topology view" the commissioning tool where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01416 Topology: Component additionally inserted

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1, to %2, %3, connection: %4
Component: None
Propagation: Local
Response: NONE

Acknowledgment: NONE

Explanation of the message value: For %1, %2

Value	Cause	Remedy
0	Component unknown	
1	Control Unit	
2	Motor Module	
3	Line Module	
4	Sensor Module	
5	Voltage Sensing Module	
6	Terminal Module	
7	DRIVE-CLiQ Hub Module	
8	Controller Extension	
9	Filter module	
10	Hydraulic Module	
49	DRIVE-CLiQ component	
50	Option slot	
60	Encoder	
70	DRIVE-CLiQ motor	
71	Hydraulic cylinder	
72	Hydraulic valve	
80	Motor	

For %3

Component in target topology

For %4

Value	Cause	Remedy
0	Port 0	
1	Port 1	
2	Port 2	
3	Port 3	
4	Port 4	
5	Port 5	
6	Port 6	
7	Port 7	
8	Port 8	
9	Port 9	
10	X100	
11	X101	
12	X102	
13	X103	
14	X104	
15	X105	
20	X200	
21	X201	
22	X202	
23	X203	
24	X204	
25	X205	
40	X400	

41 X401
42 X402
50 X500
51 X501
52 X502
53 X503
54 X504
55 X505
56 X506
57 X507

Cause: The topology comparison has found a component in the actual topology which is not specified in the target topology.
Alarm value (r2124, interpret hexadecimal):
ddccbbaa hex:
dd = component class (%2)
cc = connection number (%4)
bb = component class of the additional component (%1)
aa = component number (%3)
Note:
The component class of the additional component is contained in bb.
The component is described in dd, cc and aa, where the additional component is inserted.
Component class and connection number are described in F01375.

Remedy: Adapting topologies:
- Remove the additional component (correct the actual topology).
- Adapt the project/parameterizing in the commissioning tool (correct the target topology).
Note:
Under "Topology --> Topology view" the commissioning tool where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01420 Topology: Component different

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Component: %1, target: %2, actual: %3, difference: %4
Component: None
Propagation: Local
Response: NONE

Acknowledgment: NONE

Explanation of the message value:

For %1

Component in target topology

For %2, %3

Value	Cause	Remedy
0	Component unknown	
1	Control Unit	
2	Motor Module	
3	Line Module	
4	Sensor Module	
5	Voltage Sensing Module	
6	Terminal Module	
7	DRIVE-CLiQ Hub Module	
8	Controller Extension	
9	Filter module	
10	Hydraulic Module	
49	DRIVE-CLiQ component	
50	Option slot	
60	Encoder	
70	DRIVE-CLiQ motor	
71	Hydraulic cylinder	
72	Hydraulic valve	
80	Motor	

For %4

Value	Cause	Remedy
1	Different component type	
2	Different article number	
3	Different manufacturer	
4	Incorrect subcomponent connected	
5	NX10 or NX15 used instead of CX32.	
6	CX32 used instead of NX10 or NX15.	
7	Different number of connections	

Cause:

The topology comparison has detected differences in the actual and target topologies in the electronic nameplate component.

Alarm value (r2124, interpret hexadecimal):

ddccbbaa hex:

aa = component number (%1),

bb = component class of the target topology (%2),

cc = component class of the actual topology (%3),

dd = difference (%4)

Note:

dd = 04 hex = 4 dec:

For a multi-component module, the incorrect subcomponent (index) is connected (e.g. Double Motor Module X201 instead of X200) - or only a part of a multi-component module is set to "deactivate and not available".

Note:

The component class is described in F01375.

The drive system is no longer booted. In this state, the drive control (closed-loop) cannot be enabled.

Remedy: Adapting topologies:
- Connect the expected component (correct the actual topology).
- Adapt the project/parameterizing in the commissioning tool (correct the target topology).

Note:
Under "Topology --> Topology view" the commissioning tool where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01422 Topology: Required data rate cannot be set

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Component: %1, connection: %2, difference: %3
Component: None
Propagation: Local
Response: NONE

Acknowledgment: NONE

Explanation of the message value: For %1

Component in target topology

For %2

Value	Cause	Remedy
0	Port 0	
1	Port 1	
2	Port 2	
3	Port 3	
4	Port 4	
5	Port 5	
6	Port 6	
7	Port 7	
8	Port 8	
9	Port 9	
10	X100	
11	X101	
12	X102	
13	X103	
14	X104	
15	X105	
20	X200	
21	X201	
22	X202	
23	X203	
24	X204	
25	X205	
40	X400	
41	X401	
42	X402	
50	X500	
51	X501	
52	X502	
53	X503	
54	X504	
55	X505	
56	X506	
57	X507	

For %3

Value	Cause	Remedy
1	Incorrect cable	Correct cable
2	Incorrect socket	Correct socket

Cause: The topology comparison identified differences in the data rate for the connection between two components.
Alarm value (r2124, interpret hexadecimal):
ccbbaaaa hex:
aaaa = Component number of the component involved.
bb = Port number of the component involved
cc = Cause
Note:
cc = 01 hex = 1 dec:
The cable is not suitable for a 1Gbit/s data rate
cc = 02 hex = 2 dec:
The component connection used is not suitable for a 1Gbit/s data rate.
Note:
The drive system is no longer booted. In this state, the drive control (closed-loop) cannot be enabled.

Remedy: Adapting topologies:
dd = 01 hex = 1 dec:
Use a cable suitable for DRIVE-CLiQ Express.
dd = 02 hex = 2 dec:
- Use a component suitable for DRIVE-CLiQ Express.
- Use a connection suitable for DRIVE-CLiQ Express.

A01425 Topology: Serial number different

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Message value: Component: %1, %2, differences: %3

Component: None

Propagation: Local

Response: NONE

Acknowledgment: NONE

Explanation of the message value: For %1
Component in target topology
For %2

Value	Cause	Remedy
0	Component unknown	
1	Control Unit	
2	Motor Module	
3	Line Module	
4	Sensor Module	
5	Voltage Sensing Module	
6	Terminal Module	
7	DRIVE-CLiQ Hub Module	
8	Controller Extension	
9	Filter module	
10	Hydraulic Module	
49	DRIVE-CLiQ component	
50	Option slot	
60	Encoder	
70	DRIVE-CLiQ motor	
71	Hydraulic cylinder	
72	Hydraulic valve	
80	Motor	

Cause: The topology comparison has detected differences in the actual and target topologies in relation to one component. The serial number is different.
Alarm value (r2124, interpret hexadecimal):
ddccbbaa hex:
dd = reserved
cc = number of differences (%3)
bb = component class (%2)
aa = component number (%1)
Note:
The component class is described in F01375.
The drive system is no longer booted. In this state, the drive control (closed-loop) cannot be enabled.

Remedy: Adapting topologies:
- Change over the actual topology to match the target topology.
- Load the target topology that matches the actual topology (commissioning tool).

Note:
Under "Topology --> Topology view" the commissioning tool where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01428 Topology: Incorrect connection used

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Message value: Component: %1, %2, connection (actual): %3, connection (target): %4

Component: None

Propagation: Local

Response: NONE

Acknowledgment: NONE

Explanation of the message value: For %1
Component in target topology
For %2

Value	Cause	Remedy
0	Component unknown	
1	Control Unit	
2	Motor Module	
3	Line Module	
4	Sensor Module	
5	Voltage Sensing Module	
6	Terminal Module	
7	DRIVE-CLiQ Hub Module	
8	Controller Extension	
9	Filter module	
10	Hydraulic Module	
49	DRIVE-CLiQ component	
50	Option slot	
60	Encoder	
70	DRIVE-CLiQ motor	
71	Hydraulic cylinder	
72	Hydraulic valve	
80	Motor	

For %3, %4

Value	Cause	Remedy
0	Port 0	
1	Port 1	
2	Port 2	
3	Port 3	
4	Port 4	
5	Port 5	
6	Port 6	
7	Port 7	
8	Port 8	
9	Port 9	
10	X100	
11	X101	
12	X102	
13	X103	
14	X104	
15	X105	
20	X200	
21	X201	
22	X202	
23	X203	
24	X204	
25	X205	
40	X400	
41	X401	

42 X402
50 X500
51 X501
52 X502
53 X503
54 X504
55 X505
56 X506
57 X507

Cause: The topology comparison has detected differences in the actual and target topologies in relation to one component. For a component, another connection was used.
The different connections of a component are described in the alarm value.
Alarm value (r2124, interpret hexadecimal):
ddccbbaa hex:
dd = connection number of the target topology (%4)
cc = connection number of the actual topology (%3)
bb = component class (%2)
aa = component number (%1)
Note:
Component class and connection number are described in F01375.
The drive system is no longer booted. In this state, the drive control (closed-loop) cannot be enabled.

Remedy: Adapting topologies:
- Reinsert the DRIVE-CLiQ cable to the component (correct the actual topology).
- Adapt the project/parameterizing in the commissioning tool (correct the target topology).
- Automatically resolve the topology error.

Note:
Under "Topology --> Topology view" the commissioning tool where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

F01451 Topology: Target topology is invalid

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Local
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: An error was detected in the target topology.
The target topology is invalid.
Fault value (r0949, interpret hexadecimal):
ccccbbaa hex: cccc = index error, bb = component number, aa = fault cause
aa = 1B hex = 27 dec: Error not specified.
aa = 1C hex = 28 dec: Value illegal.
aa = 1D hex = 29 dec: Incorrect ID.
aa = 1E hex = 30 dec: Incorrect ID length.
aa = 1F hex = 31 dec: Too few indices left.
aa = 20 hex = 32 dec: component is not connected to the converter.
Remedy: Download the target topology again using the commissioning tool.

A01481 (N) Topology: Motor Module not connected

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Message value: Component: %1, to %2, %3, connection: %4
Component: None
Propagation: Local
Response: NONE

Acknowledgment: NONE

Explanation of the message value: For %1, %3
Component in target topology
For %2

Value	Cause	Remedy
0	Component unknown	
1	Control Unit	
2	Motor Module	
3	Line Module	
4	Sensor Module	
5	Voltage Sensing Module	
6	Terminal Module	
7	DRIVE-CLiQ Hub Module	
8	Controller Extension	
9	Filter module	
10	Hydraulic Module	
49	DRIVE-CLiQ component	
50	Option slot	
60	Encoder	
70	DRIVE-CLiQ motor	
71	Hydraulic cylinder	
72	Hydraulic valve	
80	Motor	

For %4

Value	Cause	Remedy
0	Port 0	
1	Port 1	
2	Port 2	
3	Port 3	
4	Port 4	
5	Port 5	
6	Port 6	
7	Port 7	
8	Port 8	
9	Port 9	
10	X100	
11	X101	
12	X102	
13	X103	
14	X104	
15	X105	
20	X200	
21	X201	
22	X202	
23	X203	
24	X204	
25	X205	
40	X400	
41	X401	

42 X402
50 X500
51 X501
52 X502
53 X503
54 X504
55 X505
56 X506
57 X507

Cause: The topology comparison has detected a Motor Module that is missing in the actual topology with respect to the target topology.
Alarm value (r2124, interpret hexadecimal):
ddccbbaa hex:
dd = connection number (%4)
cc = component number (%3)
bb = component class (%2)
aa = component number of the component that has not been inserted (%1)
Note:
The component is described in dd, cc and bb, where the component has not been inserted.
Component class and connection number are described in F01375.

Remedy: Adapting topologies:
- Insert the components involved at the right connection (correct the actual topology).
- Adapt the project/parameterizing in the commissioning tool (correct the target topology).
Check the hardware:
- Check the 24 V supply voltage.
- Check DRIVE-CLiQ cables for interruption and contact problems.
- Check that the component is working properly.
Note:
Under "Topology --> Topology view" the commissioning tool where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

Response upon: N: NONE

Acknowl. upon N: NONE

A01482 Topology: Sensor Module not connected

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Message value: Component: %1, to %2, %3, connection: %4

Component: None

Propagation: Local

Response: NONE

Acknowledgment: NONE

Explanation of the message value: For %1, %3
Component in target topology
For %2

Value	Cause	Remedy
0	Component unknown	
1	Control Unit	
2	Motor Module	
3	Line Module	
4	Sensor Module	
5	Voltage Sensing Module	
6	Terminal Module	
7	DRIVE-CLiQ Hub Module	
8	Controller Extension	
9	Filter module	
10	Hydraulic Module	
49	DRIVE-CLiQ component	
50	Option slot	
60	Encoder	
70	DRIVE-CLiQ motor	
71	Hydraulic cylinder	
72	Hydraulic valve	
80	Motor	

For %4

Value	Cause	Remedy
0	Port 0	
1	Port 1	
2	Port 2	
3	Port 3	
4	Port 4	
5	Port 5	
6	Port 6	
7	Port 7	
8	Port 8	
9	Port 9	
10	X100	
11	X101	
12	X102	
13	X103	
14	X104	
15	X105	
20	X200	
21	X201	
22	X202	
23	X203	
24	X204	
25	X205	
40	X400	
41	X401	

42 X402
50 X500
51 X501
52 X502
53 X503
54 X504
55 X505
56 X506
57 X507

Cause: The topology comparison has detected a Sensor Module that is missing in the actual topology with respect to the target topology.
Alarm value (r2124, interpret hexadecimal):
ddccbbaa hex:
dd = connection number (%4)
cc = component number (%3)
bb = component class (%2)
aa = component number of the component that has not been inserted (%1)
Note:
The component is described in dd, cc and bb, where the component has not been inserted.
Component class and connection number are described in F01375.

Remedy: Adapting topologies:
- Insert the components involved at the right connection (correct the actual topology).
- Adapt the project/parameterizing in the commissioning tool (correct the target topology).
Check the hardware:
- Check the 24 V supply voltage.
- Check DRIVE-CLiQ cables for interruption and contact problems.
- Check that the component is working properly.

A01483 Topology: Terminal Module not connected

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Component: %1, to %2, %3, connection: %4
Component: None
Propagation: Local
Response: NONE

Acknowledgment: NONE

Explanation of the message value: For %1, %3
Component in target topology
For %2

Value	Cause	Remedy
0	Component unknown	
1	Control Unit	
2	Motor Module	
3	Line Module	
4	Sensor Module	
5	Voltage Sensing Module	
6	Terminal Module	
7	DRIVE-CLiQ Hub Module	
8	Controller Extension	
9	Filter module	
10	Hydraulic Module	
49	DRIVE-CLiQ component	
50	Option slot	
60	Encoder	
70	DRIVE-CLiQ motor	
71	Hydraulic cylinder	
72	Hydraulic valve	
80	Motor	

For %4

Value	Cause	Remedy
0	Port 0	
1	Port 1	
2	Port 2	
3	Port 3	
4	Port 4	
5	Port 5	
6	Port 6	
7	Port 7	
8	Port 8	
9	Port 9	
10	X100	
11	X101	
12	X102	
13	X103	
14	X104	
15	X105	
20	X200	
21	X201	
22	X202	
23	X203	
24	X204	
25	X205	
40	X400	
41	X401	

42	X402
50	X500
51	X501
52	X502
53	X503
54	X504
55	X505
56	X506
57	X507

Cause: The topology comparison has detected a Terminal Module that is missing in the actual topology with respect to the target topology.
Alarm value (r2124, interpret hexadecimal):
ddccbbaa hex:
dd = connection number (%4)
cc = component number (%3)
bb = component class (%2)
aa = component number of the component that has not been inserted (%1)
Note:
The component is described in dd, cc and bb, where the component has not been inserted.
Component class and connection number are described in F01375.

Remedy: Adapting topologies:
- Insert the components involved at the right connection (correct the actual topology).
- Adapt the project/parameterizing in the commissioning tool (correct the target topology).
Check the hardware:
- Check the 24 V supply voltage.
- Check DRIVE-CLiQ cables for interruption and contact problems.
- Check that the component is working properly.
Note:
Under "Topology --> Topology view" the commissioning tool where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01484 Topology: DRIVE-CLiQ Hub Module not connected

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Component: %1, to %2, %3, connection: %4
Component: None
Propagation: Local
Response: NONE

Acknowledgment: NONE

Explanation of the message value: For %1, %3
Component in target topology
For %2

Value	Cause	Remedy
0	Component unknown	
1	Control Unit	
2	Motor Module	
3	Line Module	
4	Sensor Module	
5	Voltage Sensing Module	
6	Terminal Module	
7	DRIVE-CLiQ Hub Module	
8	Controller Extension	
9	Filter module	
10	Hydraulic Module	
49	DRIVE-CLiQ component	
50	Option slot	
60	Encoder	
70	DRIVE-CLiQ motor	
71	Hydraulic cylinder	
72	Hydraulic valve	
80	Motor	

For %4

Value	Cause	Remedy
0	Port 0	
1	Port 1	
2	Port 2	
3	Port 3	
4	Port 4	
5	Port 5	
6	Port 6	
7	Port 7	
8	Port 8	
9	Port 9	
10	X100	
11	X101	
12	X102	
13	X103	
14	X104	
15	X105	
20	X200	
21	X201	
22	X202	
23	X203	
24	X204	
25	X205	
40	X400	
41	X401	

42 X402
50 X500
51 X501
52 X502
53 X503
54 X504
55 X505
56 X506
57 X507

Cause: The topology comparison has detected a DRIVE-CLiQ Hub Module missing in the actual topology with respect to the target topology.
Alarm value (r2124, interpret hexadecimal):
ddccbbaa hex:
dd = connection number (%4)
cc = component number (%3)
bb = component class (%2)
aa = component number of the component that has not been inserted (%1)
Note:
The component is described in dd, cc and bb, where the component has not been inserted.
Component class and connection number are described in F01375.

Remedy: Adapting topologies:
- Insert the components involved at the right connection (correct the actual topology).
- Adapt the project/parameterizing in the commissioning tool (correct the target topology).
Check the hardware:
- Check the 24 V supply voltage.
- Check DRIVE-CLiQ cables for interruption and contact problems.
- Check that the component is working properly.

A01485 Topology: Controller Extension not connected

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Component: %1, to %2, %3, connection: %4
Component: None
Propagation: Local
Response: NONE

Acknowledgment: NONE

Explanation of the message value: For %1, %3
Component in target topology
For %2

Value	Cause	Remedy
0	Component unknown	
1	Control Unit	
2	Motor Module	
3	Line Module	
4	Sensor Module	
5	Voltage Sensing Module	
6	Terminal Module	
7	DRIVE-CLiQ Hub Module	
8	Controller Extension	
9	Filter module	
10	Hydraulic Module	
49	DRIVE-CLiQ component	
50	Option slot	
60	Encoder	
70	DRIVE-CLiQ motor	
71	Hydraulic cylinder	
72	Hydraulic valve	
80	Motor	

For %4

Value	Cause	Remedy
0	Port 0	
1	Port 1	
2	Port 2	
3	Port 3	
4	Port 4	
5	Port 5	
6	Port 6	
7	Port 7	
8	Port 8	
9	Port 9	
10	X100	
11	X101	
12	X102	
13	X103	
14	X104	
15	X105	
20	X200	
21	X201	
22	X202	
23	X203	
24	X204	
25	X205	
40	X400	
41	X401	

42 X402
50 X500
51 X501
52 X502
53 X503
54 X504
55 X505
56 X506
57 X507

Cause: The topology comparison has detected a Control Extension (CX32) missing in the actual topology with respect to the target topology.
Alarm value (r2124, interpret hexadecimal):
ddccbbaa hex:
dd = connection number (%4)
cc = component number (%3)
bb = component class (%2)
aa = component number of the component that has not been inserted (%1)
Note:
The component is described in dd, cc and bb, where the component has not been inserted.
Component class and connection number are described in F01375.

Remedy: Adapting topologies:
- Insert the components involved at the right connection (correct the actual topology).
- Adapt the project/parameterizing in the commissioning tool (correct the target topology).
Check the hardware:
- Check the 24 V supply voltage.
- Check DRIVE-CLiQ cables for interruption and contact problems.
- Check that the component is working properly.
Note:
Under "Topology --> Topology view" the commissioning tool where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01486 Topology: DRIVE-CLiQ component not connected

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Component: %1, to %2, %3, connection: %4
Component: None
Propagation: Local
Response: NONE

Acknowledgment: NONE

Explanation of the message value: For %1, %3
Component in target topology
For %2

Value	Cause	Remedy
0	Component unknown	
1	Control Unit	
2	Motor Module	
3	Line Module	
4	Sensor Module	
5	Voltage Sensing Module	
6	Terminal Module	
7	DRIVE-CLiQ Hub Module	
8	Controller Extension	
9	Filter module	
10	Hydraulic Module	
49	DRIVE-CLiQ component	
50	Option slot	
60	Encoder	
70	DRIVE-CLiQ motor	
71	Hydraulic cylinder	
72	Hydraulic valve	
80	Motor	

For %4

Value	Cause	Remedy
0	Port 0	
1	Port 1	
2	Port 2	
3	Port 3	
4	Port 4	
5	Port 5	
6	Port 6	
7	Port 7	
8	Port 8	
9	Port 9	
10	X100	
11	X101	
12	X102	
13	X103	
14	X104	
15	X105	
20	X200	
21	X201	
22	X202	
23	X203	
24	X204	
25	X205	
40	X400	
41	X401	

42 X402
50 X500
51 X501
52 X502
53 X503
54 X504
55 X505
56 X506
57 X507

Cause: The topology comparison has detected a DRIVE-CLiQ component missing in the actual topology with respect to the target topology.
Alarm value (r2124, interpret hexadecimal):
ddccbbaa hex:
dd = connection number (%4)
cc = component number (%3)
bb = component class (%2)
aa = component number of the component that has not been inserted (%1)
Note:
The component is described in dd, cc and bb, where the component has not been inserted.
Component class and connection number are described in F01375.

Remedy: Adapting topologies:
- Insert the components involved at the right connection (correct the actual topology).
- Adapt the project/parameterizing in the commissioning tool (correct the target topology).
Check the hardware:
- Check the 24 V supply voltage.
- Check DRIVE-CLiQ cables for interruption and contact problems.
- Check that the component is working properly.
Note:
Under "Topology --> Topology view" the commissioning tool where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01487 Topology: Option slot component not inserted

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Component: %1, to %2, %3, connection: %4
Component: None
Propagation: Local
Response: NONE

Acknowledgment: NONE

Explanation of the message value: For %1, %3
Component in target topology
For %2

Value	Cause	Remedy
0	Component unknown	
1	Control Unit	
2	Motor Module	
3	Line Module	
4	Sensor Module	
5	Voltage Sensing Module	
6	Terminal Module	
7	DRIVE-CLiQ Hub Module	
8	Controller Extension	
9	Filter module	
10	Hydraulic Module	
49	DRIVE-CLiQ component	
50	Option slot	
60	Encoder	
70	DRIVE-CLiQ motor	
71	Hydraulic cylinder	
72	Hydraulic valve	
80	Motor	

For %4

Value	Cause	Remedy
0	Port 0	
1	Port 1	
2	Port 2	
3	Port 3	
4	Port 4	
5	Port 5	
6	Port 6	
7	Port 7	
8	Port 8	
9	Port 9	
10	X100	
11	X101	
12	X102	
13	X103	
14	X104	
15	X105	
20	X200	
21	X201	
22	X202	
23	X203	
24	X204	
25	X205	
40	X400	
41	X401	

42 X402
50 X500
51 X501
52 X502
53 X503
54 X504
55 X505
56 X506
57 X507

Cause: The topology comparison has detected an option slot component missing in the actual topology with respect to the target topology.
Alarm value (r2124, interpret hexadecimal):
ddccbbaa hex:
dd = connection number (%4)
cc = component number (%3)
bb = component class (%2)
aa = component number of the component that has not been inserted (%1)
Note:
The component is described in dd, cc and bb, where the component has not been inserted.
Component class and connection number are described in F01375.

Remedy: Adapting topologies:
- Insert the components involved at the right connection (correct the actual topology).
- Adapt the project/parameterizing in the commissioning tool (correct the target topology).
Check the hardware:
- Check the 24 V supply voltage.
- Check DRIVE-CLiQ cables for interruption and contact problems.
- Check that the component is working properly.
Note:
Under "Topology --> Topology view" the commissioning tool where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01489 Topology: motor with DRIVE-CLiQ not connected

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Component: %1, to %2, %3, connection: %4
Component: None
Propagation: Local
Response: NONE

Acknowledgment: NONE

Explanation of the message value: For %1, %3
Component in target topology
For %2

Value	Cause	Remedy
0	Component unknown	
1	Control Unit	
2	Motor Module	
3	Line Module	
4	Sensor Module	
5	Voltage Sensing Module	
6	Terminal Module	
7	DRIVE-CLiQ Hub Module	
8	Controller Extension	
9	Filter module	
10	Hydraulic Module	
49	DRIVE-CLiQ component	
50	Option slot	
60	Encoder	
70	DRIVE-CLiQ motor	
71	Hydraulic cylinder	
72	Hydraulic valve	
80	Motor	

For %4

Value	Cause	Remedy
0	Port 0	
1	Port 1	
2	Port 2	
3	Port 3	
4	Port 4	
5	Port 5	
6	Port 6	
7	Port 7	
8	Port 8	
9	Port 9	
10	X100	
11	X101	
12	X102	
13	X103	
14	X104	
15	X105	
20	X200	
21	X201	
22	X202	
23	X203	
24	X204	
25	X205	
40	X400	
41	X401	

42 X402
50 X500
51 X501
52 X502
53 X503
54 X504
55 X505
56 X506
57 X507

Cause: The topology comparison has detected a motor with DRIVE-CLiQ missing in the actual topology with respect to the target topology.
Alarm value (r2124, interpret hexadecimal):
ddccbbaa hex:
dd = connection number (%4)
cc = component number (%3)
bb = component class (%2)
aa = component number of the component that has not been inserted (%1)
Note:
The component is described in dd, cc and bb, where the component has not been inserted.
Component class and connection number are described in F01375.

Remedy: Adapting topologies:
- Insert the components involved at the right connection (correct the actual topology).
- Adapt the project/parameterizing in the commissioning tool (correct the target topology).
Check the hardware:
- Check the 24 V supply voltage.
- Check DRIVE-CLiQ cables for interruption and contact problems.
- Check that the component is working properly.
Note:
Under "Topology --> Topology view" the commissioning tool where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

F01510 Signal source is not float type

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Parameter: %1
Component: None
Propagation: Interconnection
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: The required signal source has the incorrect data type. This interconnection is not established.
Fault value (r0949, interpret decimal):
Parameter number to which an interconnection should be made (numerical signal source).
Remedy: Interconnect this signal sink with a signal source, data type float.

F01511 (A) Signal interconnection with different scaling

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Parameter: %1
Component: None
Propagation: Interconnection
Response: NONE
Acknowledgment: IMMEDIATELY

Cause: The requested signal interconnection was established. However, a conversion is made between the signal source and signal sink via the reference values.
- The signal source has a different standard unit than the signal sink.
- Message only for interconnections within a drive object.

Example:
The signal source has voltage as standard unit, and the signal sink has current.
This means that factor p2002/p2001 is calculated between the signal source and signal sink.
p2002: Contains the reference value for current
p2001: Contains the reference value for voltage
Fault value (r0949, interpret decimal):
Parameter number of the signal sink.

Remedy: Not necessary.
Response upon: A: NONE
Acknowl. upon A: NONE

F01512 No scaling available

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Interconnection
Response: OFF2
Acknowledgment: POWER ON
Cause: An attempt was made to determine a conversion factor for a scaling that does not exist.
Fault value (r0949, interpret decimal):
Unit (e.g. corresponding to SPEED) for which an attempt was made to determine a factor.
Remedy: Apply scaling or check the transfer value.

F01513 (N, A) Signal interconnection cross DO with different scaling

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Parameter: %1
Component: None
Propagation: Interconnection
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: The requested signal interconnection was established. However, a conversion is made between the signal source and signal sink via the reference values.
An interconnection is made between different drive objects and the signal source has different standard units than the signal sink or the standard units are the same but the reference values are different.
Example 1:
Signal source with standard unit voltage, signal sink with standard unit current, signal source and signal sink lie in different drive objects. This means that factor p2002/p2001 is calculated between the signal source and signal sink.
p2002: Contains the reference value for current
p2001: Contains the reference value for voltage
Example 2:
Signal source with standard unit voltage in drive object 1 (DO1), signal sink with standard unit voltage unit in drive object 2 (DO2). The reference values for voltage (p2001) of the two drive objects have different values. This means that factor p2001(DO1)/p2001(DO2) is calculated between the signal source and signal sink.
p2001: Contains the reference value for voltage, drive objects 1, 2
Fault value (r0949, interpret decimal):
Parameter number of the signal sink.

Remedy:	Not necessary.
Response upon: N:	NONE
Acknowl. upon N:	NONE
Response upon: A:	NONE
Acknowl. upon A:	NONE

A01514 (F) Error when writing during a reconnect

Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Message value:	Parameter: %1
Component:	None
Propagation:	Interconnection
Response:	NONE
Acknowledgment:	NONE
Cause:	During a reconnect operation (e.g. while booting or downloading - but can also occur in normal operation) a parameter was not able to be written to. Example: When writing to a signal sink with double word format (DWORD), in the second index, the memory areas overlap. The parameter is then reset to the factory setting. Alarm value (r2124, interpret decimal): Parameter number of the signal sink.
Remedy:	Not necessary.
Response upon: F:	NONE
Acknowl. upon F:	IMMEDIATELY

F01515 (A) Writing to parameter not permitted as the master control is active

Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Message value:	-
Component:	None
Propagation:	Global
Response:	NONE
Acknowledgment:	IMMEDIATELY
Cause:	When changing the number of CDS or when copying from CDS, the master control is active.
Remedy:	If required, return the master control and repeat the operation.
Response upon: A:	NONE
Acknowl. upon A:	NONE

A01550 Security: Drive data encryption invalid

Message class:	Hardware/software error (1)
Message value:	-
Component:	Control Unit (CU)
Propagation:	Local
Response:	NONE
Acknowledgment:	NONE
Cause:	The password for drive data encryption (DDE) does not match the password configured in the converter or no password was configured. The DDE password protects sensitive data on the SD card. It is not possible to transfer the data backup from the SD card.

Remedy: To be able to restore the data backup on the SD card, the DDE password must correspond to the password that was originally configured for the data backup in the original converter:
- With the SD card inserted, enter the correct DDE password in the Security Wizard of the web server and restart the converter.
- In Startdrive, with the SD card inserted, under Online & Diagnostics, enter the correct DDE password in screen form "Specify password for encryption of the drive data" and restart the converter.

If the data backup on the SD card is not be used:
- Remove the SD card from the converter and restart the converter.

Notice: Not observing this and continuing to work at the converter can lead to the data backup on the SD card being lost.

A01590 (F) Drive: Motor maintenance interval expired

Message class: General drive fault (19)
Message value: Fault cause: %1 bin
Component: Motor
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The selected service/maintenance interval for this motor was reached.
Alarm value (r2124, interpret decimal):
Motor data set number.
See also: p0650 (Actual motor operating hours), p0651 (Motor operating hours maintenance interval)
Remedy: carry out service/maintenance and reset the service/maintenance interval (p0651).
Response upon: F: NONE
Acknowl. upon F: IMMEDIATELY

C01600 SI: STO self test failed

Message class: Safety monitoring channel has identified an error (10)
Message value: %1
Component: None
Propagation: Global
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: "Safety Integrated Functions" identified a fault in the self test of the switch-off signal path, and initiated an STO (Safe Torque Off).
Message value (r60049, interpret decimal):
1005: STO active, although STO not selected and there is no internal STO active.
1010: STO inactive, although STO is selected or an internal STO is active.
1015: The self test in operation was unsuccessful.
1016: Error in the communication path for brake/F-DI/F-DO/STO
Remedy: - Select STO and then de-select again.
- Carry out a POWER ON (switch-off/switch-on) for all components.
- Upgrade software to a later version.
- Contact Technical Support.

C01601 SI: Communication error with OM-SMT

Message class: Hardware/software error (1)
Message value: %1
Component: Control Unit (CU)

Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: An error has occurred in the communication with the Option Module Safe Motor Temperature (OM-SMT).
Note:
This message results in an STO (Safe Torque Off).
Message value (r60049, interpret decimal): Only for internal Siemens fault diagnostics.
Remedy: - Acknowledge this message using a safe acknowledgment mechanism (e.g. via PROFIsafe).
- Carry out a POWER ON (switch-off/switch-on) for all components.
- Check the electrical cabinet design and cable routing for EMC compliance.
- Upgrade software to a later version.
- Contact Technical Support.

C01603 SI: Module temperature - limit value exceeded

Message class: Safety monitoring channel has identified an error (10)
Message value: -
Component: None
Propagation: Global
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: A safe monitoring function has detected that the module temperature has exceeded a limit value. STO (Safe Torque Off) was initiated to maintain the safe state.
Remedy: - Check the ambient air temperature.
- Check the module fan.
- Operate the module in the permissible range.

F01604 SI: Safety EEPROM data error

Message class: Safety monitoring channel has identified an error (10)
Message value: %1
Component: Control Unit (CU)
Propagation: Global
Response: OFF2
Acknowledgment: POWER ON
Cause: Safety relevant EEPROM data are not correct.
This fault results in an STO (Safe Torque Off).

Fault value (r0949, interpret decimal): Only for internal Siemens fault diagnostics.
Remedy: Replace the module.

A01605 SI: Checksum error has occurred

Message class: Safety monitoring channel has identified an error (10)
Message value: %1
Component: Control Unit (CU)
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: A checksum error (CRC error) has occurred in the converter program memory.
Alarm value (r2124, interpret decimal):
Only for internal Siemens troubleshooting.

Remedy: - Carry out a POWER ON (switch-off/switch-on).
- Upgrade firmware to later version.
- Contact Technical Support.

F01606 SI: Safety HW version incorrect

Message class: Safety monitoring channel has identified an error (10)
Message value: %1
Component: Control Unit (CU)
Propagation: Global
Response: OFF2
Acknowledgment: POWER ON
Cause: Safety relevant hardware version is not compatible with this software.
This fault results in an STO (Safe Torque Off).

Fault value (r0949, interpret decimal): Only for internal Siemens fault diagnostics.
Remedy: Update the software or exchange the module for this software.

C01630 SI: Brake control error

Message class: Safety monitoring channel has identified an error (10)
Message value: %1
Component: None
Propagation: Global
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The SBC (Safe Brake Control) function integrated in the drive has identified a brake control fault and has initiated an STO (Safe Torque Off).
Message value (r60049, interpret decimal):
1:
Fault in the "Open brake" state.
- Parameter p1278 incorrectly set.
- Brake not connected or interrupted cable (check whether for p1278 = 1 and p9604 bit 1 = 0 (SBC deactivated) the brake opens).
- Ground fault in brake cable.
2:
Fault in the "Close brake" state.
- Brake not connected or interrupted cable (check whether for p1278 = 1 and p9604 bit 1 = 0 (SBC deactivated) the brake opens).
- Short-circuit in brake winding.
3:
Hardware is defective or does not support the brake control.
- Communications with the brake control has failed.
- SBC is enabled on a module that does not support brake control.
4:
- Brake is not connected or interrupted cable.

Remedy:
- Check the motor holding brake connection.
- Check the function of the motor holding brake.
- Check whether the brake control is supported.
- Check whether there are disturbances in the communications from the self-identifying brake, and if required carry out a diagnostics routine for the faults involved.
- Check that the electrical cabinet design and cable routing are in compliance with EMC regulations (e.g. shield of the motor cable and brake conductors are connected with the shield connecting plate and the motor connectors are tightly screwed to the housing).
- Replace the hardware.

A01637 (F) SI: Safety configuration not protected

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Message value: -

Component: None

Propagation: Local

Response: NONE

Acknowledgment: NONE

Cause: Safety configuration is not protected using UMAC (User Management and Access Control).

Remedy: Activate UMAC and assign the rights for changing the "Edit Safety Integrated application" safety configuration to a specific user that is saved with user name and password.

Response upon: F: NONE (OFF1, OFF2, OFF3)

Acknowl. upon F: IMMEDIATELY

C01640 (N) SI: Component exchange identified and acknowledgment/save required

Message class: General drive fault (19)

Message value: Fault cause: %1

Component: Control Unit (CU)

Propagation: Local

Response: NONE

Acknowledgment: IMMEDIATELY

Explanation of the message value: For %1

Bit	Cause	Remedy
0	It was identified that the drive was replaced	
1	It was identified that the power unit was replaced.	
3	It was identified that OM-SMT was replaced	
4	It was identified that the sensor module was replaced	
5	It was identified that the sensor was replaced	

Cause: "Safety Integrated" identified that a component has been replaced.

It is No longer possible to operate the particular drive without fault.

When safety functions are active, after a component has been replaced a partial acceptance test must be performed.

Note:

This message results in an STO (Safe Torque Off).

Remedy: - Confirm component exchange using the button in the commissioning tool.
- Save all parameters (p0977 = 1 or retentively save).
- Without a POWER ON, this message can be acknowledged using a safe acknowledgment mechanism (e.g. via PROFIsafe).

Note:
In addition to the fault, diagnostics bits r9776.2 and r9776.3 are set.
See also: r9776 (SI diagnostics)

Response upon: N: NONE
Acknowl. upon N: NONE

A01641 (F, N) SI: Component exchange identified and save necessary

Message class: General drive fault (19)
Message value: Fault cause: %1
Component: Control Unit (CU)
Propagation: Local
Response: NONE
Acknowledgment: NONE
Explanation of the message value: For %1

Bit	Cause	Remedy
0	It was identified that the drive was replaced	
1	It was identified that the power unit was replaced.	
3	It was identified that OM-SMT was replaced	
4	It was identified that the sensor module was replaced	
5	It was identified that the sensor was replaced	

Cause: "Safety Integrated" identified that a component has been replaced.
No additional stop response is initiated, and therefore the operation of the specific drive is not restricted.
When "Safety Integrated Functions" are active, after a component has been replaced a partial acceptance test must be performed.
Alarm value (r2124, interpret binary).

Remedy: - Save all parameters (p0977 = 1 or "copy RAM to ROM").
- Acknowledge fault.
See also: r9776 (SI diagnostics)

Response upon: F: NONE
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A01644 SI: OM-SMT connected and SMT not enabled

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: Control Unit (CU)
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: An OM-SMT (Option Module Safe Motor Temperature) is connected; however, the SMT function is not enabled.
Remedy: Release the SMT function with p9604.22.

C01645 SI: Parameterizing error OM-SMT

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Message value: %1

Component: Control Unit (CU)

Propagation: Local

Response: OFF2

Acknowledgment: IMMEDIATELY

Cause: An error occurred when parameterizing the OM-SMT (Option Module Safe Motor Temperature).

Message value (r60049, interpret decimal).
1: Function SMT was enabled, although no OM-SMT is connected (p9604.22 = 1).
2: Function SMT was enabled, although this function is not available in this software release (p9604.22 = 1).
3: Sending safety communication timeout information to the OM-SMT unsuccessful.

Remedy: For fault value = 1:
- Connect OM-SMT.
- Deactivate function SMT (p9604.22 = 0).

For fault value = 2, 3:
- Upgrade firmware to later version.

F01646 SI: Change logbook

Message class: Safety monitoring channel has identified an error (10)

Message value: %1

Component: Control Unit (CU)

Propagation: Local

Response: OFF2

Acknowledgment: IMMEDIATELY

Cause: The saved functional safety checksum (r9780[0]) or hardware-related safety checksum (r9780[1]) differs from the safety checksum calculated when running up or a previously calculated safety checksum was not found.
An acceptance test is required as changes have been made to a safety parameter or the safety hardware.
Fault value (r0949, interpret decimal):
1: The safety logbook has identified that a functional safety checksum has changed. An acceptance test is required.
2: The safety logbook has identified that a hardware-related safety checksum has changed. An acceptance test is required.

Remedy: For fault value = 1:
- Carry out an acceptance test and generate an acceptance report.

For fault value = 2:
- Carry out the function checks for the modified hardware and generate an acceptance report.

Note:
The procedure when carrying out an acceptance test as well as an example of the acceptance report are provided in the Safety Integrated product documentation.

C01647 SI: PROFIsafe PLC configuring not the same as the parameterization

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Message value: %1

Component: None

Propagation: Global

Response: OFF2

Acknowledgment: IMMEDIATELY

Cause: The drive has identified a difference between the PROFIsafe configuring in the F-PLC and the parameterization in SINAMICS.
Note:
This message results in an STO (Safe Torque Off).
Message value (r60049, interpret decimal):
1: The PROFIsafe telegram number in the F-PLC configuration is not identical with the value in p9611.
2: The PROFIsafe monitoring time F_WD_Time in the F-PLC configuration is not identical with the value in p9614.

Remedy: - Change the configuring in the F-PLC and load to the drive.
- Adapt the parameterization in the drive to the configuration in the F-PLC.

C01648 SI: PROFIsafe communication error

Message class: Safety monitoring channel has identified an error (10)

Message value: %1

Component: None

Propagation: Global

Response: NONE

Acknowledgment: IMMEDIATELY

Cause: The drive has identified a PROFIsafe communication error.
Note:
This message results in
- STO (Safe Torque Off), if p9612 = 0,
- SS1 (Safe Stop 1), if p9612 = 1.
Message value (r0949, interpret decimal):
6000 ... 6166:
PROFIsafe message values (PROFIsafe driver for PROFINET).
For these message values, the failsafe control signals (failsafe values) are transferred to the safety functions. If "SS1 after failure of PROFIsafe communication" is parameterized (p9612), then transfer of the Failsafe Values is delayed.
6064 ... 6076:
Error when evaluating F parameters. The values of the transferred F parameters do not match the expected values.
6064: Destination address and PROFIsafe address are different (F_Dest_Add != p9610).
6065: Destination address not valid (F_Dest_Add == 0 or 0xFFFF).
6066: Source address not valid (F_Source_Add == 0 or 0xFFFF) or source address and PROFIsafe source address different (F_Source_Add != p9613).
6067: Watchdog time not valid (F_WD_Time == 0).
6068: Incorrect SIL level (F_SIL).
6069: Incorrect F-CRC length (F_CRC_Length).
6070: Incorrect F parameter version (F_Par_Version).
6071: CRC error for the F parameters (CRC1). The transferred CRC value of the F parameters does not match the value calculated in the PROFIsafe driver.
6072: F parameterization is inconsistent.
6076: Incorrect F_block_ID.
6165: A communications error was identified when receiving the PROFIsafe telegram. The error can also occur if an inconsistent or out-of-date PROFIsafe telegram was received after switching the system off and on or after inserting the PROFINET cable.
6166: A time monitoring error (timeout) was identified when receiving the PROFIsafe telegram.
>65535: A fatal PROFIsafe communication error has occurred (only for internal Siemens error diagnostics).

Remedy:

For message value = 6064:
- Check the setting of the value in the F parameter F_Dest_Add at the PROFIsafe device.
- Check the setting of the PROFIsafe address (p9610).

For message value = 6065:
- Check the setting of the value in the F parameter F_Dest_Add at the PROFIsafe device. It is not permissible that the destination address is 0 or FFFF.

For message value = 6066:
- Check the setting of the value in F-parameter F_Source_Add at the PROFIsafe device. It is not permissible for the source address to be either 0 or FFFF.
- Check the setting of the PROFIsafe source address (p9613).

For message value = 6067:
- Check the setting of the value in the F parameter F_WD_Time at the PROFIsafe device. It is not permissible for the watchdog time to be 0.

For message value = 6068:
- Check the setting of the value in F parameter F_SIL at the PROFIsafe device.

For message value = 6069:
- Check the setting of the value in the F parameter F_CRC_Length at the PROFIsafe device.

For message value = 6070:
- Check the setting of the value in the F parameter F_Par_Version at the PROFIsafe device. The value for the F parameter version is 0 in the V1 mode and 1 in the V2 mode.

For message value = 6071:
- Check the setting of the values of the F parameters and the F parameter CRC (CRC1) calculated from these at the PROFIsafe device and update if necessary.

For message value = 6072:
- Check the settings of the values for the F parameters and, if required, correct.

The following combinations are permissible for F parameters F_CRC_Length and F_Par_Version:

F_CRC_Length = 3-byte CRC and F_Par_Version = 1

F_CRC_Length = 4-byte CRC and F_Par_Version = 1

For message value = 6076:
- Check the settings of the values for the F parameters and, if required, correct.

For message value = 6165:
- Acknowledge the fault if it occurs after running up or after inserting the PROFINET cable.
- Check the configuration and communication at the PROFIsafe device.
- Check the setting of the value for F parameter F_WD_Time at the PROFIsafe device and increase if necessary.
- Check whether all F parameters of the drive match the F parameters of the F host.

For message value = 6166:
- Check the configuration and communication at the PROFIsafe device.
- Check the setting of the value for F parameter F_WD_Time at the PROFIsafe device and increase if necessary.
- Evaluate diagnostic information in the F host.
- Check PROFIsafe connection.
- Check whether all F parameters of the drive match the F parameters of the F host.

For message value > 65535:
- Carry out a POWER ON (switch-off/switch-on) for all components.
- Check whether other faults are active - and when necessary, carry out diagnostics for the faults involved.
- Increase the monitoring cycle clock settings (p9500, p9511).
- Upgrade firmware to later version.
- Contact Technical Support.
- Replace hardware relevant for the communication.

C01649 SI: Internal software error

Message class: Hardware/software error (1)

Message value: Module: %1, line: %2

Component: Control Unit (CU)

Propagation: Global
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: An internal error has occurred in the Safety Integrated software.
Note:
This message results in an STO (Safe Torque Off) that cannot be acknowledged.
Message value (r60049, interpret hexadecimal): Only for internal Siemens fault diagnostics.
Remedy:
- Carry out a POWER ON (switch-off/switch-on) for all components.
- Repeat commissioning of "Safety Integrated" and carry out a POWER ON.
- Upgrade firmware to later version.
- Contact Technical Support.
- Replace hardware component.

F01650 SI: Acceptance test required

Message class: Safety monitoring channel has identified an error (10)
Message value: %1
Component: Control Unit (CU)
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: "Safety Integrated Functions" requires an acceptance test.
Message value (r0949, interpret decimal):
2003: Acceptance test is required as a safety parameter has been changed.
Remedy: For message value = 2003:
- Carry out an acceptance test and generate an acceptance report.
The procedure when carrying out an acceptance test as well as an example of the acceptance report are provided in the product operating instructions.

C01652 SI: Monitoring clock cycle not permissible

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Global
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: One of the Safety Integrated monitoring clock cycles is not permissible.
- The monitoring clock cycle for safe motion monitoring functions is not permissible (p9500).
- The actual value sensing clock cycle for safe motion monitoring functions is not permissible (p9511).
- The sampling time for the current controller (p0112, p0115[0]) cannot be supported.
Message value (r60049, interpret decimal):
When motion monitoring is enabled (p9603 > 0), the following applies:
100: No matching monitoring clock cycle (p9500) was able to be found.
107: The actual value sensing clock cycle (p9511) is not an integer multiple of the sampling time of the current controller (p0115[0]).
108: The parameterized actual value sensing clock cycle (p9511) cannot be set on this component.
111: The monitoring clock cycle (p9500) is not an integer multiple of the sampling time of the current controller (p0115[0]).

Remedy: When motion monitoring is enabled (p9603 > 0):
- Upgrade firmware to later version.
- Correct the monitoring clock cycle (p9500) and carry out POWER ON.

For message value = 100:
Set the monitoring clock cycle in p9500 as an integer multiple of the sampling time of the current controller (p9500 / 2 = n * p0115[0]).

For message value = 107, 108:
Set the actual value sensing clock cycle in p9511 as an integer multiple of the current controller sampling time (p9511 = n * p0115[0]), and at the same time as an integer divisor of the monitoring clock cycle (p9511 = p9500 / m).

For message value = 111:
Set the monitoring clock cycle in p9500 as an integer multiple of the sampling time of the current controller (p0115[0]).

C01653 SI: PROFINET configuration error

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Message value: %1

Component: None

Propagation: Global

Response: NONE (OFF1, OFF2, OFF3)

Acknowledgment: IMMEDIATELY

Cause: There is a PROFINET configuration error for using Safety Integrated monitoring functions with a higher-level control (F-PLC).

Note:
When the Safety Integrated Functions are enabled, this message results in an STO (Safe Torque Off).

Message value (r60049, interpret decimal):
200: A safety slot for receive data from the control has not been configured.
220: The configured safety slot for the receive data from the control has an unknown format.
230: The configured safety slot for the receive data from the F-PLC has the incorrect length.
231: The configured safety slot for the receive data from the F-PLC has the incorrect length.
300: A safety slot for the send data to the control has not been configured.
320: The configured safety slot for the send data to the control has an unknown format.
330: The configured safety slot for the send data to the F-PLC has the incorrect length.
331: The configured safety slot for the send data to the F-PLC has the incorrect length.
400: The telegram number in the F-PLC does not match the parameterization in the drive.

Remedy: The following generally applies:
- Check and, if necessary, correct the PROFINET configuration of the safety slot on the controller side.
- Upgrade firmware to later version.

For message value = 231, 331:
- In the drive, parameterize the appropriate PROFIsafe telegram (p9611) to be set on the F-PLC.
- Configure the PROFIsafe telegram matching the parameterization (p9611) in the F-PLC.

A01654 (F, N) SI: PROFIsafe configuration different

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Message value: %1

Component: None

Propagation: Global

Response: NONE

Acknowledgment: NONE

Cause: The configuration of a PROFIsafe telegram in the higher-level control (F-PLC) does not match the parameterization in the drive.
Note:
This message does not result in a safety stop response.
Alarm value (r2124, interpret decimal):
1:
A PROFIsafe telegram is configured in the higher-level control; however, PROFIsafe is not enabled in the drive (p9603.1).
2:
PROFIsafe is parameterized in the drive; however, a PROFIsafe telegram has not been configured in the higher-level control.

Remedy: The following generally applies:
- Check and, if necessary, correct the PROFIsafe configuration in the higher-level control.
For alarm value = 1:
- Remove the PROFIsafe configuring in the higher-level F control or enable PROFIsafe in the drive.
For alarm value = 2:
- Configure the PROFIsafe telegram to match the parameterization in the higher-level F-control.

Response upon: F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

C01657 SI: PROFIsafe telegram number invalid

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Global
Response: OFF2
Acknowledgment: POWER ON
Cause: The PROFIsafe telegram number set in p9611 is not valid.
When PROFIsafe is enabled (p9603.1 = 1), then a telegram number greater than zero must be entered in p9611.
Note:
This message does not result in a safety stop response.
See also: p9611 (SI PROFIsafe telegram selection), r60022 (PROFIsafe telegram)
Remedy: Check the telegram number setting (p9611).

C01658 SI: PROFIsafe telegram number not equal

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Global
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The PROFIsafe telegram number in p9611 differs from the configured PROFIsafe telegram number in the F-PLC (r60022).
Note:
This message does not result in a safety stop response.
See also: p9611 (SI PROFIsafe telegram selection)
Remedy: Align the telegram number in p9611 with the PROFIsafe telegram number in the F-PLC (r60022).

F01661 SI: Simulation of the safety inputs active

Message class: General drive fault (19)
Message value: Fault cause: %1 bin
Component: Control Unit (CU)
Propagation: Drive
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The simulation of the digital inputs is active (p0795).
It is not permissible that safety inputs are simulated.
Message value (r0949, interpret binary):
The displayed bits indicate which digital inputs must not be simulated.
Remedy: - Deactivate the simulation of the digital inputs for the safety inputs (p0795).
- Acknowledge message.

C01668 SI: Checksum error safety monitoring functions

Message class: Safety monitoring channel has identified an error (10)
Message value: %1
Component: Control Unit (CU)
Propagation: Global
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The actual checksum calculated by the drive and entered in r10098 via the safety-relevant parameters does not match the reference checksum saved in p10099 at the last machine acceptance.
Safety-relevant parameters have been changed or a fault is present.
Note:
This message results in an STO (Safe Torque Off).
Message value (r60049, only for internal Siemens diagnostics)
Remedy: - Carry out safety commissioning.
- Carry out an acceptance test.

C01670 SI: Invalid Sensor Module configuration

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Global
Response: OFF2
Acknowledgment: IMMEDIATELY

Cause:

The configuration of a Sensor Module used for Safety Integrated is not permissible.

Note:

This message results in an STO (Safe Torque Off).

Message value (r60049, interpret decimal):

1: The encoder data set selected for Safety Integrated is not valid or the encoder is not assigned to an encoder data set.

2: No encoder was parameterized for Safety Integrated or the encoder is not suitable for safety-related applications.

4: A communication error with the encoder has occurred.

5: Number of relevant bits in the encoder coarse position invalid.

6: DRIVE-CLiQ encoder configuration invalid.

7: Non-safety relevant component of the encoder coarse position for the linear DRIVE-CLiQ encoder not valid.

8: Safety comparison algorithm not supported.

9: Relationship between the grid division and measuring step for linear DRIVE-CLiQ encoder is not binary.

15: Pulses per revolution of a rotary encoder is not valid.

16: Grid division of a linear encoder is not valid.

17: Encoder is not compatible. The safe positioning accuracy of the encoder is not equal to the setpoint parameterized in p9631 - or the safe maximum speed/velocity of the encoder is not equal to the setpoint parameterized in p9630.

18: Encoder has still not been configured for Safety Integrated. The safe positioning accuracy of the encoder has still not been parameterized in p9631 - and the safe maximum velocity of the encoder has still not been parameterized in p9630 (parameter values are 0).

19: The encoder parameterization or the module identifier of the encoder/encoder module has changed or the encoder parameterization is corrupt.

20: For a DQi encoder, the offset between POS1 and POS2 has changed since the last run-up.

21: The timer for the effectivity test for a DQi encoder is not equal to 4 hours.

22: In the current firmware version, the encoder type is not permitted for Safety Integrated.

Remedy:

For message value = 1:
Carefully ensure that a safety-relevant encoder is connected and commission the drive again.

For message value = 2:
Use an encoder that Safety Integrated Functions supports.

For message value = 4:
Check whether there is a DRIVE-CLiQ communication error to the Sensor Module involved and, if required, carry out a diagnostics routine for the faults identified.

For message value =8:
Use an encoder that implements an algorithm supported by Safety Integrated.
Supported encoder types are listed in the product documentation for Safety Integrated.

For message value = 5, 6, 7, 9, 15, 16, 19, 20, 21:
Replace the encoder if it is defective.

For message value = 17, 18:
Select and deselect the safety commissioning mode (during safety commissioning, the quality of the connected encoder is transferred into the encoder quality parameter p9630 and ff.).

For message value = 22:
Use an encoder type that is supported in the current firmware version.
Supported encoder types are listed in the product documentation for Safety Integrated.

For message value = 23:
Safety actual value acquisition clock cycle (p9511) is not an integer multiple of the encoder communication clock cycle.

C01671 SI: Parameterization actual value acquisition incorrect

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Global
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The parameterization of the actual value sensing for Safety Integrated is incorrect.
Note:
This message results in an STO (Safe Torque Off).
Message value (r60049, interpret decimal):
yyyyxxxx dec: yyyy = supplementary information, xxxx = parameter
yyyy = 0:
No additional supplementary information
xxxx = 9522:
The gear stage was set too high.
Remedy: Check the parameterization of the actual value sensing for Safety Integrated and if required correct.
For message value 9522:
- Set the gearbox stage lower.

C01673 SI: Safe encoder assignment incorrect

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Message value: %1
Component: None
Propagation: Global
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The existing actual value sensing configuration is incorrect.
Note:
This message results in an STO (Safe Torque Off).
Message value (r60049, interpret decimal):
1: A Safety Integrated function that requires an encoder is enabled (e.g. SLS), but no encoder data set or an incorrect encoder data set is configured.
Remedy: For message value = 1:
Correct the assignment of EDS to DDS (p0187). p0187 must include EDS = 0 in all indices.
Note:
EDS: Encoder Data Set
DDS: Drive Data Set

C01674 SI: Safety function not supported by PROFIsafe telegram

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Global
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The monitoring function enabled in p9604 is not supported by the currently set PROFIsafe telegram (p9611).
Note:
Message value (r60049, interpret bitwise binary):
Bit 3 = 1:
SS1E (Safe Stop 1 External) via PROFIsafe is not supported (p9604.3).
Bit 5 = 1:
SS2E (Safe Stop 2 External) via PROFIsafe is not supported (p9604.5).
Bit 6 = 1:
SS2ESR: (Safe Stop 2 Extended Stop and Retract) via PROFIsafe is not supported (p9604.6).
Bit 9 = 1:
Transfer of SLS (Safely-Limited Speed) limit value via PROFIsafe is not supported (p9604.9).
Bit 15 = 1:
Gearbox stage switchover via PROFIsafe is not supported (p9604.15).
Bit 19 = 1:
SCA via PROFIsafe is not supported (p9604.19).
Bit 20 = 1:
Transfer of safe position (SP) via PROFIsafe is not supported (p9604.20).
Bit 30 = 1:
Transfer of F-DI via PROFIsafe is not supported (p9604.30).
Remedy: - Deselect the monitoring function involved (p9604).
- Set the matching PROFIsafe telegram (p9611).

C01676 SI: Parameterization of the failsafe inputs not permissible

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: Control Unit (CU)
Propagation: Global

Response:	OFF2
Acknowledgment:	IMMEDIATELY
Cause:	When simultaneously controlled via terminal (p9603.0 = 1) and PROFIsafe (p9603.1 = 1) - Only the failsafe digital input F-DI 0 (r10071.0) may be selected - Only STO (c10022) / SS1 (c10023) / SS1E (c10060) may be interconnected Note: This message results in an STO (Safe Torque Off). Message value (r60049, interpret decimal): xxxx = parameter number of the incorrect signal interconnection
Remedy:	Correct parameters: - Interconnect with a valid signal source. - Inhibit control via terminal (p9603.0 = 0). - Inhibit control via PROFIsafe (p9603.1 = 0).

C01677 SI: Incorrect onboard F-I/O parameter value

Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Message value:	Parameter: %1, supplementary information: %2
Component:	None
Propagation:	Global
Response:	NONE
Acknowledgment:	IMMEDIATELY

Cause:

The parameter cannot be parameterized with this value.
Note:
This message does not result in a safety stop response.
Message value (r60049, interpret decimal): yyyyxxxx dec:
yyyy = supplementary information
xxxx = parameter

yyyy = 0:
No additional information available.

xxxx = 10000 and
yyyy = F-DI number:
A non-existent F-DI was enabled.

xxxx = 10002:
The F-DI discrepancy time (p10002) is less than or equal to the SI monitoring clock cycle (p9500).

xxxx = 10017 and
yyyy = F-DI number:
The input filter (p10017) is less than or equal to (p10018 + 2ms) when simultaneously selecting "Self test using specified dark pulses" (p10041[y] = 1 or p10041[y] = 2).

xxxx = 10018 and
yyyy = F-DI number:
Setting "F-DI self test length dark pulses" (p10018) is zero when simultaneously selecting "Self test using specified dark pulses" (p10041[y] = 1 or p10041[y] = 2).

xxxx = 10041 and
yyyy = F-DI number:
An invalid value was set in "F-DI self test mode selection" (p10041[y]).

xxxx = 10071 and
yyyy = F-DI number:
An F-DI status r10071[y], which was not enabled in p10000, has been wired.

xxxx = 10042 and
xxxx = index from c10042
The F-DO signal source c10042[y] was assigned an invalid value.

Remedy: Correct the parameter value.
For xxxx = 10000 and yyyy = F-DI number:
- Correct p10000 "SI F-DI enable".
For xxxx = 10002:
- Set p10002 "SI F-DI switchover discrepancy time" longer than p9500 "SI monitoring clock cycle".
For xxxx = 10017 and yyyy = F-DI number:
- Set p10017 "SI Digital inputs input filter" greater than (p10018 + 2 ms)
- Change p10041[y] "SI F-DI self test mode selection".
For xxxx = 10018 and yyyy = F-DI number:
- Set p10018 "SI F-DI self test length dark pulses" greater than zero.
- Change p10041[y] "SI F-DI self test mode selection".
For xxxx = 10041 and yyyy = F-DI number:
- Change p10041[y] "SI F-DI self test mode selection".
For xxxx = 10071 and yyyy = F-DI number:
- Correct p10000 "SI F-DI enable".
For xxxx = 10042 and yyyy = index c10042:
- Correct c10042[y] "SI F-DO 0 signals of the AND logic operation".

C01680 SI: Checksum error safety monitoring functions

Message class: Safety monitoring channel has identified an error (10)
Message value: %1
Component: Control Unit (CU)
Propagation: Global
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The actual checksum over the safety-relevant parameters, calculated by the drive, does not match the reference checksum last saved for the last machine acceptance test.
Safety-relevant parameters have been changed or a fault is present.
Note:
This message results in an STO (Safe Torque Off).
Message value (r60049, only for internal Siemens diagnostics)
Remedy: - Check the safety-relevant parameters and if required, correct.
- Retentively save parameters.
- Perform a POWER ON if safety parameters requiring a POWER ON have been modified.
- Carry out an acceptance test.

C01681 SI: Incorrect parameter value

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Parameter: %1, supplementary information: %2
Component: None
Propagation: Global
Response: OFF2
Acknowledgment: IMMEDIATELY

Cause: The parameter cannot be parameterized with this value.
Note:
This message results in an STO (Safe Torque Off).
Message value (r60049, interpret decimal):
yyyyxxxx dec: yyyy = supplementary information, xxxx = parameter
yyyy = 0:
No additional information available.
xxxx = 9547:
Parameter rule not complied with.
xxxx = 9560:
For SS1 ramp-monitored (p9606 = 2) or SS1E ramp-monitored (p9607 = 2), the parameter must be greater than zero.
xxxx = 9578:
The acceleration limit (p9578) or possibly the monitoring cycle (p9500) is set too low.
xxxx = 9603:
The type of control displayed under additional information is not permissible for p9603 on this device.
xxxx = 10006 or 10022 to 10036:
An inadmissible signal source for the control via F-DI was set.
xxxx = 10050:
An inadmissible signal source for the F-DI via PROFIsafe was set. yyyy contains the incorrect index of c10050[].

Remedy: Correct parameters:
For xxxx = 9547:
Set parameters p9546 and p9547 according to the following rule: p9546 * 0.75 >= p9547
For xxxx = 9560:
Set a parameter value greater than zero.
For xxxx = 9578:
Increase parameter p9578 or if required, p9500.
The following rule must be satisfied: p9578 * 10 > r9790[1] and p9578 * 3 > r9790[0].
For xxxx = 9603:
In p9603, set a type of control that is permissible for this device.
For xxxx = 10006 or 10022 to 10036:
Interconnect with a valid signal source.
For xxxx = 10050 and yyyy = 0, 1 or 2:
Interconnect c10050[yyyy] with a valid signal source or fixed value.

C01682 SI: Monitoring function not supported

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Global
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: At least one of the monitoring functions enabled in p9604 is not supported with this firmware version on this device.
Note:
The message value (r60049, interpret binary) indicates the bits of the monitoring functions, which form this firmware version on this device, are not supported. If several, non-supported monitoring functions are simultaneously enabled, then these are all displayed in the message value.
This message results in an STO (Safe Torque Off).
See also: p9604 (SI enable)

Remedy: Correct parameter p9604 so that monitoring functions only permitted for this firmware version and for this device are enabled.
See also: p9604 (SI enable)

C01690 SI: Data backup problem for the NVRAM

Message class: Hardware/software error (1)
Message value: %1
Component: Control Unit (CU)
Propagation: Local
Response: OFF2
Acknowledgment: POWER ON
Cause: When saving parameters r9780, r9781 and r9782 (Safety logbook) says, an error has occurred in conjunction with the NVRAM.
Note:
This message does not result in a safety stop response.
Message value (r60049, interpret decimal):
1: There is no physical NVRAM in the drive.
2: There is no longer any free memory space in the NVRAM.
Remedy: For message value = 1:
- Replace the hardware.
For message value = 2:
- De-select functions that are not required and that take up memory space in the NVRAM.
- Contact Technical Support.
Note:
NVRAM: Non-Volatile Random Access Memory (non-volatile read and write memory)

A01698 (F) SI: Commissioning mode active

Message class: General drive fault (19)
Message value: -
Component: Control Unit (CU)
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: "Safety Integrated" commissioning is selected.
This message is withdrawn after the safety functions have been commissioned.
Note:
- This message does not result in a safety stop response.
- In the safety commissioning mode, function STO (Safe Torque Off) is internally selected.
Remedy: Not necessary.
Response upon: F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

C01700 SI: STO (Safe Torque Off) initiated

Message class: Safety monitoring channel has identified an error (10)
Message value: -
Component: None
Propagation: Global
Response: OFF2
Acknowledgment: IMMEDIATELY

Cause:	The drive is stopped using STO (Safe Torque Off). Possible causes: Subsequent response, following messages: C01706, C01714, C01715, C01716.
Remedy:	Carry out diagnostics for the active messages (C01706, C01714, C01715, C01716).

C01701 SI: SS1 (Safe Stop 1) initiated

Message class:	Safety monitoring channel has identified an error (10)
Message value:	-
Component:	None
Propagation:	Global
Response:	OFF3
Acknowledgment:	IMMEDIATELY
Cause:	The drive is stopped using SS1 (Safe Stop 1) (braked along the OFF3 down ramp). As a result of this message, after the time parameterized in p9556 has expired, or the speed threshold parameterized in p9560 has been fallen below, STO (Safe Torque Off) is initiated. Possible causes: Subsequent response, following messages: C01707, C01711, C01714, C01715, C01716.
Remedy:	Perform diagnostics for active messages (C01707, C01711, C01714, C01715, C01716).

C01702 SI: SS1E (Safe Stop 1 External) initiated

Message class:	Safety monitoring channel has identified an error (10)
Message value:	-
Component:	None
Propagation:	Global
Response:	NONE
Acknowledgment:	IMMEDIATELY
Cause:	The drive is stopped via SS1E (Safe Stop 1 External) (braked from an external control system). As a result of this message, after the time parameterized in p9594 has expired, or the speed threshold parameterized in p9560 has been fallen below, STO (Safe Torque Off) is initiated. Possible causes: Subsequent response, following messages: C01714, C01716
Remedy:	Carry out diagnostics for the active messages (C01714, C01716).

C01706 SI: SAM/SBR limit exceeded

Message class:	Safety monitoring channel has identified an error (10)
Message value:	%1
Component:	None
Propagation:	Global
Response:	OFF2
Acknowledgment:	IMMEDIATELY

Cause: The safety functions with parameterized motion monitoring SAM (Safe Acceleration Monitor) / SBR (Safe Brake Ramp) have identified an error.
After initiating SS1 (Safe Stop 1), SS1E (Safe Stop 1 External), SS2 (Safe Stop 2) or SS2E (Safe Stop 2 External), the speed has exceeded the set tolerance.
The drive is shut down by message C01700 (STO (Safe Torque Off) initiated).

Message value (r60049, interpret decimal):
0: SAM for SS1/SS2 has detected a fault.
1: SBR for SS1/SS2 has detected a fault.
2: SAM for SS1E/SS2E has detected a fault.
3: SBR for SS1E/SS2E has detected a fault.

Remedy: Check the braking behavior and, if necessary, adapt the parameterization of the SAM or SBR monitoring.
Without a POWER ON, this message can be acknowledged using a safe acknowledgment mechanism (e.g. via PROFIsafe).
See also: p9548, p9581, p9582, p9583

C01707 SI: Tolerance for safe operating stop exceeded

Message class: Safety monitoring channel has identified an error (10)
Message value: -
Component: None
Propagation: Global
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: The actual position has distanced itself further from the target position than the standstill tolerance.
The drive is shut down by message C01701 (SS1 (Safe Stop 1) initiated).
Remedy: - Check whether safety messages are active, and if required carry out the appropriate diagnostic routines for the messages involved.
- Check whether the standstill tolerance matches the accuracy and control dynamic performance of the axis.
- Carry out a POWER ON.
Without a POWER ON, this message can be acknowledged using a safe acknowledgment mechanism (e.g. via PROFIsafe).
See also: p9530 (SI SOS standstill tolerance)

C01708 SI: SS2 (Safe Stop 2) initiated

Message class: Safety monitoring channel has identified an error (10)
Message value: -
Component: None
Propagation: Global
Response: STOP2
Acknowledgment: IMMEDIATELY
Cause: The drive is stopped using SS2 (Safe Stop 2) (braked along the OFF3 down ramp).
SOS (Safe Operating Stop) is activated after the parameterized time has expired.
Possible causes:
- Stop request from the higher-level control system.
- Subsequent response messages: C01714, C01715, C01716
See also: p9552 (SI transition time SS2 to SOS)
Remedy: - Remove the cause of the message at the control system.
- Carry out diagnostics for the active messages (C01714, C01715, C01716)
Without a POWER ON, this message can be acknowledged using a safe acknowledgment mechanism (e.g. via PROFIsafe).

C01709 SI: SS2E (Safe Stop2 External) initiated

Message class: Safety monitoring channel has identified an error (10)
Message value: -
Component: None
Propagation: Global
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: The drive is stopped via SS2E (Safe Stop 2 External) (braking along a path).
SOS (Safe Operating Stop) is activated after the parameterized time has expired.
Possible causes:
- Stop request from the higher-level control system.
- Subsequent response messages: C01714, C01715, C01716
See also: p9553 (SI transition time SS2E to SOS)
Remedy: - Remove the cause of the message at the control system.
- Carry out diagnostics for the active messages (C01714, C01715, C01716)
Without a POWER ON, this message can be acknowledged using a safe acknowledgment mechanism (e.g. via PROFIsafe).

C01711 SI: SCF (Safety Channel Failure) initiated

Message class: Safety monitoring channel has identified an error (10)
Message value: -
Component: None
Propagation: Global
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: The drive has detected an error in a safe monitoring function and has initiated SCF (Safety Channel Failure).
Monitoring functions are no longer reliable. Safe operation not possible.
Possible causes:
Subsequent response, following messages: C01648, C01750, C01751, C01753, C01754, C01769.

Note:
This message results in an SS1 (Safe Stop 1) or SS1E (Safe Stop 1 External) depending on p9561, and as a consequence, after the time parameterized in p9556 has expired, or the speed threshold parameterized in p9560 has been fallen below, STO (Safe Torque Off) is initiated.
See also: p9555 (SI transition time SCF to SS1/SS1E), p9561 (SI SCF stop response)
Remedy: Carry out diagnostics for the active messages (C01648, C01750, C01751, C01753, C01754, C01769).

C01714 SI: Safely-Limited Speed exceeded

Message class: Safety monitoring channel has identified an error (10)
Message value: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: IMMEDIATELY

Cause: The drive has moved faster than that specified by the velocity limit value (p9531). The drive is stopped by the configured stop response (p9563).
Message value (r60049, interpret decimal):
100: SLS1 exceeded.
200: SLS2 exceeded.
300: SLS3 exceeded.
400: SLS4 exceeded.

Remedy: - Check the traversing/motion program in the control.
- Check the limits for SLS (Safely-Limited Speed) and if required adapt accordingly (p9531).
Without a POWER ON, this message can be acknowledged using a safe acknowledgment mechanism (e.g. via PROFIsafe).
See also: p9531 (SI SLS limit values), p9563 (SI SLS stop response)

C01716 SI: Tolerance for Safe Direction exceeded

Message class: Safety monitoring channel has identified an error (10)

Message value: %1

Component: None

Propagation: Global

Response: NONE

Acknowledgment: IMMEDIATELY

Cause: The tolerance for SDI (Safe Direction) was exceeded. The drive is stopped by the configured stop response (p9566).
Message value (r60049, interpret decimal):
0: Tolerance for "SDI positive" exceeded.
1: Tolerance for "SDI negative" exceeded.

Remedy: - Check the traversing/motion program in the control.
- Check the tolerance for function SDI and if required, adapt (p9564).
Without a POWER ON, this message can be acknowledged using a safe acknowledgment mechanism (e.g. via PROFIsafe).
Prerequisite:
- Deselect function SDI function and if required select again.
See also: p9564, p9565, p9566

C01717 SI: SLA limit exceeded

Message class: Safety monitoring channel has identified an error (10)

Message value: %1

Component: None

Propagation: Global

Response: NONE

Acknowledgment: IMMEDIATELY

Cause: The acceleration limit for function SLA (Safely-Limited Acceleration) was exceeded. The drive is stopped as a result of the configured stop response (p9579).
Message value (r60049, interpret decimal):
0: The monitoring of the coarsely resolved acceleration has violated the acceleration limit.
1: The monitoring of the finely resolved acceleration and possibly filtered acceleration has violated the acceleration limit.

Remedy:
- Check the traversing/motion program in the control.
- Check the acceleration limit for the SLA function and if required, adapt (p9578).
- Carry out a safe acknowledgment.

For message value = 0:
Analyze the causes using r9714[0] and r9714[3].
For message value = 1:
Analyze the causes using r9789[0], r9789[1] and r9789[2].
See also: p9578 (SI SLA acceleration limit), p9579 (SI SLA stop response)

C01730 SI: Reference block for dynamic Safely-Limited Speed invalid

Message class: Safety monitoring channel has identified an error (10)
Message value: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: The reference block transferred via PROFIsafe is negative.
A reference block is used to generate a referred velocity limit value based on the reference quantity in p9531[0].
The drive is stopped by the configured stop response (p9563[0]).
Message value (r60049, interpret decimal):
Requested, invalid reference block.
Remedy: In the PROFIsafe telegram, input data S_SLS_LIMIT_IST must be corrected.
Without a POWER ON, this message can be acknowledged using a safe acknowledgment mechanism (e.g. via PROFIsafe).

C01750 SI: Hardware fault safety-related encoder

Message class: Hardware/software error (1)
Message value: %1
Component: Encoder 1
Propagation: Global
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: The encoder that is used for the safety-relevant motion monitoring functions signals a hardware fault.
Note:
This message results in
- STO (Safe Torque Off) if p9507 bit 8 = 0
- SCF (Safety Channel Failure) if p9507 bit 8 = 1

Message value (r60049, interpret decimal):
Encoder status word 1, encoder status word 2 that resulted in the message.
Remedy:
- Check the encoder connection.
- Replace encoder.

Without a POWER ON, this message can be acknowledged using a safe acknowledgment mechanism (e.g. via PROFIsafe).

C01751 SI: Effectivity test error safety-related encoder

Message class: Safety monitoring channel has identified an error (10)
Message value: %1
Component: Encoder 1
Propagation: Global
Response: NONE

Acknowledgment: IMMEDIATELY

Cause: The DRIVE-CLiQ encoder for safe motion monitoring signals an error for the internal encoder effectivity tests, the sequence of which are cyclically monitored.
Note:
This message results in an SCF (Safety Channel Failure).
Message value (r60049, interpret decimal):
Only for internal Siemens troubleshooting.

Remedy: - Check the encoder connection.
- Replace encoder.
Without a POWER ON, this message can be acknowledged using a safe acknowledgment mechanism (e.g. via PROFIsafe).

C01753 SI: Fault safety-relevant encoder

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Message value: %1

Component: None

Propagation: Global

Response: NONE

Acknowledgment: IMMEDIATELY

Cause: The encoder that is used for the safety-relevant motion monitoring functions signals a fault.
This message results in SCF (Safety Channel Failure).
Message value (r60049, interpret decimal):
1012: Plausibility violation of the encoder actual value.
1021: Cyclic communication failure between the monitoring channel and Sensor Module.
1022: Sign-of-life error for DRIVE-CLiQ encoders.
1024: Sign-of-life error for HTL/TTL encoders.
1031: Data transfer error between the monitoring channel and the Sensor Module (CRC error).
1033: Fault when checking offset between POS1 and POS2

Remedy: - Check the encoder connection.
- Replace encoder.
Without a POWER ON, this message can be acknowledged using a safe acknowledgment mechanism (e.g. via PROFIsafe).
For message value = 1021, 1024:
- Check the communication link.
- Set the monitoring clock cycle higher (p9500, p9511).
- Carry out a POWER ON (switch off/switch on) for all components.
- Replace the hardware.
For message value = 1033:
if one of the safety encoders was replaced:
- Acknowledge hardware replacement.
- Save all parameters (p0977 = 1 or retentively save).
- Acknowledge fault.

C01754 SI: Fault safety-relevant actual value acquisition

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Message value: %1

Component: None

Propagation: Global

Response: NONE

Acknowledgment: IMMEDIATELY

Cause: The actual value sensing for safe motion monitoring signals an error.
Message value (r60049, interpret decimal):
1039: Converting the position on the load side exceeds data format.
Remedy: For message value = 1039: Check the parameterization of the gearbox (p9520, p9521, p9522).

C01755 SI: Encoder limit frequency exceeded

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: Message value (r60049, interpret decimal):
1: Motion monitoring functions with encoder: the actual velocity exceeds the encoder limit frequency of 500 kHz.
Note:
This fault results in an SS1 (Safe Stop 1).
Remedy: Without a POWER ON, this message can be acknowledged using a safe acknowledgment mechanism (e.g. via PROFIsafe).

C01769 SI: Error for data cross-check

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: When carrying out a data cross-check between the two monitoring channels, the drive detected a difference between parameters or results and initiated an SCF (Safety Channel Failure). One of the monitoring functions no longer functions reliably, i.e. safe operation is no longer possible.
Safety message C01711 is also displayed as SCF (Safety Channel Failure) has been initiated.
Remedy: - Carry out a POWER ON (switch-off/switch-on) for all components.
- Recommission "Safety Integrated" and carry out a POWER ON.
- Upgrade firmware to later version.
- Contact Technical Support.
- Replace the hardware.

C01770 SI: Fault of the failsafe inputs

Message class: Safety monitoring channel has identified an error (10)
Message value: Fault cause: %1, F-DI number: %2
Component: Control Unit (CU)
Propagation: Global
Response: NONE

Acknowledgment: IMMEDIATELY

Explanation of the message value: For %1

Value	Cause	Remedy
1	Discrepancy error (state between two monitoring channels different for too long)	Check the F-DI wiring
2	Too many switching operations	Reduce the switching frequency
3	Test pulse error	Check the F-DI wiring
4	Internal software error	

Cause:
The failsafe digital inputs (F-DI) have a fault condition.
Message value (r60049, interpret hexadecimal):
yyyyxxxx hex
xxxx: number of the failsafe digital input (F-DI).
yyyy: fault cause

Note:
If several faults occur consecutively, then this message is only signaled for the first fault that occurs.

Remedy:
- Check the wiring of the F-DI (contact problems).
- If the wiring is correct, and for example there is no wire breakage, then a check must be made as to whether the switching frequency at F-DI is too high and must therefore be reduced (switching pulses must have a longer time between them). The time interval between each signal edge at an F-DI must be at least equal to the discrepancy time before the input is switched again.

Note:
This message can be acknowledged via F-DI or PROFIsafe (safe acknowledgment).
Discrepancy errors of an F-DI can only be acknowledged if safe acknowledgment was carried out after the cause of the error was resolved (acknowledgment via PROFIsafe, extended message acknowledgment, self acknowledgment). As long as safety acknowledgment was not carried out, the corresponding F-DI stays in the safe state internally.
A self acknowledgment for an F-DI can be realized using a positive edge at the corresponding F-DI.
Sets the discrepancy time for fast switching operations at the F-DIs:
For fast switching operations at the failsafe digital inputs (F-DI), it may be necessary to adapt the discrepancy time to the switching frequency:
- The period of a cyclic switching pulse must be less than half of the discrepancy time (if necessary, round down).
- The time between two fast switching pulses should be longer than the discrepancy time (if necessary, round up).
- The discrepancy time must be at least p9500 (it must always be rounded up or down to be an integer multiple of the SI monitoring clock cycle p9500).

If an input filter has been parameterized (p10017 > 0), then the shortest possible discrepancy time is directly specified by the input filter.
- The period of a cyclic switching pulse must be less than half of the discrepancy time p10017 (if necessary, round down).
- The time between two fast switching pulses should be longer than the discrepancy time+p10017 (if necessary, round up).
- The discrepancy time must be at least p9500 The input filter must always be set less than the discrepancy time.

Self test with specified dark pulses (p10041 > 0) for long cable lengths:
- Increase the dark pulse length (p10018 or p10019).
- Increase the input filter (p10017).

Note:
F-DI: Failsafe Digital Input

C01771 SI: Fault of the failsafe outputs

Message class: Safety monitoring channel has identified an error (10)

Message value: Fault cause: %1, F-DO a number: %2

Component: Control Unit (CU)
Propagation: Global
Response: NONE
Acknowledgment: IMMEDIATELY
Explanation of the message value: For %1

Value	Cause	Remedy
1	Discrepancy error (state between two monitoring channels different for too long)	Check the F-DO wiring
2	Feedback signal fault	Check the F-DO wiring
3	Test pulse error	Adapt test pulse length
4	Overcurrent detected	Check the F-DO wiring

Cause: The failsafe digital outputs (F-DO) have a fault condition.
Message value (r60049, interpret hexadecimal):
yyyyxxxx hex:
xxxx: number of the failsafe digital output (F-DO).
yyyy: fault cause

Note:
If several faults occur consecutively, then this message is only signaled for the first fault that occurs.

Remedy: - Check the wiring of the F-DO (contact problems).
Note:
This message can be acknowledged via F-DI or PROFIsafe (safe acknowledgment).

C01793 SI: Internal safety message buffer is full

Message class: Safety monitoring channel has identified an error (10)
Message value: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: Too many safety messages have occurred within a short time so that some have not been able to be displayed.
Remedy: No remedy required

A01796 (F, N) SI: Wait for communication

Message class: Communication error to the higher-level control system (9)
Message value: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The drive waits for communication to be established to execute the safety-relevant motion monitoring functions.
Note:
STO (Safe Torque Off) is active in this state.
Alarm value (r2124, interpret decimal):
3: Wait for communication to be established to PROFIsafe F-Host.

Remedy: If the message is not automatically withdrawn after a longer period of time, then carry out the following checks:
- Evaluate any other active PROFIsafe communication messages/signals.
- Check the operating state of the F-Host.
- Check the communication connection to the F Host.
- Check whether this device supports PROFIsafe communications.

Response upon: F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

C01799 SI: Acceptance test mode active

Message class: Safety monitoring channel has identified an error (10)
Message value: -
Component: Control Unit (CU)
Propagation: Global
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: The acceptance test mode is active.
This means the following:
- The setpoint velocity limiting is deactivated (r9733).

Remedy: Not necessary.
The message is withdrawn when exiting the acceptance test mode.

F01800 (A) DRIVE-CLiQ: Hardware/configuration error

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: %1
Component: None
Propagation: Local
Response: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowledgment: IMMEDIATELY
Cause: A DRIVE-CLiQ connection fault has occurred.
Fault value (r0949, interpret decimal):
100 ... 107:
Communication via DRIVE-CLiQ socket X100 ... X107 has not been switched to cyclic operation. The cause may be an incorrect structure or a configuration that results in an impossible bus timing.
10:
Loss of the DRIVE-CLiQ connection. The cause may be, for example, that the DRIVE-CLiQ cable was withdrawn from the converter or as a result of a short-circuit for motors with DRIVE-CLiQ. This fault can only be acknowledged in cyclic communication.
11:
Repeated faults when detecting the connection. This fault can only be acknowledged in cyclic communication.
12:
A connection was detected but the node ID exchange mechanism does not function. The reason is probably that the component is defective. This fault can only be acknowledged in cyclic communication.

Remedy: For fault value = 100 ... 107:
- Ensure that the DRIVE-CLiQ components have the same firmware versions.
- Avoid longer topologies for short current controller sampling times.

For fault value = 10:
- Check the DRIVE-CLiQ cables at the converter.
- Remove any short-circuit for motors with DRIVE-CLiQ.
- Carry out a POWER ON.

For fault value = 11:
- Check the electrical cabinet design and cable routing for EMC compliance.

For fault value = 12:
- Replace the component involved.

Response upon: A: NONE

Acknowl. upon A: NONE

A01839 DRIVE-CLiQ diagnostics: Cable fault to the component

Message class: General drive fault (19)

Message value: Component number: %1

Component: Control Unit (CU)

Propagation: Global

Response: NONE

Acknowledgment: NONE

Cause: The fault counter (r9936[0...199]) to monitor the DRIVE-CLiQ connections/cables has been incremented.
Alarm value (r2124, interpret decimal):
Component number.
Note:
The component number specifies the component whose feeder cable from the direction of the converter is faulted.
The alarm is automatically withdrawn after 5 seconds, assuming that no other data transfer error has occurred.
See also: r9936 (DRIVE-CLiQ diagnostic error counter connection)

Remedy:
- Check the corresponding DRIVE-CLiQ cables.
- Check the electrical cabinet design and cable routing for EMC compliance.

A01840 SMI: Component found without motor data

Message class: Hardware/software error (1)

Message value: Component number: %1

Component: None

Propagation: Drive

Response: NONE

Acknowledgment: NONE

Explanation of the message value: For %1
Component in target topology

Cause: An SMI/DQI without motor data has been found (e.g. SMI installed as replacement part).
Alarm value (r2124, interpret decimal):
Component number from target topology.

Remedy: 1. Download the SMI/DQI data (motor/encoder data) from the data backup again (p4690, p4691).
2. Carry out a POWER ON (switch-off/switch-on) for this component.
Note:
DQI: DRIVE-CLiQ Sensor Integrated
SMI: SINAMICS Sensor Module Integrated

A01900 (F) PB/PN: Configuration telegram error

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: A controller attempts to establish a connection using an incorrect configuring telegram.
Alarm value (r2124, interpret decimal):
2:
Too many PZD data words for output or input. The number of possible PZD is specified by the number of indices in r2050/c2053.
3:
Uneven number of bytes for input or output.
4:
Setting data for synchronization not accepted. For more information, see A01902.
211:
Unknown parameterizing block.
253:
PN Shared Device: Illegal mixed configuration of PROFIsafe and PZD.
254:
PN Shared Device: Illegal double assignment of a slot/subslot.
257:
PN Shared Device: Too many PZD data words for the output or input in the overall device.
501:
PROFIsafe parameter error (e.g. F_Source_Add, F_Dest_Add).
502:
PROFIsafe telegram does not match.
Additional values:
Only for internal Siemens troubleshooting.
Remedy: Check the bus configuration on the controller and device sides.
For alarm value = 2:
- Check data words for output and input.
For alarm value = 211:
- Ensure offline version <= online version.
For alarm value = 257:
- Check the number of data words for output and input to the complete device.
For alarm value = 501:
- Check the set PROFIsafe addresses (p9610, p9613).
For alarm value = 502:
- Check the set PROFIsafe telegram (r60022, p9611).
Response upon: F: NONE (OFF1)
Acknowl. upon F: IMMEDIATELY

A01902 PB/PN: Isochronous operation parameterization not permissible

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Local
Response: NONE
Acknowledgment: NONE

Cause: Parameterization for isochronous operation is not permissible.
Alarm value (r2124, interpret decimal):
0: Bus cycle time Tdp < 0.5 ms.
1: Bus cycle time Tdp > 32 ms.
2: Bus cycle time Tdp is not an integer multiple of the current controller sampling time.
3: Instant of the actual value sensing Ti > Bus cycle time Tdp or Ti = 0.
4: Instant of the actual value sensing Ti is not an integer multiple of the current controller sampling time.
5: Instant of the setpoint acceptance To >= Bus cycle time Tdp or To = 0.
6: Instant of the setpoint acceptance To is not an integer multiple of the current controller sampling time.
7: Controller application cycle time Tmapc is not an integer multiple of the speed controller sampling time.
8: Bus reserve bus cycle time Tdp - Data exchange time Tdx less than two current controller sampling times.
10: Instant of the setpoint acceptance To <= data exchange time Tdx + current controller sampling time
11: Controller application cycle time Tmapc > 14 x Tdp or Tmapc = 0.
12: PLL tolerance window Tpll_w > Tpll_w_max.
13: Bus cycle time Tdp is not a multiple of all basic clock cycles.

Remedy: - Adapt the bus parameterization Tdp, Ti, To.
- Adapt the sampling time for the current controller or speed controller.
For alarm value = 10:
- Reduce Tdx by using fewer bus participants or shorter telegrams.
Note:
PB: PROFIBUS
PN: PROFINET

A01904 (F, N) PN: Controller setting of the PZD telegram rejected

Message class: Communication error to the higher-level control system (9)
Message value: %1
Component: None
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: A controller attempts to set a PZD telegram. The setting is not applied.
Alarm value (r2124, interpret decimal):
1: Project contains free telegram interconnections.
2: Controller specifies a combination of fixed and free telegrams.
3: Controllers have no function rights for making changes.
4: Telegram cannot be set as a result of the drive configuration.
See also: r0922 (PROFIdrive PZD telegram)
Remedy: Check and align the telegram settings in the drive project and in the controller.
Response upon: F: NONE (OFF1)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A01905 (N) PN: Controller setting to activate the channel diagnostics rejected

Message class: Communication error to the higher-level control system (9)
Message value: %1
Component: Control Unit (CU)
Propagation: Local
Response: NONE
Acknowledgment: NONE

Cause: A controller attempted to change the activation of the channel diagnostics. The setting is not applied as the controller does not have the function rights to make a change.
Alarm value (r2124, interpret decimal):
1: Channel diagnostics are activated. Controller attempts to deactivate them.
2: Channel diagnostics are not activated. Controller attempts to activate them.
Remedy: Activate channel diagnostics in the bus configuration and check and align function rights in the drive.
Response upon: N: NONE
Acknowl. upon N: NONE

F01910 (N, A) Fieldbus: Setpoint timeout

Message class: Communication error to the higher-level control system (9)
Message value: -
Component: None
Propagation: Global
Response: OFF3 (IASC/DCBRK, NONE, OFF1, OFF2, STOP2)
Acknowledgment: IMMEDIATELY
Cause: The reception of setpoints from the fieldbus interface (PROFIBUS/PROFINET) has been interrupted.
- Bus connection interrupted.
- Controller switched off.
- Controller set into the STOP state.

Remedy: Restore the bus connection and set the controller to RUN.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F01911 (N, A) PB/PN: Isochronous operation clock cycle failure

Message class: Communication error to the higher-level control system (9)
Message value: -
Component: None
Propagation: Global
Response: OFF1 (OFF3)
Acknowledgment: IMMEDIATELY
Cause: The telegram to synchronize the clock cycles has failed for several bus clock cycles or in several bus clock cycles has consecutively violated the specified time grid (see bus cycle time, Tdp and Tpllw).
Remedy: - Check the physical bus configuration (cable, connector, terminating resistor, shielding, etc.).
- Check whether communication was briefly or permanently interrupted.
- Check the utilization level of the bus and controller (e.g. bus cycle time Tdp was set too short).
Note:
PB: PROFIBUS
PN: PROFINET
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F01912 (N, A) PB/PN: Isochronous operation sign-of-life failure

Message class: Communication error to the higher-level control system (9)
Message value: -
Component: None

Propagation:	Local
Response:	OFF1 (OFF3)
Acknowledgment:	IMMEDIATELY
Cause:	The maximum permissible number of errors in the controller sign-of-life (isochronous operation) has been exceeded in cyclic operation.
Remedy:	- Physically check the bus (cables, connectors, terminating resistor, shielding, etc.). - Correct the interconnection of the controller sign-of-life (c2045). - Check whether the controller correctly sends the sign-of-life (e.g. create a trace with STW2.12 ... STW2.15 and trigger signal ZSW1.3). - Check the permissible telegram failure rate (p0925). - Check the utilization level of the bus and controller (e.g. bus cycle time Tdp was set too short). Note: PB: PROFIBUS PN: PROFINET
Response upon: N:	NONE
Acknowl. upon N:	NONE
Response upon: A:	NONE
Acknowl. upon A:	NONE

F01916 Internal communications error

Message class:	Communication error to the higher-level control system (9)
Message value:	-
Component:	None
Propagation:	Global
Response:	OFF1 (OFF2, OFF3)
Acknowledgment:	IMMEDIATELY
Cause:	An internal Ethernet communications error has occurred.
Remedy:	- Carry out a POWER ON (switch-off/switch-on) for all components. - Upgrade firmware to later version. - Contact Technical Support.

F01917 Internal communications error

Message class:	Communication error to the higher-level control system (9)
Message value:	-
Component:	None
Propagation:	Global
Response:	OFF1 (OFF2, OFF3)
Acknowledgment:	IMMEDIATELY
Cause:	An internal PROFINET communications error has occurred.
Remedy:	- Carry out a POWER ON (switch-off/switch-on) for all components. - Upgrade firmware to later version. - Contact Technical Support.

A01925 (F) Modbus TCP: Connection interrupted

Message class:	Communication error to the higher-level control system (9)
Message value:	-
Component:	None
Propagation:	Local
Response:	NONE
Acknowledgment:	NONE

Cause:	The Ethernet connection to the Modbus controller is interrupted.
Remedy:	- Establish an Ethernet connection. - Activate the Modbus controller.
Response upon: F:	NONE (OFF1)
Acknowl. upon F:	IMMEDIATELY

A01932 PB/PN: Isochronous mode missing for DSC

Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Message value:	-
Component:	None
Propagation:	Global
Response:	NONE
Acknowledgment:	NONE
Cause:	There is no isochronous mode or isochronous sign of life and DSC is selected. Note: DSC: Dynamic Servo Control See also: r0922 (PROFIdrive PZD telegram)
Remedy:	Set isochronous mode across the bus configuration and transfer isochronous sign-of-life.

A01940 PB/PN: Clock cycle synchronism not reached

Message class:	Communication error to the higher-level control system (9)
Message value:	-
Component:	None
Propagation:	Local
Response:	NONE
Acknowledgment:	NONE
Cause:	The bus is in the data exchange state and clock synchronous operation has been selected using the parameterizing telegram. Synchronization with the clock cycle specified by the controller was still not able to be performed. - The controller does not send an isochronous telegram, although isochronous operation was selected when configuring the bus. - The controller uses another isochronous bus clock cycle than was transferred to the device in the parameterizing telegram.
Remedy:	- Check the controller application and bus configuration. - Check the consistency between the clock cycle input when configuring the device and clock cycle setting at the controller. Note: PB: PROFIBUS PN: PROFINET

A01941 PB/PN: Clock cycle signal missing when establishing bus communication

Message class:	Communication error to the higher-level control system (9)
Message value:	-
Component:	None
Propagation:	Local
Response:	NONE
Acknowledgment:	NONE
Cause:	The bus is in the data exchange state and clock synchronous operation has been selected using the parameterizing telegram. The synchronization telegram is not received.

Remedy: Check the controller application and bus configuration.
Note:
PB: PROFIBUS
PN: PROFINET

A01943 PB/PN: Clock cycle signal error when establishing bus communication

Message class: Communication error to the higher-level control system (9)
Message value: -
Component: None
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: The bus is in the data exchange state and clock synchronous operation has been selected using the parameterizing telegram.
The synchronization telegram is irregularly received.
- The controller sends an irregular synchronization telegram.
- The controller uses another isochronous bus clock cycle than was transferred to the device in the parameterizing telegram.
Remedy: - Check the controller application and bus configuration.
- Check the consistency between the clock cycle input when configuring the device and clock cycle setting at the controller.
Note:
PB: PROFIBUS
PN: PROFINET

A01944 PB/PN: Sign-of-life synchronism not reached

Message class: Communication error to the higher-level control system (9)
Message value: -
Component: None
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: The bus is in the data exchange state and clock synchronous operation has been selected using the parameterizing telegram.
Synchronization with the controller sign-of-life (STW2.12 ... STW2.15) could not be completed because the sign-of-life changes differently to how it was configured in the Tmapc time grid.
Remedy: - Ensure that the controller correctly increments the sign-of-life in the controller application clock cycle Tmapc.
- Correct the interconnection of the controller sign-of-life (c2045).
Note:
PB: PROFIBUS
PN: PROFINET

F01950 (N, A) PB/PN: Isochronous operation synchronization unsuccessful

Message class: Communication error to the higher-level control system (9)
Message value: -
Component: None
Propagation: Local
Response: OFF1 (NONE)
Acknowledgment: IMMEDIATELY
Cause: Synchronization of the internal clock cycle to the controller clock cycle has failed. The internal clock cycle exhibits an unexpected shift.

Remedy: Only for internal Siemens troubleshooting.
Note:
PB: PROFIBUS
PN: PROFINET
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F01951 Synch. application clock cycle missing

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: %1
Component: None
Propagation: Global
Response: OFF2 (NONE)
Acknowledgment: IMMEDIATELY
Cause: If DRIVE-CLiQ components with different application clock cycle are operated on a DRIVE-CLiQ port, then this requires synchronization with the converter. This synchronization routine was unsuccessful.
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.
Remedy: - Carry out a POWER ON (switch-off/switch-on) for all components.
- Upgrade the software of the DRIVE-CLiQ components.
- Upgrade the converter software.
Note:
If a Controller Extension is being used (e.g. CX32, NX10), then the following applies:
Check whether the Controller Extension is issuing error messages, and if required, remove these.

F01952 DRIVE-CLiQ: Synchronization of component not supported

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: %1
Component: None
Propagation: Drive
Response: OFF2 (NONE)
Acknowledgment: IMMEDIATELY
Cause: The existing system configuration requires that the connected DRIVE-CLiQ components support the synchronization between the basic clock cycle, DRIVE-CLiQ clock cycle and the application clock cycle.
However, not all DRIVE-CLiQ components have this functionality.
Fault value (r0949, interpret decimal):
Component number of the first faulty DRIVE-CLiQ component.
Remedy: Upgrade the firmware of the component specified in the fault value.
Note:
If required, also upgrade additional components in the DRIVE-CLiQ line.

F01954 DRIVE-CLiQ: Synchronization unsuccessful

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: %1
Component: None
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY

Cause: Synchronization between the basic clock cycle, DRIVE-CLiQ clock cycle and application clock cycle was started and was not able to be successfully completed (e.g. after switch-on).
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.

Remedy: 1. Remove the cause of a possibly active DRIVE-CLiQ error.
2. Initiate a new synchronization, e.g. as follows:
- Remove the PROFIBUS master and re-insert again.
- Restart the PROFIBUS master.
- Switch off the converter and switch on again.
- Carry out a hardware reset at the converter (RESET button, p0972).
- Carry out a parameter reset and load the saved parameters (p0976 = 2, 3).

A01955 DRIVE-CLiQ: Synchronization DO not completed

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: %1
Component: None
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: After the drive system is switched on, the synchronization between the basic clock cycle, DRIVE-CLiQ clock cycle and application clock cycle was started but was not completed within the selected time tolerance.
Alarm value (r2124, interpret decimal):
Only for internal Siemens troubleshooting.
Remedy: Carry out a POWER ON (switch-off/switch-on) for all components of the DO.

A01980 PN: Cyclic connection interrupted

Message class: Communication error to the higher-level control system (9)
Message value: %1
Component: None
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: The cyclic connection to the PROFINET controller is interrupted.
See also: r8936 (PN cyclic connection state)
Remedy: Establish the PROFINET connection and activate the PROFINET controller in the cyclic mode.
Check parameters "Name of Station" and "IP of Station".

A01981 PN: Maximum number of controllers exceeded

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Info 1: %1, info 2: %2
Component: None
Propagation: Local
Response: NONE
Acknowledgment: NONE

Cause: A controller attempts to establish a connection to the drive, and as a consequence exceeds the permitted number of PROFINET connections.
The alarm is automatically withdrawn after approx. 30 seconds.
Alarm value (r2124, interpret hexadecimal):
yyyyxxxx hex: yyyy = info. 1, xxxx = info. 2
Info 1 = 0: number of RT connections exceeded
Info 1 > 0: number of IRT connections exceeded
Info 2: permitted number of connections
Remedy: Check the configuration of the PROFINET controllers.

A01982 PN: Second controller missing

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: Connections to two PROFINET controllers are expected. However, only the connection to a PROFINET controller is available or the controller is in the STOP state.
- System redundancy is activated.
Remedy: Check the PROFINET controller.

A01983 PN: System redundancy switchover running

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: The "PROFINET system redundancy" function is configured and the connection between the primary controller and converter is interrupted. The backup controller assumes control of the converter.
Remedy: Not necessary.
This alarm is automatically withdrawn after switchover has been completed.

A01989 PN: Internal cyclic data transfer error

Message class: Communication error to the higher-level control system (9)
Message value: %1
Component: None
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: The cyclic actual values and/or setpoints were not transferred within the specified times.
Alarm value (r2124, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Remedy: Correctly set T_io_input or T_io_output.

A02000 Function generator: Start not possible

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None

Propagation: Interconnection
Response: NONE
Acknowledgment: NONE
Cause: The function generator has already been started.
Remedy: Stop the function generator and restart again if necessary.
Note:
The alarm is reset as follows:
- Remove the cause of this alarm.
- Restart the function generator.

A02005 Function generator: Drive does not exist

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Interconnection
Response: NONE
Acknowledgment: NONE
Cause: The drive object specified for connection does not exist.
Remedy: Use the existing drive object with the corresponding number.
Note:
The alarm is reset as follows:
- Remove the cause of this alarm.
- Restart the function generator.

A02006 Function generator: No drive specified for connection

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Interconnection
Response: NONE
Acknowledgment: NONE
Cause: No drive specified for connection was specified.
Remedy: At least one drive to be connected must be specified.
Note:
The alarm is reset as follows:
- Remove the cause of this alarm.
- Restart the function generator.

A02007 Function generator: Drive not SERVO / VECTOR / DC_CTRL

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Interconnection
Response: NONE
Acknowledgment: NONE
Cause: The drive object specified for connection is not a SERVO, VECTOR or DC_CTRL.

Remedy: Use a SERVO, VECTOR or DC_CTRL drive object with the corresponding number.
Note:
The alarm is reset as follows:
- Remove the cause of this alarm.
- Restart the function generator.

A02008 Function generator: Drive specified a multiple number of times

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Interconnection
Response: NONE
Acknowledgment: NONE
Cause: The drive object specified for connection is already specified.
Alarm value (r2124, interpret decimal):
Number of the drive object that was specified a multiple number times.
Remedy: Specify another drive object.
Note:
The alarm is reset as follows:
- Remove the cause of this alarm.
- Restart the function generator.

A02009 Function generator: Illegal mode

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Interconnection
Response: NONE
Acknowledgment: NONE
Cause: The selected operating mode (p1300) of the drive object is not permissible when using the function generator.
Alarm value (r2124, interpret decimal):
Number of the drive object involved.
Remedy: Change the operating mode for this drive object to p1300 = 20 (encoderless closed-loop speed control) or p1300 = 21 (closed-loop speed control with encoder).
Note:
The alarm is reset as follows:
- Remove the cause of this alarm.
- Restart the function generator.

A02010 Function generator: Speed setpoint from the drive is not zero

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Interconnection
Response: NONE
Acknowledgment: NONE
Cause: The speed setpoint of a drive selected for connection is greater than the value for the standstill detection set using p1226.

Remedy: For all of the drives specified for connection, set the speed setpoints to zero.
Note:
The alarm is reset as follows:
- Remove the cause of this alarm.
- Restart the function generator.

A02011 Function generator: The actual drive speed is not zero

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Interconnection
Response: NONE
Acknowledgment: NONE
Cause: The speed actual value of a drive selected for connection is greater than the value for the standstill detection set using p1226.
Remedy: Set the relevant drives to zero speed before starting the function generator.
Note:
The alarm is reset as follows:
- Remove the cause of this alarm.
- Restart the function generator.

A02015 Function generator: Drive enable signals missing

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Interconnection
Response: NONE
Acknowledgment: NONE
Cause: The master control and/or enable signals are missing to connect to the specified drive.
Remedy: Fetch the master control to the specified drive object and set all enable signals.
Note:
The alarm is reset as follows:
- Remove the cause of this alarm.
- Restart the function generator.

A02016 Function generator: Magnetizing running

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Interconnection
Response: NONE
Acknowledgment: NONE
Cause: Magnetizing has not yet been completed on a drive object specified for connection.
Alarm value (r2124, interpret decimal):
Number of the drive object involved.
Remedy: Wait for magnetizing of the motor (r0056.4).
Note:
The alarm is reset as follows:
- Restart the function generator.
See also: r0056 (Status word, closed-loop control)

A02020 Function generator: Parameter cannot be changed

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Interconnection
Response: NONE
Acknowledgment: NONE
Cause: This parameter setting cannot be changed when the function generator is active.
Remedy: - Stop the function generator before parameterizing.
- Possibly start the function generator.
Note:
The alarm is reset as follows:
- Remove the cause of this alarm.
- Restart the function generator.

A02025 Function generator: Period too short

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Interconnection
Response: NONE
Acknowledgment: NONE
Cause: The value for the period is too short.
Remedy: Check and adapt the value for the period.
Note:
The alarm is reset as follows:
- Remove the cause of this alarm.
- Restart the function generator.

A02026 Function generator: Pulse width too high

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Interconnection
Response: NONE
Acknowledgment: NONE
Cause: The selected pulse width is too high.
The pulse width must be less than the period duration.
Remedy: Reduce pulse width.
Note:
The alarm is reset as follows:
- Remove the cause of this alarm.
- Restart the function generator.

A02030 Function generator: Physical address equals zero

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Interconnection

Response: NONE
Acknowledgment: NONE
Cause: The specified physical address is zero.
Remedy: Set a physical address with a value other than zero.
Note:
The alarm is reset as follows:
- Remove the cause of this alarm.
- Restart the function generator.

A02040 Function generator: Illegal value for offset

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Interconnection
Response: NONE
Acknowledgment: NONE
Cause: The value for the offset is higher than the value for the upper limit or lower than the value for the lower limit.
Remedy: Adjust the offset value accordingly.
Note:
The alarm is reset as follows:
- Remove the cause of this alarm.
- Restart the function generator.

A02041 Function generator: Illegal value for bandwidth

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Interconnection
Response: NONE
Acknowledgment: NONE
Cause: The bandwidth referred to the time slice clock cycle of the function generator has either been set too low or too high.
Depending on the time slice clock cycle, the bandwidth is defined as follows:
Bandwidth_max = 1 / (2 x time slice clock cycle)
Bandwidth_min = Bandwidth_max / 100000
Example:
Assumption: Time slice clock cycle = 125 µs
--> Bandwidth_max = 1 / (2 x 125 µs) = 4000 Hz
--> Bandwidth_min = 4000 Hz / 100000 = 0.04 Hz
Remedy: Check the value for the bandwidth and adapt accordingly.
Note:
The alarm is reset as follows:
- Remove the cause of this alarm.
- Restart the function generator.

A02047 Function generator: Time slice clock cycle invalid

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Interconnection

Response: NONE
Acknowledgment: NONE
Cause: The time slice clock cycle selected does not match any of the existing time slices.
Remedy: Enter an existing time slice clock cycle. The fastest cycle time can be read out using the commissioning tool.
Note:
The alarm is reset as follows:
- Remove the cause of this alarm.
- Restart the function generator.

A02050 Trace: Start not possible

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Interconnection
Response: NONE
Acknowledgment: NONE
Cause: The trace has already been started.
Remedy: Stop the trace and, if necessary, start again.

A02055 Trace: Recording time too short

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Interconnection
Response: NONE
Acknowledgment: NONE
Cause: The trace duration is too short.
The minimum is twice the value of the trace clock cycle.
Remedy: Check the selected recording time and, if necessary, adjust.

A02056 Trace: Recording cycle too short

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Interconnection
Response: NONE
Acknowledgment: NONE
Cause: The selected recording clock cycle is shorter than the selected basic clock cycle 0.
Remedy: Increase the value for the trace cycle. The fastest cycle time can be read out using the commissioning tool.

A02057 Trace: Time slice clock cycle invalid

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Interconnection
Response: NONE
Acknowledgment: NONE
Cause: The time slice clock cycle selected does not match any of the existing time slices.
Remedy: Enter an existing time slice clock cycle. The fastest cycle time can be read out using the commissioning tool.

A02059 Trace: Time slice clock cycle for 2 x 8 recording channels not valid

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Interconnection
Response: NONE
Acknowledgment: NONE
Cause: The selected time slice clock cycle cannot be used for more than 4 recording channels.
Remedy: Enter the clock cycle of an existing time slice with a cycle time >= 4 ms or reduce the number of recording channels to 4 per trace.
The fastest cycle time can be read out using the commissioning tool.

A02060 Trace: Signal to be traced missing

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Interconnection
Response: NONE
Acknowledgment: NONE
Cause: - A signal to be traced was not specified.
- The specified signals are not valid.
Remedy: - Specify the signal to be traced.
- Check whether the relevant signal can be traced.

A02061 Trace: Invalid signal

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Interconnection
Response: NONE
Acknowledgment: NONE
Cause: - The specified signal does not exist.
- The specified signal can no longer be traced (recorded).
Remedy: - Specify the signal to be traced.
- Check whether the relevant signal can be traced.

A02062 Trace: Invalid trigger signal

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Interconnection
Response: NONE
Acknowledgment: NONE
Cause: - A trigger signal was not specified.
- The specified signal does not exist.
- The specified signal is not a fixed-point signal.
- The specified signal cannot be used as a trigger signal for the trace.
Remedy: Specify a valid trigger signal.

A02063 Trace: Invalid data type

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Interconnection
Response: NONE
Acknowledgment: NONE
Cause: The specified data type to select a signal using a physical address is invalid.
Remedy: Use a valid data type.

A02070 Trace: Parameter cannot be changed

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Interconnection
Response: NONE
Acknowledgment: NONE
Cause: The trace parameter settings cannot be changed when the trace is active.
Remedy: - Stop the trace before parameterization.
- If required, start the trace.

A02075 Trace: Pretrigger time too long

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Interconnection
Response: NONE
Acknowledgment: NONE
Cause: The selected pretrigger time must be shorter than the trace time.
Remedy: Check the pretrigger time setting and change if necessary.

F02080 Trace: Parameterization deleted due to unit changeover

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Local
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: The trace parameterization in the converter was deleted due to a unit changeover or a change in the reference parameters.
Remedy: Restart trace.

A02085 Message function: Parameterization error

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Parameter: %1, index:%2
Component: Power Unit
Propagation: Local
Response: NONE

Acknowledgment: NONE
Cause: A parameterization error was identified when starting the variable message function.
Alarm value (r2124, interpret decimal):
yyxxxx dec: yy = index, xxxx = parameter
See also: p3290, c3291, r3294, p3295, p3296, p3297, p3298, p3299
Remedy: Correct the parameter and restart.
Note:
The alarm is automatically withdrawn when stopping, or when successfully starting the variable message function.

A02096 MTrace 0: Cannot be saved

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: It is not possible to save the measurement results of a multiple trace on the memory card (trace recorder 0).
A multiple trace is not started or is canceled.
Alarm value (r2124, interpret decimal):
1: Memory card cannot be accessed.
- Card is not inserted or is blocked by a mounted USB drive.
3: Data save operation to slow.
- A second trace has been completed before the measurement results of the first trace were able to be saved.
- Writing the measurement result files to the card is blocked by the parameter save.
4: Data save operation canceled.
- For instance, the file required for the data save operation was not able to be found.
Remedy: - Insert or remove the memory card.
- Use a larger memory card.
- Configure a longer trace time or use an endless trace.
- Avoid saving parameters while a multiple trace is running.
- Check whether other functions are presently accessing measurement result files.

A02098 MTrace 1: Cannot be saved

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: It is not possible to save the measurement results of a multiple trace on the memory card (trace recorder 1).
A multiple trace is not started or is canceled.
Alarm value (r2124, interpret decimal):
1: Memory card cannot be accessed.
- Card is not inserted or is blocked by a mounted USB drive.
3: Data save operation to slow.
- A second trace has been completed before the measurement results of the first trace were able to be saved.
- Writing the measurement result files to the card is blocked by the parameter save.
4: Data save operation canceled.
- For instance, the file required for the data save operation was not able to be found.

Remedy:
- Insert or remove the memory card.
- Use a larger memory card.
- Configure a longer trace time or use an endless trace.
- Avoid saving parameters while a multiple trace is running.
- Check whether other functions are presently accessing measurement result files.

A02099 Trace: Insufficient converter memory space

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Interconnection
Response: NONE
Acknowledgment: NONE
Cause: The memory space still available on the converter is no longer sufficient for the trace function.
Remedy: Reduce the memory required, e.g. as follows:
- Reduce the trace time.
- Increase the trace clock cycle.
- Reduce the number of signals to be traced.

A02150 TEC: Technology Extension cannot be loaded

Message class: Hardware/software error (1)
Message value: %1
Component: None
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: The system was not able to load a Technology Extension.
Alarm value (r2124, interpret hexadecimal):
10 hex (16 dec):
The interface version in the DCB user library is not compatible to the DCC standard library that has been loaded.
12 hex (18 dec):
A technology package was not able to be downloaded to a converter because the restart necessary was not able to be performed.
Only for internal Siemens troubleshooting.
Remedy:
- Carry out a POWER ON (switch-off/switch-on) for all components.
- Upgrade firmware to later version.
- Contact Technical Support.

For alarm value = 10 hex (16 dec):
Load a compatible DCB user library (compatible to the interface of the DCC standard library).
For alarm value = 12 hex (18 dec):
Carry out a POWER ON (switch-off/switch-on) for all components.
Note:
DCB: Drive Control Block
DCC: Drive Control Chart
TEC: Technology Extension

F02151 (A) TEC: Internal software error

Message class: Hardware/software error (1)
Message value: %1
Component: None

Propagation: Global
Response: OFF2 (NONE, OFF1, OFF3)
Acknowledgment: IMMEDIATELY
Cause: An internal software error has occurred within a Technology Extension.
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Remedy: - Carry out a POWER ON (switch-off/switch-on) for all components.
- Upgrade firmware to later version.
- Contact Technical Support.
- Replace the converter.
Note:
TEC: Technology Extension
Response upon: A: NONE
Acknowl. upon A: NONE

F02152 (A) TEC: Insufficient memory

Message class: Hardware/software error (1)
Message value: %1
Component: None
Propagation: Global
Response: OFF1
Acknowledgment: IMMEDIATELY
Cause: The functionality on this converter is too extensive (e.g. too many drives, functions, data sets, Technology Extensions, blocks, etc.).
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.
Remedy: - Change the configuration on this converter, e.g.
-- Use fewer axes
-- Reduce the number of optional functions
-- Use fewer data sets
-- Reduce Technology Extensions and blocks
Response upon: A: NONE
Acknowl. upon A: NONE

F02153 TEC: Technology function does not exist

Message class: Hardware/software error (1)
Message value: -
Component: None
Propagation: Local
Response: OFF2 (NONE)
Acknowledgment: IMMEDIATELY
Cause: A technology function (e.g. Technology Extension, DCB library) does not exist on the converter or the existing version is too old.
When configuring, a technology function is activated, which either does not exist on the converter or is only available in an outdated version. This can occur when downloading a project or when powering up.
Remedy: - Load the required technology function or version to the converter.
- If required, deactivate the technology function not required in the configuration.
Note:
DCB: Drive Control Block
TEC: Technology Extension

F03001 NVRAM checksum incorrect

Message class: Hardware/software error (1)
Message value: %1
Component: Control Unit (CU)
Propagation: Local
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: A checksum error occurred when evaluating the non-volatile data (NVRAM) on the converter.
The NVRAM data affected was deleted.
Remedy: Carry out a POWER ON (switch-off/switch-on) for all components.

F03500 (A) TM: Initialization

Message class: Hardware/software error (1)
Message value: %1
Component: Terminal Module (TM)
Propagation: Interconnection
Response: OFF1 (OFF2)
Acknowledgment: IMMEDIATELY
Cause: An internal software error occurred when initializing the Terminal Modules, the terminals of the converter or Terminal Board 30.
Fault value (r0949, interpret decimal):
yxxx dec:
y = Only for internal Siemens troubleshooting
xxx = component number (p0151)
Remedy: - Switch off/on the converter supply voltage.
- Check the DRIVE-CLiQ connection.
- If required, replace the Terminal Module.
The Terminal Module should be directly connected to a DRIVE-CLiQ socket of the converter.
If the fault occurs again, replace the Terminal Module.
Response upon: A: NONE
Acknowl. upon A: NONE

A03501 TM: Sampling time change

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: Terminal Module (TM)
Propagation: Interconnection
Response: NONE
Acknowledgment: NONE
Cause: The sampling times of the inputs/outputs were changed.
This change only becomes valid after the next boot.
Remedy: Carry out a POWER ON.

F03505 (N, A) Analog input wire breakage

Message class: External measured value / signal state outside the permissible range (16)
Message value: %1
Component: Terminal Module (TM)
Propagation: Interconnection
Response: OFF1 (NONE, OFF2)

Acknowledgment: IMMEDIATELY
Cause: The wire-break monitoring for an analog input has responded.
Remedy: Check the wiring for interruptions.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

A03506 (F, N) 24 V power supply missing

Message class: Supply voltage fault (undervoltage) (3)
Message value: %1
Component: None
Propagation: Interconnection
Response: NONE
Acknowledgment: NONE
Cause: The 24 V power supply for the digital outputs (X124) is missing.
Remedy: Check the terminals for the supply voltage (X124, L1+, M).
Response upon: F: NONE
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A03510 (F, N) Calibration data not plausible

Message class: Hardware/software error (1)
Message value: %1
Component: Terminal Module (TM)
Propagation: Interconnection
Response: NONE
Acknowledgment: NONE
Cause: During booting, the calibration data for the analog inputs is read and checked with respect to plausibility.
At least one calibration data point was determined to be invalid.
Remedy: - Switch off/on the converter supply voltage.
- Check the DRIVE-CLiQ wiring.
Note:
If it reoccurs, then replace the module.
In principle, operation could continue.
The analog channel involved possibly does not achieve the specified accuracy.
Response upon: F: NONE
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A03520 (F, N) Temperature sensor fault

Message class: External measured value / signal state outside the permissible range (16)
Message value: %1
Component: Terminal Module (TM)
Propagation: Interconnection
Response: NONE
Acknowledgment: NONE

Cause: When evaluating the temperature sensor, an error occurred.
It is expected that one of the following temperature sensors is connected via an analog input:
- LG-Ni1000 (p0756[2...3] = 6)
- Pt1000 (p0756[2...3] = 7)
- DIN Ni 1k (p0756[2...3] = 10)
Alarm value (r2124, interpret decimal):
33: Analog input 2 (AI2) wire breakage or sensor not connected.
34: Analog input 2 (AI2) measured resistance too low (short-circuit).
49: Analog input 3 (AI3) wire breakage or sensor not connected.
50: Analog input 3 (AI3) measured resistance too low (short-circuit).
See also: p0756 (Analog inputs type)

Remedy:
- Make sure that the sensor is connected correctly.
- Check the sensor for correct function and if required, replace.
- Change over the analog input to type "no sensor connected" (p0756 = 8).

Response upon: F: NONE
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A05054 (N) Parallel connection: Power unit deactivated

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: Power Unit
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: For the drive object involved, fewer power units connected in parallel are active than exist in the target topology. Operation is only possible at reduced power (power derating).
Remedy: Re-activate the deactivated power units if required.
Response upon: N: NONE
Acknowl. upon N: NONE

A05065 (F, N) Voltage measured values not plausible

Message class: Power electronics faulted (5)
Message value: %1
Component: Power Unit
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The voltage measurement does not supply any plausible values and is not used.
Alarm value (r2124, interpret bit by bit):
Bit 1: Phase U
Bit 2: Phase V
Bit 3: Phase W

Remedy: The following parameterization must be made in order to deactivate the alarm:
- Deactivate voltage measurement (p0247.0 = 0).
- Deactivate flying restart with voltage measurement (p0247.5 = 0) and deactivate fast flying restart (p1780.11 = 0).

Response upon: F: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY

Response upon: N: NONE
Acknowl. upon N: NONE

F06000 Infeed: Precharging monitoring time expired

Message class: Infeed faulted (13)
Message value: -
Variant: G220 Clean Power
Component: Power Unit
Propagation: Global
Response: OFF2 (OFF1)
Acknowledgment: IMMEDIATELY
Cause: After the line contactor closes the power unit does not signal the READY state within the monitoring time (p0857).
The end of the DC link precharging was possibly not able to be completed for one of the following reasons:
1) There is no line voltage connected.
2) The line contactor/line side switch has not been closed.
3) The line voltage is too low.
4) Line voltage incorrectly set (p0210).
5) The precharging resistors are overheated as there were too many precharging operations per time unit.
6) The precharging resistors are overheated as the DC link capacitance is too high.
7) The DC link has either a ground fault or a short-circuit.
8) Precharging circuit may be defective.
See also: p0210 (Device supply voltage), p0857 (Power unit monitoring time)
Remedy: General:
- Check the line voltage at the connecting terminals of the infeed.
- Check the line voltage setting (p0210).
- Check the monitoring time and, if required, increase (p0857).
- Where relevant, observe additional power unit messages/signals (e.g. F29027).
For 5):
- Carefully observe the permissible precharging frequency (refer to the product documentation).
For 6):
- Check the total capacitance of the DC link and reduce in accordance with the maximum permissible DC link capacitance if necessary (refer to the product documentation).
For 7):
- Check the DC link for ground faults or short-circuits.

F06050 Infeed: Smart Mode not supported

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Variant: G220 Clean Power
Component: Power Unit
Propagation: Global
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The power unit does not support the Smart Mode.
Remedy: - Upgrade the power unit software and/or hardware for the Smart Mode. The availability of the Smart Mode function is displayed in r0192.
See also: r0192 (Power unit firmware properties 1)

F06054 Infeed: Power unit modulation not supported

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Variant: G220 Clean Power
Component: Power Unit
Propagation: Global
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The power unit does not support the Smart Mode.
Remedy: - Upgrade the power unit software and/or hardware for the Smart Mode. The availability of the Smart Mode function is displayed in r0192.
See also: r0192 (Power unit firmware properties 1)

F06080 (A) Infeed: Parameter error

Message class: Infeed faulted (13)
Message value: Parameter: %1
Variant: G220 Clean Power
Component: Power Unit
Propagation: Global
Response: OFF2 (NONE, OFF1)
Acknowledgment: IMMEDIATELY
Cause: An infeed parameter is incorrectly set.
Fault value (r0949, interpret decimal):
Number of the parameter involved.
See also: r0220 (Infeed line filter type), p3665 (VSM temperature evaluation sensor type), p3667 (VSM overtemperature alarm threshold), p3668 (VSM overtemperature shutdown threshold)
Remedy: Appropriately change the parameter specified in the fault value.
See also: r0220 (Infeed line filter type), p3665 (VSM temperature evaluation sensor type), p3667 (VSM overtemperature alarm threshold), p3668 (VSM overtemperature shutdown threshold)
Response upon: A: NONE
Acknowl. upon A: NONE

F06100 Infeed: Shutdown due to line undervoltage condition

Message class: Line supply fault (2)
Message value: %1
Variant: G220 Clean Power
Component: None
Propagation: Global
Response: OFF2 (NONE, OFF1)
Acknowledgment: IMMEDIATELY
Cause: The filtered (steady-state) value of the line voltage is less than the fault threshold (p0283).
Fault condition: Vrms < p0283 * p0210
Fault value (r2133, floating point):
Actual steady-state line voltage.
See also: p0283 (Line undervoltage shutdown (trip) threshold)
Remedy: - Check the line supply.
- Check the supply voltage (p0210).
- Check the threshold value (p0283).

A06105 (F) Infeed: Line undervoltage

Message class: Line supply fault (2)
Message value: %1
Variant: G220 Clean Power
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The filtered (steady-state) value of line voltage is lower than the alarm threshold (p0282).
Alarm condition: Vrms < p0282 * p0210
Alarm value (r2134, floating point):
Actual steady-state line voltage.
See also: p0282 (Line undervoltage alarm threshold)
Remedy: - Check the line supply.
- Check the supply voltage (p0210).
- Check the alarm threshold (p0282).
Response upon: F: NONE (OFF1, OFF2)
Acknowl. upon F: IMMEDIATELY

F06200 Infeed: One or several line phases failed

Message class: Line supply fault (2)
Message value: %1
Variant: G220 Clean Power
Component: None
Propagation: Global
Response: OFF2 (OFF1)
Acknowledgment: IMMEDIATELY
Cause: Failure or overvoltage in one or several line phases.
The fault can be output in two operating states:
1. During the switch-on phase of the infeed unit.
The measured line supply angle deviates from the regular characteristic for a 3-phase system; the PLL cannot be synchronized.
2. While the infeed is operational.
During an active line voltage alarm (A06205) or current symmetry alarm (A06206), an additional fault occurred, which resulted in a shutdown. Alarm values A06205 and A06206 could provide additional information about the cause of the shutdown.
Possible causes:
- Voltage dip on the line side or phase failure or overvoltage lasting longer than 10 ms.
- Overload condition on the load side with peak current.
- Line reactor missing.
Remedy: - Check the line supply, terminals and fuses.
- Check the connection and size (rating) of the line filter and/or the line reactor.
- Check the load.
- If failed in operation, carefully note the previous alarm messages A06205/A06206 with alarm values.
See also: p3463 (Infeed phase failure detection line supply angle change)

A06205 (F) Infeed: Voltage dip in at least one line phase

Message class: Line supply fault (2)
Message value: %1
Variant: G220 Clean Power

Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: Voltage dip or overvoltage in one or several line phases has been detected in operation.
The event is displayed in status parameter r3405.2.
If nothing else is specified for the alarm values, then at the instant of the alarm, the pulses are inhibited for a minimum of 8 ms.
Also for alarm values with pulse inhibit, the operating signal of the infeed remains in r13863.0.
Alarm value (r2124, interpret bit by bit):
Bit 0: Line angle deviation due to a line fault (limit value p3463).
Bit 2: Active current deviation.
Bit 3: Line frequency deviation (limit values: 115 % * p0284, 85 % * p0285).
Bit 4: Line overvoltage (limit value: 120 % * p0281 * p0210).
Bit 5: Line undervoltage (limit value: 20 % * p0210).
Bit 7: Peak current event.
Bit 14: Recharging current fault.
Remedy: When the alarm occurs, the following always applies:
- Check the line supply, terminals and fuses.
- Check the line quality and system fault level.
- Check the load.
Dependent on the alarm value in r2124, the following also applies:
For bit 0 = 1:
Line fault occurred or poor/incorrect controller setting. For poor line quality or frequent line supply changeover operations, when required, limit value p3463 can be increased until the alarm value no longer occurs.
For bit 2 = 1:
Line fault occurred or poor/incorrect controller setting. - Check the controller setting and load.
For bit 3 = 1:
Line fault occurred. For poor line quality or frequent line changeover operations, when required, limit values p0284 and p0285 can be increased until the alarm value no longer occurs.
For bit 4 = 1:
Line interrupted or line overvoltage has occurred.
For bit 5 = 1:
Line interrupted or line undervoltage occurred.
For bit 7 = 1:
Peak current shutdown due to a line fault, overload or incorrect/missing line reactor.
For bit 14 = 1:
Supply/infeed overload or a fault in at least one line phase.
See also: r3405 (Infeed status word), p3463 (Infeed phase failure detection line supply angle change)
Response upon: F: NONE (OFF2)
Acknowl. upon F: IMMEDIATELY

A06206 (F) Infeed: Line currents asymmetrical alarm

Message class: Line supply fault (2)
Message value: %1
Variant: G220 Clean Power
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE

Cause: The asymmetry of the three line currents at the terminals of the power unit exceeds the set alarm threshold (p3465).
Generally, the cause of current asymmetry is line voltage asymmetry or failure of a line phase (e.g. a fuse has ruptured or a terminal connection has become loose). As a consequence, the message is also signaled as possible phase failure in status parameter r3405.2.
Cyclic power fluctuations in the DC link with the line frequency can also result in unequal rms values of the line currents. For this type of operating scenario, it is recommended that monitoring is deactivated (p3465[0, 3] = 0).
Alarm value (r2134, floating point):
Digits to the left of the decimal point:
Highest rms phase current in amps.
Decimal places:
Quotient of the lowest and highest rms phase current value.

Remedy:
- Check the line supply, terminals and fuses.
- Check the line quality and system fault level.
- Check the load.
- Check the settings in p3462 and p3465.

See also: r3405 (Infeed status word), p3465 (Infeed current symmetry monitoring thresholds)

Response upon: F: NONE (OFF1, OFF2)
Acknowl. upon F: IMMEDIATELY

F06207 (N, A) Infeed: Line currents asymmetrical

Message class: Line supply fault (2)
Message value: %1
Variant: G220 Clean Power
Component: Power Unit
Propagation: Global
Response: OFF1 (NONE, OFF2)
Acknowledgment: IMMEDIATELY

Cause: The asymmetry of the line currents is continuously too high.
The most probable cause is failure of a line phase.
Fault value (r2133, floating point):
Digits to the left of the decimal point:
Highest rms phase current in amps.
Decimal places:
Quotient of the lowest and highest rms phase current value.

Remedy:
- Check the previous alarm A06206 and the alarm value.
- Check the line supply, terminals and fuses.
- Check the settings in p3462 and p3465.
- Check the connection and size (rating) of the line filter and/or the line reactor.

Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

A06208 (F, N) Infeed: line voltage asymmetrical

Message class: Infeed faulted (13)
Message value: -
Variant: G220 Clean Power
Component: Power Unit
Propagation: Global

Response:	NONE
Acknowledgment:	NONE
Cause:	Asymmetry of the voltages in the line phase too high. The most probable cause is failure of a line phase. Note: This message is only output when asymmetry monitoring is activated (p3640.1 = 1).
Remedy:	- Check the line supply, terminals and fuses. - Check the setting values for the phase asymmetry (p3647[0, 1]).
Response upon: F:	NONE (OFF1, OFF2)
Acknowl. upon F:	IMMEDIATELY
Response upon: N:	NONE
Acknowl. upon N:	NONE

F06210 Infeed: Summation current too high

Message class:	Ground fault / inter-phase short-circuit detected (7)
Message value:	%1
Variant:	G220 Clean Power
Component:	Power Unit
Propagation:	Global
Response:	OFF2 (OFF1)
Acknowledgment:	IMMEDIATELY
Cause:	The smoothed sum of the phase currents (i1 + i2 + i3) is higher than 4 % of the maximum power unit current (r13209). Possible causes: - The DC link has a ground fault that results in a high total current (r13069[6]). The DC component in the line currents can damage/destroy the power unit, line reactor or line filter! - The zero point calibration of the current measurement was not carried out (p3491, A06602). - Defective current measurement in the power unit. Fault value (r2133, floating point): Smoothed total of the phase currents.
Remedy:	- Check the DC link for a low-ohmic or high-ohmic ground fault and if present, remove. - Increase the monitoring time of the current offset measurement (p3491). - Replace the power unit if necessary.

A06215 (F) Infeed: Summation current too high

Message class:	Ground fault / inter-phase short-circuit detected (7)
Message value:	%1
Variant:	G220 Clean Power
Component:	Power Unit
Propagation:	Global
Response:	NONE
Acknowledgment:	NONE
Cause:	The smoothed sum of the phase currents (i1 + i2 + i3) is higher than 3 % of the maximum power unit current (r13209). Possible causes: - The DC link has a ground fault that results in a high total current (r13069[6]). The DC component in the line currents can damage/destroy the power unit, line reactor or line filter! - The zero point calibration of the current measurement was not carried out (p3491, A06602). - Defective current measurement in the power unit. Alarm value (r2134, floating point): Smoothed total of the phase currents.

Remedy: - Check the DC link for a low-ohmic or high-ohmic ground fault and if present, remove.
- Increase the monitoring time of the current offset measurement (p3491).
- Replace the power unit if necessary.

Response upon: F: NONE (OFF1, OFF2)

Acknowl. upon F: IMMEDIATELY

F06300 Infeed: Line voltage too high at power on

Message class: Line supply fault (2)

Message value: %1

Variant: G220 Clean Power

Component: None

Propagation: Global

Response: OFF2 (NONE, OFF1)

Acknowledgment: IMMEDIATELY

Cause: The RMS line voltage Vrms was so high when switching on that controlled operation is not possible without exceeding the permissible maximum voltage in the DC link (p0280).
Fault condition: Vrms * 1.5 > p0280.
Fault value (r2133, floating point):
Lowest possible controlled DC link voltage for the line voltage presently connected.
See also: p0280 (DC link voltage maximum steady-state)

Remedy: - Check the line voltage.
- Check the maximum DC link voltage and if required, increase (p0280).
- Check the supply voltage and compare with the actual line voltage (p0210).
- Check whether the power unit is dimensioned for the line voltage actually being used.
See also: p0210 (Device supply voltage), p0280 (DC link voltage maximum steady-state)

A06301 (F) Infeed: Line overvoltage

Message class: Line supply fault (2)

Message value: Line voltage: %1

Variant: G220 Clean Power

Component: None

Propagation: Global

Response: NONE

Acknowledgment: NONE

Cause: The filtered (steady-state) value of the rms line voltage Vrms is higher than the alarm threshold (p0281).
Alarm condition: Vrms > p0281 * p0210.
See also: p0281 (Line overvoltage alarm threshold)

Remedy: - Check the line supply.
- Check the supply voltage (p0210).
- Check the alarm threshold (p0281).
See also: p0210 (Device supply voltage), p0281 (Line overvoltage alarm threshold)

Response upon: F: NONE (OFF2)

Acknowl. upon F: IMMEDIATELY

F06310 (A) Supply voltage (p0210) incorrectly parameterized

Message class: Line supply fault (2)

Message value: -

Variant: G220

Component: None

Propagation: Global

Response: NONE (OFF1, OFF2)
Acknowledgment: IMMEDIATELY
Cause: After precharging has been completed, the measured DC link voltage lies outside the tolerance range.
Permissible range:
1.16 * p0210 < r0070 < 1.6 * p0210
Note:
The fault can only be acknowledged when the drive is switched off. A new test is carried out after changing p0210.
See also: p0210 (Device supply voltage)
Remedy: - Check the parameterized supply voltage and if required change (p0210).
- Check the line voltage.
See also: p0210 (Device supply voltage)
Response upon: A: NONE
Acknowl. upon A: NONE

F06310 (A) Supply voltage (p0210) incorrectly parameterized

Message class: Line supply fault (2)
Message value: Line voltage: %1
Variant: G220 Clean Power
Component: None
Propagation: Global
Response: NONE (OFF1, OFF2)
Acknowledgment: IMMEDIATELY
Cause: After precharging has been completed, the supply voltage Vrms is not within the tolerance range of the line voltage (p0210).
The following applies for the tolerance range: p0282 * p0210 < Vrms < 110 % * p0210.
Note:
The fault can only be acknowledged when the drive is switched off.
Fault value (r2133, floating point):
Line voltage Vrms present.
See also: p0210 (Device supply voltage)
Remedy: - Check the parameterized supply voltage and if required change (p0210).
- Check the line voltage.
See also: p0210 (Device supply voltage)
Response upon: A: NONE
Acknowl. upon A: NONE

F06311 Infeed: Supply voltage (p0210) incorrect

Message class: Line supply fault (2)
Message value: Line voltage: %1
Variant: G220 Clean Power
Component: None
Propagation: Global
Response: OFF2 (OFF1)
Acknowledgment: IMMEDIATELY
Cause: The supply voltage Vrms does not lie within the extended tolerance range of the set line voltage (p0210).
The following applies for the extended tolerance range: 75 % * p0210 < Vrms < 120 % * p0210
Fault value (r2133, floating point):
Line voltage Vrms present.
See also: p0210 (Device supply voltage)

Remedy: - Check the parameterized supply voltage and if required change (p0210).
- Check the line voltage.
See also: p0210 (Device supply voltage)

A06350 (F) Infeed: Measured line frequency too high

Message class: Line supply fault (2)
Message value: Line frequency: %1
Variant: G220 Clean Power
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The actual line frequency f_line is higher than the parameterized alarm threshold (f_line > p0211 * p0284).
The alarm can be output in two operating states:
1. During the switch-on phase of the infeed unit.
Consequence:
Synchronization of the infeed to the line supply is interrupted and is restarted.
The alarm is reissued if the line frequency remains higher than the parameterized alarm threshold.
2. While the infeed is operational.
Consequence:
The infeed still remains in the operating state, alarm A06350 is output. This signifies a critical operational fault.
Alarm value (r2134, floating point):
Actual line frequency determined.
See also: p0284 (Line frequency exceeded alarm threshold)
Remedy: - Check the parameterized line frequency and if required change (p0211).
- Check the alarm threshold (p0284).
- Check the line supply.
- Check the line quality.
See also: p0211 (Rated line frequency), p0284 (Line frequency exceeded alarm threshold)
Response upon: F: NONE (OFF1, OFF2)
Acknowl. upon F: IMMEDIATELY

A06351 (F) Infeed: Measured line frequency too low

Message class: Line supply fault (2)
Message value: Line frequency: %1
Variant: G220 Clean Power
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE

Cause: The actual line frequency f_line is lower than the parameterized alarm threshold (f_line < p0211 * p0285).
The alarm can be output in two operating states:
1. During the switch-on phase of the infeed unit.
Consequence:
Synchronization of the infeed to the line supply is interrupted and is restarted.
The alarm is reissued if the line frequency remains less than the parameterized alarm threshold.
2. While the infeed is operational.
Consequence:
The infeed remains in the "operating" (run) state and alarm A06351 is output. This signifies a critical operational fault.
Alarm value (r2134, floating point):
Actual line frequency determined.
See also: p0285 (Line frequency undershot alarm threshold)

Remedy: - Check the parameterized line frequency and if required change (p0211).
- Check the alarm threshold (p0285).
- Check the line supply.
- Check the line quality.
See also: p0211 (Rated line frequency), p0285 (Line frequency undershot alarm threshold)

Response upon: F: NONE (OFF1, OFF2)

Acknowl. upon F: IMMEDIATELY

F06500 Infeed: Line synchronization not possible

Message class: Line supply fault (2)

Message value: -

Variant: G220 Clean Power

Component: Power Unit

Propagation: Global

Response: OFF2 (OFF1)

Acknowledgment: IMMEDIATELY

Cause: The line synchronization is not possible within the monitoring time.
The infeed was re-synchronized to the line supply because it was interrupted due to an incorrect line frequency or due to excessively high line voltage distortion.
After 20 attempts, synchronization - and therefore also the switching-on operation - were interrupted.

Remedy: - Check the parameterized line frequency and if required change (p0211).
- Check the setting of the threshold values (p0284, p0285).
- Check the line supply.
- Check the connecting terminals
- Check the state of the circuit breaker and its associated control.
See also: p0211 (Rated line frequency), p0284 (Line frequency exceeded alarm threshold), p0285 (Line frequency undershot alarm threshold)

A06601 (F) Infeed: Current offset measurement interrupted

Message class: Infeed faulted (13)

Message value: %1

Variant: G220 Clean Power

Component: Power Unit

Propagation: Global

Response: NONE

Acknowledgment: NONE

Cause: Defective current measurement or a DC current is present during the offset measurement.
Alarm value (r2124, interpret decimal):
1: Excessively high phase current has occurred during the current offset calibration.
2: The measured current offset is greater than the 1.6% of the maximum permissible converter current (e.g. due to a ground fault in the DC link).
3. Not enough phase current measured values were sensed during the current offset calibration.

Remedy: For alarm value = 1:
- Possible counter-measure if there is no line contactor: Switch on the line supply an adequately long time before OFF1 = 1.
For alarm value = 2:
- Defective current measurement or a DC current is present during the offset measurement.
- Check the DC link for a ground fault.
For alarm value = 3:
- Possible counter-measure if there is no line contactor: Switch on the line supply an adequately long time before OFF1 = 1.
- Check the line quality.
- Defective current measurement or a DC current is present during the offset measurement.
- Before switching on, check voltage actual values r13089[0...2]. For a defective voltage measurement, the current offset measurement is canceled.

Response upon: F: NONE (OFF1, OFF2)

Acknowl. upon F: IMMEDIATELY

A06602 (F) Infeed: Current offset measurement not possible

Message class: Infeed faulted (13)

Message value: -

Variant: G220 Clean Power

Component: Power Unit

Propagation: Global

Response: NONE

Acknowledgment: NONE

Cause: After an OFF1 = 1 no valid current offset measurement was able to be made within the monitoring time (p3491) before closing the line contactor. The actual correction values for the current offset r13069[3..5] remain unchanged.
Notice:
Without a valid measurement, DC components can occur in the phase currents r13069[0..2], which can cause noise, power loss and damage - especially in transformers. Under certain circumstances the quality of the DC link voltage control is reduced.
See also: p3491 (Infeed I-offset measurement monitoring time)

Remedy: - Check the DC link for a ground fault. A ground fault can destroy parts and components!
- Check the monitoring time setting and if required increase (p3491). At least 100 ms is required for a valid measurement (p3491 > 100 ms).
See also: p3491 (Infeed I-offset measurement monitoring time)

Response upon: F: NONE (OFF1, OFF2)

Acknowl. upon F: IMMEDIATELY

F06700 (A) Infeed: Switch line contactor for load condition

Message class: Infeed faulted (13)

Message value: -

Variant: G220 Clean Power

Component: Power Unit

Propagation: Global

Response: NONE (OFF2)

Acknowledgment: IMMEDIATELY
Cause: For an ON command, the infeed line contactor should be switched under load.
Remedy: - Do not load the DC link if the infeed has not issued an operating signal (r13863.0 = 1).
- After the infeed has been switched off, all power units connected to the DC link should be switched off. To realize this, the operating signal of the infeed (r13863.0) must be suitably interconnected.
Response upon: A: NONE
Acknowl. upon A: NONE

A06800 (F) Infeed: Maximum steady-state DC link voltage reached

Message class: Infeed faulted (13)
Message value: -
Variant: G220 Clean Power
Component: Power Unit
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The DC link voltage setpoint has reached the maximum steady-state voltage parameterized in p0280.
The DC link voltage is increased by the modulation depth reserve controller for the following reasons:
- Modulation depth reserve is too low (p3480).
- Line voltage is too high.
- Supply voltage (p0210) parameterized to be too low.
Remedy: - Check the supply voltage setting (p0210).
- Check the line supply for an overvoltage condition.
- Reduce the modulation depth reserve (p3480).
See also: p0210 (Device supply voltage), p0280 (DC link voltage maximum steady-state), p3480 (Infeed modulation depth limit)
Response upon: F: NONE (OFF1, OFF2)
Acknowl. upon F: IMMEDIATELY

A06925 (N) Operating mode only for diagnostic purposes

Message class: Application/technological function faulted (17)
Message value: -
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The current operating mode is only intended for diagnostic purposes.
See also: p1300 (Open-loop/closed-loop control mode)
Remedy: Change the operating mode.
Response upon: N: NONE
Acknowl. upon N: NONE

F07011 Drive: Motor overtemperature

Message class: Motor overload (8)
Message value: %1
Component: Motor
Propagation: Global
Response: OFF2 (NONE, OFF1, OFF3, STOP2)
Acknowledgment: IMMEDIATELY

Cause:
KTY84/Pt1000/Pt100 or no sensor:
The measured motor temperature or model temperature has exceeded the fault threshold or the timer after the alarm threshold has been exceeded has expired.
The parameterized response becomes active.
PTC or bimetallic NC contact:
The response threshold of 1650 Ohm was exceeded or the NC contact opened and the timer has expired. The parameterized response becomes active.
Additional motor overload protection:
The motor load is too high.
Possible causes:
- Motor is overloaded.
- The motor ambient temperature is too high.
- PTC / bimetallic NC contact: Wire breakage or sensor not connected.
Fault value (r0949, interpret decimal):
200:
Motor temperature model 1 (I2t): temperature too high.
Number of the temperature channel leading to the message.
400:
Additional motor overload protection: the load is too high.
See also: p0351, p0604, p0605, p0606, p0612, p0613, p0617, p0618, p0619, p0625, p0626, p0627, p0628, p5375

Remedy:
- Reduce the motor load.
- Check the ambient temperature and the motor ventilation.
- Check the wiring and the connection of the PTC or bimetallic NC contact.
- Check activation of the additional motor overload protection (5375).
See also: p0351, p0604, p0605, p0606, p0612, p0617, p0618, p0619, p0625, p0626, p0627, p0628

A07012 (N) Drive: Motor temperature model overtemperature

Message class: Motor overload (8)
Message value: %1
Component: Motor
Propagation: Global
Response: NONE
Acknowledgment: NONE

Cause:
Motor temperature model 1/3 or the additional motor overload protection identified that the alarm threshold was exceeded.
Hysteresis:2K
Alarm value (r2124, interpret decimal):
200:
Motor temperature model 1 (I2t): temperature too high.
300:
Motor temperature model 3: temperature too high.
400:
Additional motor overload protection: the load is too high. If the load remains at this level, the drive is shut down with fault F07011.
See also: r0034, p0351, p0605, p0611, p0612, p0613, p5375

Remedy:
- Check the motor load and if required, reduce.
- Check the motor ambient temperature.
- Check activation of the motor temperature model.

Motor temperature model 1 (I2t):
- Check the thermal time constant.
- Check alarm threshold.

Motor temperature model 3:
- Check the motor type.
- Check alarm threshold.
- Check the model parameters.
- Check activation of the additional motor overload protection (p5375).

See also: r0034, p0351, p0605, p0611, p0612, p0613

Response upon: N: NONE

Acknowl. upon N: NONE

F07013 Drive: Motor temperature model configuration fault

Message class: Motor overload (8)

Message value: %1

Component: Motor

Propagation: Global

Response: OFF2 (NONE, OFF1, OFF3, STOP2)

Acknowledgment: IMMEDIATELY

Cause: A fault has occurred in the configuration of the motor temperature model.

Fault value (r0949, interpret decimal):

300:

Motor temperature model 3: The sensor does not supply the necessary encoder temperature for the thermal model.

301:

Motor temperature model 3: The encoder type is unknown.

302:

More than one temperature model was simultaneously activated.

303:

Motor temperature model unknown in the actual firmware version.

See also: p0300, p0301, p0404, p0612

Remedy:
- Check the encoder type.
- Check the motor type.
- Check activation of the motor temperature model.
- Check the motor temperature model parameters.

See also: p0300, p0301, p0404, p0612

A07014 (N) Drive: Motor temperature model configuration alarm

Message class: Motor overload (8)

Message value: %1

Component: Motor

Propagation: Global

Response: NONE

Acknowledgment: NONE

Cause: A fault has occurred in the configuration of the motor temperature model.
Alarm value (r2124, interpret decimal):
1:
All motor temperature models: It is not possible to save the model temperature
300:
Motor temperature models 1, 3: Threshold value for an alarm is higher than the threshold value for a fault.
See also: p0610 (Motor overtemperature response), p5390 (Mot_temp_mod 1/3 alarm threshold), p5391 (Mot_temp_mod 1/3 fault threshold)

Remedy:
- Set the response for motor overtemperature to "Alarm and fault, no reduction of I_max."
- Check and correct the threshold values.
- Only activate one motor temperature model.
- Activate the correct motor temperature model.

See also: p0610 (Motor overtemperature response), p5390 (Mot_temp_mod 1/3 alarm threshold), p5391 (Mot_temp_mod 1/3 fault threshold)

Response upon: N: NONE

Acknowl. upon N: NONE

A07015 Drive: Motor temperature sensor alarm

Message class: External measured value / signal state outside the permissible range (16)

Message value: %1

Component: Motor

Propagation: Global

Response: NONE

Acknowledgment: NONE

Cause: An error was detected when evaluating the temperature sensor set in p0600 and p0601.
With the fault, the time in p0607 is started. If the fault is still present after this time has expired, then fault F07016 is output; however, at the earliest, 50 ms after alarm A07015.
Possible causes:
- Wire break or sensor not connected (KTY: R > 1630 Ohm, Pt1000: R > 1720 Ohm, Pt100: R > 375Ohm).
- Measured resistance too low (PTC: R < 20 Ohm, KTY: R < 50 Ohm, Pt1000: R < 603 Ohm, Pt100: < 30Ohm).

Alarm value (r2124, interpret decimal):
- When SME/TM120 is selected (p0601 = 10), the following applies:
Number of the temperature channel leading to the message.

Remedy:
- Make sure that the sensor is connected correctly.
- Check the parameterization (p0600, p0601).

See also: r0035, p0600, p0601, p0607

F07016 Drive: Motor temperature sensor fault

Message class: External measured value / signal state outside the permissible range (16)

Message value: %1

Component: Motor

Propagation: Global

Response: OFF1 (NONE, OFF2, OFF3, STOP2)

Acknowledgment: IMMEDIATELY

Cause: An error was detected when evaluating the temperature sensor set in p0600 and p0601.
Possible causes:
- Wire break or sensor not connected (KTY: R > 1630 Ohm, Pt1000: R > 1720 Ohm, Pt100: R > 375Ohm).
- Measured resistance too low (PTC: R < 20 Ohm, KTY: R < 50 Ohm, Pt1000: R < 603 Ohm, Pt100: < 30Ohm).
Note:
If alarm A07015 is present, the time in p0607 is started. If the fault is still present after this time has expired, then fault F07016 is output; however, at the earliest, 50 ms after alarm A07015.
Fault value (r0949, interpret decimal):
- When SME/TM120 is selected (p0601 = 10), the following applies:
Number of the temperature channel leading to the message.
See also: p0607 (Temperature sensor fault timer)

Remedy:
- Make sure that the sensor is connected correctly.
- Check the parameterization (p0600, p0601).
- Induction motors: Deactivate temperature sensor fault (p0607 = 0).
See also: r0035, p0600, p0601, p0607

F07080 Drive: Incorrect control parameter

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Parameter: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: IMMEDIATELY

Cause: The closed-loop control parameters have been parameterized incorrectly (e.g. p0356 = L_spread = 0).
Fault value (r0949, interpret decimal):
The fault value includes the parameter number involved.
See also: p0310, p0311, p0341, p0344, p0350, p0354, p0356, p0357, p0358, p0360, p0400, p0404, p0408, p0640, p1082, p1300

Remedy: Modify the parameter indicated in the fault value (r0949) (e.g. p0640 = current limit > 0).
See also: p0311, p0341, p0344, p0350, p0354, p0356, p0358, p0360, p0400, p0404, p0408, p0640, p1082

F07082 Macro: Execution not possible

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Fault cause: %1, supplementary information: %2, preliminary parameter number: %3
Component: None
Propagation: Local
Response: NONE
Acknowledgment: IMMEDIATELY

Cause: The macro cannot be executed.
Fault value (r0949, interpret hexadecimal):
ccccbbaa hex:
cccc = preliminary parameter number, bb = supplementary information, aa = fault cause
Fault causes for the trigger parameter itself:
19: Called file is not valid for the trigger parameter.
20: Called file is not valid for parameter 15.
21: Called file is not valid for parameter 700.
22: Called file is not valid for parameter 1000.
23: Called file is not valid for parameter 1500.
24: Data type of a TAG is incorrect (e.g. Index, number or bit is not U16).
Fault causes for the parameters to be set:
25: Error level has an undefined value.
26: Mode has an undefined value.
27: A value was entered as string in the tag value that is not "DEFAULT".
31: Entered drive object type unknown.
32: A device was not able to be found for the determined drive object number.
34: A trigger parameter was recursively called.
35: It is not permissible to write to the parameter via macro.
36: Check, writing to a parameter unsuccessful, parameter can only be read, not available, incorrect data type, value range or assignment incorrect.
37: Source parameter for a signal interconnection was not able to be determined.
38: An index was set for a non-indexed (or CDS-dependent) parameter.
39: No index was set for an indexed parameter.
41: A bit operation is only permissible for parameters with the parameter format DISPLAY_BIN.
42: A value not equal to 0 or 1 was set for a bit operation.
43: Reading the parameter to be changed by the bit operation was unsuccessful.
51: Factory setting for DEVICE may only be executed on the DEVICE.
61: The setting of a value was unsuccessful.

Remedy: - Check the parameter involved.
- Check the macro file and signal interconnection.

F07084 Macro: Condition for WaitUntil not fulfilled

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Parameter: %1
Component: None
Propagation: Local
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: The WaitUntil condition set in the macro was not fulfilled in a certain number of attempts.
Fault value (r0949, interpret decimal):
Parameter number for which the condition was set.
Remedy: Check and correct the conditions for the WaitUntil loop.

F07086 Units changeover: Parameter limit violation due to reference value change

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Parameter: %1
Variant: G220
Component: None
Propagation: Global
Response: NONE

Acknowledgment: IMMEDIATELY

Cause: A reference parameter was changed in the system. This resulted in the fact that for the parameters involved, the set value was not able to be written in the per unit notation.
The values of the parameters were set to the corresponding violated minimum limit/maximum limit or to the factory setting.
Possible causes:
- The steady-state minimum limit/maximum limit or that defined in the application was violated.
Fault value (r0949, parameter):
Diagnostics parameter to display the parameters that were not able to be re-calculated.
See also: p0304, p0305, p0310, p0596, p2000, p2001, p2002, p2003, p2004

Remedy: Check the adapted parameter value and if required correct.

F07086 Units changeover: Parameter limit violation due to reference value change

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Message value: Parameter: %1

Variant: G220 Clean Power

Component: None

Propagation: Global

Response: NONE

Acknowledgment: IMMEDIATELY

Cause: A reference parameter was changed in the system. This resulted in the fact that for the parameters involved, the set value was not able to be written in the per unit notation.
The values of the parameters were set to the corresponding violated minimum limit/maximum limit or to the factory setting.
Possible causes:
- The steady-state minimum limit/maximum limit or that defined in the application was violated.
Fault value (r0949, parameter):
Diagnostics parameter to display the parameters that were not able to be re-calculated.
See also: p0304, p0305, p0310, p0596, p2000, p2001, p2002, p2003, p2004, p2008

Remedy: Check the adapted parameter value and if required correct.

F07088 Units changeover: Parameter limit violation due to units changeover

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Message value: Parameter: %1

Component: None

Propagation: Global

Response: NONE

Acknowledgment: IMMEDIATELY

Cause: A changeover of units was initiated. This resulted in a violation of a parameter limit
Possible causes for the violation of a parameter limit:
- When rounding off a parameter corresponding to its decimal places, the steady-state minimum limit or maximum limit was violated.
- Inaccuracies for the data type "FloatingPoint".
In these cases, when the minimum limit is violated then the parameter value is rounded up and when the maximum limited is violated the parameter value is rounded down.
Fault value (r0949, interpret decimal).
See also: p0100, p0349, p0505, p0595

Remedy: Check the adapted parameter values and if required correct.

A07089 Unit switchover: Function activation is blocked because the units have been switched over

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: An attempt was made to activate a function. This is not permissible if the units have already been changed over.
See also: p0100 (IEC/NEMA Standards), p0349 (System of units motor equivalent circuit diagram data), p0505 (Selecting the system of units)
Remedy: Restore units that have been changed over to the factory setting.

A07092 Drive: Moment of inertia estimator still not ready

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: Control Unit (CU)
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The moment of inertia estimator has still not determined any valid values.
The acceleration cannot be calculated.
The moment of inertia estimator has stabilized, if the frictional values as well as the moment of inertia value (r1493) have been determined and the appropriate status signal is set (r1407.26 = 1).
The following parameters influence the response of the moment of the inertia estimator:
p1560, p1561, p1562
Remedy: Traverse the axis until the moment of inertia estimator has stabilized.
This alarm is automatically withdrawn after the moment of inertia estimator has stabilized.

F07094 General parameter limit violation

Message class: Hardware/software error (1)
Message value: Parameter: %1
Component: None
Propagation: Local
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: As a result of the violation of a parameter limit, the parameter value was automatically corrected.
Minimum limit violated --> parameter is set to the minimum value.
Maximum limit violated --> parameter is set to the maximum value.
Invalid Enum value --> parameter is set to the default value.
Fault value (r0949, interpret decimal):
Parameter number, whose value had to be adapted.
Remedy: Check the adapted parameter values and if required correct.

A07200 Drive: Master control ON command present

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Global

Response: NONE
Acknowledgment: NONE
Cause: The ON/OFF1 command is present (no 0 signal).
The command is either influenced via binary signal sink c0840 (actual CDS) or control word bit 0 via the master control.
Remedy: Switch the signal to 0 via binary signal sink c0840 (actual CDS) or control word bit 0 via the master control.

F07220 (N, A) Drive: Control by PLC missing

Message class: Communication error to the higher-level control system (9)
Message value: -
Component: None
Propagation: Global
Response: OFF1 (NONE, OFF2, OFF3, STOP2)
Acknowledgment: IMMEDIATELY
Cause: The "Control by PLC" signal was missing in operation.
- Interconnection of the binary signal sink for "Control by PLC" is incorrect (c0854).
- The higher-level control has withdrawn the "Control by PLC" signal.
- Data transfer via the fieldbus (controller/drive) was interrupted.

Remedy: - Check the interconnection of the binary signal sink for "Control by PLC" (c0854).
- Check the "Control by PLC" signal and, if required, switch in.
- Check data transfer via the fieldbus (controller/drive).

Note:
If the drive should continue to operate after withdrawing "Control by PLC", then the fault response must be parameterized to NONE or the message type should be parameterized as alarm.

Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F07300 (A) Drive: Line contactor feedback signal missing

Message class: Auxiliary unit faulted (20)
Message value: -
Component: None
Propagation: Global
Response: OFF2 (NONE)
Acknowledgment: IMMEDIATELY
Cause: - The line contactor was not able to be closed within the time in p0861.
- The line contactor was not able to be opened within the time in p0861.
- The line contactor dropped out during operation
- The line contactor has closed although the drive converter is switched off.

Remedy: - Check the setting of c0860.
- Check the feedback circuit from the line contactor.
- Increase the monitoring time in p0861.

See also: c0860 (Line contactor feedback signal), p0861 (Line contactor monitoring time)

Response upon: A: NONE
Acknowl. upon A: NONE

F07311 Bypass motor switch

Message class: Application/technological function faulted (17)
Message value: Fault cause: %1 bin

Component: None
Propagation: Global
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: Fault value (r0949, interpret bitwise):
Bit 1: Switch "Closed" feedback signal missing.
Bit 2: Switch "Open" feedback signal missing.
Bit 3: Switch feedback signal too slow.
After switching, the system waits for the positive feedback signal. If the feedback signal is received later than the specified time, then a fault trip (shutdown) is issued.
Bit 6: Drive switch feedback signal not consistent with the bypass state.
The drive switch is closed when switching-on or when switching-in the motor.
See also: p1260 (Bypass configuration), r1261 (Bypass control/status word), c1266 (Bypass control command), p1267 (Bypass changeover source configuration), c1269 (Bypass switch feedback signal), p1274 (Bypass switch monitoring time)
Remedy: - Check the transfer of the feedback signals.
- Check the switch.

F07312 Bypass Line Side Switch

Message class: Application/technological function faulted (17)
Message value: Fault cause: %1 bin
Component: None
Propagation: Global
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The Line Side Switch feedback signal is not plausible.
Fault value (r0949, interpret binary):
Bit 1: Switch "Closed" feedback signal missing.
Bit 2: Switch "Open" feedback signal missing.
Bit 3: Switch feedback signal too slow.
After switching, the system waits for the positive feedback signal. If the feedback signal is received later than the specified time, then the system is shut down.
Bit 6: Line Side Switch feedback signal not consistent with the bypass state.
When switching-on or when switching-in (staging) the motor, the line side switch is closed without this having been requested from the bypass.
See also: p1260 (Bypass configuration), r1261 (Bypass control/status word), c1266 (Bypass control command), p1267 (Bypass changeover source configuration), c1269 (Bypass switch feedback signal), p1274 (Bypass switch monitoring time)
Remedy: - Check the transfer of the feedback signals.
- Check the switch.

A07314 (N) Debypass without flying restart

Message class: Application/technological function faulted (17)
Message value: -
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE

Cause: Flying restart was not selected when switching back to converter operation with a non-synchronized bypass.
In this case, the Line Side Switch for the bypass is opened; however, the motor is not reconnected to the converter but coasts down.
See also: p1260 (Bypass configuration), r1261 (Bypass control/status word), c1266 (Bypass control command), p1267 (Bypass changeover source configuration), c1269 (Bypass switch feedback signal), p1274 (Bypass switch monitoring time)

Remedy: - Activate flying restart (p1200 > 0)
- If a flying restart cannot be activated, reset the bypass command without an OFF1 enable

Response upon: N: NONE

Acknowl. upon N: NONE

F07320 Drive: Automatic restart interrupted

Message class: Application/technological function faulted (17)

Message value: %1

Component: None

Propagation: Global

Response: OFF2

Acknowledgment: IMMEDIATELY

Cause: - The specified number of restart attempts (p1211) has been completely used up because within the monitoring time (p1213) the faults were not able to be acknowledged. The number of restart attempts (p1211) is decremented at each new start attempt.
- The monitoring time for the power unit has expired (p0857).
- When exiting commissioning or at the end of the motor identification or the speed controller optimization, the drive unit is not automatically switched on again.
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.

Remedy: - Increase the number of restart attempts (p1211). The actual number of starting attempts is displayed in r1214.
- Increase the wait time in p1212 and/or the monitoring time in p1213.
- Either increase or disable the monitoring time of the power unit (p0857).
- Reduce the wait time to reset the start counter p1213[1] so that fewer faults are registered in the time interval.

A07321 Drive: Automatic restart active

Message class: Application/technological function faulted (17)

Message value: -

Component: None

Propagation: Global

Response: NONE

Acknowledgment: NONE

Cause: The automatic restart (AR) is active. When the line supply returns and/or the causes of the existing faults are removed the drive is automatically restarted. The pulses are enabled and the motor starts to rotate.
For p1210 = 26, restarting is realized with the delayed setting of the ON command.

Remedy: - The automatic restart (AR) should, if required, be inhibited (p1210 = 0).
- An automatic restart can be directly interrupted by withdrawing the switch-on command (c0840).
- For p1210 = 26: by withdrawing the OFF2- / OFF3 command.

F07330 Flying restart: Measured search current too low

Message class: Application/technological function faulted (17)

Message value: -

Component: None

Propagation: Global

Response: OFF2 (NONE, OFF1)

Acknowledgment: IMMEDIATELY
Cause: During a flying restart, it was identified that the search current reached is too low.
It is possible that the motor is not connected.
Remedy: Check the motor feeder cables.

N07332 Flying restart: Maximum speed reduced

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The maximum speed that can be reached is reduced; at very high speeds problems associated with the flying restart can be encountered.
Possible causes:
- Power ratio, power unit/motor too high
Remedy: Parameter changes are not required.
Note:
A flying restart at speeds above 3000 rpm should be avoided.

F07334 (N, A) Function not possible

Message class: Application/technological function faulted (17)
Message value: %1
Component: Motor
Propagation: Global
Response: OFF1 (NONE, OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: The selected function is not possible for this configuration.
Fault value (r0949, interpret decimal):
0:
Function "Travel to fixed stop" (c1545) was selected via the associated binary signal source, although encoderless operation or U/f operation is active.
Remedy: For fault value = 0:
- Operate the closed-loop speed control with an encoder.
- If necessary, deselect function "Travel to fixed stop".
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

A07350 (F) Drive: Measuring probe parameterized to a digital output

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Local
Response: NONE
Acknowledgment: NONE

Cause: The measuring probe is connected to a parameterizable digital input/output and the terminal is set as output.
Alarm value (r2124, interpret decimal):
8: DI/DO 8 (X122.9/X132.1)
9: DI/DO 9 (X122.10/X132.2)
10: DI/DO 10 (X122.12/X132.3)
11: DI/DO 11 (X122.13/X132.4)
12: DI/DO 12 (X132.9)
13: DI/DO 13 (X132.10)
14: DI/DO 14 (X132.12)
15: DI/DO 15 (X132.13)
Regarding the terminal designation:
The first designation is valid for CU320, the second for CU305.

Remedy: - Deselect the measuring probe (p0488, p0489, p0580).

Response upon: F: OFF1

Acknowl. upon F: IMMEDIATELY

A07353 Drive: DC quantity control deactivated

Message class: Motor overload (8)

Message value: %1

Component: Motor

Propagation: Global

Response: NONE

Acknowledgment: NONE

Cause: The DC quantity control has deactivated itself.
The manipulated variable of the DC quantity control was at its limit.

Remedy: Optimize the DC quantity controller (Kp, Tn, bandwidth, PT2 filter).
Note:
After changing the corresponding parameters, the DC quantity control is re-enabled and the alarm is automatically withdrawn.
See also: p3857 (DC quantity controller P gain), p3858 (DC quantity controller integral time)

A07400 (N) Drive: DC link voltage maximum controller active

Message class: Application/technological function faulted (17)

Message value: -

Component: None

Propagation: Global

Response: NONE

Acknowledgment: NONE

Cause: The DC link voltage controller has been activated because the upper switch-in threshold has been exceeded (r1242, r1282).
The ramp-down times are automatically increased in order to maintain the DC link voltage (r0070) within the permissible limits. There is a system deviation between the setpoint and actual speeds.
When the DC link voltage controller is switched out (disabled), this is the reason that the ramp-function generator output is set to the speed actual value.
See also: r0056 (Status word, closed-loop control), p1240 (Vdc controller or Vdc monitoring configuration), p1280 (Vdc controller or Vdc monitoring configuration (U/f))

Remedy: If the controller is not to intervene:
- Increase the ramp-down times.
- Switch off the Vdc_max controller (p1240 = 0 for vector control, p1280 = 0 for U/f control).
If the ramp-down times are not to be changed:
- Use a chopper or regenerative feedback unit.

Response upon: N: NONE
Acknowl. upon N: NONE

A07401 (N) Drive: DC link voltage maximum controller deactivated

Message class: Application/technological function faulted (17)
Message value: -
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The Vdc_max controller can No longer maintain the DC link voltage (r0070) below the limit value (r1242, r1282) and was therefore switched out (disabled).
- The line voltage is permanently higher than specified for the power unit.
- The motor is permanently in the generating mode as a result of a load that is driving the motor.

Remedy:
- Check whether the input voltage is within the permissible range (if required, increase the value in p0210).
- Check whether the duty cycle and load limits are within the permissible limits.

Response upon: N: NONE
Acknowl. upon N: NONE

A07402 (N) Drive: DC link voltage minimum controller active

Message class: Application/technological function faulted (17)
Message value: -
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The DC link voltage controller has been activated as the lower switch-in threshold has been undershot (r1246, r1286).
The kinetic energy of the motor is used to buffer the DC link. The drive is therefore braked.
See also: r0056 (Status word, closed-loop control), p1240 (Vdc controller or Vdc monitoring configuration), p1280 (Vdc controller or Vdc monitoring configuration (U/f))
Remedy: The alarm disappears when power supply returns.
Response upon: N: NONE
Acknowl. upon N: NONE

F07403 (N, A) Drive: Lower DC link voltage threshold reached

Message class: Infeed faulted (13)
Message value: -
Component: None
Propagation: Global
Response: OFF1 (NONE, OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: The DC link voltage monitoring is active (p1240, p1280 = 5, 6) and the lower DC link voltage threshold (r1246, r1286) was reached in the "Operation" state.
Remedy:
- Check the line voltage.
- Check the infeed.
- Adapt the device supply voltage (p0210) or the switch-on level (p1245, p1285).
- Disable the DC link voltage monitoring (p1240, p1280 = 0).

Response upon: N: NONE
Acknowl. upon N: NONE

Response upon: A: NONE
Acknowl. upon A: NONE

F07404 Drive: Upper DC link voltage threshold reached

Message class: DC link overvoltage (4)
Message value: -
Component: None
Propagation: Global
Response: OFF2 (NONE, OFF1, OFF3)
Acknowledgment: IMMEDIATELY
Cause:
- The DC link voltage monitoring is active (p1240, p1280 = 4, 6) and the upper DC link voltage threshold (r1242, r1282) was reached in the "Operation" state.
- The monitoring of the DC link voltage (p1284) has responded (only U/f control).

Remedy:
- Check the line voltage.
- Check the infeed.
- Adapt the device supply voltage (p0210).
- If necessary, deactivate the DC link voltage monitoring (p1240, p1280 = 0).
- Adapt the monitoring of the DC link voltage (p1284, only U/f control).

F07405 (N, A) Drive: Kinetic buffering minimum speed fallen below

Message class: Application/technological function faulted (17)
Message value: -
Component: None
Propagation: Global
Response: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Acknowledgment: IMMEDIATELY
Cause: During kinetic buffering the speed fell below minimum speed (p1257 or p1297 for vector drives with U/f control) and the line supply did not return.
Remedy: Check the speed threshold for the Vdc_min controller (kinetic buffering) (p1257, p1297).
See also: p1257 (Vdc_min controller speed threshold), p1297 (Vdc_min controller speed threshold (U/f))
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F07406 (N, A) Drive: Kinetic buffering maximum time exceeded

Message class: Application/technological function faulted (17)
Message value: -
Component: None
Propagation: Global
Response: OFF3 (IASC/DCBRK, NONE, OFF1, OFF2, STOP2)
Acknowledgment: IMMEDIATELY
Cause: The maximum buffer time (p1255 and p1295 for vector drives with U/f control) has been exceeded without the line supply having returned.
Remedy: Check the time threshold for Vdc_min controller (kinetic buffering) (p1255, p1295).
See also: p1255 (Vdc_min controller time threshold), p1295 (Vdc_min controller time threshold (U/f))
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

A07408 (N) Drive: DC link voltage minimum controller deactivated

Message class: Application/technological function faulted (17)
Message value: -
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The Vdc_max controller can No longer maintain the DC link voltage (r0070) below the limit value (r1242, r1282) and was therefore switched out (disabled).
- The line voltage is permanently higher than specified for the power unit.
- The motor is permanently in the generating mode as a result of a load that is driving the motor.

See also: p1259 (Vdc controller configuration)
Remedy: At the input voltage, check whether a line phase has failed. If this is not the case, then the monitoring function can be deactivated using p1259 bit 3. In this case, the parameterization of the Vdc_min controller should be checked.
Response upon: N: NONE
Acknowl. upon N: NONE

A07409 (N) Drive: U/f control, current limiting controller active

Message class: Application/technological function faulted (17)
Message value: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The current limiting controller of the U/f control was activated because the current limit was exceeded.
Remedy: The alarm is automatically withdrawn after one of the following measures:
- Increase current limit (p0640).
- Reduce the load.
- Slow down the ramp up to the setpoint speed.

Response upon: N: NONE
Acknowl. upon N: NONE

F07410 Drive: Current controller output limited

Message class: Application/technological function faulted (17)
Message value: -
Component: None
Propagation: Global
Response: OFF2 (NONE, OFF1)
Acknowledgment: IMMEDIATELY
Cause: The condition "I_act = 0 and Uq_set_1 longer than 16 ms at its limit" is present and can be caused by the following:
- Motor not connected or motor contactor open.
- Motor data and motor configuration (star-delta) do not match.
- No DC link voltage present.
- Power unit defective.
- Phase failure in the motor feeder cable.
- The "flying restart" function is not activated.

Remedy:
- Connect the motor, check the motor feeder cable or check the motor contactor.
- Check the motor parameterization and the connection type (star-delta).
- Check the DC link voltage (r0070).
- Check the power unit.
- Activate the "flying restart" function (p1200).

F07411 Drive: Flux setpoint not reached when building up excitation

Message class: Application/technological function faulted (17)

Message value: -

Component: None

Propagation: Global

Response: OFF2

Acknowledgment: IMMEDIATELY

Cause: When quick magnetizing is configured (p1401.6 = 1) the specified flux setpoint is not reached although 90% of the maximum current is specified.
- Incorrect motor data.
- Motor data and motor configuration (star-delta) do not match.
- The current limit has been set too low for the motor.
- Induction motor (encoderless, open-loop controlled) in I2t limiting.
- Power unit is too small.
- The magnetizing time is too short.

Remedy:
- Correct the motor data. Perform motor data identification and rotating measurement.
- Check the motor configuration.
- Correct the current limits (p0640).
- Reduce the induction motor load.
- If necessary, use a larger power unit.
- Check motor supply cable.
- Check power unit.
- Increase p0346.

F07412 Drive: Commutation angle incorrect (motor model)

Message class: Position/speed actual value incorrect or not available (11)

Message value: %1

Component: None

Propagation: Global

Response: ENCODER (NONE, OFF2)

Acknowledgment: IMMEDIATELY

Cause: An incorrect commutation angle was detected, which can result in a positive coupling in the speed controller.
Possible causes:
- The motor encoder is incorrectly adjusted with respect to the magnet position.
- The motor encoder is damaged.
- Phase failure in the motor feeder cable.
- The angular commutation offset is incorrectly set (p0431).
- Data to calculate the motor model has been incorrectly set (p0356 (motor stator leakage inductance) and/or p0350 (motor stator resistance) and/or p0352 (cable resistance)).
- The changeover speed for the motor model is too low (p1752). The monitoring function only becomes effective above the changeover speed.
- The motor encoder speed signal is faulted.
- The control loop is instable due to incorrect parameterization.

Fault value (r0949, interpret decimal):
0: The comparison of the pole position angle from the encoder and motor model resulted in an excessively high value (> 45 ° electrical).
1: The change in the speed signal from the motor encoder has changed by > p0492 within a current controller clock cycle.

Remedy:
- Check the phase sequence for the motor, and if required, correct.
- Check the motor feeder cable.
- If the encoder mounting was changed, re-adjust the encoder.
- Replace the defective motor encoder.
- Correctly set the angular commutation offset (p0431). If required, determine using p1990.
- Correctly set the motor stator resistance, cable resistance and motor stator leakage inductance (p0350, p0352, p0356).

Calculate the cable resistance from the cross-section and length, check the inductance and stator resistance using the motor data sheet, measure the stator resistance, e.g. using a multimeter - and if required, again identify the values using the stationary motor data identification (p1910).
- Increase the changeover speed for the motor model (p1752). The monitoring is completely deactivated for p1752 > p1082 (maximum speed).
- With pole position identification activated (p1982 = 1) check the procedure for pole position identification (p1980) and force a new pole position identification procedure by means of deselection followed by selection (p1982 = 0 -> 1).

Note:
For High Dynamic Motors (1FK7xxx-7xxx), for applications with a higher current, if necessary, the monitoring should be disabled.
See also: p0350, p0352, p0356, p0431, p0492, p1752, p1910, p1980, p1982, p1990

A07416 Drive: Flux controller configuration

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Parameter: %1, index: %2, fault cause: %3
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The configuration of the flux control (p1401) is contradictory.
Alarm value (r2124, interpret hexadecimal):
ccbbaaaa hex
aaaa = Parameter
bb = Index
cc = fault cause
1: Quick magnetizing (p1401.6) for soft starting (p1401.0).
2: Quick magnetizing for flux build-up control (p1401.2).
3: Quick magnetizing (p1401.6) for Rs identification after restart (p0621 = 2).

Remedy:
For fault cause = 1:
- Shut down soft start (p1401.0 = 0).
- Shut down quick magnetizing (p1401.6 = 0).

For fault cause = 2:
- Switch-on flux build-up control (p1401.2 = 1).
- Shut down quick magnetizing (p1401.6 = 0).

For fault cause = 3:
- Re-parameterize Rs identification (p0621 = 0, 1)
- Shut down quick magnetizing (p1401.6 = 0).

F07417 Drive: Pulse technique not plausible (motor model)

Message class: Application/technological function faulted (17)
Message value: %1
Component: None
Propagation: Global
Response: OFF2 (NONE)
Acknowledgment: IMMEDIATELY
Cause:
The evaluation of the test pulse response indicated incorrect values.
Fault value (r0949, interpret decimal):
10: The pulse response is repeatedly implausible.
Possible causes:
- The power unit component is faulty.

20: At the preset pulse amplitude, the measured pulse response is much higher than the expected value.
Possible causes:
- Strong oscillations have occurred.
- The motor is short-circuited for high frequencies (output filter).
- The motor is damaged.

Remedy:
For fault value = 0:
Once the pulse technique has been deselected automatically (p1750.5 = 0), there are two possible options:
- Acknowledge the fault and save parameter p1750.5 = 0 -> field-oriented control mode to standstill is not used and replaced by transition to open-loop control at low speeds.
- Upgrade the power unit firmware (at least V4.3) -> field-oriented control mode to standstill is available.

For fault value = 10:
With active selection of the pulse technique (p1750.5 = 1):
- POWER ON (switch-off/switch-on) the converter and the power unit together again.

or
- Carry out a manual restart.

If this does not solve the problem: Replace the power unit component.
For fault value = 20:
- Control parameters might have been adjusted (factory setting, commissioning).
- Filters must not be connected between motor and converter/inverter.
- Check the motor.

F07422 Drive: Reference model natural frequency > Shannon frequency

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Global
Response: NONE (OFF1, OFF2, OFF3)
Acknowledgment: IMMEDIATELY

Cause: The natural filter frequency of the PT2 element for the reference model (p1433) is greater than the Shannon frequency.
The Shannon frequency is calculated according to the following formula: 0.5 /speed controller clock cycle.
Remedy: - Reduce the natural frequency of PT2 element for reference model (p1433).

F07426 (A) Technology controller actual value limited

Message class: Application/technological function faulted (17)
Message value: %1
Component: None
Propagation: Global
Response: NONE (IASC/DCBRK, OFF1, OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: The actual value for the technology controller, interconnected via numerical signal sink c2264, has reached a limit.
Fault value (r0949, interpret decimal):
1: Upper limit reached.
2: Lower limit reached.
Remedy: - Adapt the limits to the signal level (p2267, p2268).
- Check the actual value scaling.
- Deactivate evaluation of the limits (p2252.3).
See also: p0595 (Technological unit selection), p0596 (Technological unit reference quantity), c2264 (Technology controller actual value), p2267 (Technology controller upper limit actual value), p2268 (Technology controller lower limit actual value)
Response upon: A: NONE
Acknowl. upon A: NONE

A07428 (N) Technology controller parameterizing error

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The technology controller has a parameterizing error.
Alarm value (r2124, interpret decimal):
1:
The upper output limit in p2291 is set lower than the lower output limit in p2292.
Remedy: For alarm value = 1:
Set the output limit in p2291 higher than in p2292.
See also: p2291 (Technology controller maximum limiting), p2292 (Technology controller minimum limiting)
Response upon: N: NONE
Acknowl. upon N: NONE

F07434 Drive: It is not possible to change the direction of rotation with the pulses enabled

Message class: Application/technological function faulted (17)
Message value: -
Component: None
Propagation: Global
Response: OFF2
Acknowledgment: IMMEDIATELY

Cause: With the pulses enabled, a drive data set that has a different parameterized direction of rotation was selected (p1821).
It is only possible to change the motor direction of rotation using p1821 when the pulses are inhibited.

Remedy: - Change over the drive data set with the pulses inhibited.
- Ensure that the changeover to a drive data set does not result in the motor direction of rotation being changed (i.e. for these drive data sets, the same value must be in p1821).
See also: p1821 (Direction of rotation)

F07435 (N) Drive: Setting the ramp-function generator for sensorless vector control

Message class: Application/technological function faulted (17)
Message value: Parameter: %1
Component: None
Propagation: Global
Response: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3)
Acknowledgment: IMMEDIATELY
Cause: During operation with sensorless vector control (r1407.1) the ramp-function generator was stopped (c1141). An internal setting command of the ramp-function generator output caused the set setpoint speed to be frozen or was not able to be realized.
Remedy: - Deactivate the hold command for the ramp-function generator (c1141).
Note:
For sensorless vector control it is not practical to read in the main setpoint of the speed control via c1155 or c1160. In this case, the main setpoint should be injected before the ramp-function generator (c1070). The reason for this is that the ramp-function generator output is automatically set when transitioning from closed-loop speed controlled into open-loop speed controlled operation.
Response upon: N: NONE
Acknowl. upon N: NONE

A07440 EPOS: Jerk time is limited

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The calculation of the jerk time Tr = max(p2572, p2573) / p2574 resulted in an excessively high value so that the jerk time is internally limited to 1000 ms.
Note:
The alarm is also output if jerk limiting is not active.
Remedy: - Increase the jerk limiting (p2574).
- Reduce maximum acceleration or maximum deceleration (p2572, p2573).
See also: p2572 (EPOS maximum acceleration), p2573 (EPOS maximum deceleration), p2574 (EPOS jerk limiting)

A07441 LR: Save the position offset of the absolute encoder adjustment

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE

Cause: The status of the absolute encoder adjustment has changed.
In order to permanently save the determined position offset (p2525) and the determined number of the drive data set (p2733), they must be saved in a non-volatile fashion (p0971, p0977).
Possible causes:
- Motor or encoder were replaced (applies to EQN and DQI).
- Position-relevant parameters were changed.
- A non-adjusted encoder was adjusted (retentively save the project).
Note:
This message is not output when switching-on the axis after having first moved it in the switched-off state, as long as the parameterizable monitoring window was not exited.

Remedy: Readjust the encoder.
See also: p2507 (LR absolute encoder adjustment status)

F07442 (A) LR: Multiturn does not match the modulo range

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Global
Response: OFF1 (OFF2, OFF3)
Acknowledgment: IMMEDIATELY

Cause: The ratio between the multiturn resolution and the modulo range (p2576) is not an integer number.
This results in the adjustment being set back, as the position actual value cannot be reproduced after switch-off/ switch-on.

Remedy: Make the ratio between the multiturn resolution and the modulo range an integer number.
The ratio v is calculated as follows:
1. Motor encoder without position tracking
v = (p0421 * p2506 * p0433 * p2505) / (p0432 * p2504 * p2576)
2. Motor encoder with position tracking for the measuring gearbox
v = (p0412 * p2506 * p2505) / (p2504 * p2576)
3. Motor encoder with position tracking for the load gearbox
v = (p2721 * p2506 * p0433) / (p0432 * p2576)
4. Motor encoder with position tracking for the load and measuring gearbox
v = (p2721 * p2506) / p2576
5. Direct encoder without position tracking
v = (p0421 * p2506 * p0433) / (p0432 * p2576)
6. Direct encoder with position tracking for the measuring gearbox
v = (p0412 * p2506) / p2576
Note:
With position tracking, it is recommended that p0412 and p2721 are changed.
See also: p0412, p0432, p0433, p2504, p2505, p2506, p2576, p2721

Response upon: A: NONE
Acknowl. upon A: NONE

F07443 (A) LR: Home position not in the permissible range

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Global
Response: OFF1 (OFF2, OFF3)
Acknowledgment: IMMEDIATELY

Cause:	The home position received when adjusting the encoder (p2599) lies outside the half of the encoder range and cannot be set as actual axis position. Fault value (r0949, interpret decimal): Maximum permissible value for the home position
Remedy:	Set the home position to a lower value than was specified in the fault value. See also: c2598 (EPOS home position signal), p2599 (EPOS home position value)
Response upon: A:	NONE
Acknowl. upon A:	NONE

A07444 PID autotuning is activated

Message class:	Application/technological function faulted (17)
Message value:	-
Component:	None
Propagation:	Global
Response:	NONE
Acknowledgment:	NONE
Cause:	Automatic setting of the PID controller parameters (PID autotuning) was activated (p2350). See also: p2350 (Enable PID autotuning)
Remedy:	Not necessary. This alarm is automatically withdrawn after the PID autotuning has been completed.

F07445 PID autotuning canceled

Message class:	Application/technological function faulted (17)
Message value:	-
Component:	Control Unit (CU)
Propagation:	Global
Response:	NONE
Acknowledgment:	IMMEDIATELY
Cause:	The PID autotuning was canceled as a result of an error.
Remedy:	- Double the monitoring time p2354 - Uniformly increase amplitude p2355[0] and offset p2355[1]. If at all possible, the closed-loop control should not be switched into the Vdc_max control mode while PID autotuning is active.

F07446 (A) Load gearbox: Position tracking cannot be reset

Message class:	Application/technological function faulted (17)
Message value:	%1
Component:	None
Propagation:	Global
Response:	OFF1 (OFF2, OFF3)
Acknowledgment:	IMMEDIATELY
Cause:	The position tracking cannot be reset.
Remedy:	Reset the position tracking as follows: - Select encoder commissioning (p0010 = 4). - Reset position tracking, position (p2720.2 = 1). - Deselect encoder commissioning (p0010 = 0). Then acknowledge the fault and, if necessary, re-adjust the absolute encoder (p2507).
Response upon: A:	NONE
Acknowl. upon A:	NONE

F07450 (A) LR: Standstill monitoring has responded

Message class: Application/technological function faulted (17)
Message value: -
Component: None
Propagation: Global
Response: OFF1 (OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: After the standstill monitoring time (p2543) expired, the drive left the standstill window (p2542).
- Position actual value inversion incorrectly set (p0410).
- Standstill window set too small (p2542).
- Standstill monitoring time set too low (p2543).
- Position loop gain too low (p2538).
- Position loop gain too high (instability/oscillation, p2538).
- Mechanical overload.
- Connecting cable, motor/drive converter incorrect (phase missing, interchanged).
- When selecting motor identification, select the tracking mode (c2655[0] = 1 signal).
- When selecting the function generator, select the tracking mode (c2655[0] = 1 signal) and deactivate position control (c2550 = 0 signal).

Remedy: Check the causes and resolve.
Response upon: A: NONE
Acknowl. upon A: NONE

F07451 (A) LR: Position monitoring has responded

Message class: Application/technological function faulted (17)
Message value: -
Component: None
Propagation: Global
Response: OFF1 (OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: When the position monitoring time (p2545) expired, the drive had still not reached the positioning window (p2544).
- Positioning window parameterized too small (p2544).
- Position monitoring time parameterized too short (p2545).
- Position loop gain too low (p2538).
- Position loop gain too high (instability/oscillation, p2538).
- Drive mechanically locked.

Remedy: Check the causes and resolve.
Response upon: A: NONE
Acknowl. upon A: NONE

F07452 (A) LR: Following error too high

Message class: Application/technological function faulted (17)
Message value: -
Component: None
Propagation: Global
Response: OFF1 (OFF2, OFF3)
Acknowledgment: IMMEDIATELY

Cause: The difference between the position setpoint position actual value (following error dynamic model, r2563) is higher than the tolerance (p2546).
- The drive torque or accelerating capacity exceeded.
- Position measuring system fault.
- Encoder cable interrupted.
- Position control sense incorrect.
- Mechanical system locked.
- Excessively high traversing velocity or excessively high position reference value (setpoint) differences.

Remedy: Check the causes and resolve.
Response upon: A: NONE
Acknowl. upon A: NONE

F07453 LR: Position actual value preprocessing error

Message class: Application/technological function faulted (17)
Message value: -
Component: None
Propagation: Global
Response: OFF1 (OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: A position measuring system fault has occurred (F31110, F31111).
An error has occurred during the position actual value preprocessing.
Remedy: Resolve the cause of the position measuring position fault.
Check the encoder for the position actual value preprocessing.
See also: p2502 (LR encoder assignment)

A07454 LR: Position actual value preprocessing does not have a valid encoder

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: One of the following problems has occurred with the position actual value preprocessing:
- An encoder is not assigned for the position actual value preprocessing (p2502 = 0).
- An encoder is assigned, but no encoder data set (p0187 = 99 or p0188 = 99 or p0189 = 99).
- An encoder and an encoder data set have been assigned, however, the encoder data set does not contain any encoder data (p0400 = 0) or invalid data (e.g. p0408 = 0).

Remedy: Check the drive data sets, encoder data sets and encoder assignment.
See also: p0187, p0188, p0400, p2502

A07455 EPOS: Maximum velocity limited

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The maximum velocity (p2571) is too high to correctly calculate the modulo correction.
Within the sampling time for positioning (p0115[5]), with the maximum velocity, a maximum of the half modulo length must be moved through. p2571 was limited to this value.

Remedy: - Reduce the maximum velocity (p2571).
- Increase the sampling time for positioning (p0115[5]).

A07456 EPOS: Setpoint velocity limited

Message class: Application/technological function faulted (17)
Message value: -
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The actual setpoint velocity is greater than the parameterized maximum velocity (p2571) and is therefore limited.
Remedy: - Check the specified setpoint velocity.
- Reduce the velocity override (c2646).
- Increase the maximum velocity (p2571).

A07457 EPOS: Combination of input signals illegal

Message class: Application/technological function faulted (17)
Message value: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: An illegal combination of input signals that are simultaneously set was identified.
Alarm value (r2124, interpret decimal):
0: Jog 1 and jog 2 (c2589, c2590).
1: Jog 1 or jog 2 and direct setpoint input/MDI (c2589, c2590, c2647).
2: Jog 1 or jog 2 and start homing (c2589, c2590, c2595).
3: Jog 1 or jog 2 and activate traversing task (c2589, c2590, c2631).
4: Direct setpoint input/MDI and starting homing (c2647, c2595).
5: Direct setpoint input/MDI and activate traversing task (c2647, c2631).
6: Start homing and activate traversing task (c2595, c2631).
Remedy: Check the appropriate input signals and correct.

F07458 EPOS: Reference cam not found

Message class: Application/technological function faulted (17)
Message value: -
Component: None
Propagation: Global
Response: OFF1 (OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: After the active homing starts, the axis moved through the maximum permissible distance to search for the reference cam without actually finding the reference cam.
Remedy: - Check binary signal sink "Reference cam" (c2612).
- Check the maximum permissible distance to the reference cam (p2606).
- For axes without reference cam, set p2607 = 0.
See also: p2606 (EPOS active homing reference cam maximum distance), p2607 (EPOS active homing reference cam available), c2612 (EPOS active homing reference cam)

F07459 EPOS: No zero mark

Message class: Application/technological function faulted (17)
Message value: -
Component: None
Propagation: Global
Response: OFF1 (OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: After leaving the reference cam, the axis has traversed the maximum permissible distance between the reference cam and zero mark without finding the zero mark.
Remedy: - Check the encoder regarding the zero mark.
- Check the maximum permissible distance between the reference cam and zero mark (p2609).
- Use an external encoder zero mark (equivalent zero mark) (p0494).
See also: p2609 (EPOS active homing max distance reference cam and zero mark)

F07460 EPOS: End of reference cam not found

Message class: Application/technological function faulted (17)
Message value: -
Component: None
Propagation: Global
Response: OFF1 (OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: In the "Active homing" mode, when the axis reached the zero mark it also reached the end of the traversing range without detecting an edge at the binary signal sink "reference cam" (c2612).
Maximum traversing range: -2147483648 [LU] ... -2147483647 [LU]
Remedy: - Check binary signal sink "Reference cam" (c2612).
- Repeat active homing.
See also: c2612 (EPOS active homing reference cam)

A07461 EPOS: Home position not set

Message class: Application/technological function faulted (17)
Message value: -
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: When starting a traversing block/direct setpoint input, a home position is not set (r2684.11 = 0).
Remedy: Carry out homing (active homing, passive homing, set home position).

A07462 EPOS: Selected traversing block number does not exist

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE

Cause: A traversing block selected via binary signal sinks c2625 ... c2630 was started via binary signal sink c2631 = 0/1 edge "Activate traversing task".
- The number of the started traversing block is not contained in p2616[0...n].
- The started traversing block is suppressed.
Alarm value (r2124, interpret decimal):
Number of the selected traversing block that is also not available.

Remedy:
- Correct the traversing program.
- Select an available traversing block number.

A07463 (F) EPOS: External block change not requested in the traversing block

Message class: Application/technological function faulted (17)
Message value: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: For a traversing block with the block change enable CONTINUE_EXTERNAL_ALARM, the external block change was not requested.
Alarm value (r2124, interpret decimal):
Number of the traversing block.
Remedy: Resolve the reason why the edge is missing for the external block change.
Response upon: F: OFF1
Acknowl. upon F: IMMEDIATELY

F07464 EPOS: Traversing block is inconsistent

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Global
Response: OFF1 (OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: The traversing block does not contain valid information.
Alarm value (r2124, interpret decimal):
Number of the traversing block with invalid information.
Remedy: Check the traversing block and where relevant, take into consideration alarms that are present.

A07465 EPOS: Traversing block does not have a subsequent block

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: There is no subsequent block in the traversing block.
Alarm value (r2124, interpret decimal):
Number of the traversing block with the missing subsequent block.
Remedy:
- Parameterize this traversing block with the block change enable END.
- Parameterize additional traversing blocks with a higher block number and for the last block, using the block change enable END.

A07466 EPOS: Traversing block number assigned a multiple number of times

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The same traversing block number was assigned a multiple number of times.
Alarm value (r2124, interpret decimal):
Number of the traversing block that was assigned a multiple number of times.
Remedy: Correct the traversing blocks.

A07467 EPOS: Traversing block has illegal task parameters

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The task parameter in the traversing block contains an illegal value.
Alarm value (r2124, interpret decimal):
Number of the traversing block with an illegal task parameter.
Remedy: Correct the task parameter in the traversing block.

A07468 EPOS: Traversing block jump destination does not exist

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: In a traversing block, a jump was programmed to a non-existent block.
Alarm value (r2124, interpret decimal):
Number of the traversing block with a jump destination that does not exist.
Remedy: - Correct the traversing block.
- Add the missing traversing block.

A07469 EPOS: Traversing block target position < negative software limit switch

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: In the traversing block the specified absolute target position lies outside the range limited by the negative software limit switch.
Alarm value (r2124, interpret decimal):
Number of the traversing block with illegal target position.

Remedy: - Correct the traversing block.
- Change the negative software limit switch (c2578, p2580).

A07470 EPOS: Traversing block target position > positive software limit switch

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: In the traversing block the specified absolute target position lies outside the range limited by the positive software limit switch.
Alarm value (r2124, interpret decimal):
Number of the traversing block with illegal target position.
Remedy: - Correct the traversing block.
- Change the positive software limit switch (c2579, p2581).

A07471 EPOS: Traversing block target position outside the modulo range

Message class: Application/technological function faulted (17)
Message value: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: In the traversing block the target position lies outside the modulo range.
Alarm value (r2124, interpret decimal):
Number of the traversing block with illegal target position.
Remedy: - In the traversing block, correct the target position.
- Change the modulo range (p2576).

A07472 EPOS: Traversing block ABS_POS/ABS_NEG not possible

Message class: Application/technological function faulted (17)
Message value: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: In the traversing block the positioning mode ABS_POS or ABS_NEG were parameterized with the modulo correction not activated.
Alarm value (r2124, interpret decimal):
Number of the traversing block with the illegal positioning mode.
Remedy: Correct the traversing block.

A07473 (F) EPOS: Beginning of traversing range reached

Message class: Application/technological function faulted (17)
Message value: -
Component: None
Propagation: Global
Response: NONE

Acknowledgment: NONE
Cause: When traversing, the axis has moved to the traversing range limit.
Remedy: Move away in the positive direction.
Response upon: F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

A07474 (F) EPOS: End of traversing range reached

Message class: Application/technological function faulted (17)
Message value: -
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: When traversing, the axis has moved to the traversing range limit.
Remedy: Move away in the negative direction.
Response upon: F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

F07475 (A) EPOS: Target position < start of traversing range

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Global
Response: OFF1 (OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: The target position for relative traversing lies outside the traversing range.
Remedy: Correct the target position.
Response upon: A: NONE
Acknowl. upon A: NONE

F07476 (A) EPOS: Target position > end of the traversing range

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Global
Response: OFF1 (OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: The target position for relative traversing lies outside the traversing range.
Remedy: Correct the target position.
Response upon: A: NONE
Acknowl. upon A: NONE

A07477 (F) EPOS: Target position < negative software limit switch

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Global
Response: NONE

Acknowledgment: NONE
Cause: In the actual traversing operation, the target position is less than the negative software limit switch.
Remedy: - Correct the target position.
- Change the negative software limit switch (c2578, p2580).
See also: c2578 (EPOS negative software limit switch), p2580 (EPOS negative software limit switch), c2582 (EPOS software limit switch activation)
Response upon: F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

A07478 (F) EPOS: Target position > positive software limit switch

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: In the actual traversing operation, the target position is greater than the positive software limit switch.
Remedy: - Correct the target position.
- Change the positive software limit switch (c2579, p2581).
See also: c2579 (EPOS positive software limit switch), p2581 (EPOS positive software limit switch), c2582 (EPOS software limit switch activation)
Response upon: F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

A07479 EPOS: Negative software limit switch reached

Message class: Application/technological function faulted (17)
Message value: -
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The axis is at the position of the negative software limit switch. An active traversing block was interrupted.
Remedy: - Correct the target position.
- Change the negative software limit switch (c2578, p2580).
See also: c2578 (EPOS negative software limit switch), p2580 (EPOS negative software limit switch), c2582 (EPOS software limit switch activation)

A07480 EPOS: Positive software limit switch reached

Message class: Application/technological function faulted (17)
Message value: -
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The axis is at the position of the positive software limit switch. An active traversing block was interrupted.
Remedy: - Correct the target position.
- Change the positive software limit switch (c2579, p2581).
See also: c2579 (EPOS positive software limit switch), p2581 (EPOS positive software limit switch), c2582 (EPOS software limit switch activation)

F07481 (A) EPOS: Axis position < negative software limit switch

Message class: Application/technological function faulted (17)
Message value: -
Component: None
Propagation: Global
Response: OFF1 (OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: The actual position of the axis is less than the position of the negative software limit switch.
Remedy: - Correct the target position.
- Change the negative software limit switch (c2578, p2580).
See also: c2578 (EPOS negative software limit switch), p2580 (EPOS negative software limit switch), c2582 (EPOS software limit switch activation)
Response upon: A: NONE
Acknowl. upon A: NONE

F07482 (A) EPOS: Axis position > positive software limit switch

Message class: Application/technological function faulted (17)
Message value: -
Component: None
Propagation: Global
Response: OFF1 (OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: The actual position of the axis is greater than the position of the positive software limit switch.
Remedy: - Correct the target position.
- Change the positive software limit switch (c2579, p2581).
See also: c2579 (EPOS positive software limit switch), p2581 (EPOS positive software limit switch), c2582 (EPOS software limit switch activation)
Response upon: A: NONE
Acknowl. upon A: NONE

A07483 EPOS: Travel to fixed stop clamping torque not reached

Message class: Application/technological function faulted (17)
Message value: -
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The fixed stop in the traversing block was reached without the clamping torque/clamping force having been achieved.
Remedy: - Check the maximum torque-generating current (r1533).
- Check the torque limits (p1520, p1521).
- Check the power limits (p1530, p1531).
- Check the signal interconnections of the torque limits (c1522, c1523, c1528, c1529).

F07484 EPOS: Fixed stop outside the monitoring window

Message class: Application/technological function faulted (17)
Message value: -
Component: None
Propagation: Global

Response: OFF3 (OFF1, OFF2)
Acknowledgment: IMMEDIATELY
Cause: In the "fixed stop reached" state, the axis has moved outside the defined monitoring window (p2635).
Remedy: - Check the monitoring window (p2635).
- Check the mechanical system.

F07485 (A) EPOS: Fixed stop not reached

Message class: Application/technological function faulted (17)
Message value: -
Component: None
Propagation: Global
Response: OFF1 (OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: In a traversing block with the task FIXED STOP, the end position was reached without detecting a fixed stop.
Remedy: - Check the traversing block and locate the target position further into the workpiece.
- Check the "fixed stop reached" control signal (c2637).
- If required, reduce the maximum following error window to detect the fixed stop (p2634).
Response upon: A: NONE
Acknowl. upon A: NONE

A07486 EPOS: Intermediate stop missing

Message class: Application/technological function faulted (17)
Message value: -
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: In operating mode "traversing blocks" or "direct setpoint input/MDI", at the start of motion, c2640 is set to an intermediate stop, i.e. to a 0 signal.
Remedy: Set c2640 to "No intermediate stop" (1 signal) and restart motion.
See also: c2640 (EPOS intermediate stop (0 signal))

A07487 EPOS: Reject traversing task missing

Message class: Application/technological function faulted (17)
Message value: -
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: In the modes "Traversing blocks" or "Direct setpoint input/MDI" at the start of motion, the binary signal sink "Do not reject traversing task/reject traversing task" (c2641) does not have a 1 signal.
Remedy: Connect a 1 signal to the binary signal sink "Do not reject traversing task/reject traversing task" (c2641) and restart motion.
See also: c2641 (EPOS reject traversing task (0 signal))

F07488 EPOS: Relative positioning not possible

Message class: Application/technological function faulted (17)
Message value: -
Component: None

Propagation:	Global
Response:	OFF1 (OFF2, OFF3)
Acknowledgment:	IMMEDIATELY
Cause:	In the mode "direct setpoint input/MDI", for continuous transfer (c2649 = 1) relative positioning was selected (c2648 = 0 signal).
Remedy:	Check the control.

A07489 EPOS: Home position correction outside the window

Message class:	Application/technological function faulted (17)
Message value:	-
Component:	None
Propagation:	Global
Response:	NONE
Acknowledgment:	NONE
Cause:	For the function "passive homing" the difference between the measured position at the measuring probe and the home position lies outside the parameterized window.
Remedy:	- Check the mechanical system. - Check the parameterization of the window (p2602).

F07490 (N) EPOS: Enable signal withdrawn while traversing

Message class:	Application/technological function faulted (17)
Message value:	-
Component:	None
Propagation:	Global
Response:	OFF1 (OFF2, OFF3)
Acknowledgment:	IMMEDIATELY
Cause:	- For a standard assignment, another fault may have occurred as a result of withdrawing the enable signals. - The drive is in the "switching on inhibited" state (for a standard assignment).
Remedy:	- Set the enable signals or check the cause of the fault that first occurred and then result (for a standard assignment). - Check the assignment to enable the basic positioning function.
Response upon: N:	NONE
Acknowl. upon N:	NONE

F07491 (A) EPOS: Negative hardware limit switch reached

Message class:	Application/technological function faulted (17)
Message value:	-
Component:	None
Propagation:	Global
Response:	OFF3
Acknowledgment:	IMMEDIATELY
Cause:	A 0 signal was detected at c2569, i.e. the negative hardware limit switch was reached. For a positive traversing direction, the negative hardware limit switch was reached - i.e. the hardware limit switch wiring is incorrect. See also: c2569 (EPOS negative hardware limit switch)
Remedy:	- Leave the negative hardware limit switch in the positive traversing direction and return the axis to the valid traversing range. - Check the wiring of the hardware limit switch.
Response upon: A:	NONE
Acknowl. upon A:	NONE

F07492 (A) EPOS: Positive hardware limit switch reached

Message class: Application/technological function faulted (17)

Message value: -

Component: None

Propagation: Global

Response: OFF3

Acknowledgment: IMMEDIATELY

Cause: A 0 signal was detected at c2570, i.e. the positive hardware limit switch was reached.
For a negative traversing direction, the positive hardware limit switch was reached - i.e. the hardware limit switch wiring is incorrect.
See also: c2570 (EPOS positive hardware limit switch)

Remedy: - Leave the positive hardware limit switch in the negative traversing direction and return the axis to the valid traversing range.
- Check the wiring of the hardware limit switch.

Response upon: A: NONE

Acknowl. upon A: NONE

F07493 LR: Overflow of the value range for position actual value

Message class: Application/technological function faulted (17)

Message value: %1

Component: None

Propagation: Global

Response: OFF1 (OFF2, OFF3)

Acknowledgment: IMMEDIATELY

Cause: The value range (-2147483648 ... 2147483647) for the position actual value representation was exceeded.
When the overflow occurs, the "homed" or "adjustment absolute measuring system" status is reset.
Fault value (r0949, interpret decimal):
1: The position actual value (r2521) has exceeded the value range.
2: The encoder position actual value Gn_XIST2 (r0483) or the absolute value after the load gearbox (r2723) has exceeded the value range.
3: The maximum encoder value times the factor to convert the absolute position (r0483 and/or r2723) from increments to length units (LU) has exceeded the value range for displaying the position actual value.
Note:
For a linear encoder, the following must be maintained:
- p0407 * p2503 / (2^p0418*10^7) < 1
- p0407 * p2503 / (2^p0419*10^7) < 1

Remedy: If required, reduce the traversing range or position resolution (p2506).
Increase the fine resolution of absolute position actual value (p0419).
Note for fault value = 3:
If the value for the maximum possible absolute position (LU) is greater than 4294967296, then it is not possible to make an adjustment due to an overflow.
For rotary encoders, the maximum possible absolute position (LU) is calculated as follows:
1. Motor encoder without position tracking
p2506 * p0433 * p2505 / (p0432 * p2504)
p2506 * p0433 * p2505 * p0421 / (p0432 * p2504) for multiturn encoders
2. Motor encoder with position tracking for measuring gearbox
p2506 * p0412 * p2505 / p2504
3. Motor encoder with position tracking for load gearbox
p2506 * p2721 * p0433 / p0432
4. Motor encoder with position tracking for load and measuring gearbox
p2506 * p2721
5. Direct encoder without position tracking
p2506 * p0433 / p0432
p2506 * p0433 * p0421 / p0432 for multiturn encoders
6. Direct encoder with position tracking for measuring gearbox
p2506 * p0412

F07494 LR: Drive Data Set changeover in operation

Message class: Application/technological function faulted (17)
Message value: -
Component: None
Propagation: Global
Response: OFF1 (OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: A Drive Data Set changeover (DDS) with a change of the mechanical relationships (p2503 ... 2506), direction of rotation (p1821) or the encoder assignment (p2502) was requested in operation.
Note:
DDS: Drive Data Set
Remedy: To changeover the drive data set, initially, exit the "operation" mode.

A07495 (F, N) LR: Homing function interrupted

Message class: Application/technological function faulted (17)
Message value: -
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: An activated homing function (homing mark search or measuring probe evaluation) was canceled.
Possible causes:
- An encoder fault has occurred (Gn_ZSW.15 = 1).
- Position actual value was set during an activated homing function.
- Homing mark search and measuring probe evaluation simultaneously activated.
- Activated homing function (homing mark search or measuring probe evaluation) was deactivated.
- The input terminal for the measuring probe is not set.

Remedy: - Check the causes and resolve.
- Reset the control and activate the required function.
- Set the input terminal for the measuring probe (p0488, p0489).

Response upon: F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A07496 EPOS: Enable not possible

Message class: Application/technological function faulted (17)
Message value: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: It is not possible to enable the basic positioner because at least one condition is missing.
Alarm value (r2124, interpret decimal):
1: EPOS enable missing.
2: Position actual value, valid feedback signal missing.
Remedy: Check the corresponding missing condition.

A07498 (F) LR: Measuring probe evaluation not possible

Message class: Application/technological function faulted (17)
Message value: %1
Component: None
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: When evaluating the measuring probe, an error occurred.
Alarm value (r2124, interpret decimal):
6:
The input terminal for the measuring probe is not set.
4098:
Error when initializing the measuring probe.
4100:
The measuring pulse frequency is too high.
> 50000:
The measuring clock cycle is not a multiple integer of the position controller clock cycle.
Remedy: Deactivate measuring probe evaluation.
For alarm value = 6:
Set the input terminal for the measuring probe (p0488, p0489).
For alarm value = 4098:
Check the converter hardware.
For alarm value = 4100:
Reduce the frequency of the measuring pulses at the measuring probe.
For alarm value > 50000:
Set the clock cycle ratio of the measuring clock cycle to the position controller clock cycle to an integer multiple.
To do this, the currently effective measuring clock cycle can be determined from the alarm value as follows:
Tmeas [125 µs] = alarm value - 50000
With PROFIdrive, the measuring clock cycle corresponds to the bus clock cycle.
Without PROFIdrive, the measuring clock cycle is an internal cycle time that cannot be influenced.
Response upon: F: OFF1
Acknowl. upon F: IMMEDIATELY

F07499 (A) EPOS: Reversing cam approached with the incorrect traversing direction

Message class: Application/technological function faulted (17)
Message value: -
Component: None
Propagation: Global
Response: OFF3
Acknowledgment: IMMEDIATELY
Cause: The negative reversing cam was approached in the positive traversing direction, or the positive reversing cam was approached in the negative traversing direction.
See also: c2613 (EPOS active homing negative reversing cam), c2614 (EPOS active homing positive reversing cam)
Remedy: - Check the wiring of the reversing cam (c2613, c2614).
- Check the traversing direction to approach the reversing cam.
Response upon: A: NONE
Acknowl. upon A: NONE

F07501 Drive: Motor Data Set MDS not configured

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Drive data set: %1
Component: None
Propagation: Global
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: Only for power units:
The motor data set was not configured - This means that a data set number was not entered into the associated drive data set.
Fault value (r0949, interpret decimal):
The fault value includes the drive data set number of p0186.
Remedy: The index of the motor data set associated with the drive data set should be entered into p0186.
See also: p0186 (Motor Data Sets (MDS) number)

F07502 Drive: Encoder Data Set EDS not configured

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Drive data set: %1
Component: None
Propagation: Global
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The encoder data set was not configured - This means that a data set number was not entered into the associated drive data set.
Fault value (r0949, interpret decimal):
The fault value contains drive data set numbers of p0187, p0188.
The fault value is increased by 100 * encoder number (e.g. for p0188: Fault value 2xx with xx = data set number).
Remedy: The index of the encoder data set associated with the drive data set should be entered into p0187 (1st encoder), p0188 (2nd encoder).

A07504 Drive: Motor data set is not assigned to a drive data set

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1

Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: A motor data set is not assigned to a drive object.
All of the existing motor data sets in the drive data sets must be assigned using the MDS number (p0186[0...n]). There must be at least as many drive data sets as motor data sets.
Alarm value (r2124, interpret decimal):
Number of the motor data set that has not been assigned.
Remedy: In the drive data sets, assign the non-assigned motor data set using the MDS number (p0186[0...n]).
- Check whether all of the motor data sets are assigned to drive data sets.
- If required, delete superfluous motor data sets.
- If required, set up new drive data sets and assign to the corresponding motor data sets.
See also: p0186 (Motor Data Sets (MDS) number)

F07509 Drive: Component assignment missing

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Global
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: A Drive Data Set (DDS) is assigned to a Motor Data Set (MDS) or Encoder Data Set (EDS) that does not have a component assignment.
Fault value (r0949, interpret decimal):
nnxxyyy
nn: Number of the MDS/EDS.
xx: Number of the DDS that is assigned to the MDS/EDS.
yyy: Parameter number that references the MDS/EDS.
Example:
p0186[7] = 5: DDS 7 is assigned MDS 5.
MDS 5 is not assigned to any component.
Alarm value = 050718
Remedy: In the drive data sets, no longer assign MDS/EDS using p0186, p0187, p0188 or set a valid component number.
See also: p0186 (Motor Data Sets (MDS) number), p0187 (Motor encoder encoder data set number), p0188 (Encoder 2 encoder data set number)

F07510 Drive: Encoder in the drive data set used a multiple number of times

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Global
Response: OFF2
Acknowledgment: IMMEDIATELY

Cause: Within a drive, in each drive data set, each encoder must always be encoder 1 or always encoder 2. This unique assignment has been violated.
Fault value (r0949, interpret decimal):
abbcdd
a/c: encoder 1/2/3
bb/dd: number of the DDS
Example:
p0187[0] = p0188[1]
Alarm value = 201100

Remedy: Assign the drive data set to different encoders.
See also: p0187 (Motor encoder encoder data set number), p0188 (Encoder 2 encoder data set number)

F07511 Drive: Encoder used a multiple number of times

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: Each encoder must only be assigned to one encoder data set. This unique assignment has been violated.
Fault value (r0949, interpret decimal):
bbaa hex:
bb = encoder data set 1
aa = encoder data set 2
Remedy: Correct the double use of an encoder competent.

F07516 Drive: Re-commission the data set

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: The assignment between the drive data set and motor data set (p0186) or between the drive data set and the encoder data set was modified (p0187). This is the reason that the drive data set must re-commissioned.
Fault value (r0949, interpret decimal):
Drive data set to be re-commissioned.
Remedy: Commission the drive data set specified in the fault value (r0949).

F07517 Drive: Encoder data set changeover incorrectly parameterized

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Info 1: %1, info 2: %2
Component: None
Propagation: Global
Response: OFF2
Acknowledgment: IMMEDIATELY

Cause: In at least two drive data sets (DDS), the same motor data set (MDS) is assigned different encoder data sets (EDS) for the motor encoder. In various DDSs, it is not permissible for an MDS to have different motor encoders.
The following parameterization therefore results in an error:
DDS0: p0186[0] = 0, p0187[0] = 0
DDS1: p0186[1] = 0, p0187[1] = 1
Fault value (r0949, interpret decimal):
The lower 16 bits indicate the first DDS. The upper 16 bits indicate the second DDS.

Remedy: Create two MDS with the same motor data in order to operate one motor with different motor encoders.
Example:
DDS0: p0186[0] = 0, p0187[0] = 0
DDS1: p0186[1] = 1, p0187[1] = 1

A07530 Drive: Drive Data Set DDS not present

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The selected drive data set is not available (r0837 > p0180). The drive data set was not changed over.
See also: p0180, c0820, c0821, c0822, c0823, r0837
Remedy: - Select the existing drive data set.
- Set up additional drive data sets.

A07531 Drive: Command Data Set CDS not present

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The selected command data set is not available (r0836 > p0170). The command data set was not changed over.
See also: c0810 (Command data set selection CDS bit 0), c0811 (Command data set selection CDS bit 1), r0836 (Command Data Set CDS selected)
Remedy: - Select the existing command data set.
- Set up additional command data sets.

A07550 (F, N) Drive: Not possible to reset encoder parameters

Message class: Hardware/software error (1)
Message value: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: When restoring a factory setting, it was not possible to reset the encoder parameters. The encoder parameters are directly read out of the encoder via DRIVE-CLiQ.
Alarm value (r2124, interpret decimal):
Component number of the encoder involved.
Remedy: - Repeat the operation.
- Check the DRIVE-CLiQ connection.

Response upon: F:	NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F:	IMMEDIATELY
Response upon: N:	NONE
Acknowl. upon N:	NONE

F07551 Drive encoder: No commutation angle information

Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Message value:	Fault cause: %1, drive data set: %2
Component:	Encoder 1
Propagation:	Global
Response:	OFF2 (IASC/DCBRK)
Acknowledgment:	IMMEDIATELY
Cause:	The commutation angle information is missing. This means that synchronous motors cannot be controlled (closed-loop control) Fault value (r0949, interpret decimal): yyyyxxxx dec: yyyy = fault cause, xxxx = drive data set yyyy = 1 dec: The motor encoder used does not supply an absolute commutation angle. yyyy = 2 dec: The selected ratio of the measuring gearbox does not match the motor pole pair number.
Remedy:	For fault cause = 1: - Activate the pole position identification routine (p1982 = 1) for motor encoders without absolute position information. Then, using an encoder adjustment (p1990), the angular commutation offset should be determined. - Check the encoder parameterization (p0404). - Use an encoder with track C/D, EnDat interface of Hall sensors. - Use an encoder with sinusoidal A/B track for which the motor pole pair number (r0313) multiplied by the gear ratio (p0432/p0433) is less than the encoder pulse number (p0408) – or is an integer multiple of the encoder pulse number (p0408). For fault cause = 2: - The quotient of the pole pair number divided by the ratio of the measuring gearbox must be an integer number: (p0314 * p0433) / p0432. Note: For operation with track C/D, this quotient must be less than 8. See also: p0402, p0404, p0432, p0433

F07552 (A) Drive encoder: Encoder configuration not supported

Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Message value:	Fault cause: %1, component number: %2, encoder data set: %3
Component:	None
Propagation:	Global
Response:	OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Acknowledgment:	IMMEDIATELY

Cause: The requested encoder configuration is not supported. Only bits may be requested in p0404 that are signaled as being supported by the encoder evaluation in r0456.
Fault value (r0949, interpret decimal):
ccccbbaa hex: cccc = fault cause, bb = component number, aa = encoder data set
cccc = 1: sin/cos encoder with absolute track (is supported by SME25).
cccc = 3: Square-wave encoder (this is supported by SMC30).
cccc = 4: sin/cos encoder (this is supported by SMC20, SMI20, SME20, SME25).
cccc = 10: DRIVE-CLiQ encoder (is supported by DQI).
cccc = 12: sin/cos encoder with homing mark (this is supported by SME20).
cccc = 23: Resolver (this is supported by SMC10, SMI10).
cccc = 65535: Other function (compare r0456 and p0404).
See also: p0404 (Encoder configuration effective), r0456 (Encoder configuration supported)

Remedy:
- Check the encoder parameterization (p0400, p0404).
- Use the matching encoder evaluation (r0456).

Response upon: A: NONE

Acknowl. upon A: NONE

F07553 (A) Drive encoder: Sensor Module configuration not supported

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Message value: Encoder data set: %1, first incorrect bit: %2, incorrect parameter: %3

Component: None

Propagation: Global

Response: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)

Acknowledgment: IMMEDIATELY

Cause: The Sensor Module does not support the requested configuration.
For incorrect p0430 (cc = 0), the following applies:
- In p0430 (requested functions), at least 1 bit was set that is not set in r0458 (supported functions) (exception: Bit 19, 28, 29, 30, 31).
- p1982 > 0 (pole position identification requested), but r0458.16 = 0 (pole position identification not supported).

For incorrect p0437 (cc = 1), the following applies:
- In p0437 (requested functions), at least 1 bit was set that is not set in r0459 (supported functions).

Fault value (r0949, interpret hexadecimal):
ddccbbaa hex
aa: encoder data set number
bb: first incorrect bit
cc: incorrect parameter
cc = 0: incorrect parameter is p0430
cc = 1: incorrect parameter is p0437
cc = 2: incorrect parameter is r0459
cc = 3: incorrect parameter is p0454
dd: reserved (always 0)

Remedy:
- Check the encoder parameterization (p0430, p0437, p0454).
- Check the pole position identification routine (p1982).
- Use the matching encoder evaluation (r0457, r0458, r0459).

See also: p0430, p0437, r0458, r0459, p1982

Response upon: A: NONE

Acknowl. upon A: NONE

F07555 (A) Drive encoder: Configuration position tracking

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Message value: Component number: %1, encoder data set: %2, drive data set: %3, fault cause: %4
Component: Encoder 1
Propagation: Global
Response: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Acknowledgment: IMMEDIATELY
Cause: For position tracking, the configuration is not supported.
Position tracking can only be activated for absolute encoders.
For linear axes, it is not possible to simultaneously activate the position tracking for load and measuring gears.
Fault value (r0949, interpret hexadecimal):
ddccbbaa hex
aa = encoder data set
bb = component number
cc = drive data set
dd = fault cause
dd = 00 hex = 0 dec
An absolute encoder is not being used.
dd = 01 hex = 1 dec
Position tracking cannot be activated because the memory of the internal NVRAM is not sufficient or a converter does not have an NVRAM.
dd = 04 hex = 4 dec
A linear encoder is being used.
See also: p0404 (Encoder configuration effective), p0411 (Measuring gearbox configuration)
Remedy: For fault value 0:
- Use an absolute encoder.
For fault value 1:
- Use a converter with sufficient NVRAM.
For fault value 4:
- If necessary, deselect position tracking (p0411).
Response upon: A: NONE
Acknowl. upon A: NONE

F07556 Measuring gearbox: Position tracking, maximum actual value exceeded

Message class: Position/speed actual value incorrect or not available (11)
Message value: Component number: %1, encoder data set: %2
Component: None
Propagation: Global
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: When the position tracking of the measuring gearbox is configured, the drive/encoder identifies a maximum possible absolute position actual value (r0483) that cannot be represented within 32 bits.
Maximum value: p0408 * p0412 * 2^p0419
Fault value (r0949, interpret decimal):
aayyyyxx hex: yyyy = component number, xx = encoder data set
See also: p0408 (Rotary encoder pulse number), p0412 (Measuring gearbox absolute encoder rotary revolutions virtual), p0419 (Fine resolution absolute value Gx_XIST2 (in bits))
Remedy: - Reduce the fine resolution (p0419).
- Reduce the multiturn resolution (p0412).
See also: p0412 (Measuring gearbox absolute encoder rotary revolutions virtual), p0419 (Fine resolution absolute value Gx_XIST2 (in bits))

A07557 (F) Motor encoder: Home position not in the permissible range

Message class: Application/technological function faulted (17)
Message value: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The home position received via p2599 when adjusting the encoder lies outside half of the encoder range and cannot be set as actual axis position.
The maximum permissible value is displayed in the supplementary information.
Remedy: Set the home position less than the value from the supplementary information.
See also: c2598 (EPOS home position signal)
Response upon: F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

A07558 (F) Encoder 2: Home position not in the permissible range

Message class: Application/technological function faulted (17)
Message value: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The home position received via p2599 when adjusting the encoder lies outside half of the encoder range and cannot be set as actual axis position.
The maximum permissible value is displayed in the supplementary information.
Remedy: Set the home position less than the value from the supplementary information.
See also: c2598 (EPOS home position signal)
Response upon: F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

A07559 (F) Encoder 3: Home position not in the permissible range

Message class: Application/technological function faulted (17)
Message value: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The home position received via p2599 when adjusting the encoder lies outside half of the encoder range and cannot be set as actual axis position.
The maximum permissible value is displayed in the supplementary information.
Remedy: Set the home position less than the value from the supplementary information.
See also: c2598 (EPOS home position signal)
Response upon: F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

F07560 Drive encoder: Number of pulses is not to the power of two

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Encoder data set: %1
Component: None

Propagation: Global
Response: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Acknowledgment: IMMEDIATELY
Cause: For rotary absolute encoders, the pulse number in p0408 must be to the power of two.
Fault value (r0949, interpret decimal):
The fault value includes the encoder data set number involved.
Remedy: - Check the parameterization (p0408, p0404.1, r0458.5).
- Upgrade the Sensor Module firmware if necessary

F07561 Drive encoder: Number of multiturn pulses is not to the power of two

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Encoder data set: %1
Component: None
Propagation: Global
Response: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Acknowledgment: IMMEDIATELY
Cause: The multiturn resolution in p0421 must be to the power of two.
Fault value (r0949, interpret decimal):
The fault value includes the encoder data set number involved.
Remedy: - Check the parameterization (p0421, p0404.1, r0458.5).
- Upgrade the Sensor Module firmware if necessary

F07562 (A) Drive, encoder: Position tracking, incremental encoder not possible

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Fault cause: %1, component number: %2, encoder data set: %3
Component: None
Propagation: Global
Response: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Acknowledgment: IMMEDIATELY
Cause: The requested position tracking for incremental encoders is not supported.
Fault value (r0949, interpret hexadecimal):
ccccbbaa hex
aa = encoder data set
bb = component number
cccc = fault cause
cccc = 00 hex = 0 dec
The encoder type used does not support function "Position tracking incremental encoder".
cccc = 01 hex = 1 dec
Position tracking cannot be activated because the memory of the internal NVRAM is not sufficient or a converter does not have an NVRAM.
cccc = 04 hex = 4 dec
The linear encoder used does not support function "Position tracking".
See also: p0404 (Encoder configuration effective), p0411 (Measuring gearbox configuration), r0456 (Encoder configuration supported)
Remedy: - Check the encoder parameterization (p0400, p0404).
- Use a converter with the appropriate NVRAM.
- If required, deselect position tracking for the incremental encoder (p0411.3 = 0).
Response upon: A: NONE
Acknowl. upon A: NONE

F07563 (A) Drive encoder: XIST1_ERW configuration incorrect

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Fault cause: %1, encoder data set: %2
Component: None
Propagation: Global
Response: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Acknowledgment: IMMEDIATELY
Cause: An incorrect configuration was identified for the "Absolute position for incremental encoder" function.

Fault value (r0949, interpret decimal):
yyxx dec:
yy = fault cause,
xx = encoder data set

yy = 1 = 01 hex:
The "Absolute value for incremental encoder" function is not supported (r0459.13 = 0).
See also: r0459 (Sensor Module properties extended), p4652 (XIST1_ERW reset mode)

Remedy: For fault value = 1:
- Upgrade the Sensor Module firmware version.
- Check the mode (p4652 = 1, 3 requires the property r0459.13 = 1).

Response upon: A: NONE
Acknowl. upon A: NONE

A07565 (F, N) Drive: Encoder error in PROFIdrive encoder interface 1

Message class: Position/speed actual value incorrect or not available (11)
Message value: %1
Component: Sensor Module Encoder 1
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: An encoder error is signaled for the motor encoder via the PROFIdrive encoder interface (G1_ZSW.15).
Alarm value (r2124, interpret decimal):
Error code from G1_XIST2, refer to the description regarding r0483.
Note:
This alarm is only output if encoder control word G1_STW is interconnected.
Remedy: Acknowledge the encoder error using the encoder control word (G1_STW.15 = 1).
Response upon: F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A07566 (F, N) Drive: Encoder error in PROFIdrive encoder interface 2

Message class: Position/speed actual value incorrect or not available (11)
Message value: %1
Component: Sensor Module Encoder 2
Propagation: Global
Response: NONE
Acknowledgment: NONE

Cause: An encoder error was signaled for encoder 2 via the PROFIdrive encoder interface (G2_ZSW.15).
Alarm value (r2124, interpret decimal):
Error code from G2_XIST2, refer to the description regarding r0483.
Note:
This alarm is only output if encoder control word G2_STW is interconnected.
Remedy: Acknowledge the encoder error using the encoder control word (G2_STW.15 = 1).
Response upon: F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A07569 (F) Enc identification active

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: During encoder identification (waiting) with p0400 = 10100, the encoder could still not be identified.
Either the wrong encoder has been installed or no encoder has been installed, the wrong encoder cable has been connected or no encoder cable has been connected to the Sensor Module, or the DRIVE-CLiQ component has not been connected.
Note:
Encoder identification must be supported by the encoder and is possible in the following cases:
- Encoder with EnDat interface.
- Encoder with SSI interface.
- Motor with DRIVE-CLiQ.
Remedy: - Check and, if necessary, connect the encoder / encoder cable.
- Check and, if necessary, establish the DRIVE-CLiQ connection.
- For SSI encoders, perform the required operator action (see product documentation).
- In the case of encoders that cannot be identified (e.g. encoders without EnDat interface), enter the correct encoder type in p0400.
Response upon: F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

N07570 (F) Encoder identification data transfer running

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Global
Response: OFF2
Acknowledgment: NONE
Cause: The encoder type was automatically determined using p0400 = 10100.
Note:
This fault causes the pulses to be canceled - This is necessary to transfer the encoder parameterization to p0400 and the following.
See also: p0400 (Encoder type selection)
Remedy: Acknowledge the fault without taking additional measures.
Response upon: F: OFF2
Acknowl. upon F: IMMEDIATELY

F07575 Drive: Motor encoder not ready

Message class: Position/speed actual value incorrect or not available (11)
Message value: -
Component: Sensor Module Encoder 1
Propagation: Global
Response: OFF2 (ENCODER)
Acknowledgment: IMMEDIATELY
Cause: The motor encoder signals that it is not ready.
- Initialization of encoder 1 (motor encoder) was unsuccessful.
- The function "parking encoder" is active (encoder control word G1_STW.14 = 1).
- The Sensor Module is defective.

Remedy: Evaluate other active faults via the motor encoder.

A07576 Drive: Encoderless operation due to a fault active

Message class: Position/speed actual value incorrect or not available (11)
Message value: -
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: Encoderless operation is active due to a fault (r1407.13 = 1).
Note:
The behavior for faults has been set to ENCODER fault response in p0491.
See also: p0491 (Motor encoder fault response ENCODER)
Remedy:
- Remove the cause of a possible encoder fault.
- Carry out a POWER ON (switch-off/switch-on) for all components.

A07577 (F) Motor encoder: Measuring probe evaluation not possible

Message class: Application/technological function faulted (17)
Message value: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: When evaluating the measuring probe, an error occurred.
Alarm value (r2124, interpret decimal):
6: The input terminal for the measuring probe is not set.
4098: Error when initializing the probe.
4100: The measuring pulse frequency is too high.
4200: The bus cycle time is not a multiple integer of the position controller clock cycle.
Remedy: Deactivate measuring probe evaluation (c2509 = 0 signal).
For alarm value = 6:
Set the input terminal for the measuring probe (p0488, p0489).
For alarm value = 4098:
Check the converter hardware.
For alarm value = 4100:
Reduce the frequency of the measuring pulses at the measuring probe.
For alarm value = 4200:
Set the clock cycle ratio between the bus cycle time and the position controller clock cycle to an integer multiple.
Response upon: F: OFF1

Acknowl. upon F: IMMEDIATELY

A07578 (F) Encoder 2: Measuring probe evaluation not possible

Message class: Application/technological function faulted (17)
Message value: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: When evaluating the measuring probe, an error occurred.
Alarm value (r2124, interpret decimal):
6: The input terminal for the measuring probe is not set.
4098: Error when initializing the probe.
4100: The measuring pulse frequency is too high.
4200: The bus cycle time is not a multiple integer of the position controller clock cycle.
Remedy: Deactivate measuring probe evaluation (c2509 = 0 signal).
For alarm value = 6:
Set the input terminal for the measuring probe (p0488, p0489).
For alarm value = 4098:
Check the converter hardware.
For alarm value = 4100:
Reduce the frequency of the measuring pulses at the measuring probe.
For alarm value = 4200:
Set the clock cycle ratio between the bus cycle time and the position controller clock cycle to an integer multiple.
Response upon: F: OFF1
Acknowl. upon F: IMMEDIATELY

A07579 (F) Encoder 3: Measuring probe evaluation not possible

Message class: Application/technological function faulted (17)
Message value: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: When evaluating the measuring probe, an error occurred.
Alarm value (r2124, interpret decimal):
6: The input terminal for the measuring probe is not set.
4098: Error when initializing the probe.
4100: The measuring pulse frequency is too high.
4200: The bus cycle time is not a multiple integer of the position controller clock cycle.
Remedy: Deactivate measuring probe evaluation (c2509 = 0 signal).
For alarm value = 6:
Set the input terminal for the measuring probe (p0488, p0489).
For alarm value = 4098:
Check the converter hardware.
For alarm value = 4100:
Reduce the frequency of the measuring pulses at the measuring probe.
For alarm value = 4200:
Set the clock cycle ratio between the bus cycle time and the position controller clock cycle to an integer multiple.
Response upon: F: OFF1

Acknowl. upon F: IMMEDIATELY

A07580 (F, N) Drive: No Sensor Module with matching component number

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Encoder data set: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: A Sensor Module with the specified component number was not found.
Alarm value (r2124, interpret decimal):
Encoder data set involved.
Remedy: Correct the component number of the Sensor Module.
Response upon: F: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A07581 (F) Motor encoder: Position actual value preprocessing error

Message class: Position/speed actual value incorrect or not available (11)
Message value: -
Component: Encoder 1
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: An error has occurred during the position actual value preprocessing.
Remedy: Check the encoder for the position actual value preprocessing.
See also: p2502 (LR encoder assignment)
Response upon: F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

A07582 (F) Encoder 2: Position actual value preprocessing error

Message class: Position/speed actual value incorrect or not available (11)
Message value: -
Component: Encoder 2
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: An error has occurred during the position actual value preprocessing.
Remedy: Check the encoder for the position actual value preprocessing.
See also: p2502 (LR encoder assignment)
Response upon: F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

A07583 (F) Encoder 3: Position actual value preprocessing error

Message class: Position/speed actual value incorrect or not available (11)
Message value: -
Component: Encoder 3
Propagation: Global

Response: NONE
Acknowledgment: NONE
Cause: An error has occurred during the position actual value preprocessing.
Remedy: Check the encoder for the position actual value preprocessing.
See also: p2502 (LR encoder assignment)
Response upon: F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

A07587 Motor encoder: Position actual value preprocessing has no valid encoder

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: Encoder 1
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The following problem has occurred during the position actual value preprocessing:
- An encoder data set has been assigned, however, the encoder data set does not contain any encoder data (p0400 = 0) or invalid data (e.g. p0408 = 0).
Remedy: Check the drive data sets, encoder data sets.
See also: p0187, p0188, p0400, p2502

A07588 Encoder 2: Position actual value preprocessing does not have a valid encoder

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: Encoder 2
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The following problem has occurred during the position actual value preprocessing:
- An encoder data set has been assigned, however, the encoder data set does not contain any encoder data (p0400 = 0) or invalid data (e.g. p0408 = 0).
Remedy: Check the drive data sets, encoder data sets.
See also: p0187, p0188, p0400, p2502

A07589 Encoder 3: Position actual value preprocessing does not have a valid encoder

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: Encoder 3
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The following problem has occurred during the position actual value preprocessing:
- An encoder data set has been assigned, however, the encoder data set does not contain any encoder data (p0400 = 0) or invalid data (e.g. p0408 = 0).
Remedy: Check the drive data sets, encoder data sets.
See also: p0187, p0188, p0400, p2502

A07590 (F) Motor encoder: Drive data set changeover in operation

Message class: Application/technological function faulted (17)

Message value: -
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: A Drive Data Set changeover (DDS) with a change of the mechanical relationships and the encoder assignment (p2502) was requested in operation.
Remedy: To change over the drive data set, initially, exit the "operation" mode.
Response upon: F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

A07591 (F) Encoder 2: Drive Data Set changeover in operation

Message class: Application/technological function faulted (17)
Message value: -
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: A Drive Data Set changeover (DDS) with a change of the mechanical relationships and the encoder assignment (p2502) was requested in operation.
Remedy: To change over the drive data set, initially, exit the "operation" mode.
Response upon: F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

A07592 (F) Encoder 3: Drive Data Set changeover in operation

Message class: Application/technological function faulted (17)
Message value: -
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: A Drive Data Set changeover (DDS) with a change of the mechanical relationships and the encoder assignment (p2502) was requested in operation.
Remedy: To change over the drive data set, initially, exit the "operation" mode.
Response upon: F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

A07593 (F, N) Motor encoder: Value range for position actual value exceeded

Message class: Application/technological function faulted (17)
Message value: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE

Cause: The value range (-2147483648 ... 2147483647) for the position actual value representation was exceeded.
When the overflow occurs, the "homed" or "absolute encoder adjusted" status is reset.
Alarm value (r2124, interpret decimal):
1: The position actual value (r2521) has exceeded the value range.
2: The encoder position actual value Gn_XIST2 (r0483) or the absolute value after the load gear has exceeded the value range.
3: The maximum encoder value multiplied by the factor to convert the absolute position from increments to length units (LU) has exceeded the value range for displaying the position actual value.

Remedy: If required, reduce the traversing range or position resolution.
For alarm value = 3:
Reducing the position resolution and conversion factor:
- Reduce the length unit (LU) per load revolution for rotary encoders (p2506).
- Increase the fine resolution of absolute position actual values (p0419).

Response upon: F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A07594 (F, N) Encoder 2: Value range for position actual value exceeded

Message class: Application/technological function faulted (17)
Message value: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE

Cause: The value range (-2147483648 ... 2147483647) for the position actual value representation was exceeded.
When the overflow occurs, the "homed" or "absolute encoder adjusted" status is reset.
Alarm value (r2124, interpret decimal):
1: The position actual value (r2521) has exceeded the value range.
2: The encoder position actual value Gn_XIST2 (r0483) or the absolute value after the load gear has exceeded the value range.
3: The maximum encoder value times the factor to convert the absolute position from increments to length units (LU) has exceeded the value range for displaying the position actual value.

Remedy: If required, reduce the traversing range or position resolution.
For alarm value = 3:
Reducing the position resolution and conversion factor:
- Reduce the length unit (LU) per load revolution for rotary encoders (p2506).
- Increase the fine resolution of absolute position actual values (p0419).

Response upon: F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A07595 (F, N) Encoder 3: Value range for position actual value exceeded

Message class: Application/technological function faulted (17)
Message value: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE

Cause: The value range (-2147483648 ... 2147483647) for the position actual value representation was exceeded.
When the overflow occurs, the "homed" or "absolute encoder adjusted" status is reset.
Alarm value (r2124, interpret decimal):
1: The position actual value (r2521) has exceeded the value range.
2: The encoder position actual value Gn_XIST2 (r0483) or the absolute value after the load gearbox (r2723) has exceeded the value range.
3: The maximum encoder value times the factor to convert the absolute position (r0483 and/or r2723) from increments to length units (LU) has exceeded the value range for displaying the position actual value.

Remedy: If required, reduce the traversing range or position resolution.
For alarm value = 3:
Reducing the position resolution and conversion factor:
- Reduce the length unit (LU) per load revolution for rotary encoders (p2506).
- Increase the fine resolution of absolute position actual values (p0419).

Response upon: F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

F07800 Drive: No power unit present

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: Power Unit
Propagation: Global
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: The power unit parameters cannot be read or no parameters are stored in the power unit.
Note:
This fault also occurs if an incorrect topology was selected in the commissioning tool and this parameterization is then downloaded to the converter.
See also: r0200 (Power unit code number actual)

Remedy:
- Carry out a POWER ON (switch-off/switch-on) for all components.
- Check the power unit and replace if necessary.
- Check the converter and replace if necessary.
- After correcting the topology, the parameters must be again downloaded using the commissioning tool.

F07801 Drive: Motor overcurrent

Message class: Motor overload (8)
Message value: -
Component: Motor
Propagation: Global
Response: OFF2 (NONE, OFF1, OFF3)
Acknowledgment: IMMEDIATELY
Cause: The permissible motor limit current was exceeded.
- Effective current limit set too low.
- Current controller not correctly set.
- U/f operation: Up ramp was set too short or the load is too high.
- U/f operation: Short-circuit in the motor cable or ground fault.
- U/f operation: Motor current does not match current of power unit.
- Switch to rotating motor without flying restart function (p1200).
Note:
Limit current = 2 x minimum (p0640, 4 x p0305 x p0306) >= 2 x p0305 x p0306

Remedy:
- Check the current limits (p0640).
- Vector control: Check the current controller (p1715, p1717).
- U/f control: Check the current limiting controller (p1340 ... p1346).
- Increase the up ramp (p1120) or reduce the load.
- Check the motor and motor cables for short-circuit and ground fault.
- Check the motor for the star-delta configuration and rating plate parameterization.
- Check the power unit and motor combination.
- Choose "flying restart" function (p1200) if switched to rotating motor.

F07802 Drive: Infeed or power unit not ready

Message class: Infeed faulted (13)
Message value: -
Component: None
Propagation: Global
Response: OFF2 (NONE)
Acknowledgment: IMMEDIATELY
Cause: After an internal switch-on command, the infeed or drive does not signal ready.
- Monitoring time is too short.
- DC link voltage is not present.
- Associated infeed or drive of the signaling component is defective.
- Supply voltage incorrectly set.

Remedy:
- Increase the monitoring time (p0857).
- Ensure that there is a DC link voltage. Check the DC link busbar. Enable the infeed.
- Check the supply voltage setting (p0210).

See also: p0857 (Power unit monitoring time)

F07807 Drive: Short-circuit/ground fault detected

Message class: Ground fault / inter-phase short-circuit detected (7)
Message value: %1
Component: Motor
Propagation: Global
Response: OFF2 (NONE)
Acknowledgment: IMMEDIATELY

Cause: A phase-phase short-circuit or ground fault was detected at the motor-side output terminals of the converter.
Fault value (r0949, interpret decimal):
1: Short-circuit, phase UV.
2: Short-circuit, phase UW.
3: Short-circuit, phase VW.
4: Ground fault with overcurrent.
5: Motor cable phase U interrupted
6: Motor cable phase V interrupted
7: Motor cable phase W interrupted
8: Short-circuit with hardware shutdown
1yxxx: Ground fault with current in phase U detected (y = pulse number, xxxx = component of the current in phase V in per mille).
2yxxx: Ground fault with current in phase V detected (y = pulse number, xxxx = component of the current in phase U in per mille).
Note:
Also when interchanging the line and motor cables is identified as a motor-side short-circuit.
The ground fault test only functions when the motor is stationary.
Connecting to a motor that is either not de-energized or partially de-energized is possibly detected as ground fault.

Remedy: - Check the motor-side converter connection for a phase-phase short-circuit.
- Rule-out interchanged line and motor cables.
- Check for a ground fault.
- Check the motor cable connections
For a ground fault the following applies:
- Do not enable the pulses when connecting to a rotating motor without the "Flying restart" function activated (p1200).
- Increase the de-energization time (p0347).
- Increase pulse cancellation delay time (p1228) to ensure standstill.
- If necessary, deactivate the monitoring (p1901), e.g. if the rated motor current is greater than that of the power unit.

F07810 Drive: Power unit EEPROM without rated data

Message class: Hardware/software error (1)
Message value: -
Component: Power Unit
Propagation: Global
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: No rated data are stored in the power unit EEPROM.
See also: r0206, r0207, r0208, r0209
Remedy: Replace the power unit or inform Siemens Customer Service.

A07820 Drive: Temperature sensor not connected

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE

Cause: The temperature sensor for monitoring the motor temperature, specified in p0600, is not available.
Alarm value (r2124, interpret decimal):
1: p0601 = 10, but in p0600 evaluation via encoder is not selected.
2: p0600 = 10 (signal interconnection); however, the signal source (c0603) is not interconnected.
5: Component with sensor evaluation not present or has been removed in the meantime.

Remedy: For alarm value = 1:
- In p0600 set an encoder with temperature sensor.
For alarm value = 2:
- Interconnect c0603 with the temperature signal.
For alarm value = 5:
- Connect the component with the temperature sensor. Check the DRIVE-CLiQ connection.
See also: p0600 (Motor temperature sensor for monitoring), p0601 (Motor temperature sensor type)

F07840 Drive: Infeed operation missing

Message class: Infeed faulted (13)
Message value: -
Variant: G220 Clean Power
Component: None
Propagation: Global
Response: OFF2 (NONE)
Acknowledgment: IMMEDIATELY

Cause: The signal "infeed operation" is not present although the enable signals for the drive have been present for longer than the parameterized monitoring time (p0857).
- Infeed not operational.
- Interconnection of the binary signal sink for the signal "infeed operation" is either incorrect or missing (c0864).

Remedy: - Bring the infeed into an operational state.
- Check the interconnection of the binary signal sink for the signal "infeed operation" (c0864).
- Increase the monitoring time (p0857).
- Wait until the infeed has completed the line supply identification routine.
See also: p0857 (Power unit monitoring time), c0864 (Infeed operation)

F07841 (A) Drive: Infeed operation withdrawn

Message class: Infeed faulted (13)
Message value: -
Variant: G220 Clean Power
Component: None
Propagation: Global
Response: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3)
Acknowledgment: IMMEDIATELY

Cause: The signal "infeed operation" was withdrawn in operation.
- Interconnection of the binary signal sink for the signal "infeed operation" is either incorrect or missing (c0864).
- The enable signals of the infeed were disabled.
- Due to a fault, the infeed withdraws the signal "infeed operation".

Remedy: - Check the interconnection of the binary signal sink for the signal "infeed operation" (c0864).
- Check the enable signals of the infeed and if required, enable.
- Remove and acknowledge an infeed fault.
Note:
If this drive is intended to back up the DC link regeneratively, then the fault response must be parameterized for NONE, OFF1 or OFF3. so that the drive can continue to operate even after the infeed fails.

Response upon: A: NONE

Acknowl. upon A: NONE

F07860 (A) External fault 1

Message class: External measured value / signal state outside the permissible range (16)
Message value: -
Component: None
Propagation: Global
Response: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Acknowledgment: IMMEDIATELY
Cause: The condition for "External fault 1" is active.
Note:
"External fault 1" is initiated by a 1/0 edge via binary signal sink c2106.
See also: c2106 (External fault 1)
Remedy: - Eliminate the causes of this fault.
- Acknowledge fault.
Response upon: A: NONE
Acknowl. upon A: NONE

F07861 (A) External fault 2

Message class: External measured value / signal state outside the permissible range (16)
Message value: -
Component: None
Propagation: Global
Response: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Acknowledgment: IMMEDIATELY
Cause: The condition for "External fault 2" is present.
Note:
"External fault 2" is initiated by a 1/0 edge via binary signal sink c2107.
See also: c2107 (External fault 2)
Remedy: - Eliminate the causes of this fault.
- Acknowledge fault.
Response upon: A: NONE
Acknowl. upon A: NONE

F07890 Internal voltage protection/internal armature short-circuit with STO (Safe Torque Off) active

Message class: Application/technological function faulted (17)
Message value: -
Component: None
Propagation: Global
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The internal armature short-circuit (p1231 = 4) is not possible, as STO (Safe Torque Off) is enabled. The pulses cannot be enabled.
Remedy: Switch out the internal armature short-circuit (p1231=0) or deactivate Safe Torque Off (p9603 = 0).
Note:
SH: Safe standstill

A07891 Drive: Load monitoring pump/fan blocked

Message class: Motor overload (8)
Message value: -
Component: Motor
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The load monitoring is configured for a pump or fan (p2193 = 4, 5).
The monitoring function detects when the pump/fan is blocked.
It is possible that the blocking torque threshold (p2168) is set too low (e.g. heavy duty starting).
See also: p2165, p2168, p2181, p2193
Remedy: - Check whether the pump/fan is blocked, and if blocked, then resolve the problem.
- Check that the fan can freely move, and if necessary, resolve the problem.
- Adapt the parameterization corresponding to the load (p2165, p2168)..

A07892 Drive: Load monitoring pump/fan no load condition

Message class: Application/technological function faulted (17)
Message value: -
Component: Motor
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The load monitoring is configured for a pump or fan (p2193 = 4, 5).
The monitoring function detects when the pump/fan is operating under no load conditions.
The pump is running in the dry state (no medium to be pumped) – or the fan has a broken belt.
It is possible that the detection torque threshold is too low (p2191).
See also: p2181 (Load monitoring response), p2191 (Load monitoring torque threshold no load), p2193 (Load monitoring configuration)
Remedy: - For a pump, check the medium being pumped, and if required, provide the medium.
- For a fan, check the belt, and if required, replace.
- If necessary, increase the detection torque threshold (p2191).

A07893 Drive: Load monitoring pump leakage

Message class: Application/technological function faulted (17)
Message value: -
Component: Motor
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The load monitoring is configured for a pump (p2193 = 4).
The monitoring function detects a leak in the pump circuit.
In this case, the pump requires a torque that is lower than in normal operation to pump the reduced quantity.
See also: p2181, p2182, p2183, p2184, p2186, p2188, p2190, p2193
Remedy: - Remove the leak in the pump circuit.
- For a nuisance trip, reduce the torque thresholds of the leakage characteristic (p2186, p2188, p2190).

F07894 Drive: Load monitoring pump/fan blocked

Message class: Motor overload (8)
Message value: -

Component: Motor
Propagation: Global
Response: OFF1 (NONE, OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: The load monitoring is configured for a pump or fan (p2193 = 4, 5).
The monitoring function detects when the pump/fan is blocked.
It is possible that the blocking torque threshold (p2168) is set too low (e.g. heavy duty starting).
See also: p2165, p2168, p2181, p2193
Remedy: - Check whether the pump/fan is blocked, and if blocked, then resolve the problem.
- Check that the fan can freely move, and if necessary, resolve the problem.
- Adapt the parameterization corresponding to the load (p2165, p2168)..

F07895 Drive: Load monitoring pump/fan no load condition

Message class: Application/technological function faulted (17)
Message value: -
Component: Motor
Propagation: Global
Response: OFF1 (NONE, OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: The load monitoring is configured for a pump or fan (p2193 = 4, 5).
The monitoring function detects when the pump/fan is operating under no load conditions.
The pump is running in the dry state (no medium to be pumped) – or the fan has a broken belt.
It is possible that the detection torque threshold is too low (p2191).
See also: p2181 (Load monitoring response), p2191 (Load monitoring torque threshold no load), p2193 (Load monitoring configuration)
Remedy: - For a pump, check the medium being pumped, and if required, provide the medium.
- For a fan, check the belt, and if required, replace.
- If necessary, increase the detection torque threshold (p2191).

F07896 Drive: Load monitoring pump leakage

Message class: Application/technological function faulted (17)
Message value: -
Component: Motor
Propagation: Global
Response: OFF1 (NONE, OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: The load monitoring is configured for a pump (p2193 = 4).
The monitoring function detects a leak in the pump circuit.
In this case, the pump requires a torque that is lower than in normal operation to pump the reduced quantity.
See also: p2181, p2182, p2183, p2184, p2186, p2188, p2190, p2193
Remedy: - Remove the leak in the pump circuit.
- For a nuisance trip, reduce the torque thresholds of the leakage characteristic (p2186, p2188, p2190).

A07899 (N) Drive: Stall monitoring not possible

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Parameter: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE

Cause: Stall monitoring is not possible, because a change was made into the open-loop speed controlled mode before the wait time p2177 had expired.
This situation can only occur, if the following conditions apply:
p0504 = 0, 2 and p1300 = 20
p2177 > p1758
p1750.2 = 0
p1750.6 = 0

Remedy: - Deactivate the changeover into open-loop speed controlled operation when operating at the torque limit (p1750.6 = 0).
Condition:
No slow reversing through the open-loop speed controlled operating range p1755 within the time p1758 when operating at the torque limit.
- Shorten the stall detection wait time (p2177 < p1758).
- Activate closed-loop controlled operation from standstill and higher (p1750.2 = 1).
Condition:
There is no active load, for example, a hoisting gear
- Use an operating mode with encoder (p0504 = 0, 2 and p1300 = 21).

Response upon: N: NONE

Acknowl. upon N: NONE

F07900 (N, A) Drive: Motor blocked

Message class: Application/technological function faulted (17)

Message value: -

Component: Motor

Propagation: Global

Response: OFF2 (NONE, OFF1, OFF3, STOP2)

Acknowledgment: IMMEDIATELY

Cause: The motor has been operating at the torque limit longer than the time specified in p2177 and below the speed threshold in p2175.
This signal can also be triggered if the speed is oscillating and the speed controller output repeatedly goes to its limit.
This message can also be output for a phase failure in the motor feeder cable.
It may also be the case that thermal monitoring of the power unit reduces the current limit (see p0290), thereby causing the motor to decelerate.
See also: p2175 (Motor blocked speed threshold), p2177 (Motor blocked delay time)

Remedy: - Check that the motor can freely move.
- Check the effective torque limit (r1538, r1539).
- Check for encoderless vector control p1610 (not for p1750 bit 2, 5 = 1)
- Check the parameter, message "Motor blocked" and if required, correct (p2175, p2177).
- Check the direction of rotation enable signals for a flying motor restart (c1110, c1111).
- For U/f control: Check the current limits and acceleration times (p0640, p1120).
- Check the motor feeder cable.

Response upon: N: NONE

Acknowl. upon N: NONE

Response upon: A: NONE

Acknowl. upon A: NONE

F07901 Drive: Motor overspeed

Message class: Application/technological function faulted (17)

Message value: -

Component: Motor

Propagation: Global
Response: OFF2 (IASC/DCBRK)
Acknowledgment: IMMEDIATELY
Cause: The maximum permissible speed was either positively or negatively exceeded.
The maximum permissible positive speed is formed as follows: Minimum (p1082, c1085) + p2162
The maximum permissible negative speed is formed as follows: Maximum (-p1082, c1088) - p2162
Remedy: The following applies for a positive direction of rotation:
- Check r1084, and if required correct p1082, c1085 and p2162.
The following applies for a negative direction of rotation:
- Check r1087, and if required correct p1082, c1088 and p2162.
Activate precontrol of the speed limiting controller (p1401.7 = 1).
Increase the hysteresis for the overspeed signal p2162. This upper limit is dependent upon the maximum motor speed p0322 and the maximum speed p1082 of the setpoint channel.

F07902 (N, A) Drive: Motor stalled

Message class: Application/technological function faulted (17)
Message value: %1
Component: Motor
Propagation: Global
Response: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Acknowledgment: IMMEDIATELY
Cause: The system has identified that the motor has stalled for a time longer than is set in p2178.
Fault value (r0949, interpret decimal):
1: Stall detection using r1408.11 (p1744, p0492).
2: Stall detection using r1408.12 (p1745, p1743 for synchronous reluctance motors) or via the flux difference (r0083 ... r0084).
4: Missing load r2197.11
See also: p1744 (Motor model speed threshold stall detection), p2178 (Motor stalled delay time)

Remedy:

It should always be carefully ensured that the motor data identification (p1910) as well as the rotating measurement (p1960) were carried out (also refer to r3925). For synchronous motors with encoder, the encoder must have been adjusted (p1990). The motor must be connected.

For closed-loop speed and torque control without speed encoder, the following applies:

Check whether the drive stalls only as a result of the load in the open-loop controlled mode (p1750.0) or if the speed setpoint is still zero. If so, increase the current setpoint via p1610 or set p1750.2 = 1 (sensorless vector control to standstill for passive loads).

- If the motor excitation build-up time (p0346) was significantly reduced and the drive stalls when it is switched on and run immediately, p0346 should be increased again or quick magnetizing selected (p1401).

- Check the current controller (p1715, p1717) and the speed adaptation controller (p1764, p1767). If the dynamic response was significantly reduced, then this should be increased again.

- If there is no fault, then the fault tolerance (p1745) or the delay time (p2178) can be increased.

For synchronous reluctance motors, the fault tolerance (p1743) can be increased and flux monitoring (p1401.15) can be deactivated.

For closed-loop speed and torque control with speed encoder, the following applies:

- Check the speed signal (interrupted cable, polarity, pulse number, broken encoder shaft).

- Check the speed encoder, if another speed encoder was selected using the data set changeover. This must be connected to the same motor that is controlled for the data set changeover.

If there is no fault, then the fault tolerance (p1744 or p0492) can be increased. For resolvers with a high signal ripple, for example p0492 should be increased and the speed signal smoothed (p1441, p1442).

If the stalled motor should take place in the range of the monitor model and for speeds of less than 30 % of the rated motor speed, then a change can be made directly from the current model into the flux impression (p1401.5 = 1). We therefore recommend that the time-controlled model change is switched in (p1750.4 = 1) or the model changeover limits are significantly increased (p1752 > 0.35 x p0311; p1753 = 5 %).

- Check the speed encoder, if another speed encoder was selected using the data set changeover. This must be connected to the motor that is controlled for the data set changeover.

The following generally apply for closed-loop and torque control:

- Check whether the motor cables are disconnected.

- Check the current limits (p0640, r0067, r0289). If the current limits are too low, then the drive cannot be magnetized.

- If the fault occurs with fault value 2 when the motor accelerates very quickly to the field weakening range, the deviation between the flux setpoint and flux actual value can be reduced and, in turn, the message prevented, by reducing p1596 or p1553.

If there is no fault, then the delay time can be increased (p2178).

Response upon: N: NONE

Acknowl. upon N: NONE

Response upon: A: NONE

Acknowl. upon A: NONE

A07903 Drive: Motor speed deviation

Message class: Application/technological function faulted (17)

Message value: -

Component: Motor

Propagation: Global

Response: NONE

Acknowledgment: NONE

Cause: The absolute value of the speed difference between the setpoint (c2151) and the speed actual value (r2169) exceeds the tolerance threshold (p2163) for longer than the tolerated time (p2164, p2166).
The alarm is only enabled for p2149.0 = 1.
Possible causes:
- The load torque is greater than the torque setpoint.
- When accelerating, the torque/current/power limit is reached. If the limits are not sufficient, then it is possible that the drive has been dimensioned too small.
- For closed-loop torque control, the speed setpoint does not track the speed actual value.
- For active Vdc controller.
- For active pulse technique and then effective torque limit (p1557).
For U/f control, the overload condition is detected as the I_max controller is active.
See also: p2149 (Monitoring configuration)

Remedy:
- Increase p2163 and/or p2166.
- Increase the torque/current/power limits.
- For closed-loop torque control: The speed setpoint should track the speed actual value.
- Deactivate alarm with p2149.0 = 0.

F07904 (N, A) External armature short-circuit: Contactor feedback signal "Closed" missing

Message class: Application/technological function faulted (17)
Message value: -
Component: None
Propagation: Global
Response: OFF2 (NONE)
Acknowledgment: IMMEDIATELY
Cause: When closing the contactor, the binary signal sink "External armature short-circuit: contactor feedback signal" (c1235) did not issue the signal "Closed" (r1239.1 = 1) within the monitoring time (p1236).
Remedy:
- Check that the binary signal sink "External armature short-circuit contactor feedback signal" is correctly connected (c1235).
- Check the logic of the contactor feedback signal (r1239.1 = 1: "Closed", r1239.1 = 0: "Open").
- Increase the monitoring time (p1236).
- If required, set the external armature short-circuit without contactor feedback signal (p1231 = 2).

Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F07905 (N, A) External armature short-circuit: Contactor feedback signal "Open" missing

Message class: Application/technological function faulted (17)
Message value: -
Component: None
Propagation: Global
Response: OFF2 (NONE)
Acknowledgment: IMMEDIATELY
Cause: When opening the contactor, the binary signal sink "External armature short-circuit: contactor feedback signal" (c1235) did not issue the signal "Open" (r1239.1 = 0) within the monitoring time (p1236).
Remedy:
- Check that the binary signal sink "External armature short-circuit contactor feedback signal" is correctly connected (c1235).
- Check the logic of the contactor feedback signal (r1239.1 = 1: "Closed", r1239.1 = 0: "Open").
- Increase the monitoring time (p1236).
- If required, set the external armature short-circuit without contactor feedback signal (p1231 = 2).

Response upon: N: NONE

Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F07906 Armature short-circuit / internal voltage protection: Parameterization error

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Fault cause: %1, motor data set: %2
Component: None
Propagation: Global
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The armature short-circuit is incorrectly parameterized.
Fault value (r0949, interpret decimal):
zzzzyyxx: zzzz = fault cause, xx = motor data set
zzzz = 0001 hex = 1 dec:
No permanent magnet synchronous motor selected.
zzzz = 0002 hex = 2 dec:
No induction motor selected.
zzzz = 0065 hex = 101 dec:
External armature short-circuit: Output (r1239.0) not wired.
zzzz = 0066 hex = 102 dec:
External armature short-circuit with contactor feedback signal: No feedback signal interconnected (binary signal sink "External armature short-circuit: contactor feedback signal" c1235). The feedback signal must be interconnected in all command data sets (CDS).
zzzz = 0067 hex = 103 dec:
External armature short-circuit without contactor feedback signal: Wait time when opening (p1237) is 0.
zzzz = 00C9 hex = 201 dec:
Internal voltage protection: The maximum output current of the converter (r0209) is less than 1.8 x motor short-circuit current (r0331).
zzzz = 00CA hex = 202 dec:
Internal voltage protection: No converter in the booksize or chassis format is used.
zzzz = 00CB hex = 203 dec:
Internal voltage protection: The motor short-circuit current (p0320) is greater than the maximum motor current (p0323).
zzzz = 00CC hex = 204 dec:
Internal voltage protection: The activation (p1231 = 4) is not given for all motor data sets with synchronous motors (p0300 = 2xx, 4xx).

Remedy:

For fault value = 1:

- An armature short-circuit / voltage protection is only permissible for permanent-magnetic synchronous motors. The highest position of the motor type in p0300 must either be 2 or 4.

For fault value = 101:

- The contactor for the external armature short-circuit configuration should be controlled using output signal r1239.0. For instance, the signal can be interconnected to an output terminal via an appropriate binary signal sink. Before this fault can be acknowledged, p1231 must be set again.

For fault value = 102:

- If the external armature short-circuit is selected with contactor feedback signal (p1231 = 1), then the feedback signal must be connected to an input terminal (e.g. r0722.x) and then interconnected to the binary signal sink "External armature short-circuit: contactor feedback signal" c1235.

- Alternatively, the external armature short-circuit without contactor feedback signal (p1231 = 2) can be selected.

For fault value = 103:

- If the external armature short-circuit without contactor feedback signal (p1231 = 2) is selected, then a wait time must be parameterized in p1237. This time must always be greater than the actual contactor opening time, as otherwise the converter would be short-circuited!

For fault value = 201:

- A converter with a higher maximum current or a motor with a lower short-circuit current must be used. The maximum converter current must be higher than 1.8 x short-circuit current of the motor.

For fault value = 202:

- For internal voltage protection, use a converter in the booksize or chassis format.

For fault value = 203:

- For internal voltage protection, only use short-circuit proof motors.

For fault value = 204:

- The internal voltage protection must either be activated for all motor data sets with synchronous motors (p0300 = 2xx, 4xx) (p1231 = 3) or it must be deactivated for all motor data sets (p1231 not equal to 3). This therefore ensures that the protection cannot be accidentally withdrawn as a result of a data set changeover. The fault can only be acknowledged if this condition is fulfilled.

F07907 Internal armature short-circuit: Motor terminals are not at zero potential after pulse cancellation

Message class: Application/technological function faulted (17)

Message value: -

Component: Power Unit

Propagation: Global

Response: NONE

Acknowledgment: IMMEDIATELY

Cause:

The function "Internal voltage protection" (p1231 = 3) was activated.

The following must be observed:

- When the internal voltage protection is active, after pulse cancellation, all of the motor terminals are at half of the DC link voltage (without an internal voltage protection, the motor terminals are at zero potential)!

- It is only permissible to use motors that are short-circuit proof (p0320 < p0323).

- The converter must be able to continually provide 1.8x the short-circuit current (r0331) of the motor (r0289).

- The internal voltage protection cannot be interrupted due to a fault response. If an overcurrent condition occurs during the active, internal voltage protection, then this can destroy the converter and/or the motor.

- If the converter does not support the autonomous, internal voltage protection (r0192.10 = 0), in order to ensure safe, reliable functioning when the line supply fails, an external 24 V power supply (UPS) must be used for the components.

- If the converter does support the autonomous, internal voltage protection (r0192.10 = 1), then the DC link must be used for the 24 V power supply for the components in order to ensure safe, reliable functioning when the line supply fails.

- If the internal voltage protection is active, it is not permissible that the motor is driven by the load for a longer period of time (e.g. as a result of loads that move the motor or another coupled motor).

Remedy: Not necessary.
This a note for the user.

A07908 Internal armature short-circuit active

Message class: Application/technological function faulted (17)
Message value: -
Component: Power Unit
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The converter signals that the motor is short-circuited through the power semiconductors (r1239.5 = 1). The pulses cannot be enabled. The internal armature short-circuit is selected (p1231 = 4):
Remedy: For synchronous motors, the armature short-circuit braking is activated with binary signal sink c1230 = 1 signal.
See also: c1230 (DC braking/armature short circuit activation), p1231 (DC braking/armature short circuit configuration)

F07909 Internal voltage protection: Deactivation only effective after POWER ON

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Global
Response: NONE
Acknowledgment: POWER ON
Cause: The deactivation of the internal voltage protection (p1231 not equal to 3) only becomes effective after POWER ON.
The status signal r1239.6 = 1 indicates that the internal voltage protection is ready.
Remedy: Not necessary.
This a note for the user.

A07910 (N) Drive: Motor overtemperature

Message class: Motor overload (8)
Message value: %1
Component: Motor
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: KTY84/Pt1000/Pt100 or no sensor:
The measured motor temperature or the temperature of the motor temperature model 2 has exceeded the alarm threshold. The parameterized response becomes active.
PTC or bimetallic NC contact:
The response threshold of 1650 Ohm was exceeded or the NC contact opened.
Alarm value (r2124, interpret decimal):
11: No output current reduction.
12: Output current reduction active.
See also: p0604 (Mot_temp_mod 2/sensor: alarm threshold), p0610 (Motor overtemperature response)
Remedy: - Check the motor load.
- Check the motor ambient temperature.
- Check KTY84/Pt1000.
- Check the overtemperatures of motor temperature model 2.
See also: p0612, p0617, p0618, p0619, p0625, p0626, p0627, p0628

Response upon: N: NONE
Acknowl. upon N: NONE

A07920 Drive: Torque/speed too low

Message class: Application/technological function faulted (17)
Message value: -
Component: Motor
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: For p2193 = 1:
The torque deviates from the torque/speed envelope characteristic (too low).
For p2193 = 2:
The speed signal from the external encoder (see c3230) deviates from the speed (r2169) (too low).
See also: p2181 (Load monitoring response)
Remedy: - Check the connection between the motor and load.
- Adapt the parameterization corresponding to the load.

A07921 Drive: Torque/speed too high

Message class: Application/technological function faulted (17)
Message value: -
Component: Motor
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: For p2193 = 1:
The torque deviates from the torque/speed envelope characteristic (too high).
For p2193 = 2:
The speed signal from the external encoder (see c3230) deviates from the speed (r2169) (too high).
Remedy: - Check the connection between the motor and load.
- Adapt the parameterization corresponding to the load.

A07922 Drive: Torque/speed out of tolerance

Message class: Application/technological function faulted (17)
Message value: -
Component: Motor
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: For p2193 = 1:
The torque deviates from the torque/speed envelope characteristic.
For p2193 = 2:
The speed signal from the external encoder (see c3230) deviates from the speed (r2169).
Remedy: - Check the connection between the motor and load.
- Adapt the parameterization corresponding to the load.

F07923 Drive: Torque/speed too low

Message class: Application/technological function faulted (17)
Message value: -

Component: Motor
Propagation: Global
Response: OFF1 (NONE, OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: For p2193 = 1:
The torque deviates from the torque/speed envelope characteristic (too low).
For p2193 = 2:
The speed signal from the external encoder (see c3230) deviates from the speed (r2169) (too low).
Remedy: - Check the connection between the motor and load.
- Adapt the parameterization corresponding to the load.

F07924 Drive: Torque/speed too high

Message class: Application/technological function faulted (17)
Message value: -
Component: Motor
Propagation: Global
Response: OFF1 (NONE, OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: For p2193 = 1:
The torque deviates from the torque/speed envelope characteristic (too high).
For p2193 = 2:
The speed signal from the external encoder (see c3230) deviates from the speed (r2169) (too high).
Remedy: - Check the connection between the motor and load.
- Adapt the parameterization corresponding to the load.

F07925 Drive: Torque/speed out of tolerance

Message class: Application/technological function faulted (17)
Message value: -
Component: Motor
Propagation: Global
Response: OFF1 (NONE, OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: For p2193 = 1:
The torque deviates from the torque/speed envelope characteristic.
For p2193 = 2:
The speed signal from the external encoder (see c3230) deviates from the speed (r2169).
Remedy: - Check the connection between the motor and load.
- Adapt the parameterization corresponding to the load.

A07926 Drive: Envelope curve parameter invalid

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Parameter: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE

Cause: Invalid parameter values were entered for the envelope characteristic of the load monitoring.
The following rules apply for the speed thresholds:
p2182 < p2183 < p2184
The following rules apply for the torque thresholds:
p2185 > p2186
p2187 > p2188
p2189 > p2190
Load monitoring configuration and response must match.
It is not permissible that the individual load torque monitoring areas overlap.
Alarm value (r2124, interpret decimal):
Number of the parameter with the invalid value.
Note:
The load torque monitoring has not been activated as long as the alarm is active.

Remedy: - Set the parameters for the load monitoring according to the applicable rules.
- If necessary, deactivate the load monitoring (p2181 = 0, p2193 = 0).

A07927 DC braking active

Message class: Application/technological function faulted (17)

Message value: -

Component: Motor

Propagation: Global

Response: NONE

Acknowledgment: NONE

Cause: The motor is braked with DC current. DC braking is active.
1)
A message with response DCBRK is active. The motor is braked with the braking current set in p1232 for the duration set in p1233. If the standstill threshold p1226 is undershot, then braking is prematurely canceled.
2)
DC braking has been activated at binary signal sink c1230 with the DC braking set (p1231 = 4). Braking current p1232 is injected until this binary signal sink becomes inactive.

Remedy: Not necessary.
This alarm is automatically withdrawn after DC braking.

F07928 Internal voltage protection initiated

Message class: Application/technological function faulted (17)

Message value: -

Component: Power Unit

Propagation: Global

Response: OFF2

Acknowledgment: IMMEDIATELY

Cause: The converter signals that the motor is short-circuited through the power semiconductors (r1239.5 = 1). The pulses cannot be enabled. The internal voltage protection is selected (p1231 = 3).

Remedy: If the converter supports the autonomous internal voltage protection (r0192.10 = 1), then the converter automatically decides - using the DC link voltage - as to whether the armature short-circuit should be activated.
The armature short-circuit is activated and response OFF2 is initiated if the DC link voltage exceeds 800 V. If the DC link voltage falls below 450 V, then the armature short-circuit is withdrawn.
If the motor is still in a critical speed range, the armature short-circuit is re-activated once the DC link voltage exceeds the threshold of 800 V.
If the autonomous (independent) internal voltage protection is active (r1239.5 = 1) and the line supply returns (450 V < DC link voltage < 800 V), the armature short-circuit is withdrawn after 3 minutes.

A07929 (F) Drive: No motor detected

Message class: Application/technological function faulted (17)
Message value: -
Component: Motor
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The absolute current value is so small after enabling the inverter pulses that no motor is detected.
Note:
In the case of vector control and an induction motor, this alarm is followed by the fault F07902.
No evaluation for vector control and synchronous motor.
See also: p2179 (Output load identification current limit)
Remedy: - Check the motor feeder cables.
- Reduce the threshold value (p2179, e.g. for synchronous motors and U/f control).
- Check the voltage boost of the U/f control (p1310).
- Carry out a standstill measurement to set the stator resistance (p0350).
Response upon: F: OFF2 (NONE, OFF1, OFF3)
Acknowl. upon F: IMMEDIATELY

F07936 Drive: Load failure

Message class: Application/technological function faulted (17)
Message value: -
Component: Motor
Propagation: Global
Response: OFF1 (NONE, OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: The load monitoring has detected a load failure.
Remedy: - Check the sensor.
- If necessary, deactivate the load monitoring (p2193).
See also: p2193 (Load monitoring configuration), c3232 (Load monitoring failure detection (external))

F07937 (N) Drive: Speed deviation between motor model and external speed

Message class: Application/technological function faulted (17)
Message value: -
Component: Motor
Propagation: Global
Response: OFF2 (NONE, OFF1, OFF3)
Acknowledgment: IMMEDIATELY
Cause: The absolute value of the speed difference from the two actual values (r2169, r1443) exceeds the tolerance threshold (p3236) for longer than permitted (p3238).
Possible causes:
- The interconnection or scaling of the external encoder signal is incorrect (c1440, p2000).
- Speed encoder for external encoder signal faulty.
- Encoder signal's polarity or gain incorrect.
- Smoothing time constant for model speed for monitoring too high (p2157).
- Smoothing time constant or threshold values for monitoring too low (p3236, p3238).
If an external encoder signal is not being used:
- Check speed signal r0061. For significant signal ripple, check the speed encoder and if required increase p0492.
See also: p2149 (Monitoring configuration)

Remedy: - Check that the external speed matches the motor speed (c1440, r1443).
- Check the polarity of the external speed (r1443).
- Check the interconnection of the numerical signal sink and the scaling of the signal (c1440, p2000).

Response upon: N: NONE

Acknowl. upon N: NONE

F07940 Sync-line-drive: Synchronizing error

Message class: Application/technological function faulted (17)

Message value: %1

Component: None

Propagation: Global

Response: OFF2

Acknowledgment: IMMEDIATELY

Cause: An error occurred when synchronizing the drive to the line supply.
Fault value (r0949, interpret binary):
Bit 0 = 1:
- After synchronization has been completed, the phase difference (r3808) is greater than the threshold value for phase synchronism (p3813) for longer than 1 second.

Bit 1 = 1:
- While synchronizing the motor to the line supply, an OFF1 or OFF3 response occurred.
- The enable was withdrawn while synchronizing (c3802 = 0)

Bit 2 = 1:
- Within the time limit (p3818), the phase difference was not able to be continuously limited to the threshold value.

Remedy: For bit 0, 2 = 1:
- If required increase the threshold value for phase synchronism (p3813) for line - drive synchronization.
- Increase the phase controller limiting (p3811).
- Increase the threshold value for the frequency difference (p3806).

For bit 1 = 1:
- Complete synchronizing before OFF1 or OFF3 (r3819.2 = 1).
- Complete synchronizing (r3819.2 = 1) before withdrawing the enable (c3802 = 0).

For bit 2 = 1:
- Increase the time limit (p3818).

See also: p3806 (Sync-line-drive frequency difference threshold value), p3811 (Sync-line-drive frequency limiting), p3813 (Sync-line-drive phase synchronism threshold value), p3815 (Sync-line-drive voltage difference threshold value), p3818 (Sync-line-drive synchronization time limit)

A07941 Sync-line-drive: Target frequency not permissible

Message class: Application/technological function faulted (17)

Message value: Parameter: %1

Component: None

Propagation: Global

Response: NONE

Acknowledgment: NONE

Cause: The target frequency is outside the permissible value range.
Alarm value (r2124, interpret decimal):
1084: Target frequency greater than the positive speed limit, f_sync > f_max (r1084).
1087: Target frequency less than the negative speed limit, f_sync < f_min (r1087).

Remedy: Fulfill the conditions for the target frequency for line - drive synchronization.
See also: r1084 (Positive speed limit effective), r1087 (Negative speed limit effective)

A07942 Sync-line-drive: Setpoint frequency is completely different than the target frequency

Message class: Application/technological function faulted (17)

Message value: -

Component: None

Propagation: Global

Response: NONE

Acknowledgment: NONE

Cause: There is a considerable difference between the setpoint frequency and the target frequency (f_set <> f_target). The deviation that can be tolerated is set in p3806.

Remedy: Not necessary.

The alarm is automatically withdrawn after the difference that can be tolerated between the setpoint and target frequencies (p3806) is reached.

See also: p3806 (Sync-line-drive frequency difference threshold value)

A07943 Sync-line-drive: Synchronization not permitted

Message class: Application/technological function faulted (17)

Message value: Parameter: %1

Component: None

Propagation: Global

Response: NONE

Acknowledgment: NONE

Cause: Synchronization is not permitted.

Alarm value (r2124, interpret decimal):

1300: The control mode (p1300) has not been set to encoderless closed-loop speed control or U/f characteristic.

1910: Motor data identification activated.

1960: Speed controller optimization activated.

3816: Voltage signal not found.

3845: Friction characteristic record activated.

Remedy: Fulfill the conditions for line - drive synchronization.

For alarm value = 1300:

Set the control mode p0504 to Standard Drive Control (1) or select other control modes (0) and then set p1300 to encoderless closed-loop speed control (p1300 = 20) or U/f characteristic (p1300 = 0 ... 19).

For alarm value = 1910:

Exit the motor data identification routine (p1910).

For alarm value = 1960:

Exit the speed controller optimization routine (p1960).

For alarm value = 3816:

Connect the Voltage Sensing Module (VSM), assign to the drive to be synchronized and enter the connection to the voltage signal r3661 in c3816 of the drive. When using voltage sensing of a neighboring drive object, it must be ensured that the same current controller sampling time (p0115[0]) exists as the one for the synchronizing drive. If the voltage signal of an active infeed should be used, then a connection can be made to r6319[0] if it is available.

For alarm value = 3845:

Exit the friction characteristic record (p3845).

F07950 (A) Drive: Incorrect motor parameter

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Message value: Parameter: %1

Component: None

Propagation: Global

Response: NONE
Acknowledgment: IMMEDIATELY
Cause: - The motor parameters were incorrectly entered while commissioning (e.g. p0300 = 0, no motor).
Fault value (r0949, interpret decimal):
Parameter number involved.
300:
For this control mode, the motor type is not supported.
A synchronous reluctance motor is not operated in the closed-loop speed/torque control mode.
307:
The following motor parameters could be incorrect:
p0304, p0305, p0307, p0308, p0309
302:
DQI motor type, which is no longer supported.
See also: p0300, p0301, p0304, p0305, p0307, p0310, p0311, p0314, p0316, p0320, p0322, p0323
Remedy: Compare the motor data with the rating plate data and if required, correct.
For fault value = 300:
Operate a motor type supported by the selected control mode.
Response upon: A: NONE
Acknowl. upon A: NONE

F07951 Drive: Motor is not permitted

Message class: General drive fault (19)
Message value: Parameter: %1
Variant: G220 Clean Power
Component: Motor
Propagation: Drive
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: As a result of the insulation class, the motor is not permitted to be connected to this converter.
The supply voltage is too high for 1PH8 motors.
Remedy: A motor with a higher insulation class must be used when controlled from a CPD converter type.
A 1PH8 motor can be operated with lower supply voltages (see p0210).

F07955 Drive: Motor has been changed

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Parameter: %1
Component: Motor
Propagation: Global
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: The code number of the actual motor with DRIVE-CLiQ does not match the saved number.
The code numbers of the bearings, gearbox or brake do not match the saved numbers.
Fault value (r0949, interpret decimal):
Number of the incorrect parameter
See also: p0301 (Motor code number selection), r0302 (Motor code number of motor with DRIVE-CLiQ)
Remedy: Connect the original motor, switch on the converter again (POWER ON) and exit quick commissioning.
Or: set p0300 = 10000 (load the parameters from the motor with DRIVE-CLiQ) and re-commission. The data for bearings, gearbox and brake are reloaded.

F07956 (A) Drive: Motor code does not match the list (catalog) motor

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: Motor
Propagation: Global
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: The motor code of the connected motor with DRIVE-CLiQ does not match the possible list motor types (see selection in p0300).
The connected motor with DRIVE-CLiQ might not be supported by this firmware version.
Fault value (r0949, interpret decimal):
Motor code of the connected motor with DRIVE-CLiQ.
Note:
The first three digits of the motor code generally correspond to the list motor type.
Remedy: Use a motor with DRIVE-CLiQ and the matching motor code.
Response upon: A: NONE
Acknowl. upon A: NONE

A07960 Drive: Incorrect friction characteristic

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Parameter: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The friction characteristic is incorrect.
Alarm value (r2124, interpret decimal):
1:
Incorrect parameter format.
1538:
The friction torque is greater than the maximum from the upper effective torque limit (r1538) and zero. This is the reason that the output of the friction characteristic (r3841) is limited to this value.
1539:
The friction torque is less than the minimum from the lower effective torque limit (r1539) and zero. This is the reason that the output of the friction characteristic (r3841) is limited to this value.
3820 ... 3829:
Incorrect parameter number. The speeds entered in the parameters for the friction characteristic do not correspond to the following condition:
0.0 < p3820 < p3821 < ... < p3829 <= p0322 or p1082, if p0322 = 0
Therefore the output of the friction characteristic (r3841) is set to zero.
3830 ... 3839:
Incorrect parameter number. The torques entered in the parameters for the friction characteristic do not correspond to the following condition:
0 <= p3830, p3831 ... p3839 <= r0333
Therefore the output of the friction characteristic (r3841) is set to zero.
See also: r3840 (Friction characteristic status word)

Remedy: Fulfill the conditions for the friction characteristic.
For alarm value = 1538:
Check the upper effective torque limit (e.g. in the field weakening range).
For alarm value = 1539:
Check the lower effective torque limit (e.g. in the field weakening range).
For alarm value = 3820 ... 3839:
Fulfill the conditions to set the parameters of the friction characteristic.
If the motor data (e.g. the maximum speed p0322) is changed during commissioning, then the technological limits and threshold values dependent on this, must be re-calculated.

A07961 Drive: Record friction characteristic activated

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The automatic friction characteristic record is activated.
The friction characteristic is recorded at the next switch-on command.
It is not possible to save parameters when recording the friction characteristic (p0977).
Remedy: Not necessary.
The alarm is automatically withdrawn after the friction characteristic recording has been successfully completed or recording has been deactivated (p3845 = 0).

F07963 Drive: Record friction characteristic canceled

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Parameter: %1
Component: None
Propagation: Global
Response: OFF1
Acknowledgment: IMMEDIATELY

Cause:

The conditions to record the friction characteristic are not fulfilled.

Fault value (r0949, interpret decimal):

0046: Missing enable signals (r0046).

1082: The highest speed value to be approached (p3829) is greater than the maximum speed (p1082).

1084: The highest speed value to be approached (p3829) is higher than the maximum speed (r1084, p1083, c1085).

1087: The highest speed value to be approached (p3829) is higher than the maximum speed (r1087, p1086, c1088).

1110: Friction characteristic recording, negative direction selected (p3845) and negative direction inhibited (c1110).

1111: Friction characteristic recording, positive direction selected (p3845) and positive direction inhibited (c1111).

1198: Friction characteristic recording selected (p3845 > 0) and negative (c1110) and positive directions (c1111) inhibited (r1198).

1300: The control mode (p1300) has not been set to closed-loop speed control.

1755: For encoderless closed-loop control (p1300 = 20), the lowest speed value to be approached (p3820) is less than or equal to the changeover speed, open-loop controlled operation (p1755).

1910: Motor data identification activated.

1960: Speed controller optimization activated.

3820 ... 3829: speed cannot be approached.

3840: Friction characteristic incorrect.

3845: Friction characteristic record deselected.

Remedy:

Fulfill the conditions to record the friction characteristic.

For fault value = 0046:

- Establish missing enable signals.

For fault value = 1082, 1084, 1087:

- Select the highest speed value to be approached (p3829) less than or equal to the maximum speed (p1082, r1084, r1087).
- Recalculate the speed interpolation points along the friction characteristic (automatic calculation).

For fault value = 1110:

- Select the friction characteristic record, positive direction (p3845).

For fault value = 1111:

- Select the friction characteristic record, negative direction (p3845).

For fault value = 1198:

- Enable permitted direction (c1110, c1111, r1198).

For fault value = 1300:

- Set the control mode (p1300) on the closed-loop speed control (p1300 = 20, 21).

For fault value = 1755:

- Recalculate the interpolation points along the characteristic with p3845 = 9.
- For encoderless closed-loop speed control (p1300 = 20) select the lowest speed value to be approached (p3820) greater than the changeover speed of open-loop controlled operation (p1755).
- Recalculate the speed interpolation points along the friction characteristic (automatic calculation).

For fault value = 1910:

- Exit the motor data identification routine (p1910).

For fault value = 1960:

- Exit the speed controller optimization routine (p1960).

For fault value 3820 ... 3829:

- Check the load at speeds p3820 ... p3829
- Check the speed signal (r0063) for oscillation at speed p3820 ... p3829. Check the settings of the speed controller if applicable.

For fault value = 3840:

- Make the friction characteristic error-free (p3820 ... p3829, p3830 ... p3839, r3840).

For fault value = 3845:

- Activate the friction characteristic record (p3845).

F07967 Drive: Automatic encoder adjustment/pole position identification incorrect

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Global
Response: OFF2 (NONE, OFF1)
Acknowledgment: IMMEDIATELY
Cause: A fault has occurred during the automatic encoder adjustment or the pole position identification.
Only for internal Siemens troubleshooting.
Remedy: Carry out a POWER ON.

F07968 Drive: Lq-Ld measurement incorrect

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Global
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: A fault has occurred during the Lq-Ld measurement.
Fault value (r0949, interpret decimal):
10: Stage 1: The ratio between the measured current and zero current is too low.
12: Stage 1: The maximum current was exceeded.
15: Second harmonic too low.
16: Drive converter too small for the measuring technique.
17: Abort due to pulse inhibit.
Remedy: For fault value = 10:
Check whether the motor is correctly connected.
Replace the power unit involved.
Deactivate technique (p1909).
For fault value = 12:
Check whether motor data have been correctly entered.
Deactivate technique (p1909).
For fault value = 16:
Deactivate technique (p1909).
For fault value = 17:
Repeat technique.

F07969 Drive: Incorrect pole position identification

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Global
Response: OFF2
Acknowledgment: IMMEDIATELY

Cause: A fault has occurred during the pole position identification routine.
Fault value (r0949, interpret decimal):
1: Current controller limited
2: Motor shaft locked.
4: Encoder speed signal not plausible.
10: Stage 1: The ratio between the measured current and zero current is too low.
11: Stage 2: The ratio between the measured current and zero current is too low.
12: Stage 1: The maximum current was exceeded.
13: Stage 2: The maximum current was exceeded.
14: Current difference to determine the +d axis too low.
15: Second harmonic too low.
16: Drive converter too small for the measuring technique.
17: Abort due to pulse inhibit.
18: First harmonic too low.
20: Pole position identification requested with the motor shaft rotating and activated "flying restart" function.

Remedy:

For fault value = 1:
- Check whether the motor is correctly connected.
- Check whether motor data have been correctly entered.
- Replace the power unit involved.

For fault value = 2:
- Open the motor holding brake (interconnect c0855 with a 1 signal) and switch the motor into a no-load condition.

For fault value = 4:
- Check whether the encoder pulse number (p0408) and gearbox ratio (p0432, p0433) are correct.
- Check whether the motor pole pair number is correct (p0314).

For fault value = 10:
- When selecting p1980 = 4: increase the value for p0325.
- When selecting p1980 = 1: increase the value for p0329.
- Check whether the motor is correctly connected.
- Replace the power unit involved.

For fault value = 11:
- Increase the value for p0329.
- Check whether the motor is correctly connected.
- Replace the power unit involved.

For fault value = 12:
- When selecting p1980 = 4: reduce the value for p0325.
- When selecting p1980 = 1: reduce the value for p0329 (minimum, p0305).
- If p0329 = p0305: then reduce p0356, p0357.
- Check whether motor data have been correctly entered.

For fault value = 13:
- Reduce the value for p0329.
- Check whether motor data have been correctly entered.

For fault value = 14:
- Increase the value for p0329.
- Motor not sufficiently anisotropic, change the technique (p1980 = 1, 10).

For fault value = 15:
- Increase the value for p0325.
- Motor not sufficiently anisotropic, change the technique (p1980 = 1, 10).

For fault value = 16:
- Deactivate the technique (p1982).

For fault value = 17:
- The same as fault value 12 – or repeat the technique.

For fault value = 18:
- Increase the value for p0329.
- Saturation not sufficient, change the technique (p1980 = 10).

For fault value = 20:
- Before carrying out a pole position identification routine ensure that the motor shaft is absolutely stationary (zero speed).

F07970 Drive: Automatic encoder adjustment incorrect

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Global
Response: OFF2 (NONE)
Acknowledgment: IMMEDIATELY

Cause: A fault has occurred during the automatic encoder adjustment.
Fault value (r0949, interpret decimal):
1: Current controller limited
2: Motor shaft locked.
4: Encoder speed signal not plausible.
5: Deselect U/f (p1300) or deactivate encoder calibration (p1990).
10: Stage 1: The ratio between the measured current and zero current is too low.
11: Stage 2: The ratio between the measured current and zero current is too low.
12: Stage 1: The maximum current was exceeded.
13: Stage 2: The maximum current was exceeded.
14: Current difference to determine the +d axis too low.
15: Second harmonic too low.
16: Drive converter too small for the measuring technique.
17: Abort due to pulse inhibit.

Remedy:
For fault value = 1:
Check whether the motor is correctly connected.
Check whether motor data have been correctly entered.
Replace the power unit involved.
For fault value = 2:
Open the motor holding brake (interconnect c0855 with a 1 signal) and switch the motor into a no-load condition.
For fault value = 4:
Check whether the speed actual value inversion is correct (p0410.0).
Check whether the motor is correctly connected.
Check whether the encoder pulse number (p0408) and gearbox factor (p0432, p0433) are correct.
Check whether the motor pole pair number is correct (p0314).
For fault value = 5:
Deselect U/f (p1300) or deactivate encoder calibration (p1990).
For fault value = 10:
Increase the value for p0325.
Check whether the motor is correctly connected.
Replace the power unit involved.
For fault value = 11:
Increase the value for p0329.
Check whether the motor is correctly connected.
Replace the power unit involved.
For fault value = 12:
Reduce the value for p0325.
Check whether motor data have been correctly entered.
For fault value = 13:
Reduce the value for p0329.
Check whether motor data have been correctly entered.
For fault value = 14:
Increase the value for p0329.
For fault value = 15:
Increase the value for p0325.
For fault value = 16:
Deactivate technique (p1982).
For fault value = 17:
Repeat technique.
For fault value = 24:
Check the excitation equipment.
If there is no error, then extend the runtime for the automatic encoder calibration via p1999. Repeat technique.

A07971 (N) Drive: Angular commutation offset determination activated

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The automatic determination of the angular commutation offset (encoder adjustment) is activated (p1990 = 1, 3).
Note:
The automatic determination is carried out at the next switch-on command.
See also: p1990 (Encoder adjustment determine angular commutation offset)

Remedy: Not necessary.
The alarm is automatically withdrawn after successful determination or for the setting p1990 = 0.
Response upon: N: NONE
Acknowl. upon N: NONE

A07975 (N) Drive: Travel to the zero mark - Setpoint input expected

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The zero mark must be evaluated in order to adjust the encoder. It is expected that a speed or torque setpoint is entered.
See also: p1990 (Encoder adjustment determine angular commutation offset)
Remedy: Not necessary.
This alarm is automatically withdrawn after the zero mark has been detected.
Response upon: N: NONE
Acknowl. upon N: NONE

A07976 Drive: Fine encoder calibration activated

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Parameter: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The alarm indicates the phases of the fine encoder calibration using the alarm value.
Alarm value (interpret decimal):
1: Fine encoder calibration active.
2: Rotating measurement started (set the setpoint speed > 40 % rated motor speed).
3: Rotating measurement lies within the speed and torque range.
4: Rotating measurement successful: pulse inhibit can be initiated to accept the values.
5: Fine encoder calibration is calculated.
10: Speed too low, rotating measurement interrupted.
12: Torque too high, rotating measurement interrupted.
See also: p1905 (Parameter tuning selection)
Remedy: For alarm value = 10:
Increase the speed.
For alarm value = 12:
Bring the drive into a no-load condition.

F07977 ESM and Safety Integrated (SI) not supported

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Global
Response: OFF2
Acknowledgment: IMMEDIATELY

Cause: ESM and one Safety Integrated function are activated.
The drive does not support the simultaneous use of both functions.
Note:
ESM: Essential Service Mode
Remedy: Deactivate Safety Integrated via p9603 or ESM via c3880.
See also: c3880 (ESM activation signal), p9603 (SI control)

A07980 Drive: Rotating measurement activated

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The rotating measurement (automatic speed controller optimization) is activated.
The rotating measurement is carried out at the next switch-on command.
Note:
During the rotating measurement it is not possible to save the parameters (p0977).
See also: p1960 (Rotating measurement selection)
Remedy: Not necessary.
The alarm is automatically withdrawn after the speed controller optimization has been successfully completed or for the setting p1900 = 0.

A07981 Drive: Enable signals for the rotating measurement missing

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The rotating measurement cannot be started due to missing enable signals.
For p1959.13 = 1, the following applies:
- Enable signals for the ramp-function generator missing (see c1140 ... c1142).
- Enable signals for the speed controller integrator missing (see c1476, c1477).
Remedy: - Acknowledge faults that are present.
- Establish missing enable signals.
See also: r0002 (Drive operating display), r0046 (Missing enable signals)

F07982 Drive: Rotating measurement encoder test

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Global
Response: OFF1 (NONE, OFF2)
Acknowledgment: IMMEDIATELY

Cause: A fault has occurred during the encoder test.
Fault value (r0949, interpret decimal):
1: The speed did not reach a steady-state condition.
2: The speed setpoint was not able to be approached as the minimum limiting is active.
3: The speed setpoint was not able to be approached as the suppression (skip) bandwidth is active.
4: The speed setpoint was not able to be approached as the maximum limiting is active.
5: The encoder does not supply a signal.
6: Incorrect polarity.
7: Incorrect pulse number.
8: Noise in the encoder signal or speed controller unstable.
9: Voltage Sensing Module (VSM) incorrectly connected.

Remedy: For fault value = 1:
- Check the motor parameters.
- Carry out a motor data identification routine (p1910).
- If required, reduce the dynamic factor (p1967 < 25 %).

For fault value = 2:
- Adapt the speed setpoint (p1965) or adapt the minimum limit (p1080).

For fault value = 3:
- Adapt the speed setpoint (p1965) or suppression (skip) bandwidths (p1091 ... p1094, p1101).

For fault value = 4:
- Adapt the speed setpoint (p1965) or maximum limit (p1082, p1083 and p1086).

For fault value = 5:
- Check the encoder connection. If required, replace the encoder.

For fault value = 6:
- Check the connection assignment of the encoder cable. Adapt the polarity (p0410).

For fault value = 7:
- Adapt the pulse number (p0408).

For fault value = 8:
- Check the encoder connection and encoder cable. It is possible that there is a problem associated with the ground connection.
- Reduce the dynamic response of the speed controller (p1460, p1462 and p1470, p1472).

For fault value = 9:
- Check the connections of the Voltage Sensing Module (VSM).

Note:
The encoder test can be switched out (disabled) using p1959.0.
See also: p1959 (Rotating measurement configuration)

F07983 Drive: Rotating measurement saturation characteristic

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Global
Response: OFF1 (NONE, OFF2)
Acknowledgment: IMMEDIATELY

Cause: A fault has occurred while determining the saturation characteristic.
Fault value (r0949, interpret decimal):
1: The speed did not reach a steady-state condition.
2: The rotor flux did not reach a steady-state condition.
3: The adaptation circuit did not reach a steady-state condition.
4: The adaptation circuit was not enabled.
5: Field weakening active.
6: The speed setpoint was not able to be approached as the minimum limiting is active.
7: The speed setpoint was not able to be approached as the suppression (skip) bandwidth is active.
8: The speed setpoint was not able to be approached as the maximum limiting is active.
9: Several values of the determined saturation characteristic are not plausible.
10: Saturation characteristic could not be sensibly determined because load torque too high.

Remedy: For fault value = 1:
- The total drive moment of inertia is far higher than that of the motor (p0341, p0342).
Deselect rotating measurement (p1960), enter the moment of inertia p0342 and repeat the measurement.
For fault value = 1 ... 2:
- Increase the measuring speed (p1961) and repeat the measurement.
For fault value = 1 ... 4:
- Check the motor parameters (rating plate data).
- Check the moment of inertia (p0341, p0342).
- Carry out a motor data identification routine (p1910).
- If required, reduce the dynamic factor (p1967 < 25 %).
For fault value = 5:
- The speed setpoint (p1961) is too high. Reduce the speed.
For fault value = 6:
- Adapt the speed setpoint (p1961) or minimum limiting (p1080).
For fault value = 7:
- Adapt the speed setpoint (p1961) or suppression (skip) bandwidths (p1091 ... p1094, p1101).
For fault value = 8:
- Adapt the speed setpoint (p1961) or maximum limit (p1082, p1083 and p1086).
For fault value = 9, 10:
- The measurement was carried out at an operating point where the load torque is too high. Select a more suitable operating point, either by changing the speed setpoint (p1961) or by reducing the load torque. The load torque may not be varied while making measurements.
Note:
The saturation characteristic identification routine can be disabled using p1959.1.
See also: p1959 (Rotating measurement configuration)

F07984 Drive: Speed controller optimization, moment of inertia

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Global
Response: OFF1 (NONE, OFF2)
Acknowledgment: IMMEDIATELY

Cause: A fault has occurred while identifying the moment of inertia.
Fault value (r0949, interpret decimal):
1: The speed did not reach a steady-state condition.
2: The speed setpoint was not able to be approached as the minimum limiting is active.
3. The speed setpoint was not able to be approached as the suppression (skip) bandwidth is active.
4. The speed setpoint was not able to be approached as the maximum limiting is active.
5: It is not possible to increase the speed by 10% as the minimum limiting is active.
6: It is not possible to increase the speed by 10% as the suppression (skip) bandwidth is active.
7: It is not possible to increase the speed by 10% as the maximum limiting is active.
8: The torque difference after the speed setpoint step is too low in order to be able to still reliably identify the moment of inertia.
9: Too few data to be able to reliably identify the moment of inertia.
10: After the setpoint step, the speed either changed too little or in the incorrect direction.
11: The identified moment of inertia is not plausible. The measured moment of inertia is less than the 0.05x or greater than 500x the preset moment of inertia of the motor p0341.

Remedy: For fault value = 1:
- Check the motor parameters (rating plate data).
- Check the moment of inertia (p0341, p0342) and adapt the speed controller gain.
- Carry out a motor data identification routine (p1910).
- If required, reduce the dynamic factor (p1967 < 25 %).

For fault value = 2, 5:
- Adapt the speed setpoint (p1965) or adapt the minimum limit (p1080).

For fault value = 3, 6:
- Adapt the speed setpoint (p1965) or suppression (skip) bandwidths (p1091 ... p1094, p1101).

For fault value = 4, 7:
- Adapt the speed setpoint (p1965) or maximum limit (p1082, p1083 and p1086).

For fault value = 8:
- The total drive moment of inertia is far higher than that of the motor (refer to p0341, p0342). Deselect rotating measurement (p1960), enter the moment of inertia p0342, adapt the speed controller gain and repeat the measurement.

For fault value = 9:
- Check the moment of inertia (p0341, p0342). Adapt the speed controller gain.

For fault value = 10:
- Check the moment of inertia (p0341, p0342). Adapt the speed controller gain.

For fault value = 11:
- Reduce the moment of inertia of the motor p0341 (e.g. factor of 0.2) or increase (e.g. factor of 5) and repeat the measurement.

Note:
The moment of inertia identification routine can be disabled using p1959.2.
See also: p1959 (Rotating measurement configuration)

F07985 Drive: Speed controller optimization (oscillation test)

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Global
Response: OFF1 (NONE, OFF2)
Acknowledgment: IMMEDIATELY

Cause: A fault has occurred during the vibration test.
Fault value (r0949, interpret decimal):
1: The speed did not reach a steady-state condition.
2: The speed setpoint was not able to be approached as the minimum limiting is active.
3: The speed setpoint was not able to be approached as the suppression (skip) bandwidth is active.
4: The speed setpoint was not able to be approached as the maximum limiting is active.
5: Torque limits too low for a torque step.
6: No suitable speed controller setting was found.

Remedy: For fault value = 1:
- Check the motor parameters (rating plate data).
- Check the moment of inertia (p0341, p0342). Adapt the speed controller gain.
- Carry out a motor data identification routine (p1910).
- If required, reduce the dynamic factor (p1967 < 25 %).

For fault value = 2:
- Adapt the speed setpoint (p1965) or adapt the minimum limit (p1080).

For fault value = 3:
- Adapt the speed setpoint (p1965) or suppression (skip) bandwidths (p1091 ... p1101).

For fault value = 4:
- Adapt the speed setpoint (p1965) or maximum limit (p1082, p1083 and p1086).

For fault value = 5:
- Increase the torque limits (e.g. p1520, p1521).

For fault value = 6:
- Reduce the dynamic factor (p1967).
- Disable the vibration test (p1959.4 = 0) and repeat the rotating measurement.

See also: p1959 (Rotating measurement configuration)

F07986 Drive: Rotating measurement ramp-function generator

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Global
Response: OFF1 (NONE, OFF2)
Acknowledgment: IMMEDIATELY
Cause: During the rotating measurements, problems with the ramp-function generator occurred.
Fault value (r0949, interpret decimal):
1: The positive and negative directions are inhibited.
Remedy: For fault value = 1:
Enable direction (c1110 or c1111).

A07987 Drive: Rotating measurement, no encoder available

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: No encoder available. The rotating measurement was carried out without encoder.
Remedy: Connect encoder or select p1960 = 1, 3.

F07988 Drive: Rotating measurement, no configuration selected

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Global
Response: OFF2 (NONE, OFF1)
Acknowledgment: IMMEDIATELY
Cause: When configuring the rotating measurement (p1959), no function was selected.
Remedy: Select at least one function for automatic optimization of the speed controller (p1959).
See also: p1959 (Rotating measurement configuration)

F07989 Drive: Rotating measurement leakage inductance (q-axis)

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Global
Response: OFF1 (NONE, OFF2)
Acknowledgment: IMMEDIATELY
Cause: An error has occurred while measuring the dynamic leakage inductance.
Fault value (r0949, interpret decimal):
1: The speed did not reach a steady-state condition.
2: The speed setpoint was not able to be approached as the minimum limiting is active.
3: The speed setpoint was not able to be approached as the suppression (skip) bandwidth is active.
4: The speed setpoint was not able to be approached as the maximum limiting is active.
5: The 100% flux setpoint was not reached.
6: No Lq measurement possible because field weakening is active.
7: Speed actual value exceeds the maximum speed p1082 or 75% of the rated motor speed.
8: Speed actual value is below 2 % of the rated motor speed.

Remedy:

For fault value = 1:
- Check the motor parameters.
- Carry out a motor data identification routine (p1910).
- If required, reduce the dynamic factor (p1967 < 25 %).

For fault value = 2:
- Adapt the speed setpoint (p1965) or adapt the minimum limit (p1080).

For fault value = 3:
- Adapt the speed setpoint (p1965) or suppression (skip) bandwidths (p1091 ... p1094, p1101).

For fault value = 4:
- Adapt the speed setpoint (p1965) or maximum limit (p1082, p1083 and p1086).

For fault value = 5:
- Flux setpoint p1570 = 100 % and current setpoint p1610 = 0 % kept during the Lq measurement.

For fault value = 6:
- Reduce the regenerative load so that the drive does not reach field weakening when accelerating.
- Reduce p1965 so that the q leakage inductance is recorded at lower speeds.

For fault value = 7:
- Increase p1082, if this is technically permissible.
- Reduce p1965 so that the q leakage inductance is recorded at lower speeds.

For fault value = 8:
- Reduce the load when motoring so that the drive is not braked.
- Increase p1965 so that the measurement may be taken at higher speeds.

Note:
The measurement of the q leakage inductance can be disabled using p1959.5. If only p1959.5 is set, then only this measurement is carried out if p1960 is set to 1, 2 and the drive is switched on.
See also: p1959 (Rotating measurement configuration)

F07990 Drive: Incorrect motor data identification

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: Motor
Propagation: Global
Response: OFF2 (NONE, OFF1)
Acknowledgment: IMMEDIATELY

Cause:

A fault has occurred during the identification routine.

Fault value (r0949, interpret decimal):

1: Current limit value reached.

2: Identified stator resistance lies outside the expected range 0.02 ... 100% of Zn.

3: Identified rotor resistance lies outside the expected range 0.1 ... 100% of Zn.

4: Identified stator reactance lies outside the expected range 50 ... 500 % of Zn.

5: Identified magnetizing reactance lies outside the expected range 50 ... 900 % of Zn.

6: Identified rotor time constant lies outside the expected range 10 ms ... 5 s.

7: Identified total leakage reactance lies outside the expected range 4 ... 50 % of Zn.

8: Identified stator leakage reactance lies outside the expected range 2 ... 50% of Zn.

9: Identified rotor leakage reactance lies outside the expected range 2 ... 50% of Zn.

10: Motor has been incorrectly connected.

11: Motor shaft rotates.

12: Ground fault detected.

15: Pulse inhibit occurred during motor data identification.

20: Identified threshold voltage of the semiconductor devices lies outside the expected range 0 ... 10 V.

30: Current controller in voltage limiting.

40: At least one identification contains errors. The identified parameters are not saved to prevent inconsistencies.

60: Incorrect power stack data for the calibration of the converter output voltage

61: Incorrect measured values for the calibration of the converter output voltage

70: Identification of the circle center point canceled (reluctance motor).

80: Saturation characteristic: Current range exceeded or too low.

81: Saturation characteristic: flux model direct axis cannot be determined.

82: Saturation characteristic: flux model quadrature axis cannot be determined.

83: Saturation characteristic: rated operating point cannot be determined.

90: Saturation measurement pole position identification: Current limit reached (permanent magnet synchronous motor)

91: Saturation measurement pole position identification: measurement canceled (permanent magnet synchronous motor)

Note:

Percentage values are referred to the rated motor impedance:

Zn = Vmot.nom / sqrt(3) / Imot,nom

Remedy:

For fault value = 1 ... 40:
- Check whether motor data have been correctly entered in p0300, p0304 ... p0311.
- Is there an appropriate relationship between the motor power rating and that of the power unit? The ratio of the power unit to the rated motor current should not be less than 0.5 and not be greater than 4.
- Check the connection type (star/delta).

For fault value = 4, 7:
- Check whether the inductance in p0233 is correctly set.
- Check whether motor has been correctly connected (star-delta).

For fault value = 11 in addition:
- Deactivate oscillation monitoring (p1909.7 = 1).

For fault value = 12:
- Check the power cable connections.
- Check the motor.
- Check the CT.

For fault value = 80:
- Check the motor data.
- Change parameters p2940...p2947.

For fault value = 90:
- Increase maximum motor current (p0323)

The limits specified by the motor manufacturer must be carefully observed, otherwise the motor could be damaged.
- Deactivate the measurement (p1909.11 = 1)

The maximum current cannot be increased:
- Deactivate the measurement (p1909.11 = 1)
- Activate the PolID technique, DC current injection (p1980 = 10)

If the maximum current cannot be increased, for example to protect a gearbox, then it is permissible to briefly exceed it for the PolID:
- Increase the maximum permissible current for the PolID to 3*p0305 (p1906.16 = 1)

For fault value = 91:
- Check the motor data
- Deactivate the measurement (p1909.11 = 0)

A07991 (N) Drive: Motor data identification activated

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Message value: -

Component: None

Propagation: Global

Response: NONE

Acknowledgment: NONE

Cause:
The motor data identification routine is activated.

The motor data identification routine is carried out at the next switch-on command.

If rotating measurement is selected (see p1900, p1960), it will not be possible to save the parameter assignment. Once motor data identification has been completed or deactivated, the option to save the parameter assignment will be made available again.

See also: p1910 (Motor data identification selection)

Remedy:
Not necessary.

The alarm is automatically withdrawn after the motor data identification has been successfully completed or for the setting p1900 = 0.

Response upon: N: NONE

Acknowl. upon N: NONE

A07994 (F, N) Drive: Motor data identification not performed

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: Operating mode p0504 = 1 (Standard Drive Control) or a control mode "vector control" has been set, and a motor data identification has still not been performed.
The alarm is initiated when changing the drive data set (see r0051) in the following cases:
- Vector control is parameterized in the actual drive data set (p1300 >= 20).
and
- Motor data identification has still not been performed in the actual drive data set (see r3925).
Note:
A check can be made and this alarm output also when exiting commissioning and when the system runs up.
Remedy:
- Perform motor data identification (see p1900).
- If required parameterize "U/f -control" (p0504 = 0, p1300 < 20, change p0500).
- Switch over to a drive data set, in which the conditions do not apply.
Response upon: F: NONE (OFF2)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A08560 IE: Syntax error in configuration file

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: A syntax error has been detected in the configuration file for the Industrial Ethernet interface (X127). The saved configuration file has not been loaded.
Note:
IE: Industrial Ethernet
Remedy: Reinitialize the station using the "Edit Ethernet node" screen form (e.g. with Startdrive commissioning tool).

A08561 IE: Consistency error affecting adjustable parameters

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Local
Response: NONE
Acknowledgment: NONE

Cause: A consistency error was detected when activating the configuration for the Industrial Ethernet interface (X127).
Alarm value (r2124, interpret decimal):
0: General consistency error
1: Error in the IP configuration (IP address, subnet mask or standard gateway).
2: Error in the station names.
5: Standard gateway is also set at the PROFINET interface.
6: The station name is also set at the PROFINET interface.
7: The IP address is located in the same subnet as the IP address of the PROFINET interface.
Note:
For alarm value = 0, 1, 2, 5, 7 the following applies: the configuration was not changed.
For alarm value = 6 the following applies: The new configuration was however activated.
IE: Industrial Ethernet

Remedy: Reinitialize the station using the "Edit Ethernet node" screen form (e.g. with Startdrive commissioning tool).

A08562 PROFINET: Syntax error in configuration file

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: None
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: A syntax error has been detected in the configuration file for the PROFINET interface (X150). The saved configuration file has not been loaded.
Remedy: Reinitialize the station using the "Edit Ethernet node" screen form (e.g. with Startdrive commissioning tool).

A08563 PROFINET: Consistency error affecting adjustable parameters

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: A consistency error was detected when activating the configuration for the PROFINET interface (X150).
Alarm value (r2124, interpret decimal):
0: General consistency error
1: Error in the IP configuration (IP address, subnet mask or standard gateway).
2: Error in the station names.
3: DHCP was not able to be activated, as a cyclic PROFINET connection already exists.
5: Standard gateway is also set at the Industrial Ethernet interface (X127).
6: Standard station name is also set at the Industrial Ethernet interface (X127).
7: IP address is located in the same subnet as the IP address of the Industrial Ethernet interface (X127).
Note:
For alarm value = 0, 1, 2, 3, 4, 5, 7, the following applies: the configuration was not changed.
For alarm value = 6 the following applies: The new configuration was however activated.
DHCP: Dynamic Host Configuration Protocol
Remedy: Reinitialize the station using the "Edit Ethernet node" screen form (e.g. with Startdrive commissioning tool).

A08566 IIoT: Syntax error in configuration file

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -

Component: None
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: A syntax error has been detected in the configuration file for the IIoT interface (X128). The saved configuration file has not been loaded.
Note:
IIoT: Industrial Internet of Things
Remedy: Reinitialize the station using the "Edit Ethernet node" screen form (e.g. with Startdrive commissioning tool).

A08567 IIoT: Consistency error for adjustable parameters

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: A consistency error was detected when activating the configuration for the IIoT interface (X128).
Alarm value (r2124, interpret decimal):
0: General consistency error
1: Error in the IP configuration (IP address, subnet mask or standard gateway).
2: Error in the station names.
5: Standard gateway is also set at the PROFINET interface.
6: The station name is also set at the PROFINET interface.
7: The IP address is located in the same subnet as the IP address of the PROFINET interface.
Note:
For alarm value = 0, 1, 2, 5, 7 the following applies: the configuration was not changed.
For alarm value = 6 the following applies: The new configuration was however activated.
IE: Industrial Ethernet
Remedy: Reinitialize the station using the "Edit Ethernet node" screen form (e.g. with Startdrive commissioning tool).

A08800 PROFIenergy energy-saving mode active

Message class: Communication error to the higher-level control system (9)
Message value: %1
Component: None
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The PROFIenergy energy-saving mode is active
Alarm value (r2124, interpret decimal):
Mode ID of the active PROFIenergy energy-saving mode.
See also: r5600 (PROFIenergy energy-saving mode ID)
Remedy: The alarm is automatically withdrawn when the energy-saving mode is exited.
Note:
The energy-saving mode is exited after the following events:
- The PROFIenergy command end_pause is received from the higher-level control.
- The higher-level control has changed into the STOP operating state.
- The PROFINET connection to the higher-level control has been disconnected.

F13000 License not adequate

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Message value: %1

Component: Control Unit (CU)

Propagation: Global

Response: OFF2

Acknowledgment: IMMEDIATELY

Cause:
- The converter uses options that require a license and the licenses are not sufficient.
- An error has occurred when checking the licensing.

Fault value (r0949, interpret decimal):

0: Adequate licensing was not able to be determined as there is no licensing data available on the memory card.

1: Adequate licensing was not able to be determined as the memory card with the required licensing data was withdrawn in operation or the memory card is defective.

2: Adequate licensing was not able to be determined as there is no licensing data available on the memory card.

3: Adequate licensing was not able to be determined as the licensing data does not match the serial number of the memory card being used.

4, 5, 6, 7: Adequate licensing was not able to be determined as the licensing data were manipulated and are therefore invalid.

8, 9: An internal error occurred when checking the license.

Remedy:

For fault value = 0:

Transfer a license file with the required licenses to the converter.

For fault value = 1:

Reinsert the memory card into the converter. If you have to replace a defective memory card, contact Technical Support.

For fault value = 2:

Transfer a license file with the required licenses to the converter.

For fault value = 3:

Compare the license file name (after "LK_" to ".ZIP") with the serial number of the memory card.

Transfer the appropriate license file to the converter.

For fault value = 4, 5, 6, 7, 8, 9:

- Carry out a POWER ON.
- Upgrade firmware to later version.
- Contact Technical Support.

Note:

An overview of the converter functions requiring a license can be displayed using a commissioning tool in the online mode. Depending on the commissioning tool, you can also obtain the necessary licensing (serial number, license file, Trial License Mode).

A13002 Licensing not sufficient in operation

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Message value: -

Component: Control Unit (CU)

Propagation: Global

Response: NONE

Acknowledgment: NONE

Cause:
- For the converter, the options that require a license are being used but the licenses are not sufficient.
- An error occurred when checking the existing licenses.

Alarm value (r2124, interpret decimal):

0: The existing license is not sufficient.

1: An adequate license was not able to be determined as the memory card with the required licensing data was withdrawn in operation or the memory card has developed a defect.

2: An adequate license was not able to be determined as there is no licensing data available on the memory card.

3: An adequate license was not able to be determined as there is no licensing data available on the memory card.

4, 5, 6, 7: An adequate license was not able to be determined as the licensing data were manipulated and are therefore invalid.

8,9: An internal error occurred when checking the license.

Remedy:
For alarm value = 0:

Additional licenses are required and must be activated.

For alarm value = 1:

Reinsert or replace the memory card that matches the system.

For alarm value = 2:

Transfer the license file to the converter.

For alarm value = 3:

Compare the license file name (after "LK_" to ".ZIP") with the serial number of the memory card.

Transfer the appropriate license file to the converter.

For alarm value = 4, 5, 6, 7, 8, 9:

- Carry out a POWER ON.
- Upgrade firmware to later version.
- Contact Technical Support.

Note:

An overview of the converter functions requiring a license can be displayed using a commissioning tool in the online mode. Depending on the commissioning tool, you can also obtain the necessary licensing (serial number, license file, Trial License Mode).

A13030 Trial License activated

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Message value: -

Component: Control Unit (CU)

Propagation: Local

Response: NONE

Acknowledgment: NONE

Cause: The "Trial License" function was activated. One of the available periods is expiring.

Remedy: Not necessary.

The alarm is automatically withdrawn after the periods have expired.

A13031 Trial License period expired

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Message value: -

Component: Control Unit (CU)

Propagation: Local

Response: NONE

Acknowledgment: NONE

Cause: One of the available periods of the "Trial License" function has expired.

Remedy: - If required, start an additional period.
- Deactivate functions requiring a license.
- Appropriately license the converter.
Note:
A license that is not adequate will only become evident after the next time the system runs up.

A13032 Trial License last period activated

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: Control Unit (CU)
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: The "Trial License" function was activated. The last of the available periods is expiring.
Remedy: Not necessary.
The alarm is automatically withdrawn after the last period has expired.

A13033 Trial License last period expired

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: Control Unit (CU)
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: The last period of the "Trial License" function has expired. No additional periods available.
Remedy: - Deactivate functions requiring a license.
- Appropriately license the converter.
Note:
A license that is not adequate will only become evident after the next time the system runs up.

F29001 Infeed power unit: Overcurrent

Message class: Power electronics faulted (5)
Message value: Fault cause: %1 bin
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY

Cause: The infeed power unit has detected an overcurrent condition.
- Closed-loop control is incorrectly parameterized.
- High discharge and post-charging currents for line voltage interruptions.
- High post-charging currents for overload when motoring and DC link voltage dip.
- Power cables are not correctly connected.
- Line phase interrupted.
- Power unit defective.

Fault value (r0949, interpret bitwise):
Bit 0: Overcurrent phase U.
Bit 1: Overcurrent phase V.
Bit 2: Overcurrent phase W.
Bit 4: Diode overload phase U
Bit 5: Diode overload phase V
Bit 6: Diode overload phase W

Remedy:
- Check the parameterization of the closed-loop control
- Check the line quality.
- Reduce the motor load.
- Check the power cable connections.
- Check the length of the power cables.
- Replace power unit.

F29002 Infeed power unit: DC link voltage overvoltage

Message class: DC link overvoltage (4)
Message value: %1
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY

Cause: The power unit has detected overvoltage in the DC link.
- Motor regenerates too much energy.
- Device supply voltage too high.
- Line phase interrupted or line voltage collapsed

Fault value only for internal Siemens diagnostics.

Remedy:
- Increase the ramp-down time.
- Activate the motor-side DC link voltage controller (p1240).
- Use a braking resistor or an infeed capable of energy recovery.
- Check the device supply voltage.
- Check the line phases.

See also: p0210 (Device supply voltage), p1240 (Vdc controller or Vdc monitoring configuration)

F29003 Infeed power unit: DC link voltage undervoltage

Message class: Infeed faulted (13)
Message value: -
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY

Cause: The power unit has detected an undervoltage condition in the DC link.
- Line supply failure.
- Line voltage below the permissible value.
- Line infeed failed or interrupted.
- Line phase interrupted.

Remedy:
- Check the line voltage.
- Check the line infeed and observe the fault messages relating to it (if there are any).
- Check the line phases.
- Check the supply voltage setting (p0210).

See also: p0210 (Device supply voltage)

F29004 Infeed power unit: Heat sink overtemperature

Message class: Power electronics faulted (5)
Message value: %1
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY

Cause: The temperature of the power unit heat sink has exceeded the permissible limit value.
- Insufficient cooling, fan failure.
- Overload.
- Ambient temperature too high.
- Pulse frequency too high.

Fault value (r0949, interpret decimal):
Temperature [0.01 °C].

Remedy:
- Check the function of the fan.
- Check the air flow and if relevant, the fan filter elements
- Check whether the ambient temperature is in the permissible range.
- Check the load.
- Reduce the pulse frequency if this is higher than the rated pulse frequency.

Notice:
This fault can only be acknowledged after the alarm threshold for alarm A29250 has been fallen below.
See also: p1800 (Pulse frequency setpoint)

F29005 Infeed power unit: Overload I2t

Message class: Power electronics faulted (5)
Message value: %1
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY

Cause: The power unit was overloaded (r13036 = 100 %).
- The permissible rated power unit current was exceeded for an inadmissibly long time.
- The permissible duty cycle was not maintained.

Fault value (r0949, interpret decimal):
I2t [100 % = 16384].

Remedy:
- Reduce the continuous load.
- Adapt the duty cycle.
- Check the rated currents of the motor and power unit.

See also: r0036 (Power unit overload), r0206 (Rated power unit power), p0307 (Rated motor power)

F29007 Infeed power unit: Inadmissible asymmetry of the partial DC links

Message class: DC link overvoltage (4)
Message value: %1
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: An inadmissibly high level of asymmetry has developed between the partial capacitances in the DC link.

The fault can only be acknowledged once the asymmetry has been adequately reduced. This is realized automatically in the switched-off state; however, this can require a wait time of up to several minutes.

This fault can occur in the following cases:

- Asymmetrical line voltage dips, interruptions or overvoltage conditions (possibly also very brief, for just a few milliseconds)
- Strongly oscillating DC link load at the line frequency or at a multiple of the line frequency
- Device damage

Fault value only for internal Siemens diagnostics.

Remedy:
- Check the line supply and connection
- Check the DC link connection and load connected to the DC link
- Switch-off/switch-on
- Device replacement or repair

F29008 Infeed power unit: Sign-of-life error cyclic data

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: -
Variant: G220 Clean Power
Component: Control Unit (CU)
Propagation: Local
Response: NONE (OFF1, OFF2)
Acknowledgment: IMMEDIATELY
Cause: The converter has not punctually updated the cyclic setpoint telegrams to the power unit. The number of consecutive tolerated sign-of-life errors has exceeded the fault threshold.
Remedy: Check the converter and if required replace.

A29010 (F) Infeed power unit: Sign-of-life error cyclic data

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: -
Variant: G220 Clean Power
Component: Control Unit (CU)
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: There is an internal communication error in the converter.

The cyclic setpoint telegrams of the converter were not received on time for at least one clock cycle.

Remedy: Check the power unit and if required replace.

Response upon: F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

F29011 Infeed power unit: Line phase failure in the main circuit

Message class: Line supply fault (2)
Message value: %1
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: OFF2 (OFF1)
Acknowledgment: IMMEDIATELY
Cause: At the power unit, the DC link voltage ripple has exceeded the permissible limit value.
Possible causes:
- A line phase has failed.
- The 3 line phases are inadmissibly asymmetrical.
- The capacitance of the DC link capacitor forms a resonance frequency with the line inductance and the reactor integrated in the power unit.
- The fuse of a phase of a main circuit has ruptured.
Only for internal Siemens troubleshooting.
Remedy:
- Check the main circuit fuses.
- Check whether a single-phase load is distorting the line voltages.

F29012 Infeed power unit: Temperature sensor wire breakage

Message class: Power electronics faulted (5)
Message value: %1
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: OFF1 (OFF2)
Acknowledgment: IMMEDIATELY
Cause: The connection to a temperature sensor in the power unit is interrupted.
Fault value (r0949, interpret binary):
Bit 1: Air intake
Bit 2: Inverter 1
Bit 3: Inverter 2
Bit 4: Inverter 3
Bit 5: Inverter 4
Bit 6: Inverter 5
Bit 7: Inverter 6
Bit 8: Rectifier
Bit 10: Moisture ext. moisture sensor
Bit 11: Temperature ext. moisture sensor
Bit 13: Balance resistor
Bit 14: Capacitor air discharge
Bit 15: Liquid intake
Remedy: Contact Technical Support.

F29013 Infeed power unit: Temperature sensor short-circuit

Message class: Power electronics faulted (5)
Message value: %1

Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: OFF1 (OFF2)
Acknowledgment: IMMEDIATELY
Cause: A temperature sensor in the power unit is short-circuited.
Fault value (r0949, interpret binary):
Bit 1: Air intake
Bit 2: Inverter 1
Bit 3: Inverter 2
Bit 4: Inverter 3
Bit 5: Inverter 4
Bit 6: Inverter 5
Bit 7: Inverter 6
Bit 8: Rectifier
Bit 10: Moisture ext. moisture sensor
Bit 11: Temperature ext. moisture sensor
Bit 14: Capacitor air discharge
Bit 15: Liquid intake
Remedy: Contact Technical Support.

F29017 Infeed power unit: Hardware current limit has responded too often

Message class: Power electronics faulted (5)
Message value: Fault cause: %1 bin
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The hardware current limiting in the particular phase has responded too frequently (see A29031, A29032, A29033). The number of times the limit has been exceeded depends on the design and type of power unit.
Possible causes:
- Closed-loop control is incorrectly parameterized.
- Load is too large.
- Power unit defective.
Fault value (r0949, interpret binary):
Bit 3: phase U
Bit 4: phase V
Bit 5: phase W
Additional bits:
Only for internal Siemens troubleshooting.
Remedy:
- Check the controller settings and if necessary, reset the controller.
- Reduce the load.
- Check the line feeder cables and connections.
- Replace power unit.

F29020 Infeed power unit: Configuration not supported

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Fault cause: %1, additional information: %2
Variant: G220 Clean Power

Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: A configuration is requested that is not supported by the power unit.
Fault value (r0949, interpret hexadecimal):
yyyyxxxx hex: xxxx = fault cause, yyyy = additional information (internal Siemens)
xxxx = 1: The requested DRIVE-CLiQ timing is not permissible.
xxxx = 3: Initialization was not able to be successfully completed. It is possible that the converter was switched-off before or while running up.
xxxx = 4: The combination of power unit and converters is not supported.
xxxx = 8: The version of the ASIC installed in the power unit is no longer supported.
Remedy: For fault cause = 1:
Update the converter firmware or change the DRIVE-CLiQ topology.
For fault cause = 3, 4:
Use a converter with the appropriate power unit and carry out a POWER ON for the converter.
For fault cause = 8:
Replace the power unit by one which has a newer ASIC version.
See also: p0115 (Sampling times for internal control loops), p1231 (DC braking/armature short circuit configuration), p1810 (Modulator configuration)

F29021 Infeed power unit: Ground fault

Message class: Ground fault / inter-phase short-circuit detected (7)
Message value: %1
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The power unit has detected a ground fault.
Possible causes:
- Ground fault in the motor cables or in the motor.
- Braking resistor has a ground fault.
- DC link ground fault.
- CT defective.
Note:
Fault value (r0949, interpret decimal):
0:
- The braking resistor has a ground fault.
> 0:
Absolute value, total current amplitude [20479 = r0209 * 1.4142].
Remedy: - Check the motor cables and motor.
- Check the cables and contacts of the brake connection (a wire is possibly broken).
- Check the braking resistor.
- Replace power unit.
See also: p0287 (Ground fault monitoring shutdown threshold)

F29022 Infeed power unit: Monitoring U_ce

Message class: Ground fault / inter-phase short-circuit detected (7)
Message value: Fault cause: %1 bin
Variant: G220 Clean Power

Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: In the power unit, the monitoring of the collector-emitter voltage (U_ce) of the semiconductor has responded.
Possible causes:
- The power supply for power semiconductor gating missing.
- Short-circuit at the power unit output.
- Defective semiconductor in the power unit.
Fault value (r0949, interpret binary):
Bit 0: Short-circuit in phase U
Bit 1: Short-circuit in phase V
Bit 2: Short-circuit in phase W
Bit 4: U_ce group fault signal interrupted
See also: r0949 (Fault value)
Remedy:
- Check the power cable connections.
- Select the defective semiconductor and replace.
- When alarm 29269 simultaneously occurs, then the power supply for the power semiconductor control is overloaded. A hardware defect must be assumed. Contact Technical Support.

F29024 Infeed power unit: Overtemperature thermal model

Message class: Power electronics faulted (5)
Message value: Power semiconductor: %1, temperature: [0.01 degrees C] %2
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The temperature difference between the power semiconductor involved and the heat sink has exceeded the permissible fault threshold.
- The permissible duty cycle was not maintained.
- Insufficient cooling, fan failure.
- Overload.
- Ambient temperature too high.
- Pulse frequency too high.

Fault value (r0949, interpret hexadecimal):
yyyyxxxx hex: yyyy= Power semiconductor, xxxx = Temperature in 0.01°C
See also: r0037 (Power unit temperatures)
Remedy:
- Adapt the duty cycle.
- Check the function of the fan.
- Check the air flow and if relevant, the fan filter elements
- Check whether the ambient temperature is in the permissible range.
- Reduce the pulse frequency if this is higher than the rated pulse frequency.

F29025 Infeed power unit: Chip overtemperature

Message class: Power electronics faulted (5)
Message value: %1
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local

Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The chip temperature of the power semiconductor involved has exceeded the permissible fault threshold.
- The permissible duty cycle was not maintained.
- Insufficient cooling, fan failure.
- Overload.
- Ambient temperature too high.
- Pulse frequency too high.

Fault value (r0949, interpret hexadecimal):
yyyyxxxx hex: yyyy= Power semiconductor, xxxx = Temperature in 0.01°C
Remedy:
- Adapt the duty cycle.
- Check the function of the fan.
- Check the air flow and if relevant, the fan filter elements
- Check whether the ambient temperature is in the permissible range.
- Reduce the pulse frequency if this is higher than the rated pulse frequency.

Note:
This fault can only be acknowledged after the alarm threshold for alarm A29252 has been fallen below.
See also: r0037 (Power unit temperatures)

F29026 (A) Power unit: DC link pre-charging monitoring

Message class: Infeed faulted (13)
Message value: %1
Variant: G220 Clean Power
Component: Power Unit
Propagation: Global
Response: NONE (OFF1, OFF2)
Acknowledgment: IMMEDIATELY
Cause: A deviation between the charging curve and the power consumption was identified during DC link pre-charging.
This message can occur in the following cases:
- Asymmetrical line voltage dips, interruptions (possibly even very briefly for just a few milliseconds)
- One or several line phases failed / not connected
- Damage to the device (especially to the precharging circuit, e.g. the resistors)

Alarm value only for internal Siemens diagnostics.
Remedy: Caution: Continuous operation with F29026 is not permissible, and can damage the converter.
- Check the line supply and connection
- Check the precharging circuit

Response upon: A: NONE
Acknowl. upon A: NONE

F29027 Infeed power unit: Precharging DC link time monitoring

Message class: Infeed faulted (13)
Message value: Enable signals: %1, status: %2
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY

Cause:

The power unit DC link was not able to be precharged within the expected time.
1) There is no line voltage connected.
2) The line contactor/line side switch has not been closed.
3) The line voltage is too low.
4) Line voltage incorrectly set (p0210).
5) The precharging resistors are overheated as there were too many precharging operations per time unit.
6) The precharging resistors are overheated as the DC link capacitance is too high.
7) The precharging resistors are overheated because when there is no "ready for operation" (r0863.0) of the infeed unit, power is taken from the DC link.
8) The precharging resistors are overheated as the line contactor was closed during the DC link fast discharge through the Braking Module.
9) The DC link has either a ground fault or a short-circuit.
10) The precharging circuit is possibly defective (only for chassis units).
11) Infeed defective.
Fault value (r0949, interpret binary):
yyyyxxxx hex:
yyyy = power unit state
0: Fault status (wait for OFF and fault acknowledgment).
1: Restart inhibit (wait for OFF).
2: Overvoltage condition detected -> change into the fault state.
3: Undervoltage condition detected -> change into the fault state.
4: Wait for bridging contactor to open -> change into the fault state.
5: Wait for bridging contactor to open -> change into restart inhibit.
6: Wait for bypass contactor to open
7: Commissioning.
8: Ready for precharging.
9: Precharging started, DC link voltage lower than the minimum switch-on voltage.
10: Precharging, DC link voltage end of precharging still not detected.
11: Wait for the end of the de-bounce time of the main contactor after precharging has been completed.
12: Precharging completed, ready for pulse enable.
13: It was detected that the STO terminal was energized at the power unit.
xxxx = Missing internal enable signals, power unit (inverted bit-coded, FFFF hex -> all internal enable signals available)
Bit 0: Power supply for the power semiconductor gating shut down.
Bit 1: Ground fault detected.
Bit 2: Peak current intervention.
Bit 3: I2t exceeded.
Bit 4. Thermal model overtemperature calculated.
Bit 5: (heat sink, gating module, power unit) overtemperature measured.
Bit 6: Reserved.
Bit 7: Overvoltage detected.
Bit 8: Power unit has completed precharging, ready for pulse enable.
Bit 9: STO terminal missing.
Bit 10: Overcurrent detected.
Bit 12: DRIVE-CLiQ fault active.
Bit 13: Vce fault detected, transistor de-saturated due to overcurrent/short-circuit.
Bit 14: Undervoltage detected.
See also: p0210 (Device supply voltage)

Remedy:
General:
- Check the line voltage at the input terminals.
- Check the line voltage setting (p0210).
- Wait (approx. 8 minutes) until the precharging resistors have cooled down. For this purpose, preferably disconnect the infeed unit from the line supply.

For 5):
- Carefully observe the permissible precharging frequency (refer to the product documentation).

For 6):
- Check the total capacitance of the DC link and reduce in accordance with the maximum permissible DC link capacitance if necessary (refer to the product documentation).

For 7):
- Interconnect the ready-for-operation signal from the infeed unit (r13863.0) in the enable logic of the drives connected to this DC link.

For 8):
- Check the connections of the external line contactor. The line contactor must be open during DC link fast discharge.

For 9):
- Check the DC link for ground faults or short-circuits.

For 11):
- Check the converter DC link voltage (r13070).

A fuse has ruptured if the DC link voltage is not displayed.

See also: p0210 (Device supply voltage)

A29030 Infeed power unit: Internal overtemperature alarm

Message class: Power electronics faulted (5)
Message value: %1
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause:
The temperature inside the drive converter has exceeded the permissible temperature limit.
- Insufficient cooling, fan failure.
- Overload.
- Ambient temperature too high.

Alarm value (r2124, interpret decimal):
Only for internal Siemens troubleshooting.

Remedy:
- Possibly use an additional fan.
- Check whether the ambient temperature is in the permissible range.

Notice:
This alarm is automatically withdrawn once the permissible temperature limit value has been fallen below minus 5 K.

A29031 Infeed power unit: Hardware current limiting in phase U

Message class: Power electronics faulted (5)
Message value: -
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: NONE
Acknowledgment: NONE

Cause: Hardware current limit for phase U responded. The pulsing in this phase is inhibited for one pulse period.
- Closed-loop control is incorrectly parameterized.
- Fault in the power cables.
- The power cables exceed the maximum permissible length.
- Power unit defective.

Remedy:
- Check the power cable connections.
- Check the power cables for short-circuit or ground fault.
- Check the length of the power cables.

A29032 Infeed power unit: Hardware current limiting in phase V

Message class: Power electronics faulted (5)
Message value: -
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: Hardware current limit for phase V responded. The pulsing in this phase is inhibited for one pulse period.
- Closed-loop control is incorrectly parameterized.
- Fault in the power cables.
- The power cables exceed the maximum permissible length.
- Power unit defective.

Remedy:
- Check the power cable connections.
- Check the power cables for short-circuit or ground fault.
- Check the length of the power cables.

A29033 Infeed power unit: Hardware current limiting in phase W

Message class: Power electronics faulted (5)
Message value: -
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: Hardware current limit for phase W responded. The pulsing in this phase is inhibited for one pulse period.
- Closed-loop control is incorrectly parameterized.
- Fault in the power cables.
- The power cables exceed the maximum permissible length.
- Power unit defective.

Remedy:
- Check the power cable connections.
- Check the power cables for short-circuit or ground fault.
- Check the length of the power cables.

A29034 Infeed power unit: Internal overtemperature

Message class: Power electronics faulted (5)
Message value: %1
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: NONE

Acknowledgment: NONE
Cause: The alarm threshold for internal overtemperature has been reached.
Fault F29036 is triggered if the temperature inside the power unit increases up to the fault threshold.
- Ambient temperature might be too high.
- Insufficient cooling, fan failure.
Remedy:
- Check the ambient air temperature.
- Check the fan for the inside of the unit.

F29035 Infeed power unit: Overtemperature air intake

Message class: Power electronics faulted (5)
Message value: %1
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: OFF1 (OFF2)
Acknowledgment: IMMEDIATELY
Cause: The air intake in the power unit has exceeded the permissible temperature limit.
- Ambient temperature too high.
- Insufficient cooling, fan failure.
Fault value (r0949, interpret decimal):
Temperature [0.1 °C].
Remedy:
- Check the function of the fan.
- Check the air flow and if relevant, the fan filter elements
- Check whether the ambient temperature is in the permissible range.

F29036 Infeed power unit: Internal overtemperature

Message class: Power electronics faulted (5)
Message value: %1
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The temperature inside the converter has exceeded the permissible limit value.
- Insufficient cooling, fan failure.
- Overload.
- Ambient temperature too high.
Remedy:
- Check the function of the internal fan
- Check the air flow and if relevant, the fan filter elements
- Check whether the ambient temperature is in the permissible range.
Notice:
This fault can only be acknowledged once the permissible temperature limit minus 5 K has been fallen below.

F29040 Infeed power unit: Undervoltage 24 V

Message class: Supply voltage fault (undervoltage) (3)
Message value: Channel: %1, voltage: %2 [0.1 V]
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: OFF2

Acknowledgment: IMMEDIATELY
Cause: Failure of the 24 V power supply for the power unit.
- The undervoltage threshold was undershot for longer than 3 ms.
Fault value (r0949, interpret decimal):
24 V voltage [0.1 V].
Remedy:
- Check the power supply of the power unit.
- Carry out a POWER ON (switch-off/switch-on) for the component.

A29041 (F) Infeed power unit: Undervoltage 24/48 V alarm

Message class: Supply voltage fault (undervoltage) (3)
Message value: Channel: %1, voltage: %2 [0.1 V]
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: For the power unit power supply, the lower threshold has been violated.
Alarm value (r2124, interpret decimal):
24 V voltage [0.1 V].
Remedy:
- Check the power supply of the power unit.
- Carry out a POWER ON (switch-off/switch-on) for the component.
Response upon: F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

A29042 (N) Infeed power unit: Fan has reached the maximum operating hours

Message class: Power electronics faulted (5)
Message value: %1
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: The maximum operating time of at least one fan will soon be reached, or has already been exceeded.
Alarm value (r2124, interpret binary):
Bit 0 = 1:
The wear counter of the heat sink fan has reached 99 %. The remaining service life is 1 %. After this 1 % has elapsed, bit 0 is cleared and bit 2 is set in the alarm value.
Bit 2 = 1:
The wear counter of the heat sink fan has exceeded 100 %.
Bit 8 = 1:
The wear counter of the 1st internal fan has reached 99 %. The remaining service life is 1 %. After this 1 % has elapsed, bit 8 is cleared and bit 10 is set in the alarm value.
Bit 10 = 1:
The wear counter of the 1st internal fan has exceeded 100 %.
Bit 16 = 1:
The wear counter of the 2nd internal fan has reached 99 %. The remaining service life is 1 %. After this 1 % has elapsed, bit 16 is cleared and bit 18 is set in the alarm value.
Bit 18 = 1:
The wear counter of the 2nd internal fan has exceeded 100 %.

Remedy: For the fan involved, carry out the following:
- Replace the fan.
- Reset the wear counter using the appropriate button in Startdrive or the web server.
See also: r0277 (Power unit fan wear counter)

Response upon: N: NONE

Acknowl. upon N: NONE

F29043 Infeed power unit: Overvoltage 24/48 V

Message class: Supply voltage fault (overvoltage) (3)

Message value: Channel: %1, voltage: %2 [0.1 V]

Variant: G220 Clean Power

Component: Power Unit

Propagation: Local

Response: OFF2

Acknowledgment: POWER ON

Cause: For the power unit power supply, the upper threshold has been violated.
Fault value (r0949, interpret decimal):
24 V voltage [0.1 V].

Remedy: Check the power supply of the power unit.

A29044 (F) Infeed power unit: Overvoltage 24/48 V alarm

Message class: Supply voltage fault (overvoltage) (3)

Message value: Channel: %1, voltage: %2 [0.1 V]

Variant: G220 Clean Power

Component: Power Unit

Propagation: Local

Response: NONE

Acknowledgment: NONE

Cause: For the power unit power supply, the upper threshold has been violated.
Alarm value (r2124, interpret decimal):
24 V voltage [0.1 V].

Remedy: Check the power supply of the power unit.

Response upon: F: NONE (OFF1, OFF2, OFF3)

Acknowl. upon F: IMMEDIATELY

A29048 (N) Infeed power unit: Defective fan

Message class: External measured value / signal state outside the permissible range (16)

Message value: Fault cause: %1 bin

Variant: G220 Clean Power

Component: Power Unit

Propagation: Global

Response: NONE

Acknowledgment: NONE

Cause: The feedback signal of a fan signals a fault, or there is a communication error with one or several fans.
- Fan defective.
- Fan blocked.
- Feedback signal error.

Alarm value (r2124, interpret binary):
Bit 0 = 1: heat sink fan
Bit 1 = 1: fan 1 inside the device
Bit 2 = 1: fan 2 inside the device
Bit 4 = 1: Internal communication error to one or several fans
Bits 16 to 31 are only for internal Siemens diagnostics.

Remedy:
- Check the fan involved.
- If required, replace the fan.
- For communication errors, update the software or replace the power unit.

Note:
If the alarm has been withdrawn, this does not necessarily mean that the cause of the fault has been resolved. It is also possible that the software switched off the fan, and therefore can no longer evaluate the feedback signal.

Response upon: N: NONE

Acknowl. upon N: NONE

F29050 Infeed power unit: 24 V supply overvoltage

Message class: Supply voltage fault (overvoltage) (3)

Message value: -

Variant: G220 Clean Power

Component: Power Unit

Propagation: Local

Response: OFF2

Acknowledgment: POWER ON

Cause: The voltage monitor signals an overvoltage fault on the module.

Remedy:
- Check the 24 V power supply.
- Replace the module if necessary.

F29052 Infeed EEPROM data error

Message class: Hardware/software error (1)

Message value: %1

Variant: G220 Clean Power

Component: Power Unit

Propagation: Local

Response: OFF2

Acknowledgment: POWER ON

Cause: Power unit EEPROM data error.
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.

Remedy: Replace the power unit or update the EEPROM data.

F29053 Infeed FPGA data error

Message class: Hardware/software error (1)

Message value: %1

Variant: G220 Clean Power

Component: Power Unit

Propagation:	Local
Response:	NONE
Acknowledgment:	POWER ON
Cause:	The FPGA data of the power unit are faulty. This can be caused, for example, if a firmware update is interrupted.
Remedy:	Replace the power unit or update of the FPGA data by updating the firmware. Note: If this fault occurs after a firmware update, then update the firmware again.

F29055 Infeed power unit: Braking chopper overcurrent

Message class:	Braking Module faulted (14)
Message value:	-
Variant:	G220 Clean Power
Component:	None
Propagation:	Global
Response:	OFF2
Acknowledgment:	IMMEDIATELY
Cause:	An overcurrent condition has occurred in the braking chopper.
Remedy:	- Check whether the braking resistor has a short-circuit. - For an external braking resistor, check whether the resistor may have been dimensioned too small. Note: The braking chopper is only enabled again at pulse enable after the fault has been acknowledged.

A29057 Infeed power unit: Line asymmetry

Message class:	Line supply fault (2)
Message value:	%1
Variant:	G220 Clean Power
Component:	Power Unit
Propagation:	Local
Response:	NONE
Acknowledgment:	NONE
Cause:	Frequencies have been detected on the DC link voltage that would suggest line asymmetry or failure of a line phase. It is also possible that a motor phase has failed. If these frequencies occur with the same or even higher amplitudes, then after a device-specific time elapses, fault F29011 is output. Alarm value, only for internal Siemens troubleshooting.
Remedy:	- Check the line phase connection. - Check the motor feeder cable connections. If there is no phase failure of the line or motor, then line asymmetry is involved. - Reduce the power in order to avoid fault F29011.

F29058 (N, A) Infeed power unit: Heat sink fan defective

Message class:	External measured value / signal state outside the permissible range (16)
Message value:	Fault cause: %1 bin
Variant:	G220 Clean Power
Component:	Power Unit
Propagation:	Global
Response:	OFF2 (NONE, OFF1)
Acknowledgment:	IMMEDIATELY

Cause: The feedback signal of the heat sink fan signals a fault, or there is a communication error with the fan.
- Fan defective.
- Fan blocked.
- Feedback signal error.

Fault value (r0949, interpret binary):
Value in bits 0 to 15:
0: Feedback signal of the fan signals a fault
1: Internal communication error to the fan
Bits 16 to 31 are only for internal Siemens diagnostics.

Remedy:
- Check the heat sink fan and replace if necessary.
- For communication errors, update the software or replace the power unit.

Note:
If the fault can be acknowledged, this does not necessarily mean that the cause of the fault has been resolved. It is also possible that the software switched off the fan, and therefore can no longer evaluate the feedback signal.

Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F29059 Infeed power unit: Internal fan 1 defective

Message class: Auxiliary unit faulted (20)
Message value: %1
Variant: G220 Clean Power
Component: Power Unit
Propagation: Global
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The feedback signal of internal fan 1 signals a fault, or there is a communication error with the fan.

Fault value (r0949, interpret decimal):
0: Feedback signal of the fan signals a fault
1: Internal communication error to the fan

Remedy:
- Check internal fan 1 and replace if necessary.
- For communication errors, update the software or replace the power unit.

Note:
If the fault can be acknowledged, this does not necessarily mean that the cause of the fault has been resolved. It is also possible that the software switched off the fan, and therefore can no longer evaluate the feedback signal.

F29062 Infeed bypass contactor opened with current flowing

Message class: Infeed faulted (13)
Message value: -
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The bypass contactor of the precharging unit has been opened under current.

Possible causes:
- A defect at the bypass contactor

Remedy: It is urgently recommended that the components involved are replaced to prevent serious damage to the entire converter line-up.

A29066 (N) Infeed power unit: Overtemperature, alarm capacitor air discharge

Message class: Power electronics faulted (5)
Message value: %1
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: The air discharged from the DC link capacitor has exceeded the alarm threshold.
- Ambient temperature too high.
- Insufficient cooling, fan failure.

Alarm value (r2124, interpret decimal):
Temperature when reaching the alarm threshold [0.1 °C].
Note:
If operation is unchanged, then the permissible limit value can be exceeded. In this case, fault F30067 is output and the pulses inhibited.

Remedy:
- Check the function of the fan.
- Check the air flow and if relevant, the fan filter elements
- Check whether the ambient temperature is in the permissible range.

Note:
This alarm is only withdrawn after the alarm threshold has been fallen below - and the corresponding hysteresis.

Response upon: N: NONE
Acknowl. upon N: NONE

F29067 Infeed power unit: Overtemperature, fault capacitor air discharge

Message class: Overtemperature of the electronic components (6)
Message value: %1
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The air discharged from the DC link capacitor has exceeded the permissible limit.
- Ambient temperature too high.
- Insufficient cooling, fan failure.

Fault value (r0949, interpret decimal):
Temperature when reaching the limit value [0.1 °C].

Remedy:
- Check the function of the fan.
- Check the air flow and if relevant, the fan filter elements
- Check whether the ambient temperature is in the permissible range.

Note:
This fault can only be acknowledged after the limit value has been fallen below, and the corresponding hysteresis (5 K).

F29068 Infeed power unit: Undertemperature inverter heat sink

Message class: Power electronics faulted (5)
Message value: %1

Variant: G220 Clean Power
Component: Power Unit
Propagation: Drive
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The actual inverter heat sink temperature is below the permissible minimum value.
Possible causes:
- The power unit is being operated at an ambient temperature that lies below the permissible range.
- The temperature sensor evaluation is defective.
Fault value (r0949, interpret decimal):
Inverter heat sink temperature [0.1 °C].
Remedy:
- Ensure that higher ambient temperatures prevail.
- Replace the power unit.

F29081 Infeed power unit: Switching operations too frequent

Message class: Power electronics faulted (5)
Message value: Fault cause: %1 bin
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The power unit has executed too many switching operations for current limitation.
- Closed-loop control is incorrectly parameterized.
- High discharge and post-charging currents for line voltage interruptions.
- High post-charging currents for overload when motoring and DC link voltage dip.
- Short-circuit currents at switch-on due to the missing line commutating reactor.
- Power cables are not correctly connected.
- Power cables exceed the maximum permissible length.
- Power unit defective.
Fault value (r0949, interpret bitwise):
Bit 0: Phase U.
Bit 1: Phase V.
Bit 2: Phase W.
Remedy:
- Check the line quality.
- Reduce the motor load.
- Correct connection of line commutating reactor.
- Check the power cable connections.
- Check the power cables for short-circuit or ground fault.
- Check the length of the power cables.
- Replace power unit.

F29105 Infeed power unit: Actual value sensing error

Message class: Power electronics faulted (5)
Message value: -
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY

Cause: At least one incorrect actual value channel was detected on the Power Stack Adapter (PSA).
The incorrect actual value channels are displayed in the following diagnostic parameters.
Remedy: Evaluate the diagnostic parameters.
If the actual value channel is incorrect, check the components and if required, replace.

A29250 (N) Infeed power unit: Overtemperature heat sink rectifier

Message class: Power electronics faulted (5)
Message value: -
Variant: G220 Clean Power
Component: Power Unit
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The alarm threshold for overtemperature at the infeed heat sink has been reached.
The following applies for p0212.9 = 0: There is no overload response.
The following applies for p0212.9 = 1: The response is set using p0290.
Fault F29004 is output if the temperature of the heat sink increases by 5 K.
Remedy: Check the following:
- Is the ambient temperature within the defined limit values?
- Have the load conditions and the duty cycle been appropriately dimensioned?
- Has the cooling failed?

Response upon: N: NONE
Acknowl. upon N: NONE

A29252 Infeed power unit: Chip overtemperature alarm

Message class: Power electronics faulted (5)
Message value: Power semiconductor: %1, temperature: [0.01 degrees C] %2
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: The chip temperature of the power semiconductor involved has exceeded the permissible alarm threshold.
The following applies for p0212.9 = 0: There is no overload response.
The following applies for p0212.9 = 1: The response is set using p0290.
Fault F29025 is output if the temperature of the heat sink increases by 5 K.

Alarm value (r2124, interpret hexadecimal):
yyyyxxxx hex: yyyy= Power semiconductor, xxxx = Temperature in 0.01°C
Remedy: Check the following:
- Is the ambient temperature within the defined limit values?
- Have the load conditions and the duty cycle been appropriately dimensioned?
- Has the cooling failed?

A29253 Infeed power unit: Overtemperature thermal model alarm

Message class: Power electronics faulted (5)
Message value: Power semiconductor: %1, temperature: [0.01 degrees C] %2
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local

Response: NONE
Acknowledgment: NONE
Cause: The temperature difference between the power semiconductor involved and the heat sink has exceeded the permissible alarm threshold.
The following applies for p0212.9 = 0: There is no overload response.
The following applies for p0212.9 = 1: The response is set using p0290.
Alarm value (r2124, interpret hexadecimal):
yyyyxxxx hex: yyyy= Power semiconductor, xxxx = Temperature in 0.01°C
Remedy: Not necessary.
The alarm is automatically withdrawn once the alarm threshold has been fallen below.
Note:
If the temperature continues to increase, this can result in fault F29024.

A29254 (N) Infeed power unit: Overtemperature air intake alarm

Message class: Overtemperature of the electronic components (6)
Message value: %1
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: The alarm threshold for the air intake overtemperature has been reached.
The following applies for p0212.9 = 0: There is no overload response.
The following applies for p0212.9 = 1: The response is set using p0290.
Fault F29035 is initiated if the air intake temperature continues to increase.
Alarm value (r2124, interpret decimal):
Temperature when reaching the alarm threshold [0.1 °C].
Remedy: Check the following:
- Is the ambient temperature within the defined limit values?
- Has the fan failed?
Note:
This alarm is only withdrawn after the alarm threshold has been fallen below - and the corresponding hysteresis.
Response upon: N: NONE
Acknowl. upon N: NONE

A29256 Infeed power unit: Overload I2t

Message class: Power electronics faulted (5)
Message value: -
Variant: G220 Clean Power
Component: Power Unit
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The alarm threshold for I2t overload (95%) of the power unit has been exceeded.
The following applies for p0212.9 = 0: There is no overload response.
The following applies for p0212.9 = 1: The response parameterized in p0290 becomes active.
Remedy: - Reduce the continuous load.
- Adapt the duty cycle.
- Check the assignment of the rated currents of the motor and converter.

F29260	**Infeed power unit: Fault in the driver supply for the power semiconductor**
Message class:	Power electronics faulted (5)
Message value:	-
Variant:	G220 Clean Power
Component:	Power Unit
Propagation:	Local
Response:	OFF2
Acknowledgment:	IMMEDIATELY
Cause:	A fault has occurred in the driver supply of the power semiconductor.
Remedy:	There is a hardware defect. The device must be replaced.

F29261	**Infeed power unit: Internal fan 2 defective**
Message class:	Auxiliary unit faulted (20)
Message value:	%1
Variant:	G220 Clean Power
Component:	Power Unit
Propagation:	Global
Response:	OFF2
Acknowledgment:	IMMEDIATELY
Cause:	The feedback signal of internal fan 2 signals a fault, or there is a communication error with the fan. Fault value (r0949, interpret decimal): 0: Feedback signal of the fan signals a fault 1: Internal communication error to the fan
Remedy:	- Check internal fan 2 and replace if necessary. - For communication errors, update the software or replace the power unit. Note: If the fault can be acknowledged, this does not necessarily mean that the cause of the fault has been resolved. It is also possible that the software switched off the fan, and therefore can no longer evaluate the feedback signal.

A29266	**Infeed power unit: Required modulator setting cannot be implemented**
Message class:	Hardware/software error (1)
Message value:	%1
Variant:	G220 Clean Power
Component:	Power Unit
Propagation:	Global
Response:	NONE
Acknowledgment:	NONE
Cause:	The required modulator setting was not able to be implemented. This can involve some undesirable effects; for example, unexpectedly high switching losses can occur or the current controller bandwidth can be reduced. Alarm value (r2124, interpret hexadecimal): Only for internal Siemens troubleshooting.
Remedy:	- If required, deactivate wobbulation in bit p13810.2 and activate again. - Carry out a POWER ON (switch-off/switch-on).

A29500 (F, N)	**Line filter capacitor temperature alarm threshold exceeded**
Message class:	Infeed faulted (13)
Message value:	%1
Variant:	G220 Clean Power

Component:	Power Unit
Propagation:	Local
Response:	NONE
Acknowledgment:	NONE
Cause:	The calculated temperature of the thermal model of the line filter (r37[2]) has exceeded the threshold value. Alarm value (r2124, interpret decimal): Temperature actual value at the time of initiation [0.01 °C]. See also: r13037 (Infeed power unit temperatures)
Remedy:	- Check the fan. - Reduce the power.
Response upon: F:	NONE
Acknowl. upon F:	IMMEDIATELY
Response upon: N:	NONE
Acknowl. upon N:	NONE

A29507 (F, N) Infeed power unit: Asymmetry of the partial DC links

Message class:	DC link overvoltage (4)
Message value:	%1
Variant:	G220 Clean Power
Component:	Power Unit
Propagation:	Local
Response:	NONE
Acknowledgment:	NONE
Cause:	Asymmetry has occurred between partial capacitances in the DC link. This message can occur in the following cases: - Asymmetrical line voltage dips, interruptions or overvoltage conditions (possibly also very brief, for just a few milliseconds) - Strongly oscillating DC link load at the line frequency or at a multiple of the line frequency - Device damage Alarm value only for internal Siemens diagnostics.
Remedy:	Caution: Continuous operation with alarm A29507 is not permissible, and can damage the converter. - Check the line supply and connection - Check the DC link connection and load connected to the DC link Note: If dissymmetry deteriorates further, then the system can shut down with fault F29007.
Response upon: F:	NONE (OFF1, OFF2)
Acknowl. upon F:	IMMEDIATELY
Response upon: N:	NONE
Acknowl. upon N:	NONE

N29800 (F) Infeed power unit: Group signal

Message class:	Power electronics faulted (5)
Message value:	-
Variant:	G220 Clean Power
Component:	Power Unit
Propagation:	Local
Response:	OFF2
Acknowledgment:	NONE
Cause:	The power unit has detected at least one fault.
Remedy:	Evaluate the other messages that are presently available.

Response upon: F: OFF2
Acknowl. upon F: IMMEDIATELY

F29801 Infeed power unit DRIVE-CLiQ: Sign-of-life missing

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Variant: G220 Clean Power
Component: Control Unit (CU)
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: There is a DRIVE-CLiQ communication error between the converter and the power unit involved.
The computing time load might be too high.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

xx = 0A hex = 10 dec:
The sign-of-life bit in the received telegram is not set.
Remedy: - Deselect functions that are not required.
- Replace the component involved.

F29802 Infeed power unit: Time slice overflow

Message class: Hardware/software error (1)
Message value: %1
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: A time slice overflow has occurred.
Fault value (r0949, interpret decimal):
xx: Time slice number
Remedy: - Carry out a POWER ON (switch-off/switch-on) for all components.
- Upgrade firmware to later version.
- Contact Technical Support.

F29804 (N, A) Infeed power unit: CRC

Message class: Hardware/software error (1)
Message value: %1
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: OFF2 (OFF1, OFF3)
Acknowledgment: IMMEDIATELY
Cause: A checksum error (CRC error) has occurred for the power unit.

Remedy: - Carry out a POWER ON (switch-off/switch-on) for all components.
- Upgrade firmware to later version.
- Contact Technical Support.

Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F29805 Infeed power unit: EEPROM checksum error

Message class: Hardware/software error (1)
Message value: %1
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: Internal parameter data is corrupted.
Fault value (r0949, interpret hexadecimal):
01: EEPROM access error.
02: Too many blocks in the EEPROM.
Remedy: Replace the module.

F29809 Infeed power unit: Switching information not valid

Message class: Hardware/software error (1)
Message value: -
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: For 3P gating unit, the following applies:
The last switching status word in the setpoint telegram is identified by the end ID. Such an end ID was not found.
Remedy: - Carry out a POWER ON (switch-off/switch-on) for all components.
- Upgrade firmware to later version.
- Contact Technical Support.

F29810 Infeed power unit: Watchdog timer elapsed

Message class: Hardware/software error (1)
Message value: -
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The watchdog timer has expired. This can only be caused by a fatal software error.
Remedy: - Carry out a POWER ON (switch-off/switch-on) for all components.
- Upgrade firmware to later version.
- Contact Technical Support.

F29820 Infeed power unit DRIVE-CLiQ: Telegram error

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: There is a DRIVE-CLiQ communication error between the converter and the power unit involved.
Error cause:
1 (= 01 hex):
Checksum error (CRC error).
2 (= 02 hex):
Telegram is shorter than specified in the length byte or in the receive list.
3 (= 03 hex):
Telegram is longer than specified in the length byte or in the receive list.
4 (= 04 hex):
The length of the received telegram does not match the receive list.
5 (= 05 hex):
The type of the received telegram does not match the receive list.
6 (= 06 hex):
The address of the component in the telegram and in the receive list do not match.
7 (= 07 hex):
A SYNC telegram is expected - but the received telegram is not a SYNC telegram.
8 (= 08 hex):
No SYNC telegram is expected - but the received telegram is one.
9 (= 09 hex):
The error bit in the received telegram is set.
16 (= 10 hex):
The received telegram is too early.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: - Carry out a POWER ON (switch-off/switch-on).
- Check the electrical cabinet design and cable routing for EMC compliance.
- Check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).

F29835 Infeed power unit DRIVE-CLiQ: Cyclic data transfer error

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY

Cause: There is a DRIVE-CLiQ communication error between the converter and the power unit involved. The nodes do not send and receive in synchronism.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

xx = 33 (= 21 hex):
The cyclic telegram has not been received.
xx = 34 (= 22 hex):
Timeout in the telegram receive list.
xx = 64 (= 40 hex):
Timeout in the telegram send list.

Remedy:
- Carry out a POWER ON.
- Replace the component involved.

F29836 Infeed power unit DRIVE-CLiQ: Send error for DRIVE-CLiQ data

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: There is a DRIVE-CLiQ communication error between the converter and the power unit involved. Data were not able to be sent.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex: yy = component number, xx = error cause

xx = 65 (= 41 hex):
Telegram type does not match send list.

Remedy: Carry out a POWER ON.

F29837 Infeed power unit DRIVE-CLiQ: Component fault

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY

Cause: Fault detected on the DRIVE-CLiQ component involved. Faulty hardware cannot be excluded.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

xx = 32 (= 20 hex):
Error in the telegram header.
xx = 35 (= 23 hex):
Receive error: The telegram buffer memory contains an error.
xx = 66 (= 42 hex):
Send error: The telegram buffer memory contains an error.
xx = 67 (= 43 hex):
Send error: The telegram buffer memory contains an error.

Remedy:
- Check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
- Check the electrical cabinet design and cable routing for EMC compliance.
- If required, use another DRIVE-CLiQ socket.
- Replace the component involved.

F29845 Infeed power unit DRIVE-CLiQ: Cyclic data transfer error

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: There is a DRIVE-CLiQ communication error between the converter and the power unit involved.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

xx = 11 (= 0B hex):
Synchronization error during alternating cyclic data transfer.

Remedy: Carry out a POWER ON (switch-off/switch-on).

F29850 Infeed power unit: Internal software error

Message class: Hardware/software error (1)
Message value: %1
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: OFF1 (NONE, OFF2, OFF3)
Acknowledgment: POWER ON
Cause: An internal software error has occurred in the power unit.
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.

Remedy:
- Replace power unit.
- If required, upgrade the firmware in the power unit.
- Contact Technical Support.

F29851 Power unit DRIVE-CLiQ: Sign-of-life missing

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: OFF2 (NONE, OFF1)
Acknowledgment: IMMEDIATELY
Cause: There is a DRIVE-CLiQ communication error from the power unit involved to the converter.
The DRIVE-CLiQ component did not set the sign-of-life to the converter.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

xx = 0A hex (10 dec):
The sign-of-life bit in the received telegram is not set.

Remedy:
- Deselect functions that are not required.
- Replace the component involved (power unit, converter).

A29853 Infeed power unit: Sign-of-life error cyclic data

Message class: General drive fault (19)
Message value: -
Variant: G220 Clean Power
Component: Control Unit (CU)
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: The power unit has detected that the cyclic setpoint telegrams of the converter have not been updated on time.
At least two sign-of-life errors have occurred within the window that has been set.

Remedy:
- Reduce the size of the monitoring window.
- Check the converter and if required replace.

F29860 Infeed power unit DRIVE-CLiQ: Telegram error

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY

Cause: There is a DRIVE-CLiQ communication error from the power unit involved to the converter.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

xx = 1 (= 01 hex):
Checksum error (CRC error).
xx = 2 (= 02 hex):
Telegram is shorter than specified in the length byte or in the receive list.
xx = 3 (= 03 hex):
Telegram is longer than specified in the length byte or in the receive list.
xx = 4 (= 04 hex):
The length of the received telegram does not match the receive list.
xx = 5 (= 05 hex):
The type of the received telegram does not match the receive list.
xx = 6 (= 06 hex):
The address of the power unit in the telegram and in the receive list do not match.
xx = 9 (= 09 hex):
The DRIVE-CLiQ communication from the DRIVE-CLiQ component involved to the converter signals that the supply voltage has failed.
xx = 16 (= 10 hex):
The received telegram is too early.
xx = 17 (= 11 hex):
CRC error and the received telegram is too early.
xx = 18 (= 12 hex):
The telegram is shorter than that specified in the length byte or in the receive list and the received telegram is too early.
xx = 19 (= 13 hex):
The telegram is longer than that specified in the length byte or in the receive list and the received telegram is too early.
xx = 20 (= 14 hex):
The length of the received telegram does not match the receive list and the received telegram is too early.
xx = 21 (= 15 hex):
The type of the received telegram does not match the receive list and the received telegram is too early.
xx = 22 (= 16 hex):
The address of the power unit in the telegram and in the receive list does not match and the received telegram is too early.
xx = 25 (= 19 hex):
The error bit in the received telegram is set and the received telegram is too early.

Remedy:
- Carry out a POWER ON (switch-off/switch-on).
- Check the electrical cabinet design and cable routing for EMC compliance.
- Check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).

F29875 Infeed power unit: Supply voltage failed

Message class: Supply voltage fault (undervoltage) (3)
Message value: Component number: %1, fault cause: %2
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: OFF2

Acknowledgment: IMMEDIATELY

Cause: The DRIVE-CLiQ communication from the DRIVE-CLiQ component involved to the converter signals that the supply voltage has failed.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

xx = 9 (= 09 hex):
The supply voltage for the component has failed.

Remedy:
- Carry out a POWER ON (switch-off/switch-on).
- Check the supply voltage wiring for the DRIVE-CLiQ component (interrupted cable, contacts, ...).
- Check the dimensioning of the power supply for the DRIVE-CLiQ component.

F29885 Power unit DRIVE-CLiQ: Cyclic data transfer error

Message class: Internal (DRIVE-CLiQ) communication error (12)

Message value: Component number: %1, fault cause: %2

Variant: G220 Clean Power

Component: Power Unit

Propagation: Local

Response: OFF2

Acknowledgment: IMMEDIATELY

Cause: There is a DRIVE-CLiQ communication error from the power unit involved to the converter.
The nodes do not send and receive in synchronism.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

Error cause:
26 (= 1A hex):
Sign-of-life bit in the received telegram not set and the received telegram is too early.
33 (= 21 hex):
The cyclic telegram has not been received.
34 (= 22 hex):
Timeout in the telegram receive list.
64 (= 40 hex):
Timeout in the telegram send list.
98 (= 62 hex):
Error at the transition to cyclic operation.

Remedy:
- Check the supply voltage of the component involved.
- Carry out a POWER ON.
- Replace the component involved.

F29886 Power unit DRIVE-CLiQ: Error when sending DRIVE-CLiQ data

Message class: Internal (DRIVE-CLiQ) communication error (12)

Message value: Component number: %1, fault cause: %2

Variant: G220 Clean Power

Component: Power Unit

Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: There is a DRIVE-CLiQ communication error from the power unit involved to the converter.
Data were not able to be sent.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

Error cause:
65 (= 41 hex):
Telegram type does not match send list.
Remedy: Carry out a POWER ON.

F29887 Infeed power unit DRIVE-CLiQ: Component fault

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: Fault detected on the DRIVE-CLiQ component (power unit) involved. Faulty hardware cannot be excluded.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

Error cause:
32 (= 20 hex):
Error in the telegram header.
35 (= 23 hex):
Receive error: The telegram buffer memory contains an error.
66 (= 42 hex):
Send error: The telegram buffer memory contains an error.
67 (= 43 hex):
Send error: The telegram buffer memory contains an error.
96 (= 60 hex):
Response received too late during runtime measurement.
97 (= 61 hex):
Time taken to exchange characteristic data too long.
Remedy: - Check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
- Check the electrical cabinet design and cable routing for EMC compliance.
- If required, use another DRIVE-CLiQ socket.
- Replace the component involved.

F29895 Power unit DRIVE-CLiQ: Alternating cyclic data transfer error

Message class: Internal (DRIVE-CLiQ) communication error (12)

Message value:	Component number: %1, fault cause: %2
Variant:	G220 Clean Power
Component:	Power Unit
Propagation:	Local
Response:	OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Acknowledgment:	IMMEDIATELY
Cause:	There is a DRIVE-CLiQ communication error from the power unit involved to the converter. Fault value (r0949, interpret hexadecimal): 0000yyxx hex: yy = component number, xx = fault cause Error cause: 11 (= 0B hex): Synchronization error during alternating cyclic data transfer.
Remedy:	Carry out a POWER ON (switch-off/switch-on).

F29896 Infeed power unit DRIVE-CLiQ: Component properties inconsistent

Message class:	Internal (DRIVE-CLiQ) communication error (12)
Message value:	Component number: %1
Variant:	G220 Clean Power
Component:	Power Unit
Propagation:	Local
Response:	OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Acknowledgment:	IMMEDIATELY
Explanation of the message value:	For %1 Component in target topology
Cause:	The properties of the DRIVE-CLiQ component (power unit), specified by the fault value, have changed in an incompatible fashion with respect to the properties when booted. One cause can be, e.g. that a DRIVE-CLiQ cable or DRIVE-CLiQ component has been replaced. Fault value (r0949, interpret decimal): Component number.
Remedy:	- Carry out a POWER ON. - When a component is replaced, the same component type and if possible the same firmware version should be used. - When a cable is replaced, only use cables whose length is the same as or as close as possible to the length of the original cable (ensure compliance with the maximum cable length).

F29899 (N, A) Infeed power unit: Unknown fault

Message class:	Power electronics faulted (5)
Message value:	New message: %1
Variant:	G220 Clean Power
Component:	Power Unit
Propagation:	Local
Response:	NONE (OFF1, OFF2)
Acknowledgment:	IMMEDIATELY

Cause:	A fault occurred on the power unit, which cannot be interpreted by the converter firmware. This can occur if the firmware on the power unit is more recent than the firmware on the converter. Fault value (r0949, interpret decimal): Fault number. Note: The significance of the fault still cannot be known in an older firmware version. If required, read about the significance of this new fault in more recent documentation.
Remedy:	- Replace the firmware on the power unit by an older firmware version. - Upgrade the converter firmware.
Response upon: N:	NONE
Acknowl. upon N:	NONE
Response upon: A:	NONE
Acknowl. upon A:	NONE

F29903 Infeed power unit: I2C bus error occurred

Message class:	Hardware/software error (1)
Message value:	%1
Variant:	G220 Clean Power
Component:	Power Unit
Propagation:	Local
Response:	NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowledgment:	IMMEDIATELY
Cause:	Communications error with an EEPROM or an analog/digital converter. Fault value (r0949, interpret hexadecimal): 80000000 hex: - Internal software error. 00000001 hex ... 0000FFFF hex: - Module fault.
Remedy:	For fault value = 80000000 hex: - Upgrade firmware to later version. For fault value = 00000001 hex ... 0000FFFF hex: - Replace the module.

F29907 Infeed power unit: FPGA configuration unsuccessful

Message class:	Hardware/software error (1)
Message value:	-
Variant:	G220 Clean Power
Component:	Power Unit
Propagation:	Local
Response:	OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Acknowledgment:	IMMEDIATELY
Cause:	During initialization within the power unit, an internal software error has occurred.
Remedy:	- If required, upgrade the firmware in the power unit. - Replace power unit. - Contact Technical Support.

A29920 (F) Infeed power unit: Temperature sensor fault

Message class:	Power electronics faulted (5)
Message value:	%1
Variant:	G220 Clean Power

Component: Power Unit
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: When evaluating the temperature sensor, an error occurred.
Alarm value (r2124, interpret decimal):
1: Wire breakage or sensor not connected.
KTY: R > 1630 Ohm, Pt100: R > 375 Ohm, Pt1000: R > 1720 Ohm
2: Measured resistance too low.
PTC: R < 20 Ohm, KTY: R < 50 Ohm, Pt100: R < 30 Ohm, Pt1000: R < 603 Ohm
Note:
A temperature sensor is connected to the following terminals:
- "Booksize" format: X21.1/.2 or X22.1/.2
- "Chassis" format: X41.4/.3
Information about the temperature sensors is provided in the product documentation
Remedy: - Make sure that the sensor is connected correctly.
- Replace the sensor.
Response upon: F: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY

F29950 Infeed power unit: Internal software error

Message class: Hardware/software error (1)
Message value: %1
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: POWER ON
Cause: An internal software error has occurred.
Fault value (r0949, interpret decimal):
Information about the fault source.
Only for internal Siemens troubleshooting.
Remedy: - If necessary, upgrade the firmware in the power unit to a later version.
- Contact Technical Support.

A29999 (F, N) Infeed power unit: Unknown alarm

Message class: Power electronics faulted (5)
Message value: New message: %1
Variant: G220 Clean Power
Component: Power Unit
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: An alarm has occurred on the power unit, which cannot be interpreted by the converter firmware.
This can occur if the firmware on the power unit is more recent than the firmware on the converter.
Alarm value (r2124, interpret decimal):
Alarm number.
Note:
The significance of the fault still cannot be known in an older firmware version. If required, the significance of this new fault can be read about in more recent documentation.

Remedy: - Replace the firmware on the power unit by an older firmware version.
- Upgrade the converter firmware.

Response upon: F: NONE (OFF1, OFF2)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

F30001 Power unit: Overcurrent

Message class: Power electronics faulted (5)
Message value: Fault cause: %1 bin
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The power unit has detected an overcurrent condition.
- Closed-loop control is incorrectly parameterized.
- Motor has a short-circuit or fault to ground (frame).
- U/f operation: Up ramp set too low.
- U/f operation: Rated motor current is significantly higher than that of the Motor Module.
- Infeed: High discharge and post-charging currents for line voltage dip.
- Infeed: High post-charging currents for overload when motoring and DC link voltage dip.
- Infeed: Short-circuit currents at switch-on as there is no line reactor.
- Power cables are not correctly connected.
- The power cables exceed the maximum permissible length.
- Power unit defective.
- Line phase interrupted.

Fault value (r0949, interpret bitwise):
Bit 0: Phase U.
Bit 1: Phase V.
Bit 2: Phase W.
Bit 3: Overcurrent in the DC link.
Note:
Fault value = 0 means that the phase with overcurrent is not recognized (e.g. for blocksize device).

Remedy: - Check the motor data, carry out commissioning if required.
- Check the motor circuit configuration (star/delta).
- U/f operation: Increase up ramp.
- U/f operation: Check the assignment of the rated currents of the motor and converter.
- Infeed: Check the line quality.
- Infeed: Reduce the motor load.
- Infeed: Check that the line filter and line reactor are correctly connected.
- Check the power cable connections.
- Check the power cables for short-circuit or ground fault.
- Check the length of the power cables.
- Replace power unit.
- Check the line phases.

F30002 Power unit: DC link voltage overvoltage

Message class: DC link overvoltage (4)
Message value: %1
Component: Power Unit
Propagation: Local

Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The power unit has detected overvoltage in the DC link.
- Motor regenerates too much energy.
- Device supply voltage too high.
- When operating with a Voltage Sensing Module (VSM), the phase assignment L1, L2, L3 at the VSM differs from the phase assignment at the power unit.
- Line phase interrupted.

Fault value only for internal Siemens diagnostics.
Remedy:
- Increase the ramp-down time.
- Activate the DC link voltage controller.
- Use a braking resistor or an infeed capable of energy recovery.
- Increase the current limit of the infeed or use a larger component (for the Active Line Module).
- Check the device supply voltage.
- Check and correct the phase assignment at the VSM and at the power unit.
- Check the line phases.
- Set the rounding times (p1130, p1136). This is particularly recommended in U/f operation to relieve the DC link voltage controller with rapid ramp-down times of the ramp-function generator.

See also: p0210 (Device supply voltage), p1240 (Vdc controller or Vdc monitoring configuration)

F30003 Power unit: DC link voltage undervoltage

Message class: Infeed faulted (13)
Message value: -
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The power unit has detected an undervoltage condition in the DC link.
- Line supply failure.
- Line voltage below the permissible value.
- Line infeed failed or interrupted.
- Line phase interrupted.

Note:
The monitoring threshold for undervoltage in the DC link is indicated in r0296.
Remedy:
- Check the line voltage.
- Check the line infeed and observe the fault messages relating to it (if there are any).
- Check the line phases.
- Check the supply voltage setting (p0210).

Note:
The ready signal for the infeed r0863 must be interconnected to the associated inputs c0864 of the drives.
See also: p0210 (Device supply voltage)

F30004 Power unit: Overtemperature heat sink inverter

Message class: Power electronics faulted (5)
Message value: %1
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY

Cause: The temperature of the power unit heat sink has exceeded the permissible limit value.
- Insufficient cooling, fan failure.
- Overload.
- Ambient temperature too high.
- Pulse frequency too high.

Fault value (r0949, interpret decimal):
Temperature [0.01 °C].

Remedy:
- Check whether the fan is running.
- Check the fan elements.
- Check whether the ambient temperature is in the permissible range.
- Check the motor load.
- Reduce the pulse frequency if this is higher than the rated pulse frequency.

Notice:
This fault can only be acknowledged after the alarm threshold for alarm A30250 has been fallen below.
See also: p1800 (Pulse frequency setpoint)

F30005 Power unit: Overload I2t (AC)

Message class: Power electronics faulted (5)
Message value: %1
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The fault threshold for the I2t overload on the AC side of the power unit has been exceeded. The permissible duty cycle or the continuous load was not maintained.
Fault value (r0949, interpret decimal):
I2t (AC) [100 % = 16384]
See also: r0036 (Power unit overload)
Remedy:
- Reduce the continuous load.
- Adapt the duty cycle.
- Check the rated currents of the motor and power unit.

See also: r0206 (Rated power unit power), p0307 (Rated motor power)

F30008 Power unit: Sign-of-life error cyclic data

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: -
Component: Control Unit (CU)
Propagation: Local
Response: NONE (OFF1, OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: The converter has not punctually updated the cyclic setpoint telegrams. The number of consecutive tolerated sign-of-life errors has exceeded the fault threshold.
Remedy:
- Check the converter
- Update the firmware
- If required, replace the converter

A30010 (F) Power unit: Sign-of-life error cyclic data

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: -
Component: Control Unit (CU)

Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: There is an internal communication error in the converter.
The cyclic setpoint telegrams of the converter were not received on time for at least one clock cycle.
Remedy: - Check the converter
- Update the firmware
- If required, replace the converter
Response upon: F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

F30011 Power unit: Line phase failure in main circuit

Message class: Line supply fault (2)
Message value: %1
Component: Power Unit
Propagation: Local
Response: OFF2 (OFF1)
Acknowledgment: IMMEDIATELY
Cause: At the power unit, the DC link voltage ripple has exceeded the permissible limit value.
Possible causes:
- A line phase has failed.
- The 3 line phases are inadmissibly asymmetrical.
- The capacitance of the DC link capacitor forms a resonance frequency with the line inductance and the reactor integrated in the power unit.
- The fuse of a phase of a main circuit has ruptured.
- A motor phase has failed.
- For power units operated on a single phase, the permissible active power was exceeded.
Only for internal Siemens troubleshooting.
Remedy: - Check the main circuit fuses.
- Check whether a single-phase load is distorting the line voltages.
- Detune the resonant frequency with the line inductance by using an upstream line reactor.
- Dampen the resonant frequency with the line inductance by switching over the DC link voltage compensation in the software or increase the smoothing. However, this can have a negative impact on the torque ripple at the motor output.
- Check the motor feeder cables.

F30012 Power unit: Temperature sensor wire breakage

Message class: Power electronics faulted (5)
Message value: %1
Component: Power Unit
Propagation: Local
Response: OFF1 (OFF2)
Acknowledgment: IMMEDIATELY

Cause: The connection to a temperature sensor in the power unit is interrupted.
Fault value (r0949, interpret binary):
Bit 1: Air intake
Bit 2: Inverter 1
Bit 3: Inverter 2
Bit 4: Inverter 3
Bit 5: Inverter 4
Bit 6: Inverter 5
Bit 7: Inverter 6
Bit 8: Rectifier
Bit 10: Moisture ext. moisture sensor
Bit 11: Temperature ext. moisture sensor
Bit 13: Balance resistor
Bit 14: Capacitor air discharge
Bit 15: Liquid intake
Remedy: Contact Technical Support.

F30013 Power unit: Temperature sensor short-circuit

Message class: Power electronics faulted (5)
Message value: %1
Component: Power Unit
Propagation: Local
Response: OFF1 (OFF2)
Acknowledgment: IMMEDIATELY
Cause: A temperature sensor in the power unit is short-circuited.
Fault value (r0949, interpret binary):
Bit 1: Air intake
Bit 2: Inverter 1
Bit 3: Inverter 2
Bit 4: Inverter 3
Bit 5: Inverter 4
Bit 6: Inverter 5
Bit 7: Inverter 6
Bit 8: Rectifier
Bit 10: Moisture ext. moisture sensor
Bit 11: Temperature ext. moisture sensor
Bit 14: Capacitor air discharge
Bit 15: Liquid intake
Remedy: Contact Technical Support.

F30015 (N, A) Power unit: Phase failure motor cable

Message class: Application/technological function faulted (17)
Message value: -
Component: Motor
Propagation: Global
Response: OFF2 (NONE, OFF1, OFF3)
Acknowledgment: IMMEDIATELY

Cause:	A phase failure in the motor feeder cable was detected. The signal can also be output in the following cases: - The motor is correctly connected, but the drive has stalled in U/f control. In this case, a current of 0 A is possibly measured in one phase due to asymmetry of the currents. - The motor is correctly connected, however the closed-speed control is instable and therefore an oscillating torque is generated. Note: Chassis power units do not feature phase failure monitoring.
Remedy:	- Check the motor feeder cables. - Increase the ramp-up or ramp-down time (p1120) if the drive has stalled in U/f control. - Check the speed controller settings.
Response upon: N:	NONE
Acknowl. upon N:	NONE
Response upon: A:	NONE
Acknowl. upon A:	NONE

A30016 (N) Power unit: Load supply switched off

Message class:	Line supply fault (2)
Message value:	%1
Component:	Power Unit
Propagation:	Global
Response:	NONE
Acknowledgment:	NONE
Cause:	The DC link voltage is too low. Alarm value (r2124, interpret decimal): DC link voltage at the time of the trip [V].
Remedy:	- Switch on the load supply. - Check the line supply if necessary.
Response upon: N:	NONE
Acknowl. upon N:	NONE

F30017 Power unit: Hardware current limit has responded too often

Message class:	Power electronics faulted (5)
Message value:	Fault cause: %1 bin
Component:	Power Unit
Propagation:	Local
Response:	OFF2
Acknowledgment:	IMMEDIATELY

Cause:
The hardware current limitation in the relevant phase (see A30031, A30032, A30033) has responded too often. The number of times the limit has been exceeded depends on the design and type of power unit.
For infeed units, the following applies:
- Closed-loop control is incorrectly parameterized.
- Load on the infeed is too high.
- Voltage Sensing Module incorrectly connected.
- Line reactor missing or the incorrect type.
- Power unit defective.

The following applies to Motor Modules:
- Closed-loop control is incorrectly parameterized.
- Fault in the motor or in the power cables.
- The power cables exceed the maximum permissible length.
- Motor load too high
- Power unit defective.

Fault value (r0949, interpret binary):
Bit 0: Phase U
Bit 1: Phase V
Bit 2: Phase W
Additional bits:
Only for internal Siemens troubleshooting.
Note:
Fault value = 0 means that the phase with current limiting is not recognized (e.g. for blocksize device).

Remedy:
For infeed units, the following applies:
- Check the controller settings and reset and identify the controller if necessary.
- Reduce the load and increase the DC link capacitance or use a higher-rating infeed if necessary.
- Check the connection of the optional Voltage Sensing Module.
- Check the technical data of the line reactor.
- Check the power cables for short-circuit or ground fault.
- Replace power unit.

The following applies to Motor Modules:
- Check the motor data and if required, recalculate the controller parameters. As an alternative, run a motor data identification (p1910 = 1, p1960 = 1).
- Check the motor circuit configuration (star-delta).
- Check the motor load.
- Check the power cable connections.
- Check the power cables for short-circuit or ground fault.
- Check the length of the power cables.
- Replace power unit.

F30020 Power unit: Configuration not supported

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Fault cause: %1, additional information: %2
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY

Cause: A configuration is requested that is not supported by the power unit.
Fault value (r0949, interpret hexadecimal):
yyyyxxxx hex: xxxx = fault cause, yyyy = additional information (internal Siemens)
xxxx = 3: Initialization was not able to be successfully completed. It is possible that the converter was switched-off before or while running up.
xxxx = 4: The combination of power unit and converters is not supported.
xxxx = 8: The version of the ASIC installed in the power unit is no longer supported.

Remedy: For fault cause = 3, 4:
Use a converter with the appropriate power unit and carry out a POWER ON for the converter.
For fault cause = 8:
Replace the power unit by one which has a newer ASIC version.
See also: p0115 (Sampling times for internal control loops), p1231 (DC braking/armature short circuit configuration), p1810 (Modulator configuration)

F30021 Power unit: Ground fault

Message class: Ground fault / inter-phase short-circuit detected (7)
Message value: %1
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The power unit has detected a ground fault.
Possible causes:
- Ground fault in the power cables.
- Ground fault at the motor.
- CT defective.
- When the brake closes, this causes the hardware DC current monitoring to respond.
- Short-circuit at the braking resistor.

Note:
For power units, a ground fault is also emulated in r3113.5.
Fault value (r0949, interpret decimal):
0:
- The hardware DC current monitoring has responded.
- Short-circuit at the braking resistor.

> 0:
Absolute value, total current amplitude [20479 = r0209 * 1.4142].

Remedy:
- Check the power cable connections.
- Check the motor.
- Check the CT.
- Check the cables and contacts of the brake connection (a wire is possibly broken).
- Check the braking resistor.

See also: p0287 (Ground fault monitoring shutdown threshold)

F30022 Power unit: Monitoring U_ce

Message class: Ground fault / inter-phase short-circuit detected (7)
Message value: Fault cause: %1 bin
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY

Cause: In the power unit, the monitoring of the collector-emitter voltage (U_ce) of the semiconductor has responded.
Possible causes:
- The power supply for power semiconductor gating missing.
- Short-circuit at the power unit output.
- Defective semiconductor in the power unit.

Fault value (r0949, interpret binary):
Bit 0: Short-circuit in phase U
Bit 1: Short-circuit in phase V
Bit 2: Short-circuit in phase W
Bit 3: Short-circuit in phase N
See also: r0949 (Fault value)

Remedy:
- Check the power cable connections.
- Select the defective semiconductor and replace.
- When alarm 30269 simultaneously occurs, then the power supply for the power semiconductor gating is overloaded. A hardware defect must be assumed. Contact Technical Support.

F30024 Power unit: Overtemperature thermal model

Message class: Power electronics faulted (5)
Message value: Power semiconductor: %1, temperature: [0.01 degrees C] %2
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY

Cause: The temperature difference between the power semiconductor involved and the heat sink has exceeded the permissible fault threshold.
- The permissible duty cycle was not maintained.
- Insufficient cooling, fan failure.
- Overload.
- Ambient temperature too high.
- Pulse frequency too high.

Fault value (r0949, interpret hexadecimal):
yyyyxxxx hex: yyyy= Power semiconductor, xxxx = Temperature in 0.01°C
See also: r0037 (Power unit temperatures)

Remedy:
- Adapt the duty cycle.
- Check whether the fan is running.
- Check the fan elements.
- Check whether the ambient temperature is in the permissible range.
- Check the motor load.
- Reduce the pulse frequency if this is higher than the rated pulse frequency.
- If DC braking is active: reduce braking current (p1232).

F30025 Power unit: Chip overtemperature

Message class: Power electronics faulted (5)
Message value: Power semiconductor: %1, temperature: [0.01 degrees C] %2
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY

Cause: The chip temperature of the power semiconductor involved has exceeded the permissible fault threshold.
- The permissible duty cycle was not maintained.
- Insufficient cooling, fan failure.
- Overload.
- Ambient temperature too high.
- Pulse frequency too high.

Fault value (r0949, interpret hexadecimal):
yyyyxxxx hex: yyyy= Power semiconductor, xxxx = Temperature in 0.01°C

Remedy:
- Adapt the duty cycle.
- Check whether the fan is running.
- Check the fan elements.
- Check whether the ambient temperature is in the permissible range.
- Check the motor load.
- Reduce the pulse frequency if this is higher than the rated pulse frequency.

Note:
This fault can only be acknowledged after the alarm threshold for alarm A030252 has been fallen below.
See also: r0037 (Power unit temperatures)

F30026 (A) Power unit: DC link precharging asymmetry

Message class: Power electronics faulted (5)
Message value: %1
Component: Power Unit
Propagation: Global
Response: NONE (OFF1, OFF2)
Acknowledgment: IMMEDIATELY
Cause: Asymmetry has occurred during DC link precharging.
This message can occur in the following cases:
- Asymmetrical line voltage dips, interruptions (possibly even very briefly for just a few milliseconds)
- One or several line phases failed / not connected
- Device damage

Alarm value only for internal Siemens diagnostics.
Remedy: Caution: Continuous operation with F30026 is not permissible, and can damage the converter.
- Check the line supply and connection

Response upon: A: NONE
Acknowl. upon A: NONE

F30027 Power unit: Precharging DC link time monitoring

Message class: Infeed faulted (13)
Message value: Enable signals: %1, status: %2
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY

Cause:

The power unit DC link was not able to be precharged within the expected time.

Possible causes:

1) There is no line voltage connected.

2) The line contactor/line side switch has not been closed.

3) The line voltage is too low.

4) Line voltage incorrectly set (p0210).

5) The precharging resistors are overheated as there were too many precharging operations per time unit.

6) The precharging resistors are overheated as the DC link capacitance is too high.

7) The precharging resistors have overheated as power was drawn from the DC link but signal "Ready" (r0899.1) of the infeed was not available.

8) The precharging resistors are overheated as the line contactor was closed during the DC link fast discharge through the Braking Module.

9) The DC link has either a ground fault or a short-circuit.

10) Precharging circuit may be defective.

Fault value (r0949, interpret binary):

yyyyxxxx hex:

yyyy = power unit state

0: Fault status (wait for OFF and fault acknowledgment).

1: Restart inhibit (wait for OFF).

2: Overvoltage condition detected -> change into the fault state.

3: Undervoltage condition detected -> change into the fault state.

4: Wait for bridging contactor to open -> change into the fault state.

5: Wait for bridging contactor to open -> change into restart inhibit.

6: Wait for bypass contactor to open

7: Commissioning.

8: Ready for precharging.

9: Precharging started, DC link voltage lower than the minimum switch-on voltage.

10: Precharging, DC link voltage end of precharging still not detected.

11: Wait for the end of the de-bounce time of the main contactor after precharging has been completed.

12: Precharging completed, ready for pulse enable.

13: It was detected that the STO terminal was energized at the power unit.

xxxx = Missing internal enable signals, power unit (inverted bit-coded, FFFF hex -> all internal enable signals available)

Bit 0: Power supply of the IGBT gating shut down.

Bit 1: Ground fault detected.

Bit 2: Peak current intervention.

Bit 3: I2t exceeded.

Bit 4. Thermal model overtemperature calculated.

Bit 5: (heat sink, gating module, power unit) overtemperature measured.

Bit 6: Reserved.

Bit 7: Overvoltage detected.

Bit 8: Power unit has completed precharging, ready for pulse enable.

Bit 9: STO terminal missing.

Bit 10: Overcurrent detected.

Bit 11: Armature short-circuit active.

Bit 13: Vce fault detected, transistor de-saturated due to overcurrent/short-circuit.

Bit 14: Undervoltage detected.

See also: p0210 (Device supply voltage)

Remedy:
General:
- Check the line voltage at the input terminals.
- Check the line voltage setting (p0210).

For cause 5:
- Carefully observe the permissible precharging frequency (refer to the product documentation).

For cause 6:
- Check the total capacitance of the DC link and reduce in accordance with the maximum permissible DC link capacitance if necessary (refer to the product documentation).

For cause 7:
- When parameter r13863 is available: Interconnect the ready-for-operation signal from the infeed (r13863.0) in the enable logic (c0864) of the drives connected to this DC link.

For cause 8:
- Check the connections of the external line contactor. The line contactor must be open during DC link fast discharge.

For cause 9:
- Check the DC link for ground faults or short-circuits.

See also: p0210 (Device supply voltage)

A30030 Power unit: Internal overtemperature alarm

Message class: Power electronics faulted (5)
Message value: %1
Component: Power Unit
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause:
The temperature inside the drive converter has exceeded the permissible temperature limit.
- Insufficient cooling, fan failure.
- Overload.
- Ambient temperature too high.

Alarm value (r2124, interpret decimal):
Only for internal Siemens troubleshooting.

Remedy:
- Possibly use an additional fan.
- Check whether the ambient temperature is in the permissible range.

Notice:
This alarm is automatically withdrawn once the permissible temperature limit value has been fallen below minus 5 K.

A30031 Power unit: Hardware current limiting in phase U

Message class: Power electronics faulted (5)
Message value: -
Component: Power Unit
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause:
Hardware current limit for phase U responded. The pulsing in this phase is inhibited for one pulse period.
- Closed-loop control is incorrectly parameterized.
- Fault in the motor or in the power cables.
- The power cables exceed the maximum permissible length.
- Motor load too high
- Power unit defective.

Remedy:
- Check the motor data and if required, recalculate the control parameters. As an alternative, run a motor data identification (p1910 = 1, p1960 = 1).
- Check the motor circuit configuration (star/delta).
- Check the motor load.
- Check the power cable connections.
- Check the power cables for short-circuit or ground fault.
- Check the length of the power cables.

A30032 Power unit: Hardware current limiting in phase V

Message class: Power electronics faulted (5)

Message value: -

Component: Power Unit

Propagation: Local

Response: NONE

Acknowledgment: NONE

Cause: Hardware current limit for phase V responded. The pulsing in this phase is inhibited for one pulse period.
- Closed-loop control is incorrectly parameterized.
- Fault in the motor or in the power cables.
- The power cables exceed the maximum permissible length.
- Motor load too high
- Power unit defective.

Remedy: Check the motor data and if required, recalculate the control parameters. As an alternative, run a motor data identification (p1910 = 1, p1960 = 1).
- Check the motor circuit configuration (star/delta).
- Check the motor load.
- Check the power cable connections.
- Check the power cables for short-circuit or ground fault.
- Check the length of the power cables.

A30033 Power unit: Hardware current limiting in phase W

Message class: Power electronics faulted (5)

Message value: -

Component: Power Unit

Propagation: Local

Response: NONE

Acknowledgment: NONE

Cause: Hardware current limit for phase W responded. The pulsing in this phase is inhibited for one pulse period.
- Closed-loop control is incorrectly parameterized.
- Fault in the motor or in the power cables.
- The power cables exceed the maximum permissible length.
- Motor load too high
- Power unit defective.

Remedy:
- Check the motor data and if required, recalculate the control parameters. As an alternative, run a motor data identification (p1910 = 1, p1960 = 1).
- Check the motor circuit configuration (star/delta).
- Check the motor load.
- Check the power cable connections.
- Check the power cables for short-circuit or ground fault.
- Check the length of the power cables.

A30034 Power unit: Internal overtemperature

Message class: Power electronics faulted (5)
Message value: %1
Component: Power Unit
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: The alarm threshold for internal overtemperature has been reached.
If the temperature inside the power unit increases up to the fault threshold, then fault F30036 is triggered.
- Ambient temperature might be too high.
- Insufficient cooling, fan failure.

Remedy:
- Check the ambient air temperature.
- Check the fan for the inside of the unit.

F30036 Power unit: Internal overtemperature

Message class: Power electronics faulted (5)
Message value: %1
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The temperature inside the converter has exceeded the permissible limit value.
- Insufficient cooling, fan failure.
- Overload.
- Ambient temperature too high.

Remedy:
- Check the internal fan.
- Check the fan elements.
- Check whether the ambient temperature is in the permissible range.

Notice:
This fault can only be acknowledged once the permissible temperature limit minus 5 K has been fallen below.

F30037 Power unit: Rectifier overtemperature

Message class: Power electronics faulted (5)
Message value: %1
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The temperature in the rectifier of the power unit has exceeded the permissible temperature limit.
- Insufficient cooling, fan failure.
- Overload.
- Ambient temperature too high.
- Line phase failure.

Fault value (r0949, interpret decimal):
Temperature [0.01 °C].

Remedy:
- Check whether the fan is running.
- Check the fan elements.
- Check whether the ambient temperature is in the permissible range.
- Check the motor load.
- Check the line phases.

Notice:
This fault can only be acknowledged after the alarm threshold for alarm A05004 has been undershot.

F30040 Power unit: 24 V undervoltage

Message class: Supply voltage fault (undervoltage) (3)
Message value: %1
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The undervoltage threshold of the 24 V power supply for the power unit was fallen below for longer than 3 ms.

Note:
- For booksize power units, the undervoltage threshold is 15 V.
- For CU310-2, CUA31 and CUA32 the undervoltage threshold is 16 V.
- For all other power units, the undervoltage threshold depends on the power unit, and is not displayed.

Fault value (r0949, interpret decimal):
24 V voltage [0.1 V].

Remedy:
- Check the power supply of the power unit.
- Carry out a POWER ON (switch-off/switch-on) for the component.

A30041 (F) Power unit: Undervoltage 24 V alarm

Message class: Supply voltage fault (undervoltage) (3)
Message value: %1
Component: Power Unit
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: For the power unit power supply, the lower threshold has been violated.

Alarm value (r2124, interpret decimal):
24 V voltage [0.1 V].

Remedy:
- Check the power supply of the power unit.
- Carry out a POWER ON (switch-off/switch-on) for the component.

Response upon: F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

A30042 (N) Power unit: Fan has reached the maximum operating hours

Message class: Power electronics faulted (5)
Message value: %1
Component: Power Unit
Propagation: Local
Response: NONE
Acknowledgment: NONE

Cause: The maximum operating time of at least one fan will soon be reached, or has already been exceeded.
Alarm value (r2124, interpret binary):
Bit 0 = 1:
The wear counter of the heat sink fan has reached 99 %. The remaining service life is 1 %. After this 1 % has elapsed, bit 0 is cleared and bit 2 is set in the alarm value.
Bit 2 = 1:
The wear counter of the heat sink fan has exceeded 100 %.
Bit 8 = 1:
The wear counter of the 1st internal fan has reached 99 %. The remaining service life is 1 %. After this 1 % has elapsed, bit 8 is cleared and bit 10 is set in the alarm value.
Bit 10 = 1:
The wear counter of the 1st internal fan has exceeded 100 %.
Bit 16 = 1:
The wear counter of the 2nd internal fan has reached 99 %. The remaining service life is 1 %. After this 1 % has elapsed, bit 16 is cleared and bit 18 is set in the alarm value.
Bit 18 = 1:
The wear counter of the 2nd internal fan has exceeded 100 %.

Remedy: For the fan involved, carry out the following:
1. Replace the fan.
2. Reset the wear counter using the appropriate button in Startdrive or the web server.
See also: r0277 (Power unit fan wear counter)

Response upon: N: NONE

Acknowl. upon N: NONE

F30043 Power unit: Overvolt 24 V

Message class: Supply voltage fault (overvoltage) (3)

Message value: %1

Component: Power Unit

Propagation: Local

Response: OFF2

Acknowledgment: POWER ON

Cause: For the power unit power supply, the upper threshold has been violated.
Fault value (r0949, interpret decimal):
24 V voltage [0.1 V].

Remedy: Check the power supply of the power unit.

A30044 (F) Power unit: Overvoltage 24 V alarm

Message class: Supply voltage fault (overvoltage) (3)

Message value: %1

Component: Power Unit

Propagation: Local

Response: NONE

Acknowledgment: NONE

Cause: For the power unit power supply, the upper threshold has been violated.
Alarm value (r2124, interpret decimal):
24 V voltage [0.1 V].

Remedy: Check the power supply of the power unit.

Response upon: F: NONE (OFF1, OFF2, OFF3)

Acknowl. upon F: IMMEDIATELY

A30048 (N) Power unit: Fan defective

Message class: External measured value / signal state outside the permissible range (16)
Message value: Fault cause: %1 bin
Component: Power Unit
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The feedback signal of a fan signals a fault, or there is a communication error with one or several fans.
- Fan defective.
- Fan blocked.
- Feedback signal error.

Alarm value (r2124, interpret binary):
Bit 0 = 1: heat sink fan
Bit 1 = 1: fan 1 inside the device
Bit 2 = 1: fan 2 inside the device
Bit 4 = 1: Internal communication error to one or several fans
Bits 16 to 31 are only for internal Siemens diagnostics.

Remedy:
- Check the fan involved.
- If required, replace the fan.
- For communication errors, update the software or replace the power unit.

Note:
If the alarm has been withdrawn, this does not necessarily mean that the cause of the fault has been resolved. It is also possible that the software switched off the fan, and therefore can no longer evaluate the feedback signal.

Response upon: N: NONE
Acknowl. upon N: NONE

F30050 Power unit: 24 V supply overvoltage

Message class: Supply voltage fault (overvoltage) (3)
Message value: -
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: POWER ON
Cause: The voltage monitor signals an overvoltage fault on the module.
Remedy:
- Check the 24 V power supply.
- Replace the module if necessary.

F30051 Power unit: Motor holding brake short-circuit detected

Message class: External measured value / signal state outside the permissible range (16)
Message value: %1
Component: Power Unit
Propagation: Global
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: A short-circuit at the motor holding brake terminals has been detected.
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.

Remedy:
- Check the motor holding brake for a short-circuit.
- Check the connection and cable for the motor holding brake.

F30052	**EEPROM data error**
Message class:	Hardware/software error (1)
Message value:	%1
Component:	Power Unit
Propagation:	Local
Response:	OFF2
Acknowledgment:	POWER ON
Cause:	The EEPROM data of the power unit module are incorrect. Fault value (r0949, interpret hexadecimal): Only for internal Siemens troubleshooting.
Remedy:	Replace the power unit module or update the EEPROM data.

F30053	**FPGA data faulty**
Message class:	Hardware/software error (1)
Message value:	%1
Component:	Power Unit
Propagation:	Local
Response:	NONE
Acknowledgment:	POWER ON
Cause:	The FPGA data of the power unit are faulty. This can be caused, for example, if a firmware update is interrupted.
Remedy:	Replace the power unit or update of the FPGA data by updating the firmware. Note: If this fault occurs after a firmware update, then update the firmware again.

F30055	**Power unit: Braking chopper overcurrent**
Message class:	Braking Module faulted (14)
Message value:	-
Component:	None
Propagation:	Global
Response:	OFF2
Acknowledgment:	IMMEDIATELY
Cause:	An overcurrent condition has occurred in the braking chopper.
Remedy:	- Check whether the braking resistor has a short-circuit. - For an external braking resistor, check whether the resistor may have been dimensioned too small. Note: The braking chopper is only enabled again at pulse enable after the fault has been acknowledged.

A30057	**Power unit: Line asymmetry**
Message class:	Line supply fault (2)
Message value:	%1
Component:	Power Unit
Propagation:	Local
Response:	NONE
Acknowledgment:	NONE

Cause: Frequencies have been detected on the DC link voltage that would suggest line asymmetry or failure of a line phase.
It is also possible that a motor phase has failed.
If these frequencies occur with the same or even higher amplitudes, then after a device-specific time elapses, fault F30011 is output
Alarm value, only for internal Siemens troubleshooting.

Remedy: - Check the line phase connection.
- Check the motor feeder cable connections.
If there is no phase failure of the line or motor, then line asymmetry is involved.
- Reduce the power in order to avoid fault F30011.

F30058 (N, A) Power unit: Heat sink fan defective

Message class: External measured value / signal state outside the permissible range (16)
Message value: Fault cause: %1 bin
Component: Power Unit
Propagation: Global
Response: OFF2 (NONE, OFF1)
Acknowledgment: IMMEDIATELY
Cause: The feedback signal of the heat sink fan signals a fault, or there is a communication error with the fan.
- Fan defective.
- Fan blocked.
- Feedback signal error.
Fault value (r0949, interpret binary):
Value in bits 0 to 15:
0: Feedback signal of the fan signals a fault
1: Internal communication error to the fan
Bits 16 to 31 are only for internal Siemens diagnostics.

Remedy: - Check the heat sink fan and replace if necessary.
- Check the fan power supply and if required switch on.
Note:
- If the fault can be acknowledged, this does not necessarily mean that the cause of the fault has been resolved. It is also possible that the software switched off the fan, and therefore can no longer evaluate the feedback signal.

Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F30059 Power unit: Internal fan 1 defective

Message class: Auxiliary unit faulted (20)
Message value: %1
Component: Power Unit
Propagation: Global
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The feedback signal of internal fan 1 signals a fault, or there is a communication error with the fan.
Fault value (r0949, interpret decimal):
0: Feedback signal of the fan signals a fault
1: Internal communication error to the fan

Remedy: - Check internal fan 1 and replace if necessary.
- For communication errors, update the software or replace the power unit.
Note:
If the fault can be acknowledged, this does not necessarily mean that the cause of the fault has been resolved. It is also possible that the software switched off the fan, and therefore can no longer evaluate the feedback signal.

F30062 Bypass contactor opened under current

Message class: Infeed faulted (13)
Message value: -
Component: Power Unit
Propagation: Global
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The bypass contactor of the precharging unit has been opened under current.
Possible causes:
- A defect at the bypass contactor
Remedy: It is urgently recommended that the components involved are replaced to prevent serious damage to the entire converter line-up.

A30065 (F, N) Voltage measured values not plausible

Message class: Power electronics faulted (5)
Message value: %1
Component: Power Unit
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The voltage measurement is not supplying any plausible values
Alarm value (r2124, interpret bit by bit):
Bit 1: Phase U.
Bit 2: Phase V.
Bit 3: Phase W.
Remedy: - Deactivate voltage measurement (p0247.0 = 0).
- Deactivate flying restart with voltage measurement (p0247.5 = 0) and deactivate fast flying restart (p1780.11 = 0).
Response upon: F: NONE (OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

F30068 Power unit: Undertemperature inverter heat sink

Message class: Power electronics faulted (5)
Message value: %1
Component: Power Unit
Propagation: Drive
Response: OFF2
Acknowledgment: IMMEDIATELY

Cause: The actual inverter heat sink temperature is below the permissible minimum value.
Possible causes:
- The power unit is being operated at an ambient temperature that lies below the permissible range.
- The temperature sensor evaluation is defective.
Fault value (r0949, interpret decimal):
Inverter heat sink temperature [0.1 °C].

Remedy:
- Ensure that higher ambient temperatures prevail.
- Replace the power unit.

A30076 (N) Power unit: Thermal overload braking resistor alarm

Message class: Braking Module faulted (14)
Message value: %1
Component: Power Unit
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: The energy absorbed by the braking resistor has exceeded the alarm threshold of 80 %. If the power unit is still operated in the generator mode, then this can reach the shutdown threshold. To avoid overheating of the braking resistor, use of the braking resistor is inhibited and alarm A30077 is output.
Alarm value (r2124, interpret decimal):
Energy absorbed by the braking resistor [Ws].
Remedy: Reduce the power when generating.
Note:
For a DC link coupling, the generating power of all of the coupled power units must be taken into consideration.
Response upon: N: NONE
Acknowl. upon N: NONE

A30077 (N) Power unit: Thermal overload braking resistor

Message class: Braking Module faulted (14)
Message value: %1
Component: Power Unit
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: The braking resistor is thermally overloaded. This is the reason that its use was inhibited.
Alarm value (r2124, interpret decimal):
Energy absorbed by the braking resistor [Ws].
Remedy: Reduce the power when generating.
Note:
- Once the braking resistor has thermally recovered, it is enabled for further use.
- For a DC link coupling, the generating power of all the coupled power units must be taken into consideration.
Response upon: N: NONE
Acknowl. upon N: NONE

F30081 Power unit: Switching operations too frequent

Message class: Power electronics faulted (5)
Message value: Fault cause: %1 bin
Component: Power Unit
Propagation: Local
Response: OFF2

Acknowledgment: IMMEDIATELY

Cause: The power unit has executed too many switching operations for current limitation.
- Closed-loop control is incorrectly parameterized.
- Motor has a short-circuit or fault to ground (frame).
- U/f operation: Up ramp set too low.
- U/f operation: Rated motor current is significantly higher than that of the power section.
- Infeed: High discharge and post-charging currents for line voltage dip.
- Infeed: High post-charging currents for overload when motoring and DC link voltage dip.
- Infeed: Short-circuit currents at switch-on as there is no line reactor.
- Power cables are not correctly connected.
- Power cables exceed the maximum permissible length.
- Power unit defective.

Fault value (r0949, interpret bitwise):
Bit 0: Phase U.
Bit 1: Phase V.
Bit 2: Phase W.

Remedy:
- Check the motor data, carry out commissioning if required.
- Check the motor circuit configuration (star-delta)
- U/f operation: Increase up ramp.
- U/f operation: Check the rated currents of the motor and power unit.
- Infeed: Check the line quality.
- Infeed: Reduce the motor load.
- Infeed: Correct connection of the line reactor.
- Check the power cable connections.
- Check the power cables for short-circuit or ground fault.
- Check the length of the power cables.
- Replace power unit.

A30096 Power unit: Thermal overload symmetrizing resistor alarm

Message class: External measured value / signal state outside the permissible range (16)

Message value: Fault cause: %1 bin

Component: Power Unit

Propagation: Global

Response: NONE

Acknowledgment: NONE

Cause: The temperature of the symmetrizing resistors has exceeded the alarm threshold.
<<A description still has to be added>>

Remedy: <<A description still has to be added>>

F30097 Power unit: Thermal overload symmetrizing resistor

Message class: External measured value / signal state outside the permissible range (16)

Message value: Fault cause: %1 bin

Component: Power Unit

Propagation: Global

Response: OFF2

Acknowledgment: IMMEDIATELY

Cause: The temperature of the symmetrizing resistors has exceeded the fault threshold.
<<A description still has to be added>>

Remedy: <<A description still has to be added>>

F30105 PU: Actual value sensing fault

Message class: Power electronics faulted (5)
Message value: -
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: At least one incorrect actual value channel was detected on the Power Stack Adapter (PSA).
The incorrect actual value channels are displayed in the following diagnostic parameters.
Remedy: Evaluate the diagnostic parameters.
If the actual value channel is incorrect, check the components and if required, replace.

A30250 (N) Power unit: Overtemperature heat sink inverter

Message class: Power electronics faulted (5)
Message value: -
Component: Power Unit
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The alarm threshold for overtemperature at the inverter heat sink has been reached. The response is set using p0290.
If the heat sink temperature exceeds the value set in p0292[0], then fault F30004 is output.
Remedy: Check the following:
- Is the ambient temperature within the defined limit values?
- Have the load conditions and the duty cycle been appropriately dimensioned?
- Has the cooling failed?

Response upon: N: NONE
Acknowl. upon N: NONE

A30251 (N) Power unit: Rectifier overtemperature

Message class: Power electronics faulted (5)
Message value: -
Variant: G220
Component: Power Unit
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The alarm threshold for the overtemperature of the rectifier has been reached. The response is set using p0290.
If the temperature of the rectifier increases by an additional 5 K, then fault F30037 is triggered.
Remedy: Check the following:
- Is the ambient temperature within the defined limit values?
- Have the load conditions and the duty cycle been appropriately dimensioned?
- Has the fan failed? Check the direction of rotation.
- Has a phase of the line supply failed?
- Is an arm of the supply (incoming) rectifier defective?

Response upon: N: NONE
Acknowl. upon N: NONE

A30252 Power unit: Chip overtemperature alarm

Message class: Power electronics faulted (5)

Message value: Power semiconductor: %1, temperature: [0.01 degrees C] %2

Component: Power Unit

Propagation: Local

Response: NONE

Acknowledgment: NONE

Cause: The chip temperature of the power semiconductor involved has exceeded the permissible alarm threshold.
Note:
- The response is set using p0290.
- If the chip temperature of the power semiconductor involved increases by the value set in p0292[1], then fault F30025 is initiated.

Alarm value (r2124, interpret hexadecimal):
yyyyxxxx hex: yyyy= Power semiconductor, xxxx = Temperature in 0.01°C

Remedy: Check the following:
- Is the ambient temperature within the defined limit values?
- Have the load conditions and the duty cycle been appropriately dimensioned?
- Has the cooling failed?
- Pulse frequency too high?

A30253 Power unit: Overtemperature thermal model alarm

Message class: Power electronics faulted (5)

Message value: Power semiconductor: %1, temperature: [0.01 degrees C] %2

Component: Power Unit

Propagation: Local

Response: NONE

Acknowledgment: NONE

Cause: The temperature difference between the power semiconductor involved and the heat sink has exceeded the permissible alarm threshold.
Depending on p0290, an appropriate overload response is initiated.

Alarm value (r2124, interpret hexadecimal):
yyyyxxxx hex: yyyy= Power semiconductor, xxxx = Temperature in 0.01°C

Remedy: Not necessary.
The alarm is automatically withdrawn once the alarm threshold has been fallen below.
Note:
If the temperature continues to increase, this can result in fault F30024.

A30256 Power unit: Overload I2t (AC)

Message class: Power electronics faulted (5)

Message value: -

Component: Power Unit

Propagation: Global

Response: NONE

Acknowledgment: NONE

Cause: The alarm threshold for I2t overload (95%) of the power unit has been exceeded.
The response parameterized in p0290 becomes active.
See also: r0036 (Power unit overload)

Remedy: - Reduce the continuous load.
- Adapt the duty cycle.
- Check the assignment of the rated currents of the motor and converter.
See also: p0290 (Power unit overload response)

A30257 Power unit: Overload I2t (DC)

Message class: Power electronics faulted (5)
Message value: -
Component: Power Unit
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The alarm threshold for the I2t overload on the DC side of the power unit has been exceeded.
Depending on the selected overload response, the output current and therefore the output frequency can be reduced. If the current reduction is not sufficient to thermally relieve the power unit, then when the fault threshold for overload is reached the drive switches off the power unit and outputs fault F30258.
See also: r0036 (Power unit overload)
Remedy: - Reduce the continuous load.
- Adapt the duty cycle.
See also: p0290 (Power unit overload response)

F30258 Power unit: Overload I2t (DC)

Message class: Power electronics faulted (5)
Message value: %1
Component: Power Unit
Propagation: Global
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The fault threshold for the I2t overload on the DC side of the power unit has been exceeded.
The permissible duty cycle or the continuous load was not maintained.
Fault value (r0949, interpret decimal):
I2t (DC) [100 % = 16384]
See also: r0036 (Power unit overload)
Remedy: - Reduce the continuous load.
- Adapt the duty cycle.
See also: r0206 (Rated power unit power), p0307 (Rated motor power)

A30259 Braking resistor value too low

Message class: Braking Module faulted (14)
Message value: %1
Component: Power Unit
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The braking resistor value used in p0216 is too low.
This can result in an excessively high braking current.

Alarm value (r2124, interpret decimal):
Minimum limit value of the braking resistor [0.1 Ohm]
See also: p0216 (Braking resistance value)

Remedy: - Use a braking resistor with the appropriate resistance value
- Observe the product documentation

F30260 Power unit: Fault in the driver supply for the power semiconductor

Message class: Power electronics faulted (5)
Message value: -
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: A fault has occurred in the driver supply of the power semiconductor.
Remedy: There is a hardware defect. The device must be replaced.

F30262 Power unit: Braking chopper defective

Message class: Power electronics faulted (5)
Message value: -
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The braking chopper is defective.
Remedy: Replace the power unit.

F30263 Power unit: Braking chopper upper defective

Message class: Power electronics faulted (5)
Message value: -
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The upper braking chopper is defective.
Remedy: Replace the power unit.

F30264 Power unit: Braking chopper inhibited due to implausible DC link voltage

Message class: Braking Module faulted (14)
Message value: %1
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The braking chopper was inhibited because the unloaded DC link voltage continuously reaches or exceeds the chopper activation threshold. This prevents the braking chopper from being permanently active and possibly damaged.

Possible causes:
The value of parameter p0210 does not match the line voltage.

Fault value (r0949, interpret decimal): DC link voltage [V]
Remedy: Check the parameterization of parameter p0210.

F30265 Power unit: Line voltage failure detected

Message class: Power electronics faulted (5)
Message value: -
Component: Power Unit
Propagation: Local
Response: OFF3
Acknowledgment: IMMEDIATELY
Cause: Line voltage failure was detected
Remedy:
- Switch on the line voltage.
- To increase the degree of ruggedness, the delay time in p3234 can be increased.
- If necessary, line voltage failure detection can be deactivated using p2149.16.

See also: p2149 (Monitoring configuration)

A30266 Power unit: Required modulator setting cannot be implemented

Message class: Hardware/software error (1)
Message value: %1
Component: Power Unit
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The required modulator setting was not able to be implemented. This can involve some undesirable effects; for example, unexpectedly high switching losses can occur or the current controller bandwidth can be reduced.

Alarm value (r2124, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Remedy:
- Change the pulse frequency in parameter p1800.
- Carry out a POWER ON (switch-off/switch-on).

A30267 Power unit: Active power overload

Message class: Power electronics faulted (5)
Message value: -
Component: Power Unit
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The alarm threshold for the active power overload of the power unit has been exceeded. Depending on the selected overload response, the output current and therefore the output frequency can be reduced. If the current reduction is not sufficient to thermally relieve the power unit, then when the fault threshold for overload is reached the drive switches off the power unit and outputs fault F30268.

See also: r0036 (Power unit overload)
Remedy:
- Reduce the continuous load.
- Adapt the duty cycle.

See also: p0290 (Power unit overload response)

F30268 Power unit: Active power overload

Message class: Power electronics faulted (5)
Message value: %1
Component: Power Unit
Propagation: Global
Response: OFF2

Acknowledgment: IMMEDIATELY
Cause: The fault threshold for the active power overload of the power unit has been exceeded.
The permissible duty cycle or the continuous load was not maintained.
Fault value (r0949, interpret decimal):
Active power [100 % = 16384]
See also: r0036 (Power unit overload)
Remedy: - Reduce the continuous load.
- Adapt the duty cycle.
See also: r0206 (Rated power unit power), p0307 (Rated motor power)

A30269 Power unit: Driver supply power semiconductor overloaded

Message class: Power electronics faulted (5)
Message value: -
Component: Power Unit
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: A fault has occurred in the driver supply for the power semiconductor.
Remedy: Frequent occurrence can mean that there is a hardware defect. Observe fault message 30022.

A30502 Power unit: DC link overvoltage

Message class: DC link overvoltage (4)
Message value: %1
Component: Power Unit
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: The power unit has detected overvoltage in the DC link on a pulse inhibit.
- Device supply voltage too high.
- Line reactor incorrectly dimensioned.
Alarm value (r2124, interpret decimal):
DC link voltage [1 bit = 100 mV].
See also: r0070 (Actual DC link voltage)
Remedy: - Check the device supply voltage (p0210).
- Check the dimensioning of the line reactor.
See also: p0210 (Device supply voltage)

C30603 SI: Module temperature - limit value exceeded

Message class: Safety monitoring channel has identified an error (10)
Message value: -
Component: None
Propagation: Global
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: A safe monitoring function has detected that the module temperature has exceeded a limit value. STO (Safe Torque Off) was initiated to maintain the safe state.
Remedy: - Check the ambient air temperature.
- Check the module fan.
- Operate the module in the permissible range.

F30604 SI: Safety EEPROM data error

Message class: Safety monitoring channel has identified an error (10)
Message value: %1
Component: Power Unit
Propagation: Global
Response: OFF2
Acknowledgment: POWER ON
Cause: Safety relevant EEPROM data are not correct.
This message results in an STO (Safe Torque Off).

Message value (r60049, interpret decimal): Only for internal Siemens fault diagnostics.
Remedy: Replace the module

A30605 SI: Checksum error has occurred

Message class: Safety monitoring channel has identified an error (10)
Message value: %1
Component: None
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: A checksum error (CRC error) has occurred in the converter program memory.
Remedy: - Carry out a POWER ON (switch-off/switch-on).
- Upgrade firmware to later version.
- Contact Technical Support.

F30606 SI: Safety HW version of the Motor Module incorrect

Message class: Safety monitoring channel has identified an error (10)
Message value: %1
Component: Power Unit
Propagation: Global
Response: OFF2
Acknowledgment: POWER ON
Cause: Safety relevant hardware version is not compatible with this software.
This fault results in an STO (Safe Torque Off).

Fault value (r0949, interpret decimal): Only for internal Siemens fault diagnostics.
Remedy: Update the software or exchange the module for this software.

C30649 SI: Internal software error

Message class: Hardware/software error (1)
Message value: Module: %1, line: %2
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY

Cause: An internal error has occurred in the Safety Integrated software.
Note:
This message results in an STO (Safe Torque Off) that cannot be acknowledged.
Message value (r60049, interpret hexadecimal):
Only for internal Siemens troubleshooting.

Remedy:
- Carry out a POWER ON (switch-off/switch-on) for all components.
- Repeat commissioning of "Safety Integrated" and carry out a POWER ON.
- Upgrade firmware to later version.
- Contact Technical Support.
- Replace hardware component.

N30800 (F) Power unit: Group signal

Message class: Power electronics faulted (5)
Message value: -
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: NONE
Cause: The power unit has detected at least one fault.
Remedy: Evaluate the other messages that are presently available.
Response upon: F: OFF2
Acknowl. upon F: IMMEDIATELY

F30801 Power unit DRIVE-CLiQ: Sign-of-life missing

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Component: Control Unit (CU)
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: There is a DRIVE-CLiQ communication error between the converter and the power unit involved.
The computing time load might be too high.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

xx = 0A hex (10 dec):
The sign-of-life bit in the received telegram is not set.

Remedy:
- Deselect functions that are not required.
- Replace the component involved (power unit, converter).

F30802 Power unit: Time slice overflow

Message class: Hardware/software error (1)
Message value: %1
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY

Cause: A time slice overflow has occurred.
Fault value (r0949, interpret decimal):
xx: Time slice number
Remedy: - Carry out a POWER ON (switch-off/switch-on) for all components.
- Upgrade firmware to later version.
- Contact Technical Support.

F30804 (N, A) Power unit: Checksum error occurred

Message class: Hardware/software error (1)
Message value: %1
Component: Power Unit
Propagation: Local
Response: OFF2 (OFF1, OFF3)
Acknowledgment: IMMEDIATELY
Cause: A checksum error (CRC error) has occurred for the power unit.
Remedy: - Carry out a POWER ON (switch-off/switch-on) for all components.
- Upgrade firmware to later version.
- Contact Technical Support.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F30805 Power unit: EEPROM checksum error

Message class: Hardware/software error (1)
Message value: %1
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: Internal parameter data is corrupted.
Fault value (r0949, interpret hexadecimal):
01: EEPROM access error.
02: Too many blocks in the EEPROM.
Remedy: Replace the module.

F30809 Power unit: Switching information not valid

Message class: Hardware/software error (1)
Message value: -
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: For 3P gating unit, the following applies:
The last switching status word in the setpoint telegram is identified by the end ID. Such an end ID was not found.
Remedy: - Carry out a POWER ON (switch-off/switch-on) for all components.
- Upgrade firmware to later version.
- Contact Technical Support.

F30810 Power unit: Watchdog timer expired

Message class: Hardware/software error (1)
Message value: -
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The watchdog timer has expired. This can only be caused by a fatal software error.
Remedy: - Carry out a POWER ON (switch-off/switch-on) for all components.
- Upgrade firmware to later version.
- Contact Technical Support.

F30815 Power unit: Processor clock signal error

Message class: Hardware/software error (1)
Message value: -
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: POWER ON
Cause: The processor clock signal monitoring has signaled an error. This can involve the signal itself or its PLL.
Remedy: - Replace the hardware.
- Contact Technical Support.

F30820 Power unit DRIVE-CLiQ: Telegram error

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY

Cause: There is a DRIVE-CLiQ communication error between the converter and the power unit involved.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

Error cause:
1 (= 01 hex):
Checksum error (CRC error).
2 (= 02 hex):
Telegram is shorter than specified in the length byte or in the receive list.
3 (= 03 hex):
Telegram is longer than specified in the length byte or in the receive list.
4 (= 04 hex):
The length of the received telegram does not match the receive list.
5 (= 05 hex):
The type of the received telegram does not match the receive list.
6 (= 06 hex):
The address of the component in the telegram and in the receive list do not match.
7 (= 07 hex):
A SYNC telegram is expected - but the received telegram is not a SYNC telegram.
8 (= 08 hex):
No SYNC telegram is expected - but the received telegram is one.
9 (= 09 hex):
The error bit in the received telegram is set.
16 (= 10 hex):
The received telegram is too early.

Remedy:
- Carry out a POWER ON (switch-off/switch-on).
- Check the electrical cabinet design and cable routing for EMC compliance.
- Check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).

F30835 Power unit DRIVE-CLiQ: Cyclic data transfer error

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY

Cause: There is a DRIVE-CLiQ communication error between the converter and the power unit involved. The nodes do not send and receive in synchronism.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

Error cause:
33 (= 21 hex):
The cyclic telegram has not been received.
34 (= 22 hex):
Timeout in the telegram receive list.
64 (= 40 hex):
Timeout in the telegram send list.

Remedy:
- Carry out a POWER ON.
- Replace the component involved (power unit, converter).

F30836 Power unit DRIVE-CLiQ: Send error for DRIVE-CLiQ data

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY

Cause: There is a DRIVE-CLiQ communication error between the converter and the power unit involved. Data were not able to be sent.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

Error cause:
65 (= 41 hex):
Telegram type does not match send list.

Remedy: Carry out a POWER ON.

F30837 Power unit DRIVE-CLiQ: Component fault

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY

Cause: Fault detected on the DRIVE-CLiQ component involved. Faulty hardware cannot be excluded.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

Error cause:
32 (= 20 hex):
Error in the telegram header.
35 (= 23 hex):
Receive error: The telegram buffer memory contains an error.
66 (= 42 hex):
Send error: The telegram buffer memory contains an error.
67 (= 43 hex):
Send error: The telegram buffer memory contains an error.

Remedy:
- Check the electrical cabinet design and cable routing for EMC compliance.
- Replace the component involved.

F30845 Power unit DRIVE-CLiQ: Cyclic data transfer error

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: There is a DRIVE-CLiQ communication error between the converter and the power unit involved.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

Error cause:
11 (= 0B hex):
Synchronization error during alternating cyclic data transfer.

Remedy: Carry out a POWER ON (switch-off/switch-on).

F30850 Power unit: Internal software error

Message class: Hardware/software error (1)
Message value: %1
Component: Power Unit
Propagation: Local
Response: OFF1 (NONE, OFF2, OFF3)
Acknowledgment: POWER ON
Cause: An internal software error has occurred in the power unit.
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.

Remedy:
- Replace power unit.
- If required, upgrade the firmware in the power unit.
- Contact Technical Support.

F30851 Power unit DRIVE-CLiQ: Sign-of-life missing

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Component: Power Unit
Propagation: Local
Response: OFF2 (NONE, OFF1, OFF3)
Acknowledgment: IMMEDIATELY
Cause: There is a DRIVE-CLiQ communication error from the power unit involved to the converter.
The DRIVE-CLiQ component did not set the sign-of-life to the converter.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

xx = 10 (0A hex):
The sign-of-life bit in the received telegram is not set.

Remedy:
- Deselect functions that are not required.
- Replace the component involved (power unit, converter).

A30853 Power unit: Sign-of-life error cyclic data

Message class: General drive fault (19)
Message value: -
Component: Control Unit (CU)
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: The power unit has detected that the cyclic setpoint telegrams of the converter have not been updated on time.
Remedy:
- Check the converter and if required replace.

F30860 Power unit DRIVE-CLiQ: Telegram error

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY

Cause: There is a DRIVE-CLiQ communication error from the power unit involved to the converter.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex: yy = component number, xx = error cause

Error cause:
1 (= 01 hex):
Checksum error (CRC error).
2 (= 02 hex):
Telegram is shorter than specified in the length byte or in the receive list.
3 (= 03 hex):
Telegram is longer than specified in the length byte or in the receive list.
4 (= 04 hex):
The length of the received telegram does not match the receive list.
5 (= 05 hex):
The type of the received telegram does not match the receive list.
6 (= 06 hex):
The address of the power unit in the telegram and in the receive list do not match.
9 (= 09 hex):
The DRIVE-CLiQ communication from the DRIVE-CLiQ component involved to the converter signals that the supply voltage has failed.
16 (= 10 hex):
The received telegram is too early.
17 (= 11 hex):
CRC error and the received telegram is too early.
18 (= 12 hex):
The telegram is shorter than that specified in the length byte or in the receive list and the received telegram is too early.
19 (= 13 hex):
The telegram is longer than that specified in the length byte or in the receive list and the received telegram is too early.
20 (= 14 hex):
The length of the received telegram does not match the receive list and the received telegram is too early.
21 (= 15 hex):
The type of the received telegram does not match the receive list and the received telegram is too early.
22 (= 16 hex):
The address of the power unit in the telegram and in the receive list does not match and the received telegram is too early.
25 (= 19 hex):
The error bit in the received telegram is set and the received telegram is too early.

Remedy:
- Carry out a POWER ON (switch-off/switch-on).
- Check the electrical cabinet design and cable routing for EMC compliance.
- Check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).

F30875 Power unit: Supply voltage failed

Message class: Supply voltage fault (undervoltage) (3)
Message value: Component number: %1, fault cause: %2
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY

Cause: The DRIVE-CLiQ communication from the DRIVE-CLiQ component involved to the converter signals that the supply voltage has failed.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

Error cause:
9 (= 09 hex):
The supply voltage for the component has failed.

Remedy:
- Check the supply voltage wiring (interrupted cable, contacts, ...).
- Check the dimensioning of the 24 V supply, check cable lengths.

F30885 Power unit DRIVE-CLiQ: Cyclic data transfer error

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: There is a DRIVE-CLiQ communication error from the power unit involved to the converter.
The nodes do not send and receive in synchronism.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

Error cause:
26 (= 1A hex):
Sign-of-life bit in the received telegram not set and the received telegram is too early.
33 (= 21 hex):
The cyclic telegram has not been received.
34 (= 22 hex):
Timeout in the telegram receive list.
64 (= 40 hex):
Timeout in the telegram send list.
98 (= 62 hex):
Error at the transition to cyclic operation.

Remedy:
- Check the supply voltage of the component involved.
- Carry out a POWER ON.
- Replace the component involved.

F30886 Power unit DRIVE-CLiQ: Error when sending DRIVE-CLiQ data

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY

Cause: There is a DRIVE-CLiQ communication error from the power unit involved to the converter.
Data were not able to be sent.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

Error cause:
65 (= 41 hex):
The telegram type does not match send list

Remedy: Carry out a POWER ON.

F30887 Power unit DRIVE-CLiQ: Component fault

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: Fault detected on the DRIVE-CLiQ component (power unit) involved. Faulty hardware cannot be excluded.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

Error cause:
32 (= 20 hex):
Error in the telegram header.
35 (= 23 hex):
Receive error: The telegram buffer memory contains an error.
66 (= 42 hex):
Send error: The telegram buffer memory contains an error.
67 (= 43 hex):
Send error: The telegram buffer memory contains an error.
96 (= 60 hex):
Response received too late during runtime measurement.
97 (= 61 hex):
Time taken to exchange characteristic data too long.

Remedy: - Check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
- Check the electrical cabinet design and cable routing for EMC compliance.
- Replace the component involved.

F30895 Power unit DRIVE-CLiQ: Alternating cyclic data transfer error

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Component: Power Unit
Propagation: Local
Response: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Acknowledgment: IMMEDIATELY

Cause: There is a DRIVE-CLiQ communication error from the power unit involved to the converter.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

Error cause:
11 (= 0B hex):
Synchronization error during alternating cyclic data transfer.

Remedy: Carry out a POWER ON (switch-off/switch-on).

F30896 Power unit DRIVE-CLiQ: Component properties inconsistent

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1
Component: Power Unit
Propagation: Local
Response: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Acknowledgment: IMMEDIATELY
Explanation of the message value: For %1
Component in target topology
Cause: The properties of the DRIVE-CLiQ component (power unit), specified by the fault value, have changed in an incompatible fashion with respect to the properties when booted. One cause can be, e.g. that a DRIVE-CLiQ cable or DRIVE-CLiQ component has been replaced.
Fault value (r0949, interpret decimal):
Component number.
Remedy: - Carry out a POWER ON.
- When a component is replaced, the same component type and if possible the same firmware version should be used.
- When a cable is replaced, only use cables whose length is the same as or as close as possible to the length of the original cable (ensure compliance with the maximum cable length).

F30899 (N, A) Power unit: Unknown fault

Message class: Power electronics faulted (5)
Message value: New message: %1
Component: Power Unit
Propagation: Local
Response: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowledgment: IMMEDIATELY
Cause: A fault occurred on the power unit, which cannot be interpreted by the converter firmware.
This can occur if the firmware on this component is more recent than the converter firmware.
Fault value (r0949, interpret decimal):
Fault number.
Note:
If required, the significance of this new fault can be read about in a more recent description of the converter.
Remedy: - Replace the firmware on the power unit by an older firmware version.
- Upgrade the converter firmware.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F30903 Power unit: I2C bus error occurred

Message class: Hardware/software error (1)
Message value: %1
Component: Power Unit
Propagation: Local
Response: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowledgment: IMMEDIATELY
Cause: Communications error with an EEPROM or an analog/digital converter.
Fault value (r0949, interpret hexadecimal):
80000000 hex:
- Internal software error.
00000001 hex ... 0000FFFF hex:
- Module fault.
Remedy: For fault value = 80000000 hex:
- Upgrade firmware to later version.
For fault value = 00000001 hex ... 0000FFFF hex:
- Replace the module.

F30950 Power unit: Internal software error

Message class: Hardware/software error (1)
Message value: %1
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: POWER ON
Cause: An internal software error has occurred.
Fault value (r0949, interpret decimal):
Information about the fault source.
Only for internal Siemens troubleshooting.
Remedy: - If necessary, upgrade the firmware in the power unit to a later version.
- Contact Technical Support.

A30999 (F, N) Power unit: Unknown alarm

Message class: Power electronics faulted (5)
Message value: New message: %1
Component: Power Unit
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: An alarm has occurred on the power unit, which cannot be interpreted by the converter firmware.
This can occur if the firmware on this component is more recent than the firmware on the converter.
Alarm value (r2124, interpret decimal):
Alarm number.
Note:
If required, the significance of this new alarm can be read about in a more recent description of the converter.
Remedy: - Replace the firmware on the power unit by an older firmware version.
- Upgrade the converter firmware.
Response upon: F: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE

Acknowl. upon N: NONE

F31100 (N, A) Motor encoder: Zero mark distance error

Message class: Position/speed actual value incorrect or not available (11)

Message value: %1

Component: Encoder 1

Propagation: Local

Response: ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, STOP2)

Acknowledgment: PULSE INHIBIT

Cause: The measured zero mark distance does not correspond to the parameterized zero mark distance.
For distance-coded encoders, the zero mark distance is determined from zero marks detected pairs. This means that if a zero mark is missing, depending on the pair generation, this cannot result in a fault and also has no effect in the system.
The zero mark distance for zero mark monitoring is set in p0425.
Fault value (r0949, interpret decimal):
Last measured zero mark distance in increments (4 increments = 1 encoder pulse).
The sign designates the direction of motion when detecting the zero mark distance.
See also: p0491 (Motor encoder fault response ENCODER)

Remedy:
- Check that the encoder cables are routed in compliance with EMC.
- Check the plug connections.
- Check the encoder type (encoder with equidistant zero marks).
- Adapt the parameter for the clearance between zero marks (p0425).
- If message is output above the speed threshold, reduce filter time if necessary (p0438).
- Replace the encoder or encoder cable.

Response upon: N: NONE

Acknowl. upon N: NONE

Response upon: A: NONE

Acknowl. upon A: NONE

F31101 (N, A) Motor encoder: Zero mark failed

Message class: Position/speed actual value incorrect or not available (11)

Message value: %1

Component: Encoder 1

Propagation: Local

Response: ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, STOP2)

Acknowledgment: PULSE INHIBIT

Cause: The 1.5 x parameterized zero mark distance was exceeded.
The zero mark distance for zero mark monitoring is set in p0425.
Fault value (r0949, interpret decimal):
Number of increments after POWER ON or since the last zero mark that was detected (4 increments = 1 encoder pulse).
See also: p0491 (Motor encoder fault response ENCODER)

Remedy:
- Check that the encoder cables are routed in compliance with EMC.
- Check the plug connections.
- Check the encoder type (encoder with equidistant zero marks).
- Adapt the parameter for the clearance between zero marks (p0425).
- If message is output above the speed threshold, reduce filter time if necessary (p0438).
- When p0437.1 is active, check p4686.
- Replace the encoder or encoder cable.

Response upon: N: NONE

Acknowl. upon N: NONE

Response upon: A: NONE
Acknowl. upon A: NONE

F31103 (N, A) Motor encoder: Zero mark signal level (track R) out of tolerance

Message class: Position/speed actual value incorrect or not available (11)
Message value: R track: %1
Component: Encoder 1
Propagation: Global
Response: ENCODER (IASC/DCBRK, NONE)
Acknowledgment: PULSE INHIBIT
Cause: The zero mark signal level (track R) does not lie within the tolerance bandwidth for the motor encoder.
The fault can be initiated when the unipolar voltage level is exceeded (RP/RN) or if the differential amplitude is undershot.
Fault value (r0949, interpret hexadecimal):
yyyyxxxx hex: yyyy = 0, xxxx = Signal level, track R (16 bits with sign)
The response thresholds of the unipolar signal levels of the encoder are between < 1400 mV and > 3500 mV.
The response threshold for the differential signal level of the encoder is < -1600 mV.
A signal level of 500 mV peak value corresponds to the numerical value 5333 hex = 21299 dec.
Note:
The analog value of the amplitude error is not measured at the same time with the hardware fault output by the Sensor Module.
The fault value can only be represented between -32768 ... 32767 dec (-770 ... 770 mV).
The signal level is not evaluated unless the following conditions are satisfied:
- Sensor Module properties available (r0459.31 = 1).
- Monitoring active (p0437.31 = 1).
See also: p0491 (Motor encoder fault response ENCODER)
Remedy: - Check the speed range; frequency characteristic (amplitude characteristic) of the measuring equipment might not be sufficient for the speed range
- Check that the encoder cables and shielding are routed in compliance with EMC.
- Check the plug connections and contacts of the encoder cable.
- Check the encoder type (encoder with zero marks).
- Check whether the zero mark is connected and the signal cables RP and RN have been connected correctly (not connected with the incorrect polarity).
- Replace the encoder cable.
- If the coding disk is soiled or the lighting aged, replace the encoder.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F31110 (N, A) Motor encoder: Serial communication faulted

Message class: Position/speed actual value incorrect or not available (11)
Message value: Fault cause: %1 bin
Component: Encoder 1
Propagation: Local
Response: ENCODER (IASC/DCBRK, NONE)
Acknowledgment: PULSE INHIBIT

Cause:

There is an error in the transfer of the serial communication protocol between the encoder and internal or external evaluation module.

Fault value (r0949, interpret binary):

For an EnDat 2.1 encoder, the significance of the fault value is as follows:

Bit 0: Alarm bit in the position protocol.

Bit 1: Incorrect quiescent level on the data line.

Bit 2: Encoder does not respond (does not supply a start bit within 50 ms).

Bit 3: CRC error: The checksum in the protocol from the encoder does not match the data.

Bit 4: Encoder acknowledgment error: The encoder incorrectly understood the task (request) or cannot execute it.

Bit 5: Internal error in the serial driver: An illegal mode command was requested.

Bit 6: Timeout when cyclically reading.

Bit 7: Timeout for the register communication.

Bit 8: Protocol is too long (e.g. > 64 bits).

Bit 9: Receive buffer overflow.

Bit 10: Frame error when reading twice.

Bit 11: Parity error.

Bit 12: Data line signal level error during the monoflop time.

Bit 13: Data line incorrect.

Bit 14: Register communication error.

Bit 15: Internal communication error.

Note:

For an EnDat 2.2 encoder, the significance of the fault value for F3x135 (x = 1, 2, 3) is described.

Remedy:
For fault value, bit 0 = 1:
- Encoder defect F31111 may provide further details.
For fault value, bit 1 = 1:
- Incorrect encoder type / replace the encoder or encoder cable.
For fault value, bit 2 = 1:
- Incorrect encoder type / replace the encoder or encoder cable.
For fault value, bit 3 = 1:
- EMC / connect the cable shield, replace the encoder or encoder cable.
For fault value, bit 4 = 1:
- EMC / connect the cable shield, replace the encoder or encoder cable, replace the Sensor Module.
For fault value, bit 5 = 1:
- EMC / connect the cable shield, replace the encoder or encoder cable, replace the Sensor Module.
For fault value, bit 6 = 1:
- Update Sensor Module firmware.
For fault value, bit 7 = 1:
- Incorrect encoder type / replace the encoder or encoder cable.
For fault value, bit 8 = 1:
- Check parameterization (p0429.2).
For fault value, bit 9 = 1:
- EMC / connect the cable shield, replace the encoder or encoder cable, replace the Sensor Module.
For fault value, bit 10 = 1:
- Check parameterization (p0429.2, p0449).
For fault value, bit 11 = 1:
- Check parameterization (p0436).
For fault value, bit 12 = 1:
- Check parameterization (p0429.6).
For fault value, bit 13 = 1:
- Check data line.
For fault value, bit 14 = 1:
- Incorrect encoder type / replace the encoder or encoder cable.

Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F31111 (N, A) Motor encoder: Encoder signals an internal error (detailed information)

Message class: Position/speed actual value incorrect or not available (11)
Message value: Fault cause: %1 bin, additional information: %2
Component: Encoder 1
Propagation: Local
Response: ENCODER (IASC/DCBRK, NONE)
Acknowledgment: PULSE INHIBIT

Cause: The encoder error word provides detailed information (error bit).
For p0404.8 = 0, the following applies:
Fault value for internal Siemens troubleshooting.
For p0404.8 = 1, the following applies:
Fault value (r0949, interpret binary):
yyyyxxxx hex: yyyy = supplementary information, xxxx = fault cause
yyyy = 0:
Bit 0: Lighting system failed.
Bit 1: Signal amplitude too low.
Bit 2: Position value incorrect.
Bit 3: Encoder power supply overvoltage condition.
Bit 4: Encoder power supply undervoltage condition.
Bit 5: Encoder power supply overcurrent condition.
Bit 6: The battery must be changed.
See also: p0491 (Motor encoder fault response ENCODER)

Remedy: For yyyy = 0:
For fault value, bit 0 = 1:
Encoder is defective. Replace the encoder or motor.
For fault value, bit 1 = 1:
Encoder is defective. Replace the encoder or motor.
For fault value, bit 2 = 1:
Encoder is defective. Replace the encoder or motor.
For fault value, bit 3 = 1:
5 V supply voltage fault.
When using an SMC: Check the plug-in cable between the encoder and SMC or replace the SMC.
Otherwise: Replace the encoder or motor.
For fault value, bit 4 = 1:
5 V supply voltage fault.
When using an SMC: Check the plug-in cable between the encoder and SMC or replace the SMC.
Otherwise: Replace the encoder or motor.
For fault value, bit 5 = 1:
Encoder is defective. Replace the encoder or motor.
For fault value, bit 6 = 1:
The battery must be changed (only for encoders with battery backup).
For yyyy = 1:
Encoder is defective. Replace encoder.

Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F31112 (N, A) Motor encoder: Encoder signals an internal error

Message class: Position/speed actual value incorrect or not available (11)
Message value: %1
Component: Encoder 1
Propagation: Local
Response: ENCODER (IASC/DCBRK, NONE)
Acknowledgment: PULSE INHIBIT
Cause: The encoder signals an internal error via serial protocol.
Fault value (r0949, interpret binary):
Bit 0: Fault bit in the position protocol.

Remedy: For fault value, bit 0 = 1:
In the case of an EnDat encoder, F31111 may provide further details.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F31115 (N, A) Motor encoder: Signal level track A or B too low

Message class: Position/speed actual value incorrect or not available (11)
Message value: A track: %1, B track: %2
Component: Encoder 1
Propagation: Local
Response: ENCODER (IASC/DCBRK, NONE)
Acknowledgment: PULSE INHIBIT
Cause: The signal level (root from A^2 + B^2) of the encoder falls below the permissible limit value.
Fault value (r0949, interpret hexadecimal):
yyyyxxxx hex:
yyyy = Signal level, track B (16 bits with sign).
xxxx = Signal level, track A (16 bits with sign).
The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %).
The response threshold is < 170 mV (input frequency <= 256 kHz) or < 120 mV (input frequency > 256 kHz).
A signal level of 500 mV peak value corresponds to the numerical value 5333 hex = 21299 dec.
Note for Sensor Modules for resolvers (e.g. SMC10):
The nominal signal level is at 2900 mV (2.0 Vrms). The response threshold is < 1070 mV.
A signal level of 2900 mV peak value corresponds to the numerical value 6666 hex = 26214 dec.
Note:
The analog values of the amplitude error are not measured at the same time with the hardware fault output by the Sensor Module.
See also: p0491 (Motor encoder fault response ENCODER)
Remedy: - Check that the encoder cables and shielding are routed in compliance with EMC.
- Check the plug connections.
- Replace the encoder or encoder cable.
- Check the Sensor Module (e.g. contacts).
The following applies to measuring systems without their own bearing system:
- Adjust the scanning head and check the bearing system of the measuring wheel.
The following applies for measuring systems with their own bearing system:
- Ensure that the encoder housing is not subject to any axial force.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F31116 (N, A) Motor encoder: Signal level track A or B too low

Message class: Position/speed actual value incorrect or not available (11)
Message value: A track: %1, B track: %2
Component: Encoder 1
Propagation: Local
Response: ENCODER (IASC/DCBRK, NONE)
Acknowledgment: IMMEDIATELY

Cause: The signal level of the rectified encoder signals A and B of the encoder fall below the permissible limit value.
Fault value (r0949, interpret hexadecimal):
yyyyxxxx hex:
yyyy = Signal level, track B (16 bits with sign).
xxxx = Signal level, track A (16 bits with sign).
The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %).
The response threshold is < 130 mV.
A signal level of 500 mV peak value corresponds to the numerical value 5333 hex = 21299 dec.
Note:
The analog values of the amplitude error are not measured at the same time with the hardware fault output by the Sensor Module.
See also: p0491 (Motor encoder fault response ENCODER)

Remedy:
- Check that the encoder cables and shielding are routed in compliance with EMC.
- Check the plug connections.
- Replace the encoder or encoder cable.
- Check the Sensor Module (e.g. contacts).

Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F31117 (N, A) Motor encoder: Inversion signal A/B/R error

Message class: Position/speed actual value incorrect or not available (11)
Message value: Fault cause: %1 bin
Component: Encoder 1
Propagation: Local
Response: ENCODER (IASC/DCBRK, NONE)
Acknowledgment: IMMEDIATELY

Cause: For a square-wave encoder (bipolar, double ended) signals A*, B* and R* are not inverted with respect to signals A, B and R.
Fault value (r0949, interpret binary):
Bits 0 ... 15: Only for internal Siemens troubleshooting.
Bit 16: Error track A.
Bit 17: Error track B.
Bit 18: Error track R.
Note:
For SMC30 (only Article No. 6SL3055-0AA00-5CA0 and 6SL3055-0AA00-5CA1), CUA32 and CU310-2, the following applies:
A square-wave encoder without track R is used and track monitoring (p0405.2 = 1) is activated.
See also: p0491 (Motor encoder fault response ENCODER)

Remedy:
- Check the encoder/cable.
- Does the encoder supply signals and the associated inverted signals?
Note:
For SMC30 (only Article Number 6SL3055-0AA00-5CA0 and 6SL3055-0AA00-5CA1), the following applies:
- Check the setting of p0405 (p0405.2 = 1 is only possible if the encoder is connected at X520).
For a square-wave encoder without track R, the following jumpers must be set for the connection at X520 (SMC30), X220 (CUA32) or X23 (CU310-2):
- Pin 10 (homing signal R) <--> pin 7 (encoder power supply, ground)
- Pin 11 (homing signal R inverted) <--> pin 4 (encoder power supply)

Response upon: N: NONE
Acknowl. upon N: NONE

Response upon: A: NONE
Acknowl. upon A: NONE

F31118 (N, A) Motor encoder: Speed change not plausible

Message class: Position/speed actual value incorrect or not available (11)
Message value: %1
Component: Encoder 1
Propagation: Local
Response: ENCODER (IASC/DCBRK, NONE)
Acknowledgment: PULSE INHIBIT
Cause: For an HTL/TTL encoder, the speed change has exceeded the value in p0492 over several sampling cycles.
The change to the averaged speed actual value - If applicable - Is monitored in the current controller sampling time.
As fault response, the motor encoder can result in the switchover to encoderless operation.
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.
See also: p0491 (Motor encoder fault response ENCODER), p0492 (Maximum speed difference per sampling cycle)
Remedy: - Check the tachometer feeder cable for interruptions.
- Check the grounding of the tachometer shielding.
- If required, increase the maximum speed difference per sampling cycle (p0492).
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F31120 (N, A) Motor encoder: Encoder power supply fault

Message class: Position/speed actual value incorrect or not available (11)
Message value: Fault cause: %1 bin
Component: Encoder 1
Propagation: Local
Response: ENCODER (IASC/DCBRK, NONE)
Acknowledgment: PULSE INHIBIT
Cause: An encoder power supply fault was detected.
Fault value (r0949, interpret binary):
Bit 0: Undervoltage condition on the sense line.
Bit 1: Overcurrent condition for the encoder power supply.
Bit 2: Overcurrent condition for encoder power supply on cable resolver excitation negative.
Bit 3: Overcurrent condition for encoder power supply on cable resolver excitation positive.
Bit 4: The 24 V power supply via the inverter is overloaded.
Bit 5: Overcurrent at the EnDat connection of the converter.
Bit 6: Overvoltage at the EnDat connection of the converter.
Bit 7: Hardware fault at the EnDat connection of the converter.
Note:
If the encoder cables 6FX2002-2EQ00-.... and 6FX2002-2CH00-.... are interchanged, this can result in the encoder being destroyed because the pins of the operating voltage are reversed.
See also: p0491 (Motor encoder fault response ENCODER)

Remedy: For fault value, bit 0 = 1:
- Correct encoder cable connected?
- Check the plug connections of the encoder cable.
- SMC30: Check the parameterization (p0404.22).

For fault value, bit 1 = 1:
- Correct encoder cable connected?
- Replace the encoder or encoder cable.

For fault value, bit 2 = 1:
- Correct encoder cable connected?
- Replace the encoder or encoder cable.

For fault value, bit 3 = 1:
- Correct encoder cable connected?
- Replace the encoder or encoder cable.

For fault value, bit 5 = 1:
- Measuring unit correctly connected at the converter?
- Replace the measuring unit or the cable to the measuring unit.

For fault value, bit 6, 7 = 1:
- Replace the defective EnDat 2.2 converter.

Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F31121 (N, A) Motor encoder: Determined commutation position incorrect

Message class: Position/speed actual value incorrect or not available (11)
Message value: -
Component: Encoder 1
Propagation: Local
Response: ENCODER (NONE)
Acknowledgment: PULSE INHIBIT
Cause: A commutation position actual value sensing error was detected.
See also: p0491 (Motor encoder fault response ENCODER)
Remedy: Check the encoder mounting, and if necessary, replace the encoder and/or the motor.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F31122 Motor encoder: Sensor Module hardware fault

Message class: Supply voltage fault (undervoltage) (3)
Message value: %1
Component: Sensor Module Encoder 1
Propagation: Global
Response: ENCODER
Acknowledgment: IMMEDIATELY
Cause: An internal Sensor Module hardware fault was detected.
Fault value (r0949, interpret decimal):
1: Reference voltage error.
2: Internal undervoltage.
3: Internal overvoltage.

Remedy: Replace the corresponding Sensor Module or the motor.

F31123 (N, A) Motor encoder: Signal level A/B outside tolerance

Message class: Position/speed actual value incorrect or not available (11)
Message value: Fault cause: %1 bin
Component: Encoder 1
Propagation: Local
Response: ENCODER (IASC/DCBRK, NONE)
Acknowledgment: PULSE INHIBIT
Cause: The unipolar level (AP/AN or BP/BN) for the motor encoder is outside the permissible tolerance.
Fault value (r0949, interpret binary):
Bit 0 = 1: Either AP or AN outside the tolerance.
Bit 16 = 1: Either BP or BN outside the tolerance.
The unipolar nominal signal level of the encoder must lie in the range 2500 mV +/- 500 mV.
The response thresholds are < 1700 mV and > 3300 mV.
Note:
The signal level is not evaluated unless the following conditions are satisfied:
- Sensor Module properties available (r0459.31 = 1).
- Monitoring active (p0437.31 = 1).
See also: p0491 (Motor encoder fault response ENCODER)
Remedy: - Make sure that the encoder cables and shielding are installed in an EMC-compliant manner.
- Check the plug connections and contacts of the encoder cable.
- Check the short-circuit of a signal cable with mass or the operating voltage.
- Replace the encoder cable.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F31125 (N, A) Motor encoder: Signal level track A or B too high

Message class: Position/speed actual value incorrect or not available (11)
Message value: A track: %1, B track: %2
Component: Encoder 1
Propagation: Local
Response: ENCODER (IASC/DCBRK, NONE)
Acknowledgment: PULSE INHIBIT

Cause: The signal level (root from A^2 + B^2) of the encoder exceeds the permissible limit value.
Fault value (r0949, interpret hexadecimal):
yyyyxxxx hex:
yyyy = Signal level, track B (16 bits with sign).
xxxx = Signal level, track A (16 bits with sign).
The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %).
The response threshold is > 750 mV.
A signal level of 500 mV peak value corresponds to the numerical value 5333 hex = 21299 dec.
Note for Sensor Modules for resolvers (e.g. SMC10):
The nominal signal level is at 2900 mV (2.0 Vrms).
The response threshold is > 3582 mV.
A signal level of 2900 mV peak value corresponds to the numerical value 6666 hex = 26214 dec.
Note:
The analog values of the amplitude error are not measured at the same time with the hardware fault output by the Sensor Module.
See also: p0491 (Motor encoder fault response ENCODER)

Remedy: - Check that the encoder cables and shielding are routed in compliance with EMC.
- Replace the encoder or encoder cable.

Response upon: N: NONE

Acknowl. upon N: NONE

Response upon: A: NONE

Acknowl. upon A: NONE

F31126 (N, A) Motor encoder: Signal level track A or B too high

Message class: Position/speed actual value incorrect or not available (11)

Message value: Amplitude: %1, angle: %2

Component: Encoder 1

Propagation: Local

Response: ENCODER (IASC/DCBRK, NONE)

Acknowledgment: PULSE INHIBIT

Cause: The signal level (|A| + |B|) of the encoder exceeds the permissible limit value.
Fault value (r0949, interpret hexadecimal):
yyyyxxxx hex:
yyyy = angle
xxxx = amplitude, i.e. root of A^2 + B^2 (16 bits without sign)
The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %).
The response threshold for (|A| + |B|) is > 1120 mV or the root of (A^2 + B^2) > 955 mV.
A signal level of 500 mV peak value corresponds to the numerical value of 299A hex = 10650 dec.
The angle 0 ... FFFF hex corresponds to 0 ... 360 degrees of the fine position. Zero degrees is present at the negative zero crossover of track B.
Note:
The analog values of the amplitude error are not measured at the same time with the hardware fault output by the Sensor Module.
See also: p0491 (Motor encoder fault response ENCODER)

Remedy: - Check that the encoder cables and shielding are routed in compliance with EMC.
- Replace the encoder or encoder cable.

Response upon: N: NONE

Acknowl. upon N: NONE

Response upon: A: NONE

Acknowl. upon A: NONE

F31129 (N, A) Motor encoder: Position difference, Hall sensor/track C/D and A/B too large

Message class: Position/speed actual value incorrect or not available (11)

Message value: %1

Component: Encoder 1

Propagation: Local

Response: ENCODER (IASC/DCBRK, NONE)

Acknowledgment: PULSE INHIBIT

Cause: The error for track C/D is greater than +/-15 ° mechanical or +/-60 ° electrical or the error for the Hall signals is greater than +/-60 ° electrical.
One period of track C/D corresponds to 360 ° mechanical.
One period of the Hall signal corresponds to 360 ° electrical.
The monitoring responds if, for example, Hall sensors are connected as equivalent for the C/D tracks with the incorrect direction of rotation or supply values that are not accurate enough.
After the fine synchronization using one homing mark or 2 homing marks for distance-coded encoders, this fault is no longer initiated, but instead, Alarm A31429.
Fault value (r0949, interpret decimal):
For track C/D, the following applies:
Measured deviation as mechanical angle (16 bits with sign, 182 dec corresponds to 1 °).
For Hall signals, the following applies:
Measured deviation as electrical angle (16 bits with sign, 182 dec corresponds to 1 °).
See also: p0491 (Motor encoder fault response ENCODER)

Remedy: - Track C or D not connected.
- Correct the direction of rotation of the Hall sensor possibly connected as substitute for track C/D.
- Check that the encoder cables are routed in compliance with EMC.
- Check the adjustment of the Hall sensor.

Response upon: N: NONE

Acknowl. upon N: NONE

Response upon: A: NONE

Acknowl. upon A: NONE

F31130 (N, A) Motor encoder: Zero mark and position error from the coarse synchronization

Message class: Position/speed actual value incorrect or not available (11)

Message value: Angular deviation, electrical: %1, angle, mechanical: %2

Component: Encoder 1

Propagation: Local

Response: ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, STOP2)

Acknowledgment: PULSE INHIBIT

Cause: After initializing the pole position using track C/D, Hall signals or pole position identification routine, the zero mark was detected outside the permissible range. For distance-coded encoders, the test is carried out after passing 2 zero marks. Fine synchronization was not carried out.
When initializing via track C/D (p0404) then it is checked whether the zero mark occurs in an angular range of +/-18 ° mechanical.
When initializing via Hall sensors (p0404) or pole position identification (p1982) it is checked whether the zero mark occurs in an angular range of +/-60 ° electrical.
Fault value (r0949, interpret hexadecimal):
yyyyxxxx hex
yyyy: Determined mechanical zero mark position (can only be used for track C/D).
xxxx: Deviation of the zero mark from the expected position as electrical angle.
Scaling: 32768 dec = 180 °
See also: p0491 (Motor encoder fault response ENCODER)

Remedy:
- Check p0431 and, if necessary, correct (trigger via p1990 = 1 if necessary).
- Check that the encoder cables are routed in compliance with EMC.
- Check the plug connections.
- If the Hall sensor is used as an equivalent for track C/D, check the connection.
- Check the connection of track C or D.
- Replace the encoder or encoder cable.

Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F31131 (N, A) Motor encoder: Position deviation incremental/absolute too high

Message class: Position/speed actual value incorrect or not available (11)
Message value: %1
Component: Encoder 1
Propagation: Local
Response: ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, STOP2)
Acknowledgment: PULSE INHIBIT
Cause: Absolute encoder:
When cyclically reading the absolute position, an excessively high difference to the incremental position was detected. The absolute position that was read is rejected.
Limit value for the deviation:
- EnDat encoder: Is supplied from the encoder and is a minimum of 2 quadrants (e.g. EQI 1325 > 2 quadrants, EQN 1325 > 50 quadrants).
- Other encoders: 15 pulses = 60 quadrants.

Incremental encoder:
When the zero pulse is passed, a deviation in the incremental position was detected.
For equidistant zero marks, the following applies:
- The first zero mark passed supplies the reference point for all subsequent checks. The other zero marks must have n times the distance referred to the first zero mark.

For distance-coded zero marks, the following applies:
- The first zero mark pair supplies the reference point for all subsequent checks. The other zero mark pairs must have the expected distance to the first zero mark pair.

Fault value (r0949, interpret decimal):
Deviation in quadrants (1 pulse = 4 quadrants).
See also: p0491 (Motor encoder fault response ENCODER)

Remedy:
- Check that the encoder cables are routed in compliance with EMC.
- Check the plug connections.
- Replace the encoder or encoder cable.
- Check whether the coding disk is dirty or there are strong ambient magnetic fields.
- Adapt the parameter for the clearance between zero marks (p0425).
- If message is output above the speed threshold, reduce filter time if necessary (p0438).

Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F31135 Motor encoder: Fault when determining the position (singleturn)

Message class: Position/speed actual value incorrect or not available (11)
Message value: Fault cause: %1 bin
Component: Encoder 1

Propagation: Global
Response: ENCODER (IASC/DCBRK, NONE)
Acknowledgment: PULSE INHIBIT
Cause: The encoder has identified a position determination fault (singleturn) and supplies status information bit by bit in an internal status/fault word.
Some of these bits cause this fault to be triggered. Other bits are status displays. The status/fault word is displayed in the fault value.
Note regarding the bit designation:
The first designation is valid for DRIVE-CLiQ encoders, the second for EnDat 2.2 encoders.
Fault value (r0949, interpret binary):
Bit 0: F1 (safety status display).
Bit 1: F2 (safety status display).
Bit 2: Reserved (lighting).
Bit 3: Reserved (signal amplitude).
Bit 4: Reserved (position value).
Bit 5: Reserved (overvoltage).
Bit 6: Reserved (undervoltage)/hardware fault EnDat supply (--> F3x110, x = 1, 2, 3).
Bit 7: Reserved (overcurrent)/EnDat encoder withdrawn when not in the parked state (--> F3x110, x = 1, 2, 3).
Bit 8: Reserved (battery)/overcurrent EnDat supply (--> F3x110, x = 1, 2, 3).
Bit 9: Reserved/overvoltage EnDat supply (--> F3x110, x = 1, 2, 3).
Bit 11: Reserved/internal communication error (--> F3x110, x = 1, 2, 3).
Bit 12: Reserved/internal communication error (--> F3x110, x = 1, 2, 3).
Bit 13: Reserved/internal communication error (--> F3x110, x = 1, 2, 3).
Bit 14: Reserved/internal communication error (--> F3x110, x = 1, 2, 3).
Bit 15: Internal communication error (--> F3x110, x = 1, 2, 3).
Bit 16: Lighting (--> F3x135, x = 1, 2, 3).
Bit 17: Signal amplitude (--> F3x135, x = 1, 2, 3).
Bit 18: Singleturn position 1 (--> F3x135, x = 1, 2, 3).
Bit 19: Overvoltage (--> F3x135, x = 1, 2, 3).
Bit 20: Undervoltage (--> F3x135, x = 1, 2, 3).
Bit 21: Overcurrent (--> F3x135, x = 1, 2, 3).
Bit 22: Temperature exceeded (--> F3x405, x = 1, 2, 3).
Bit 23: Singleturn position 2 (safety status display).
Bit 24: Singleturn system (--> F3x135, x = 1, 2, 3).
Bit 25: Singleturn power down (--> F3x135, x = 1, 2, 3)
Bit 26: Multiturn position 1 (--> F3x136, x = 1, 2, 3).
Bit 27: Multiturn position 2 (--> F3x136, x = 1, 2, 3).
Bit 28: Multiturn system (--> F3x136, x = 1, 2, 3).
Bit 29: Multiturn power down (--> F3x136, x = 1, 2, 3).
Bit 30: Multiturn overflow/underflow (--> F3x136, x = 1, 2, 3).
Bit 31: Multiturn battery (reserved).
Remedy: - Determine the detailed cause of the fault using the fault value.
- Replace the encoder if necessary.
Note:
An EnDat 2.2 encoder may only be removed and inserted in the "Park" state.
If an EnDat 2.2 encoder was removed when not in the "Park" state, then after inserting the encoder, a POWER ON (switch-off/switch-on) is necessary to acknowledge the fault.

F31136 Motor encoder: Fault when determining the position (multiturn)

Message class: Position/speed actual value incorrect or not available (11)
Message value: Fault cause: %1 bin
Component: Encoder 1

Propagation: Global

Response: ENCODER (IASC/DCBRK, NONE)

Acknowledgment: PULSE INHIBIT

Cause: The encoder has identified a position determination fault (multiturn) and supplies status information bit by bit in an internal status/fault word.

Some of these bits cause this fault to be triggered. Other bits are status displays. The status/fault word is displayed in the fault value.

Note regarding the bit designation:

The first designation is valid for DRIVE-CLiQ encoders, the second for EnDat 2.2 encoders.

Fault value (r0949, interpret binary):

Bit 0: F1 (safety status display).

Bit 1: F2 (safety status display).

Bit 2: Reserved (lighting).

Bit 3: Reserved (signal amplitude).

Bit 4: Reserved (position value).

Bit 5: Reserved (overvoltage).

Bit 6: Reserved (undervoltage)/hardware fault EnDat supply (--> F3x110, x = 1, 2, 3).

Bit 7: Reserved (overcurrent)/EnDat encoder withdrawn when not in the parked state (--> F3x110, x = 1, 2, 3).

Bit 8: Reserved (battery)/overcurrent EnDat supply (--> F3x110, x = 1, 2, 3).

Bit 9: Reserved/overvoltage EnDat supply (--> F3x110, x = 1, 2, 3).

Bit 11: Reserved/internal communication error (--> F3x110, x = 1, 2, 3).

Bit 12: Reserved/internal communication error (--> F3x110, x = 1, 2, 3).

Bit 13: Reserved/internal communication error (--> F3x110, x = 1, 2, 3).

Bit 14: Reserved/internal communication error (--> F3x110, x = 1, 2, 3).

Bit 15: Internal communication error (--> F3x110, x = 1, 2, 3).

Bit 16: Lighting (--> F3x135, x = 1, 2, 3).

Bit 17: Signal amplitude (--> F3x135, x = 1, 2, 3).

Bit 18: Singleturn position 1 (--> F3x135, x = 1, 2, 3).

Bit 19: Overvoltage (--> F3x135, x = 1, 2, 3).

Bit 20: Undervoltage (--> F3x135, x = 1, 2, 3).

Bit 21: Overcurrent (--> F3x135, x = 1, 2, 3).

Bit 22: Temperature exceeded (--> F3x405, x = 1, 2, 3).

Bit 23: Singleturn position 2 (safety status display).

Bit 24: Singleturn system (--> F3x135, x = 1, 2, 3).

Bit 25: Singleturn power down (--> F3x135, x = 1, 2, 3)

Bit 26: Multiturn position 1 (--> F3x136, x = 1, 2, 3).

Bit 27: Multiturn position 2 (--> F3x136, x = 1, 2, 3).

Bit 28: Multiturn system (--> F3x136, x = 1, 2, 3).

Bit 29: Multiturn power down (--> F3x136, x = 1, 2, 3).

Bit 30: Multiturn overflow/underflow (--> F3x136, x = 1, 2, 3).

Bit 31: Multiturn battery (reserved).

Remedy: - Determine the detailed cause of the fault using the fault value.

- Replace the encoder if necessary.

Note:

An EnDat 2.2 encoder may only be removed and inserted in the "Park" state.

If an EnDat 2.2 encoder was removed when not in the "Park" state, then after inserting the encoder, a POWER ON (switch-off/switch-on) is necessary to acknowledge the fault.

F31137 Motor encoder: Fault when determining the position (singleturn)

Message class: Hardware/software error (1)

Message value: Fault cause: %1 bin

Component: Encoder 1

Propagation: Global
Response: ENCODER (IASC/DCBRK, NONE)
Acknowledgment: PULSE INHIBIT

Cause:

A position determination fault has occurred in the DRIVE-CLiQ encoder.
Fault value (r0949, interpret binary):
yyxxxxxx hex: yy = encoder version, xxxxxx = bit coding of the fault cause
---
For yy = 8 (0000 1000 bin), the following applies:
Bit 1: Signal monitoring (sin/cos).
Bit 8: F1 (safety status display) error position word 1.
Bit 9: F2 (safety status display) error position word 2.
Bit 16: LED monitoring.
Bit 17: Fault when determining the position (multiturn).
Bit 18: Single-step capability monitoring singleturn from the Safety channel.
Bit 19: ECRC, configuration error in the safety channel.
Bit 23: Temperature outside the limit values.

For yy = 11 (0000 1011 bin), the following applies:
Bit 0: Position word 1 difference between rotation counter and software counter (XC_ERR).
Bit 1: Position word 1 track error of the incremental signals (LIS_ERR).
Bit 2: Position word 1 error when aligning between incremental track signals and absolute value (ST_ERR).
Bit 3: Maximum permissible temperature exceeded (TEMP_ERR).
Bit 4: Power supply overvoltage (MON_OVR_VOLT).
Bit 5: Power supply overcurrent (MON_OVR_CUR).
Bit 6: Power supply undervoltage (MON_UND_VOLT).
Bit 7: Rotation error counter (MT_ERR).
Bit 8: F1 (safety status display) error position word 1.
Bit 9: F2 (safety status display) error position word 2.
Bit 11: Position word 1 status bit: singleturn position OK (ADC_ready).
Bit 12: Position word 1 status bit: rotation counter OK (MT_ready).
Bit 13: Position word 1 memory error (MEM_ERR).
Bit 14: Position word 1 absolute position error (MLS_ERR).
Bit 15: Position word 1 LED error, lighting unit error (LED_ERR).
Bit 18: Position word 2 error when aligning between incremental track signals and absolute value (ST_ERR).
Bit 21: Position word 2 memory error (MEM_ERR).
Bit 22: Position word 2 absolute position error (MLS_ERR).
Bit 23: Position word 2 LED error, lighting unit error (LED_ERR).

For yy = 12 (0000 1100 bin), the following applies:
Bit 8: encoder fault.
Bit 10: error in the internal position data transport.

For yy = 14 (0000 1110 bin), the following applies:
Bit 0: Position word 1 temperature outside limit value.
Bit 1: Position word 1 position determination error (multiturn).
Bit 2: Position word 1 FPGA error.
Bit 3: Position word 1 velocity error.
Bit 4: Position word 1 communication error between FPGAs/error in the incremental signal.
Bit 5: Position word 1 timeout absolute value/error when determining the position (singleturn).
Bit 6: Position word 1 internal hardware fault (clock/power monitor IC/power).
Bit 7: Position word 1 internal error (FPGA communication/FPGA parameterization/self test/software).
Bit 8: F1 (safety status display) error position word 1.
Bit 9: F2 (safety status display) error position word 2.
Bit 16: Position word 2 temperature outside limit value.
Bit 17: Position word 2 position determination error (multiturn).

Bit 18: Position word 2 FPGA error.
Bit 19: Position word 2 velocity error.
Bit 20: Position word 2 communication error between FPGAs.
Bit 21: Position word 2 position determination error (singleturn).
Bit 22: Position word 2 internal hardware fault (clock/power monitor IC/power).
Bit 23: Position word 2 internal error (self test/software).

Note:
For an encoder version that is not described here, please contact the encoder manufacturer for more detailed information on the bit coding.

Remedy:
- Determine the detailed cause of the fault using the fault value.
- If required, replace the DRIVE-CLiQ encoder.

F31138 Motor encoder: Fault when determining the position (multiturn)

Message class: Hardware/software error (1)
Message value: Fault cause: %1 bin
Component: Encoder 1
Propagation: Global
Response: ENCODER (IASC/DCBRK, NONE)
Acknowledgment: PULSE INHIBIT

Cause:

A position determination fault has occurred in the DRIVE-CLiQ encoder.
Fault value (r0949, interpret binary):
yyxxxxxx hex: yy = encoder version, xxxxxx = bit coding of the fault cause
---
For yy = 8 (0000 1000 bin), the following applies:
Bit 1: Signal monitoring (sin/cos).
Bit 8: F1 (safety status display) error position word 1.
Bit 9: F2 (safety status display) error position word 2.
Bit 16: LED monitoring.
Bit 17: Fault when determining the position (multiturn).
Bit 19: ECRC, configuration error in the safety channel.
Bit 23: Temperature outside the limit values.

For yy = 11 (0000 1011 bin), the following applies:
Bit 0: Position word 1 difference between rotation counter and software counter (XC_ERR).
Bit 1: Position word 1 track error of the incremental signals (LIS_ERR).
Bit 2: Position word 1 error when aligning between incremental track signals and absolute value (ST_ERR).
Bit 3: Maximum permissible temperature exceeded (TEMP_ERR).
Bit 4: Power supply overvoltage (MON_OVR_VOLT).
Bit 5: Power supply overcurrent (MON_OVR_CUR).
Bit 6: Power supply undervoltage (MON_UND_VOLT).
Bit 7: Rotation error counter (MT_ERR).
Bit 8: F1 (safety status display) error position word 1.
Bit 9: F2 (safety status display) error position word 2.
Bit 11: Position word 1 status bit: singleturn position OK (ADC_ready).
Bit 12: Position word 1 status bit: rotation counter OK (MT_ready).
Bit 13: Position word 1 memory error (MEM_ERR).
Bit 14: Position word 1 absolute position error (MLS_ERR).
Bit 15: Position word 1 LED error, lighting unit error (LED_ERR).
Bit 18: Position word 2 error when aligning between incremental track signals and absolute value (ST_ERR).
Bit 21: Position word 2 memory error (MEM_ERR).
Bit 22: Position word 2 absolute position error (MLS_ERR).
Bit 23: Position word 2 LED error, lighting unit error (LED_ERR).

For yy = 14 (0000 1110 bin), the following applies:
Bit 0: Position word 1 temperature outside limit value.
Bit 1: Position word 1 position determination error (multiturn).
Bit 2: Position word 1 FPGA error.
Bit 3: Position word 1 velocity error.
Bit 4: Position word 1 communication error between FPGAs/error in the incremental signal.
Bit 5: Position word 1 timeout absolute value/error when determining the position (singleturn).
Bit 6: Position word 1 internal hardware fault (clock/power monitor IC/power).
Bit 7: Position word 1 internal error (FPGA communication/FPGA parameterization/self test/software).
Bit 8: F1 (safety status display) error position word 1.
Bit 9: F2 (safety status display) error position word 2.
Bit 16: Position word 2 temperature outside limit value.
Bit 17: Position word 2 position determination error (multiturn).
Bit 18: Position word 2 FPGA error.
Bit 19: Position word 2 velocity error.
Bit 20: Position word 2 communication error between FPGAs.
Bit 21: Position word 2 position determination error (singleturn).
Bit 22: Position word 2 internal hardware fault (clock/power monitor IC/power).

Bit 23: Position word 2 internal error (self test/software).

Note:

For an encoder version that is not described here, please contact the encoder manufacturer for more detailed information on the bit coding.

Remedy:
- Determine the detailed cause of the fault using the fault value.
- If required, replace the DRIVE-CLiQ encoder.

F31142 (N, A) Motor encoder: Battery voltage error

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: Encoder 1
Propagation: Local
Response: ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, STOP2)
Acknowledgment: IMMEDIATELY
Cause: When switched-off, the encoder uses a battery to back up the multiturn information. The battery voltage is no longer sufficient to check the multiturn information.
Remedy: Replace battery.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F31150 (N, A) Motor encoder: Initialization error

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: Sensor Module Encoder 1
Propagation: Local
Response: ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, STOP2)
Acknowledgment: PULSE INHIBIT
Cause: Encoder functionality selected in p0404 cannot be executed.
Fault value (r0949, interpret hexadecimal):
Encoder malfunction.
The bit assignment corresponds to that of p0404 (e.g. bit 5 set: Error track C/D).
See also: p0404 (Encoder configuration effective), p0491 (Motor encoder fault response ENCODER)
Remedy:
- Check that p0404 is correctly set.
- Check the encoder type used (incremental/absolute) and for SMCxx, the encoder cable.
- If relevant, note additional fault messages that describe the fault in detail.

Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F31151 (N, A) Motor encoder: Encoder speed for initialization too high

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: Sensor Module Encoder 1
Propagation: Local
Response: ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, STOP2)
Acknowledgment: PULSE INHIBIT

Cause: The encoder speed is too high while initializing the Sensor Module.
Remedy: Reduce the speed of the encoder accordingly during initialization.
If necessary, deactivate monitoring (p0437.29).
See also: p0437 (Sensor Module configuration extended)
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F31152 (N, A) Motor encoder: Maximum signal frequency (track A/B) exceeded

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: Sensor Module Encoder 1
Propagation: Local
Response: ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, STOP2)
Acknowledgment: PULSE INHIBIT
Cause: The maximum signal frequency of the encoder evaluation has been exceeded.
Fault value (r0949, interpret decimal):
Actual signal frequency in Hz.
See also: p0408 (Rotary encoder pulse number)
Remedy: - Reduce the speed.
- Use an encoder with a lower pulse number (p0408).
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F31153 (N, A) Motor encoder: Identification error

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: Sensor Module Encoder 1
Propagation: Local
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: An error has occurred when identifying the encoder (waiting) p0400 = 10100.
The connected encoder was not able to be identified.
Fault value (r0949, interpret binary):
Bit 0: Data length incorrect.
See also: p0400 (Encoder type selection)
Remedy: Manually configure the encoder according to the data sheet.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

A31400 (F, N) Motor encoder: Zero mark distance error (alarm threshold exceeded)

Message class: Position/speed actual value incorrect or not available (11)
Message value: %1
Component: Encoder 1

Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: The measured zero mark distance does not correspond to the parameterized zero mark distance.
For distance-coded encoders, the zero mark distance is determined from zero marks detected pairs. This means that if a zero mark is missing, depending on the pair generation, this cannot result in a fault and also has no effect in the system.
The zero mark distance for zero mark monitoring is set in p0425.
Alarm value (r2124, interpret decimal):
Last measured zero mark distance in increments (4 increments = 1 encoder pulse).
The sign designates the direction of motion when detecting the zero mark distance.
Remedy: - Check that the encoder cables are routed in compliance with EMC.
- Check the plug connections.
- Check the encoder type (encoder with equidistant zero marks).
- Adapt the parameter for the clearance between zero marks (p0425).
- Replace the encoder or encoder cable.
Response upon: F: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A31401 (F, N) Motor encoder: Zero marked failed (alarm threshold is exceeded)

Message class: Position/speed actual value incorrect or not available (11)
Message value: %1
Component: Encoder 1
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: The 1.5x parameterized zero mark distance was exceeded without a zero mark being detected.
The zero mark distance for zero mark monitoring is set in p0425.
Alarm value (r2124, interpret decimal):
Number of increments after POWER ON or since the last zero mark that was detected (4 increments = 1 encoder pulse).
Remedy: - Check that the encoder cables are routed in compliance with EMC.
- Check the plug connections.
- Check the encoder type (encoder with equidistant zero marks).
- Adapt the parameter for the clearance between zero marks (p0425).
- Replace the encoder or encoder cable.
Response upon: F: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

F31405 (N, A) Motor encoder: Temperature in the encoder evaluation exceeded

Message class: Overtemperature of the electronic components (6)
Message value: Temperature: [0.1 degrees C] %1, temperature sensor number: %2
Component: Sensor Module Encoder 1
Propagation: Local
Response: ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, STOP2)
Acknowledgment: IMMEDIATELY

Cause:	An inadmissibly high temperature was detected in the encoder electronics or the encoder evaluation. Fault value (r0949, interpret hexadecimal): yyxxxx hex: yy = temperature sensor number, xxxx = measured module temperature in 0.1 °C.
Remedy:	When using a Sensor Module: Reduce the ambient temperature of the Sensor Module. Otherwise: Reduce the encoder ambient temperature.
Response upon: N:	NONE
Acknowl. upon N:	NONE
Response upon: A:	NONE
Acknowl. upon A:	NONE

A31407 (F, N) Motor encoder: Function limit reached

Message class:	Position/speed actual value incorrect or not available (11)
Message value:	%1
Component:	Encoder 1
Propagation:	Local
Response:	NONE
Acknowledgment:	NONE
Cause:	The encoder has reached one of its function limits. A service is recommended. Alarm value (r2124, interpret decimal): 1: Incremental signals 3: Absolute track 4: Code connection
Remedy:	Perform service. Replace the encoder if necessary. Note: The actual functional reserve of an encoder can be displayed via r4651. See also: p4650 (Encoder function reserve data set number), r4651 (Encoder function reserve)
Response upon: F:	NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F:	IMMEDIATELY
Response upon: N:	NONE
Acknowl. upon N:	NONE

A31410 (F, N) Motor encoder: Communication error (encoder and Sensor Module)

Message class:	Position/speed actual value incorrect or not available (11)
Message value:	Fault cause: %1 bin
Component:	Encoder 1
Propagation:	Local
Response:	NONE
Acknowledgment:	NONE

Cause: Serial communication protocol transfer error between the encoder and evaluation module.
Alarm value (r2124, interpret binary):
Bit 0: Alarm bit in the position protocol.
Bit 1: Incorrect quiescent level on the data line.
Bit 2: Encoder does not respond (does not supply a start bit within 50 ms).
Bit 3: CRC error: The checksum in the protocol from the encoder does not match the data.
Bit 4: Encoder acknowledgment error: The encoder incorrectly understood the task (request) or cannot execute it.
Bit 5: Internal error in the serial driver: An illegal mode command was requested.
Bit 6: Timeout when cyclically reading.
Bit 8: Protocol is too long (e.g. > 64 bits).
Bit 9: Receive buffer overflow.
Bit 10: Frame error when reading twice.
Bit 11: Parity error.
Bit 12: Data line signal level error during the monoflop time.
Remedy: - Check that the encoder cables are routed in compliance with EMC.
- Check the plug connections.
- Replace encoder.
Response upon: F: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A31411 (F, N) Motor encoder: Encoder signals an internal alarm (detailed information)

Message class: Position/speed actual value incorrect or not available (11)
Message value: Fault cause: %1 bin, additional information: %2
Component: Encoder 1
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: The absolute encoder fault word includes alarm bits that have been set.
Alarm value (r2124, interpret binary):
yyyyxxxx hex: yyyy = supplementary information, xxxx = fault cause
yyyy = 0:
Bit 0: Frequency exceeded (speed too high).
Bit 1: Temperature exceeded.
Bit 2: Control reserve, lighting system exceeded.
Bit 3: Battery discharged.
Bit 4: Home position passed.
yyyy = 1:
Bit 0: Signal amplitude outside the control range.
Bit 1: Error multiturn interface
Bit 2: Internal data error (singleturn/multiturn not with single steps).
Bit 3: Error EEPROM interface.
Bit 4: SAR_converter error.
Bit 5: Fault for the register data transfer.
Bit 6: Internal error identified at the error pin (nErr).
Bit 7: Temperature threshold exceeded or fallen below.
See also: p0491 (Motor encoder fault response ENCODER)
Remedy: Replace encoder.
Response upon: F: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)

Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A31412 (F, N) Motor encoder: Encoder signals an internal alarm

Message class: Position/speed actual value incorrect or not available (11)
Message value: %1
Component: Encoder 1
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: The encoder signals an internal alarm via serial protocol.
Alarm value (r2124, interpret binary):
Bit 0: Fault bit in the position protocol.
Bit 1: Alarm bit in the position protocol.
Remedy:
- Carry out a POWER ON (switch-off/switch-on) for all components.
- Check that the encoder cables are routed in compliance with EMC.
- Check the plug connections.
- Replace encoder.

Response upon: F: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A31414 (F, N) Motor encoder: Signal level track C or D out of tolerance

Message class: Position/speed actual value incorrect or not available (11)
Message value: C track: %1, D track: %2
Component: Encoder 1
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: The signal level (C^2 + D^2) of track C or D of the encoder or from the Hall signals, is not within the tolerance bandwidth.
Alarm value (r2124, interpret hexadecimal):
yyyyxxxx hex:
yyyy = Signal level, track D (16 bits with sign).
xxxx = Signal level, track C (16 bits with sign).
The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %).
The response thresholds are < 230 mV (observe the frequency response of the encoder) and > 750 mV.
A signal level of 500 mV peak value corresponds to the numerical value 5333 hex = 21299 dec.
Note:
If the amplitude is not within the tolerance bandwidth, then it cannot be used to initialize the start position.
Remedy:
- Check that the encoder cables are routed in compliance with EMC.
- Check the plug connections.
- Replace the encoder or encoder cable.
- Check the Sensor Module (e.g. contacts).
- Check the Hall sensor box.

Response upon: F: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE

Acknowl. upon N: NONE

N31415 (F, A) Motor encoder: Signal level track A or B out of tolerance (alarm)

Message class: Position/speed actual value incorrect or not available (11)

Message value: Amplitude: %1, angle: %2

Component: Encoder 1

Propagation: Local

Response: NONE

Acknowledgment: NONE

Cause:
The signal level (root from A^2 + B^2) of the encoder is outside the permissible tolerance.
Alarm value (r2124, interpret hexadecimal):
yyyyxxxx hex:
yyyy = angle
xxxx = amplitude, i.e. root of A^2 + B^2 (16 bits without sign)
The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %).
The response threshold is < 230 mV (observe the frequency response of the encoder).
A signal level of 500 mV peak value corresponds to the numerical value 299A hex = 10650 dec.
The angle 0 ... FFFF hex corresponds to 0 ... 360 degrees of the fine position. Zero degrees is present at the negative zero crossover of track B.
Note for Sensor Modules for resolvers (e.g. SMC10):
The nominal signal level is at 2900 mV (2.0 Vrms). The response threshold is < 1414 mV (1.0 Vrms).
A signal level of 2900 mV peak value corresponds to the numerical value 3333 hex = 13107 dec.
Note:
The analog values of the amplitude error are not measured at the same time with the hardware fault output by the Sensor Module.
See also: p0491 (Motor encoder fault response ENCODER)

Remedy:
- Check the speed range, frequency characteristic (amplitude characteristic) of the measuring equipment is not sufficient for the speed range.
- Check that the encoder cables and shielding are routed in compliance with EMC.
- Check the plug connections.
- Replace the encoder or encoder cable.
- Check the Sensor Module (e.g. contacts).
- If the coding disk is soiled or the lighting aged, replace the encoder.

Response upon: F: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)

Acknowl. upon F: IMMEDIATELY

Response upon: A: NONE

Acknowl. upon A: NONE

A31418 (F, N) Motor encoder: Speed change not plausible (alarm)

Message class: Position/speed actual value incorrect or not available (11)

Message value: %1

Component: Encoder 1

Propagation: Local

Response: NONE

Acknowledgment: NONE

Cause:
For an HTL/TTL encoder, the speed change has exceeded the value in p0492 over several sampling cycles.
The change to the averaged speed actual value - If applicable - Is monitored in the current controller sampling time.
Alarm value (r2124, interpret decimal):
Only for internal Siemens troubleshooting.
See also: p0492 (Maximum speed difference per sampling cycle)

Remedy: - Check the tachometer feeder cable for interruptions.
- Check the grounding of the tachometer shielding.
- If required, increase the setting of p0492.

Response upon: F: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A31419 (F, N) Motor encoder: Track A or B out of tolerance

Message class: Position/speed actual value incorrect or not available (11)
Message value: %1
Component: Encoder 1
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: The amplitude/phase/offset correction for track A or B is at the limit.
Amplitude error correction: Amplitude B / Amplitude A = 0.78 ... 1.27
Phase: <84 degrees or >96 degrees
SMC20: Offset correction: +/-140 mV
SMC10: Offset correction: +/-650 mV
Alarm value (r2124, interpret hexadecimal):
xxxx1: Minimum of the offset correction, track B
xxxx2: Maximum of the offset correction, track B
xxx1x: Minimum of the offset correction, track A
xxx2x: Maximum of the offset correction, track A
xx1xx: Minimum of the amplitude correction, track B/A
xx2xx: Maximum of the amplitude correction, track B/A
x1xxx: Minimum of the phase error correction
x2xxx: Maximum of the phase error correction
1xxxx: Minimum of the cubic correction
2xxxx: Maximum of the cubic correction
See also: p0491 (Motor encoder fault response ENCODER)
Remedy: - Check mechanical mounting tolerances for encoders without their own bearings (e.g. toothed-wheel encoders).
- Check the plug connections (also the transition resistance).
- Check the encoder signals.
- Replace the encoder or encoder cable.

Response upon: F: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A31421 (F, N) Motor encoder: Determined commutation position incorrect (alarm)

Message class: Position/speed actual value incorrect or not available (11)
Message value: %1
Component: Encoder 1
Propagation: Local
Response: NONE
Acknowledgment: NONE

Cause: A commutation position actual value sensing error was detected.
Alarm value (r2124, interpret decimal):
3: The absolute position of the serial protocol and track A/B differ by half an encoder pulse. The absolute position must have its zero position in the quadrants in which both tracks are negative. In the case of a fault, the position can be incorrect by one encoder pulse.

Remedy: For alarm value = 3:
- For a standard encoder with cable, contact the manufacturer where relevant.
- Correct the assignment of the tracks to the position value that is serially transferred. To do this, the two tracks must be connected, inverted, at the Sensor Module (interchange A with A* and B with B*) or, for a programmable encoder, check the zero offset of the position.

Response upon: F: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)

Acknowl. upon F: IMMEDIATELY

Response upon: N: NONE

Acknowl. upon N: NONE

A31422 (F, N) Motor encoder: Number of square-wave encoder pulses outside tolerance band

Message class: Position/speed actual value incorrect or not available (11)

Message value: %1

Component: Encoder 1

Propagation: Local

Response: NONE

Acknowledgment: NONE

Cause: The measured zero mark distance does not correspond to the parameterized zero mark distance.
This alarm is triggered with active square-wave encoder PPR correction and re-parameterized fault 31131 if the accumulator contains larger values than p4683 or p4684.
The zero mark distance for zero mark monitoring is set in p0425 (rotary encoder).
Alarm value (r2124, interpret decimal):
accumulated differential pulses in encoder pulses.
See also: p0491 (Motor encoder fault response ENCODER)

Remedy:
- Check that the encoder cables are routed in compliance with EMC.
- Check the plug connections.
- Check the encoder type (encoder with equidistant zero marks).
- Adapt the parameter for the clearance between zero marks (p0425).
- Replace the encoder or encoder cable.

Response upon: F: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)

Acknowl. upon F: IMMEDIATELY

Response upon: N: NONE

Acknowl. upon N: NONE

A31429 (F, N) Motor encoder: Position difference, Hall sensor/track C/D and A/B too large

Message class: Position/speed actual value incorrect or not available (11)

Message value: %1

Component: Encoder 1

Propagation: Local

Response: NONE

Acknowledgment: NONE

Cause: The error for track C/D is greater than +/-15 ° mechanical or +/-60 ° electrical or the error for the Hall signals is greater than +/-60 ° electrical.
One period of track C/D corresponds to 360 ° mechanical.
One period of the Hall signal corresponds to 360 ° electrical.
The monitoring responds if, for example, Hall sensors are connected as equivalent for the C/D tracks with the incorrect direction of rotation or supply values that are not accurate enough.
Alarm value (r2124, interpret decimal):
For track C/D, the following applies:
Measured deviation as mechanical angle (16 bits with sign, 182 dec corresponds to 1 °).
For Hall signals, the following applies:
Measured deviation as electrical angle (16 bits with sign, 182 dec corresponds to 1 °).
See also: p0491 (Motor encoder fault response ENCODER)

Remedy:
- Track C or D not connected.
- Correct the direction of rotation of the Hall sensor possibly connected as substitute for track C/D.
- Check that the encoder cables are routed in compliance with EMC.
- Check the adjustment of the Hall sensor.

Response upon: F: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A31431 (F, N) Motor encoder: Position deviation incremental/absolute too high (alarm)

Message class: Position/speed actual value incorrect or not available (11)
Message value: %1
Component: Encoder 1
Propagation: Local
Response: NONE
Acknowledgment: NONE

Cause: When the zero pulse is passed, a deviation in the incremental position was detected.
For equidistant zero marks, the following applies:
- The first zero mark passed supplies the reference point for all subsequent checks. The other zero marks must have n times the distance referred to the first zero mark.

For distance-coded zero marks, the following applies:
- The first zero mark pair supplies the reference point for all subsequent checks. The other zero mark pairs must have the expected distance to the first zero mark pair.

Alarm value (r2124, interpret decimal):
Deviation in quadrants (1 pulse = 4 quadrants).
See also: p0491 (Motor encoder fault response ENCODER)

Remedy:
- Check that the encoder cables are routed in compliance with EMC.
- Check the plug connections.
- Replace the encoder or encoder cable.
- Clean coding disk or remove strong magnetic fields.

Response upon: F: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A31432 (F, N) Motor encoder: Rotor position adaptation corrects deviation

Message class: Position/speed actual value incorrect or not available (11)
Message value: %1
Component: Encoder 1

Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: On track A/B, pulses have been lost or too many have been counted. These pulses are presently being corrected.
Alarm value (r2124, interpret decimal):
Last measured deviation of zero mark in increments (4 increments = 1 encoder pulse).
The sign designates the direction of motion when detecting the zero mark distance.
Remedy:
- Check that the encoder cables are routed in compliance with EMC.
- Check the plug connections.
- Replace the encoder or encoder cable.
- Check encoder limit frequency.
- Adapt the parameter for the clearance between zero marks (p0425).

Response upon: F: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A31442 (F, N) Motor encoder: Battery voltage alarm threshold reached

Message class: Position/speed actual value incorrect or not available (11)
Message value: -
Component: Encoder 1
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: When switched-off, the encoder uses a battery to back up the multiturn information. The multiturn information can no longer be buffered if the battery voltage drops even further.
Remedy: Replace battery.
Response upon: F: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A31443 (F, N) Motor encoder: Signal level track C/D outside tolerance (alarm)

Message class: Position/speed actual value incorrect or not available (11)
Message value: Fault cause: %1 bin
Component: Encoder 1
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: The unipolar level (CP/CN or DP/DN) for the motor encoder is outside the permissible tolerance.
Alarm value (r2124, interpret binary):
Bit 0 = 1: Either CP or CN outside the tolerance.
Bit 16 = 1: Either DP or DN outside the tolerance.
The unipolar nominal signal level of the encoder must lie in the range 2500 mV +/- 500 mV.
The response thresholds are < 1700 mV and > 3300 mV.
Note:
The signal level is not evaluated unless the following conditions are satisfied:
- Sensor Module properties available (r0459.31 = 1).
- Monitoring active (p0437.31 = 1).

See also: p0491 (Motor encoder fault response ENCODER)

Remedy: - Check that the encoder cables and shielding are routed in compliance with EMC.
- Check the plug connections and contacts of the encoder cable.
- Are the C/D tracks connected correctly (have the signal cables CP and CN or DP and DN been interchanged)?
- Replace the encoder cable.

Response upon: F: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A31470 (F, N) Motor encoder: Encoder signals an internal error (X521.7)

Message class: Position/speed actual value incorrect or not available (11)
Message value: -
Component: Encoder 1
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: For the Sensor Module Cabinet 30 (SMC30), a dirty encoder is signaled via a 0 signal at terminal X521.7.
Remedy: - Check the plug connections.
- Replace the encoder or encoder cable.

Response upon: F: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

F31500 (N, A) Motor encoder: Position tracking traversing range exceeded

Message class: Position/speed actual value incorrect or not available (11)
Message value: -
Component: None
Propagation: Global
Response: OFF1 (NONE, OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: For a configured linear axis without modulo correction, the drive/encoder has exceeded the maximum possible traversing range. The value should be read in p0412 and interpreted as the number of motor revolutions.
For p0411.0 = 1, the maximum traversing range for the configured linear axis is defined to be 64x (+/- 32x) of p0421.
For p0411.3 = 1, the maximum traversing range for the configured linear axis is preset (default value) to the highest possible value and is +/-p0412/2 (rounded off to complete revolutions). The highest possible value depends on the pulse number (p0408) and the fine resolution (p0419).
Remedy: The fault should be resolved as follows:
- Select commissioning.
- Reset the position tracking as follows (p0411.2 = 1).
- Deselect commissioning.

The fault should then be acknowledged and the absolute encoder adjusted.

Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F31501 (N, A) Motor encoder: Position tracking encoder position out of tolerance window

Message class: Position/speed actual value incorrect or not available (11)

Message value: %1
Component: None
Propagation: Global
Response: OFF1 (NONE, OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: When switched off, the drive/encoder was moved through a distance greater than was parameterized in the tolerance window. It is possible that there is no longer any reference between the mechanical system and encoder.
Fault value (r0949, interpret decimal):
Deviation (difference) to the last encoder position in increments of the absolute value.
The sign designates the traversing direction.
Note:
The deviation (difference) found is also displayed in r0477.
See also: p0413 (Measuring gearbox position tracking tolerance window), r0477 (Measuring gearbox position difference)
Remedy: Reset the position tracking as follows:
- Select commissioning.
- Reset the position tracking as follows (p0411.2 = 1).
- Deselect commissioning.
The fault should then be acknowledged.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F31502 (N, A) Motor encoder: Encoder with measuring gearbox without valid signals

Message class: Position/speed actual value incorrect or not available (11)
Message value: -
Component: Sensor Module Encoder 1
Propagation: Global
Response: OFF1 (OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: The encoder with measuring gearbox no longer provides any valid signals.
Remedy: It must be ensured that all of the encoders, with mounted measuring gearbox, provide valid actual values in operation.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F31503 (N, A) Motor encoder: Position tracking cannot be reset

Message class: Position/speed actual value incorrect or not available (11)
Message value: -
Component: None
Propagation: Global
Response: OFF1 (NONE, OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: The position tracking for the measuring gearbox cannot be reset.

Remedy: The fault should be resolved as follows:
- Select commissioning.
- Reset the position tracking as follows (p0411.2 = 1).
- Deselect commissioning.
The fault should then be acknowledged and the absolute encoder adjusted.

Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

A31700 Motor encoder: Functional safety monitoring initiated

Message class: Safety monitoring channel has identified an error (10)
Message value: Fault cause: %1 bin
Component: Sensor Module Encoder 1
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: Functional safety was activated. Self test of the DRIVE-CLiQ encoder has detected a fault.
Alarm value (r2124, interpret binary):
Bit x = 1: Effectivity test x unsuccessful.
Remedy: Replace encoder.

N31800 (F) Motor encoder: Group signal

Message class: Position/speed actual value incorrect or not available (11)
Message value: -
Component: None
Propagation: Local
Response: ENCODER (IASC/DCBRK, NONE)
Acknowledgment: NONE
Cause: The motor encoder has detected at least one fault.
See also: p0491 (Motor encoder fault response ENCODER)
Remedy: Evaluate the other messages that are presently available.
Response upon: F: ENCODER (IASC/DCBRK, NONE)
Acknowl. upon F: IMMEDIATELY

F31801 (N, A) Motor encoder DRIVE-CLiQ: Sign-of-life missing

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Component: Control Unit (CU)
Propagation: Local
Response: ENCODER (IASC/DCBRK, NONE)
Acknowledgment: IMMEDIATELY

Cause: There is a DRIVE-CLiQ communication error between the converter and the encoder involved.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

Error cause:
10 (= 0A hex):
The sign-of-life bit in the received telegram is not set.
See also: p0491 (Motor encoder fault response ENCODER)

Remedy: - Check the electrical cabinet design and cable routing for EMC compliance.
- Replace the component involved.

Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F31802 (N, A) Motor encoder: Time slice overflow

Message class: Hardware/software error (1)
Message value: %1
Component: Sensor Module Encoder 1
Propagation: Local
Response: ENCODER (IASC/DCBRK, NONE)
Acknowledgment: IMMEDIATELY
Cause: A time slice overflow for the motor encoder has occurred.
Fault value (r0949, interpret hexadecimal):
yx hex: y = function involved (Siemens-internal fault diagnostics), x = time slice involved
x = 9:
Time slice overflow of the fast (current controller clock cycle) time slice.
x = A:
Time slice overflow of the average time slice.
x = C:
Time slice overflow of the slow time slice.
yx = 3E7:
Timeout when waiting for SYNO (e.g. unexpected return to non-cyclic operation).
See also: p0491 (Motor encoder fault response ENCODER)

Remedy: Increase the current controller sampling time
Note:
For a current controller sampling time = 31.25 µs, use an SMx20 with Article No. 6SL3055-0AA00-5xA3.

Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F31804 (N, A) Motor encoder: Sensor Module checksum error

Message class: Hardware/software error (1)
Message value: %1
Component: Sensor Module Encoder 1
Propagation: Local

Response: ENCODER (IASC/DCBRK, NONE)
Acknowledgment: POWER ON
Cause: A checksum error has occurred when reading-out the program memory on the Sensor Module.
Fault value (r0949, interpret hexadecimal):
yyyyxxxx hex
yyyy: Memory area involved.
xxxx: Difference between the checksum at POWER ON and the actual checksum.
See also: p0491 (Motor encoder fault response ENCODER)
Remedy: - Carry out a POWER ON (switch-off/switch-on).
- Upgrade firmware to later version.
- Check whether the permissible ambient temperature for the component is being maintained.
- Replace the Sensor Module.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F31805 (N, A) Motor encoder: EEPROM checksum error

Message class: Hardware/software error (1)
Message value: %1
Component: Sensor Module Encoder 1
Propagation: Local
Response: ENCODER (IASC/DCBRK, NONE)
Acknowledgment: IMMEDIATELY
Cause: Data in the EEPROM corrupted .
Fault value (r0949, interpret hexadecimal):
01: EEPROM access error.
02: Too many blocks in the EEPROM.
See also: p0491 (Motor encoder fault response ENCODER)
Remedy: Replace the module.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F31806 (N, A) Motor encoder: Initialization error

Message class: Position/speed actual value incorrect or not available (11)
Message value: %1
Component: Sensor Module Encoder 1
Propagation: Local
Response: ENCODER (IASC/DCBRK, NONE)
Acknowledgment: PULSE INHIBIT

Cause: The encoder was not successfully initialized.
Fault value (r0949, interpret binary):
Bit 0, 1: Encoder initialization with the motor rotating has failed (deviation involving coarse and fine position in encoder pulses/4).
Bit 2: Mid-voltage matching for track A unsuccessful.
Bit 3: Mid-voltage matching for track B unsuccessful.
Bit 4: Mid-voltage matching for acceleration input unsuccessful.
Bit 5: Mid-voltage matching for track safety A unsuccessful.
Bit 6: Mid-voltage matching for track safety B unsuccessful.
Bit 7: Mid-voltage matching for track C unsuccessful.
Bit 8: Mid-voltage matching for track D unsuccessful.
Bit 9: Mid-voltage matching for track R unsuccessful.
Bit 10: The difference in mid-voltages between A and B is too great (> 0.5 V)
Bit 11: The difference in mid-voltages between C and D is too great (> 0.5 V)
Bit 12: The difference in mid-voltages between safety A and safety B is too great (> 0.5 V)
Bit 13: The difference in mid-voltages between A and safety B is too great (> 0.5 V)
Bit 14: The difference in mid-voltages between B and safety A is too great (> 0.5 V)
Bit 15: The standard deviation of the calculated mid-voltages is too great (> 0.3 V)
Bit 16: Internal fault - Fault when reading a register (CAFE)
Bit 17: Internal fault - Fault when writing a register (CAFE)
Bit 18: Internal fault: No mid-voltage matching available
Bit 19: Internal error - ADC access error.
Bit 20: Internal error - No zero crossover found.
Bit 28: Error while initializing the EnDat 2.2 measuring unit.
Bit 29: Error when reading out the data from the EnDat 2.2 measuring unit.
Bit 30: EEPROM checksum of the EnDat 2.2 measuring unit incorrect.
Bit 31: Data of the EnDat 2.2 measuring unit inconsistent.
Note:
Bit 0, 1: Up to 6SL3055-0AA00-5*A0
Bits 2 ... 20: 6SL3055-0AA00-5*A1 and higher
See also: p0491 (Motor encoder fault response ENCODER)

Remedy: Acknowledge fault.
If the fault cannot be acknowledged:
Bits 2 ... 9: Check encoder power supply.
Bits 2 ... 14: Check the corresponding cable.
Bit 15 with no other bits: Check track R, check settings in p0404.
Bit 28: Check the cable between the EnDat 2.2 converter and the measuring unit.
Bit 29 ... 31: Replace the defective measuring unit.

Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

A31811 (F, N) Motor encoder: Encoder serial number changed

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: Encoder 1
Propagation: Local
Response: NONE
Acknowledgment: NONE

Cause: The serial number of the motor encoder of a synchronous motor has changed. The change was only checked for encoders with serial number (e.g. EnDat encoders) and build-in motors (e.g. p0300 = 401) or third-party motors (p0300 = 2).
Cause 1:
- The encoder was replaced.
Cause 2:
- A third-party, built-in or linear motor was re-commissioned.
Cause 3:
- The motor with integrated and adjusted encoder was replaced.
Cause 4:
- The firmware was updated to a version that checks the encoder serial number.
See also: p0491 (Motor encoder fault response ENCODER)

Remedy: For causes 1, 2:
Carry out an automatic adjustment using the pole position identification routine. Acknowledge fault. Initiate the pole position identification routine with p1990 = 1. Then check that the pole position identification routine is correctly executed.
For causes 3, 4:
Accept the new serial number by copying from r0460 to p0441.

Response upon: F: NONE (ENCODER, OFF2)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

F31812 (N, A) Motor encoder: Requested cycle or RX/TX timing not supported

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: Sensor Module Encoder 1
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: A cycle or RX/TX timing requested by the converter is not supported.
Fault value (r0949, interpret decimal):
0: Application cycle is not supported.
1: DRIVE-CLiQ cycle is not supported.
2: Distance between RX and TX instants in time too low.
3: TX instant in time too early.
Remedy: Carry out a POWER ON (switch-off/switch-on) for all components.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F31813 Motor encoder: Hardware logic unit failed

Message class: Hardware/software error (1)
Message value: Fault cause: %1 bin
Component: Sensor Module Encoder 1
Propagation: Global
Response: ENCODER (IASC/DCBRK, NONE)
Acknowledgment: PULSE INHIBIT

Cause: The logic unit of the DRIVE-CLiQ encoder has failed.
Fault value (r0949, interpret binary):
Bit 0: ALU watchdog has responded.
Bit 1: ALU has detected a sign-of-life error.
Remedy: When the error reoccurs, replace the encoder.

F31820 (N, A) Motor encoder DRIVE-CLiQ: Telegram error

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Component: Sensor Module Encoder 1
Propagation: Local
Response: ENCODER (IASC/DCBRK, NONE)
Acknowledgment: IMMEDIATELY
Cause: There is a DRIVE-CLiQ communication error between the converter and the encoder involved.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

Error cause:
1 (= 01 hex):
Checksum error (CRC error).
2 (= 02 hex):
Telegram is shorter than specified in the length byte or in the receive list.
3 (= 03 hex):
Telegram is longer than specified in the length byte or in the receive list.
4 (= 04 hex):
The length of the received telegram does not match the receive list.
5 (= 05 hex):
The type of the received telegram does not match the receive list.
6 (= 06 hex):
The address of the component in the telegram and in the receive list do not match.
7 (= 07 hex):
A SYNC telegram is expected - but the received telegram is not a SYNC telegram.
8 (= 08 hex):
No SYNC telegram is expected - but the received telegram is one.
9 (= 09 hex):
The error bit in the received telegram is set.
16 (= 10 hex):
The received telegram is too early.
See also: p0491 (Motor encoder fault response ENCODER)
Remedy: - Carry out a POWER ON (switch-off/switch-on).
- Check the electrical cabinet design and cable routing for EMC compliance.
- Check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F31835 (N, A) Motor encoder DRIVE-CLiQ: Cyclic data transfer error

Message class: Internal (DRIVE-CLiQ) communication error (12)

Message value: Component number: %1, fault cause: %2

Component: Sensor Module Encoder 1

Propagation: Local

Response: ENCODER (IASC/DCBRK, NONE)

Acknowledgment: IMMEDIATELY

Cause: There is a DRIVE-CLiQ communication error between the converter and the encoder involved. The nodes do not send and receive in synchronism.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

Error cause:
33 (= 21 hex):
The cyclic telegram has not been received.
34 (= 22 hex):
Timeout in the telegram receive list.
64 (= 40 hex):
Timeout in the telegram send list.
See also: p0491 (Motor encoder fault response ENCODER)

Remedy:
- Carry out a POWER ON.
- Replace the component involved.

Response upon: N: NONE

Acknowl. upon N: NONE

Response upon: A: NONE

Acknowl. upon A: NONE

F31836 (N, A) Motor encoder DRIVE-CLiQ: Send error for DRIVE-CLiQ data

Message class: Internal (DRIVE-CLiQ) communication error (12)

Message value: Component number: %1, fault cause: %2

Component: Sensor Module Encoder 1

Propagation: Local

Response: ENCODER (IASC/DCBRK, NONE)

Acknowledgment: IMMEDIATELY

Cause: There is a DRIVE-CLiQ communication error between the converter and the encoder involved. Data were not able to be sent.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

Error cause:
65 (= 41 hex):
Telegram type does not match send list.
See also: p0491 (Motor encoder fault response ENCODER)

Remedy: Carry out a POWER ON.

Response upon: N: NONE

Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F31837 (N, A) Motor encoder DRIVE-CLiQ: Component fault

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Component: Sensor Module Encoder 1
Propagation: Local
Response: ENCODER (IASC/DCBRK, NONE)
Acknowledgment: IMMEDIATELY
Cause: Fault detected on the DRIVE-CLiQ component involved. Faulty hardware cannot be excluded.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

Error cause:
32 (= 20 hex):
Error in the telegram header.
35 (= 23 hex):
Receive error: The telegram buffer memory contains an error.
66 (= 42 hex):
Send error: The telegram buffer memory contains an error.
67 (= 43 hex):
Send error: The telegram buffer memory contains an error.
See also: p0491 (Motor encoder fault response ENCODER)

Remedy:
- Check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
- Check the electrical cabinet design and cable routing for EMC compliance.
- Replace the component involved.

Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F31845 (N, A) Motor encoder DRIVE-CLiQ: Cyclic data transfer error

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Component: Sensor Module Encoder 1
Propagation: Local
Response: ENCODER (IASC/DCBRK, NONE)
Acknowledgment: IMMEDIATELY

Cause: There is a DRIVE-CLiQ communication error between the converter and the encoder involved.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

Error cause:
11 (= 0B hex):
Synchronization error during alternating cyclic data transfer.
See also: p0491 (Motor encoder fault response ENCODER)

Remedy: Carry out a POWER ON (switch-off/switch-on).
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F31850 (N, A) Motor encoder: Encoder evaluation internal software error

Message class: Hardware/software error (1)
Message value: %1
Component: Sensor Module Encoder 1
Propagation: Local
Response: ENCODER (IASC/DCBRK, NONE)
Acknowledgment: POWER ON
Cause: An internal software error has occurred in the Sensor Module of the motor encoder.
Fault value (r0949, interpret decimal):
1: Background time slice is blocked.
2: Checksum over the code memory is not correct.
10000: OEM memory of the EnDat encoder contains data that cannot be interpreted.
11000 ... 11499: Description data from EEPROM incorrect.
11500 ... 11899: Calibration data from EEPROM incorrect.
11900 ... 11999: Configuration data from EEPROM incorrect.
12000 ... 12008: Communications error with analog/digital converter.
16000: DRIVE-CLiQ encoder initialization application error.
16001: DRIVE-CLiQ encoder initialization ALU error.
16002: DRIVE-CLiQ encoder HISI / SISI initialization error.
16003: DRIVE-CLiQ encoder safety initialization error.
16004: DRIVE-CLiQ encoder internal system error.
See also: p0491 (Motor encoder fault response ENCODER)
Remedy: - Replace the Sensor Module.
- If required, upgrade the firmware.
- Contact Technical Support.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F31851 (N, A) Encoder 1 DRIVE-CLiQ: Sign-of-life missing

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2

Component:	Sensor Module Encoder 1
Propagation:	Local
Response:	ENCODER (IASC/DCBRK, NONE)
Acknowledgment:	IMMEDIATELY
Cause:	There is a DRIVE-CLiQ communication error from the Sensor Module involved (encoder 1) to the converter. The DRIVE-CLiQ component did not set the sign-of-life to the converter. Fault value (r0949, interpret hexadecimal): 0000yyxx hex: yy = component number, xx = fault cause Error cause: 10 (= 0A hex): The sign-of-life bit in the received telegram is not set.
Remedy:	- Upgrade the firmware of the component involved. - Carry out a POWER ON (switch-off/switch-on) for the component involved.
Response upon: N:	NONE
Acknowl. upon N:	NONE
Response upon: A:	NONE
Acknowl. upon A:	NONE

F31860 (N, A) Encoder 1 DRIVE-CLiQ: Telegram error

Message class:	Internal (DRIVE-CLiQ) communication error (12)
Message value:	Component number: %1, fault cause: %2
Component:	Sensor Module Encoder 1
Propagation:	Local
Response:	ENCODER (IASC/DCBRK, NONE)
Acknowledgment:	IMMEDIATELY

Cause: There is a DRIVE-CLiQ communication error from the Sensor Module involved (encoder 1) to the converter.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

Error cause:
1 (= 01 hex):
Checksum error (CRC error).
2 (= 02 hex):
Telegram is shorter than specified in the length byte or in the receive list.
3 (= 03 hex):
Telegram is longer than specified in the length byte or in the receive list.
4 (= 04 hex):
The length of the received telegram does not match the receive list.
5 (= 05 hex):
The type of the received telegram does not match the receive list.
6 (= 06 hex):
The address of the power unit in the telegram and in the receive list do not match.
9 (= 09 hex):
The DRIVE-CLiQ communication from the DRIVE-CLiQ component involved to the converter signals that the supply voltage has failed.
16 (= 10 hex):
The received telegram is too early.
17 (= 11 hex):
CRC error and the received telegram is too early.
18 (= 12 hex):
The telegram is shorter than that specified in the length byte or in the receive list and the received telegram is too early.
19 (= 13 hex):
The telegram is longer than that specified in the length byte or in the receive list and the received telegram is too early.
20 (= 14 hex):
The length of the received telegram does not match the receive list and the received telegram is too early.
21 (= 15 hex):
The type of the received telegram does not match the receive list and the received telegram is too early.
22 (= 16 hex):
The address of the power unit in the telegram and in the receive list does not match and the received telegram is too early.
25 (= 19 hex):
The error bit in the received telegram is set and the received telegram is too early.

Remedy:
- Carry out a POWER ON (switch-off/switch-on).
- Check the electrical cabinet design and cable routing for EMC compliance.
- Check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).

Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F31875 (N, A) Motor encoder: Supply voltage failed

Message class: Supply voltage fault (undervoltage) (3)

Message value: Component number: %1, fault cause: %2
Component: Sensor Module Encoder 1
Propagation: Local
Response: ENCODER (IASC/DCBRK, NONE)
Acknowledgment: IMMEDIATELY
Cause: The DRIVE-CLiQ communication from the DRIVE-CLiQ component involved to the converter signals that the supply voltage has failed.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

Error cause:
9 (= 09 hex):
The supply voltage for the component has failed.
Remedy: - Check the supply voltage wiring (interrupted cable, contacts, ...).
- Check the dimensioning of the 24 V supply, check cable lengths.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F31885 (N, A) Encoder 1 DRIVE-CLiQ: Cyclic data transfer error

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Component: Sensor Module Encoder 1
Propagation: Local
Response: ENCODER (IASC/DCBRK, NONE)
Acknowledgment: IMMEDIATELY
Cause: There is a DRIVE-CLiQ communication error between the Sensor Module involved (encoder 1) and the converter. The nodes do not send and receive in synchronism.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

Error cause:
26 (= 1A hex):
Sign-of-life bit in the received telegram not set and the received telegram is too early.
33 (= 21 hex):
The cyclic telegram has not been received.
34 (= 22 hex):
Timeout in the telegram receive list.
64 (= 40 hex):
Timeout in the telegram send list.
98 (= 62 hex):
Error at the transition to cyclic operation.

Remedy: - Check the supply voltage of the component involved.
- Carry out a POWER ON (switch-off/switch-on).
- Replace the component involved.

Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F31886 (N, A) Encoder 1 DRIVE-CLiQ: Error when sending DRIVE-CLiQ data

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Component: Sensor Module Encoder 1
Propagation: Local
Response: ENCODER (IASC/DCBRK, NONE)
Acknowledgment: IMMEDIATELY
Cause: There is a DRIVE-CLiQ communication error from the Sensor Module involved (encoder 1) to the converter. Data were not able to be sent.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

Error cause:
65 (= 41 hex):
Telegram type does not match send list.

Remedy: Carry out a POWER OFF/ON.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F31887 (N, A) Motor encoder DRIVE-CLiQ: Component fault

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Component: Sensor Module Encoder 1
Propagation: Local
Response: ENCODER (IASC/DCBRK, NONE)
Acknowledgment: IMMEDIATELY

Cause: A fault has been detected on the DRIVE-CLiQ component involved (Sensor Module for the motor encoder). Faulty hardware cannot be excluded.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

Error cause:
32 (= 20 hex):
Error in the telegram header.
35 (= 23 hex):
Receive error: The telegram buffer memory contains an error.
66 (= 42 hex):
Send error: The telegram buffer memory contains an error.
67 (= 43 hex):
Send error: The telegram buffer memory contains an error.
96 (= 60 hex):
Response received too late during runtime measurement.
97 (= 61 hex):
Time taken to exchange characteristic data too long.

Remedy:
- Check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
- Check the electrical cabinet design and cable routing for EMC compliance.
- Replace the component involved.

Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F31895 (N, A) Encoder 1 DRIVE-CLiQ: Alternating cyclic data transfer error

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Component: Sensor Module Encoder 1
Propagation: Local
Response: ENCODER (IASC/DCBRK, NONE)
Acknowledgment: IMMEDIATELY
Cause: There is a DRIVE-CLiQ communication error from the Sensor Module involved (encoder 1) to the converter.
Error cause:
11 (= 0B hex):
Synchronization error during alternating cyclic data transfer.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex:
yy = component number,
xx = fault cause

Remedy: Carry out a POWER ON.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F31896 (N, A) Motor encoder DRIVE-CLiQ: Component properties inconsistent

Message class: Internal (DRIVE-CLiQ) communication error (12)

Message value: Component number: %1

Component: Sensor Module Encoder 1

Propagation: Local

Response: OFF2 (ENCODER, IASC/DCBRK, NONE, OFF1, OFF3, STOP2)

Acknowledgment: IMMEDIATELY

Explanation of the message value:
For %1
Component in target topology

Cause:
The properties of the DRIVE-CLiQ component (Sensor Module for the motor encoder), specified by the fault value, have changed in an incompatible fashion with respect to the properties when running up. One cause can be, e.g. that a DRIVE-CLiQ cable or DRIVE-CLiQ component has been replaced.
Fault value (r0949, interpret decimal):
Component number.

Remedy:
- Carry out a POWER ON.
- When a component is replaced, the same component type and if possible the same firmware version should be used.
- When a cable is replaced, only use cables whose length is the same as or as close as possible to the length of the original cable (ensure compliance with the maximum cable length).

Response upon: N: NONE

Acknowl. upon N: NONE

Response upon: A: NONE

Acknowl. upon A: NONE

F31899 (N, A) Motor encoder: Unknown fault

Message class: Position/speed actual value incorrect or not available (11)

Message value: New message: %1

Component: Sensor Module Encoder 1

Propagation: Global

Response: ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, STOP2)

Acknowledgment: IMMEDIATELY

Cause:
A fault occurred on the Sensor Module for encoder 1 that cannot be interpreted by the converter firmware.
This can occur if the firmware on this component is more recent than the firmware on the converter.
Fault value (r0949, interpret decimal):
Fault number.
Note:
The significance of this new fault can be reviewed in a more recent documentation of the converter.
See also: p0491 (Motor encoder fault response ENCODER)

Remedy:
- Replace the firmware on the Sensor Module by an older firmware version.
- Upgrade the converter firmware

Response upon: N: NONE

Acknowl. upon N: NONE

Response upon: A: NONE

Acknowl. upon A: NONE

A31902 (F, N) Motor encoder: SPI-BUS error occurred

Message class: Hardware/software error (1)

Message value: %1

Component: Sensor Module Encoder 1

Propagation: Global

Response: NONE
Acknowledgment: NONE
Cause: Error when operating the internal SPI bus.
Alarm value (r2124, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Remedy: - Replace the Sensor Module.
- If required, upgrade the firmware in the Sensor Module.
- Contact Technical Support.
Response upon: F: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A31903 (F, N) Motor encoder: I2C-BUS error occurred

Message class: Hardware/software error (1)
Message value: %1
Component: Sensor Module Encoder 1
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: Error when operating the internal I2C bus.
Alarm value (r2124, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Remedy: - Replace the Sensor Module.
- If required, upgrade the firmware in the Sensor Module.
- Contact Technical Support.
Response upon: F: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

F31905 (N, A) Motor encoder: Encoder parameterization error

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Parameter: %1, supplementary information: %2
Component: Sensor Module Encoder 1
Propagation: Global
Response: ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, STOP2)
Acknowledgment: IMMEDIATELY

Cause:
An error was identified in the encoder parameterization.
It is possible that the parameterized encoder type does not match the connected encoder.
The parameter involved can be determined as follows:
- Determine the parameter number using the fault value (r0949).
- Determine the parameter index (p0187).
Fault value (r0949, interpret decimal):
yyyyxxxx dec: yyyy = supplementary information, xxxx = parameter
xxxx = 421:
For an EnDat/SSI encoder, the absolute position in the protocol must be less than or equal to 30 bits.
xxxx = 12008:
Compares the configuration with the properties of the Sensor Module (p0430 with r0458 or p0437 with r0459)
Only bits are set in p0430 and p0437, which are indicated in the properties of the Sensor Module (r0458 and r0459).
Bits that are not displayed in the properties of the Sensor Module must be reset to the factory setting and then a POWER ON carried out (switch-off/switch-on).
Alternatively, delete the drive, recommission and then carry out a POWER ON (switch-off/switch-on).
yyyy = 0:
No additional information available.
yyyy = 1:
The component does not support HTL level (p0405.1 = 0) combined with track monitoring A/B <> -A/B (p0405.2 = 1).
yyyy = 2:
A code number for an identified encoder has been entered into p0400, however, no identification was carried out. Please start a new encoder identification.
yyyy = 3:
A code number for an identified encoder has been entered into p0400, however, no identification was carried out. Please select a listed encoder in p0400 with a code number < 10000.
yyyy = 4:
This component does not support SSI encoders (p0404.9 = 1) without track A/B.
yyyy = 5:
For SQW encoder, value in p4686 greater than in p0425.
yyyy = 6:
DRIVE-CLiQ encoder cannot be used with this firmware version.
yyyy = 7:
For an SQW encoder, the XIST1 correction (p0437.2) is only permitted for equidistant zero marks.
yyyy = 8:
The motor pole pair width is not supported by the linear scale being used.
yyyy = 9:
The length of the position in the EnDat protocol may be a maximum of 32 bits.
yyyy = 10:
The connected encoder is not supported.
yyyy = 11:
The hardware does not support track monitoring.
See also: p0491 (Motor encoder fault response ENCODER)

Remedy:
- Check whether the connected encoder type matches the encoder that has been parameterized.
- Correct the parameter specified by the fault value (r0949) and p0187.
- For parameter number = 314:
- Check the pole pair number and measuring gearbox ratio. The quotient of the "pole pair number" divided by the "measuring gearbox ratio" must be less than or equal to 1000 ((r0313 * p0433) / p0432 <= 1000).

Response upon: N: NONE

Acknowl. upon N: NONE

Response upon: A: NONE

Acknowl. upon A: NONE

F31912 Motor encoder: Device combination is not permissible

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: Encoder 1
Propagation: Global
Response: ENCODER (IASC/DCBRK, NONE)
Acknowledgment: PULSE INHIBIT
Cause: The selected device combination is not supported.
Fault value (r0949, interpret decimal):
1003:
The connected measuring unit cannot be operated with the EnDat 2.2 converter. For instance, the measuring unit has a pulse number/resolution of 2^n.
1005:
The type of measuring unit (incremental) is not supported by the EnDat 2.2 converter.
1006:
The maximum duration of the EnDat transfer (31.25 µs) was exceeded.
2001:
The set combination of current controller clock cycle, DP clock cycle and safety clock cycle is not supported by the EnDat 2.2 converter.
Remedy: For fault value = 1003, 1005, 1006:
- Use a measuring unit that is permissible.
For fault value = 2001:
- Set a permissible clock cycle combination (if required, use default settings).

A31915 (F, N) Motor encoder: Encoder configuration error

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: Sensor Module Encoder 1
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The motor encoder configuration is incorrect.
Alarm value (r2124, interpret decimal):
1:
Re-parameterization between fault/alarm is not permissible.
2:
The cyclic DQ receive telegram is too long and is limited.
3:
The cyclic DQ send telegram is too long and is limited.
419:
When the fine resolution Gx_XIST2 is configured, the encoder identifies a maximum possible absolute position actual value (r0483) that can no longer be represented within 32 bits.
Remedy: For alarm value = 1:
No re-parameterization between fault/alarm.
For alarm value = 419:
Reduce the fine resolution (p0419) or deactivate the monitoring (p0437.25), if the complete multiturn range is not required.
Response upon: F: NONE (ENCODER, IASC/DCBRK)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

F31916 (N, A) Motor encoder: Encoder parameterization error

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Parameter: %1, supplementary information: %2
Component: Sensor Module Encoder 1
Propagation: Global
Response: ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, STOP2)
Acknowledgment: IMMEDIATELY
Cause: An encoder parameter was detected as being incorrect.
It is possible that the parameterized encoder type does not match the connected encoder.
The parameter involved can be determined as follows:
- Determine the parameter number using the fault value (r0949).
- Determine the parameter index (p0187).
Fault value (r0949, interpret decimal):
Parameter number.
See also: p0491 (Motor encoder fault response ENCODER)
Remedy: - Check whether the connected encoder type matches the encoder that has been parameterized.
- Correct the parameter specified by the fault value (r0949) and p0187.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F31950 Motor encoder: Internal software error

Message class: Hardware/software error (1)
Message value: %1
Component: Sensor Module Encoder 1
Propagation: Local
Response: ENCODER (OFF2)
Acknowledgment: POWER ON
Cause: An internal software error has occurred.
Fault value (r0949, interpret decimal):
The fault value contains information regarding the fault source.
Only for internal Siemens troubleshooting.
Remedy: - If necessary, upgrade the firmware in the Sensor Module to a later version.
- Contact Technical Support.

A31999 (F, N) Motor encoder: Unknown alarm

Message class: Position/speed actual value incorrect or not available (11)
Message value: New message: %1
Component: Sensor Module Encoder 1
Propagation: Global
Response: NONE
Acknowledgment: NONE

Cause: An alarm has occurred on the Sensor Module for encoder 1, which cannot be interpreted by the converter firmware.
This can occur if the firmware on this component is more recent than the converter firmware.
Alarm value (r2124, interpret decimal):
Alarm number.
Note:
If required, the significance of this new alarm can be read about in a more recent description of the converter.
See also: p0491 (Motor encoder fault response ENCODER)

Remedy: - Replace the firmware on the Sensor Module by an older firmware version.
- Upgrade the converter firmware.

Response upon: F: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)

Acknowl. upon F: IMMEDIATELY

Response upon: N: NONE

Acknowl. upon N: NONE

F32100 (N, A) Encoder 2: Zero mark distance error

Message class: Position/speed actual value incorrect or not available (11)

Message value: %1

Component: Encoder 2

Propagation: Local

Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)

Acknowledgment: PULSE INHIBIT

Cause: The measured zero mark distance does not correspond to the parameterized zero mark distance.
For distance-coded encoders, the zero mark distance is determined from zero marks detected pairs. This means that if a zero mark is missing, depending on the pair generation, this cannot result in a fault and also has no effect in the system.
The zero mark distance for zero mark monitoring is set in p0425.
Fault value (r0949, interpret decimal):
Last measured zero mark distance in increments (4 increments = 1 encoder pulse).
The sign designates the direction of motion when detecting the zero mark distance.

Remedy: - Check that the encoder cables are routed in compliance with EMC.
- Check the plug connections.
- Check the encoder type (encoder with equidistant zero marks).
- Adapt the parameter for the clearance between zero marks (p0425).
- If message is output above the speed threshold, reduce filter time if necessary (p0438).
- Replace the encoder or encoder cable.

Response upon: N: NONE

Acknowl. upon N: NONE

Response upon: A: NONE

Acknowl. upon A: NONE

F32101 (N, A) Encoder 2: Zero mark failed

Message class: Position/speed actual value incorrect or not available (11)

Message value: %1

Component: Encoder 2

Propagation: Local

Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)

Acknowledgment: PULSE INHIBIT

Cause: The 1.5 x parameterized zero mark distance was exceeded.
The zero mark distance for zero mark monitoring is set in p0425.
Fault value (r0949, interpret decimal):
Number of increments after POWER ON or since the last zero mark that was detected (4 increments = 1 encoder pulse).

Remedy:
- Check that the encoder cables are routed in compliance with EMC.
- Check the plug connections.
- Check the encoder type (encoder with equidistant zero marks).
- Adapt the parameter for the clearance between zero marks (p0425).
- If message is output above the speed threshold, reduce filter time if necessary (p0438).
- When p0437.1 is active, check p4686.
- Replace the encoder or encoder cable.

Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F32103 (N, A) Encoder 2: Signal level zero track (track R) outside tolerance

Message class: Position/speed actual value incorrect or not available (11)
Message value: R track: %1
Component: Encoder 2
Propagation: Local
Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Acknowledgment: IMMEDIATELY

Cause: The zero mark signal level (track R) does not lie within the tolerance bandwidth for encoder 2.
The fault can be initiated when the unipolar voltage level is exceeded (RP/RN) or if the differential amplitude is undershot.
Fault value (r0949, interpret hexadecimal):
yyyyxxxx hex: yyyy = 0, xxxx = Signal level, track R (16 bits with sign)
The response thresholds of the unipolar signal levels of the encoder are between < 1400 mV and > 3500 mV.
The response threshold for the differential signal level of the encoder is < -1600 mV.
A signal level of 500 mV peak value corresponds to the numerical value 5333 hex = 21299 dec.
Note:
The analog value of the amplitude error is not measured at the same time with the hardware fault output by the Sensor Module.
The fault value can only be represented between -32768 ... 32767 dec (-770 ... 770 mV).
The signal level is not evaluated unless the following conditions are satisfied:
- Sensor Module properties available (r0459.31 = 1).
- Monitoring active (p0437.31 = 1).

Remedy:
- Check the speed range; frequency characteristic (amplitude characteristic) of the measuring equipment might not be sufficient for the speed range
- Check that the encoder cables and shielding are routed in compliance with EMC.
- Check the plug connections and contacts of the encoder cable.
- Check the encoder type (encoder with zero marks).
- Check whether the zero mark is connected and the signal cables RP and RN have been connected correctly (not connected with the incorrect polarity).
- Replace the encoder cable.
- If the coding disk is soiled or the lighting aged, replace the encoder.

Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F32110 (N, A) Encoder 2: Serial communications error

Message class: Position/speed actual value incorrect or not available (11)

Message value: Fault cause: %1 bin

Component: Encoder 2

Propagation: Local

Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)

Acknowledgment: PULSE INHIBIT

Cause: There is an error in the transfer of the serial communication protocol between the encoder and internal or external evaluation module.

Fault value (r0949, interpret binary):

For an EnDat 2.1 encoder, the significance of the fault value is as follows:

Bit 0: Alarm bit in the position protocol.

Bit 1: Incorrect quiescent level on the data line.

Bit 2: Encoder does not respond (does not supply a start bit within 50 ms).

Bit 3: CRC error: The checksum in the protocol from the encoder does not match the data.

Bit 4: Encoder acknowledgment error: The encoder incorrectly understood the task (request) or cannot execute it.

Bit 5: Internal error in the serial driver: An illegal mode command was requested.

Bit 6: Timeout when cyclically reading.

Bit 7: Timeout for the register communication.

Bit 8: Protocol is too long (e.g. > 64 bits).

Bit 9: Receive buffer overflow.

Bit 10: Frame error when reading twice.

Bit 11: Parity error.

Bit 12: Data line signal level error during the monoflop time.

Bit 13: Data line incorrect.

Bit 14: Register communication error.

Bit 15: Internal communication error.

Note:

For an EnDat 2.2 encoder, the significance of the fault value for F3x135 (x = 1, 2, 3) is described.

Remedy:
For fault value, bit 0 = 1:
- Encoder defect F31111 may provide further details.

For fault value, bit 1 = 1:
- Incorrect encoder type / replace the encoder or encoder cable.

For fault value, bit 2 = 1:
- Incorrect encoder type / replace the encoder or encoder cable.

For fault value, bit 3 = 1:
- EMC / connect the cable shield, replace the encoder or encoder cable.

For fault value, bit 4 = 1:
- EMC / connect the cable shield, replace the encoder or encoder cable, replace the Sensor Module.

For fault value, bit 5 = 1:
- EMC / connect the cable shield, replace the encoder or encoder cable, replace the Sensor Module.

For fault value, bit 6 = 1:
- Update Sensor Module firmware.

For fault value, bit 7 = 1:
- Incorrect encoder type / replace the encoder or encoder cable.

For fault value, bit 8 = 1:
- Check parameterization (p0429.2).

For fault value, bit 9 = 1:
- EMC / connect the cable shield, replace the encoder or encoder cable, replace the Sensor Module.

For fault value, bit 10 = 1:
- Check parameterization (p0429.2, p0449).

For fault value, bit 11 = 1:
- Check parameterization (p0436).

For fault value, bit 12 = 1:
- Check parameterization (p0429.6).

For fault value, bit 13 = 1:
- Check data line.

For fault value, bit 14 = 1:
- Incorrect encoder type / replace the encoder or encoder cable.

Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F32111 (N, A) Encoder 2: Encoder signals an internal error (detailed information)

Message class: Position/speed actual value incorrect or not available (11)
Message value: Fault cause: %1 bin, additional information: %2
Component: Encoder 2
Propagation: Local
Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Acknowledgment: PULSE INHIBIT

Cause: The encoder error word provides detailed information (error bit).
For p0404.8 = 0, the following applies:
Fault value for internal Siemens troubleshooting.
For p0404.8 = 1, the following applies:
Fault value (r0949, interpret binary):
yyyyxxxx hex: yyyy = supplementary information, xxxx = fault cause
yyyy = 0:
Bit 0: Lighting system failed.
Bit 1: Signal amplitude too low.
Bit 2: Position value incorrect.
Bit 3: Encoder power supply overvoltage condition.
Bit 4: Encoder power supply undervoltage condition.
Bit 5: Encoder power supply overcurrent condition.
Bit 6: The battery must be changed.

Remedy: For yyyy = 0:
For fault value, bit 0 = 1:
Encoder is defective. Replace the encoder or motor.
For fault value, bit 1 = 1:
Encoder is defective. Replace the encoder or motor.
For fault value, bit 2 = 1:
Encoder is defective. Replace the encoder or motor.
For fault value, bit 3 = 1:
5 V supply voltage fault.
When using an SMC: Check the plug-in cable between the encoder and SMC or replace the SMC.
Otherwise: Replace the encoder.
For fault value, bit 4 = 1:
5 V supply voltage fault.
When using an SMC: Check the plug-in cable between the encoder and SMC or replace the SMC.
Otherwise: Replace the encoder.
For fault value, bit 5 = 1:
Encoder is defective. Replace the encoder or motor.
For fault value, bit 6 = 1:
The battery must be changed (only for encoders with battery backup).
For yyyy = 1:
Encoder is defective. Replace encoder.

Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F32115 (N, A) Encoder 2: Signal level track A or B too low

Message class: Position/speed actual value incorrect or not available (11)
Message value: A track: %1, B track: %2
Component: Encoder 2
Propagation: Local
Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Acknowledgment: PULSE INHIBIT

Cause: The signal level (root from A^2 + B^2) of the encoder falls below the permissible limit value.
Fault value (r0949, interpret hexadecimal):
yyyyxxxx hex:
yyyy = Signal level, track B (16 bits with sign).
xxxx = Signal level, track A (16 bits with sign).
The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %).
The response threshold is < 170 mV (input frequency <= 256 kHz) or < 120 mV (input frequency > 256 kHz).
A signal level of 500 mV peak value corresponds to the numerical value 5333 hex = 21299 dec.
Note for Sensor Modules for resolvers (e.g. SMC10):
The nominal signal level is at 2900 mV (2.0 Vrms). The response threshold is < 1070 mV.
A signal level of 2900 mV peak value corresponds to the numerical value 6666 hex = 26214 dec.
Note:
The analog values of the amplitude error are not measured at the same time with the hardware fault output by the Sensor Module.

Remedy: - Check that the encoder cables and shielding are routed in compliance with EMC.
- Check the plug connections.
- Replace the encoder or encoder cable.
- Check the Sensor Module (e.g. contacts).
The following applies to measuring systems without their own bearing system:
- Adjust the scanning head and check the bearing system of the measuring wheel.
The following applies for measuring systems with their own bearing system:
- Ensure that the encoder housing is not subject to any axial force.

Response upon: N: NONE

Acknowl. upon N: NONE

Response upon: A: NONE

Acknowl. upon A: NONE

F32116 (N, A) Encoder 2: Signal level track A or B too low

Message class: Position/speed actual value incorrect or not available (11)

Message value: A track: %1, B track: %2

Component: Encoder 2

Propagation: Local

Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)

Acknowledgment: IMMEDIATELY

Cause: The signal level of the rectified encoder signals A and B of the encoder fall below the permissible limit value.
Fault value (r0949, interpret hexadecimal):
yyyyxxxx hex:
yyyy = Signal level, track B (16 bits with sign).
xxxx = Signal level, track A (16 bits with sign).
The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %).
The response threshold is < 130 mV.
A signal level of 500 mV peak value corresponds to the numerical value 5333 hex = 21299 dec.
Note:
The analog values of the amplitude error are not measured at the same time with the hardware fault output by the Sensor Module.

Remedy: - Check that the encoder cables and shielding are routed in compliance with EMC.
- Check the plug connections.
- Replace the encoder or encoder cable.
- Check the Sensor Module (e.g. contacts).

Response upon: N: NONE

Acknowl. upon N: NONE

Response upon: A: NONE
Acknowl. upon A: NONE

F32117 (N, A) Encoder 2: Inversion error signals A/B/R

Message class: Position/speed actual value incorrect or not available (11)
Message value: Fault cause: %1 bin
Component: Encoder 2
Propagation: Local
Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: For a square-wave encoder (bipolar, double ended) signals A*, B* and R* are not inverted with respect to signals A, B and R.
Fault value (r0949, interpret binary):
Bits 0 ... 15: Only for internal Siemens troubleshooting.
Bit 16: Error track A.
Bit 17: Error track B.
Bit 18: Error track R.
Note:
For SMC30 (only Article No. 6SL3055-0AA00-5CA0 and 6SL3055-0AA00-5CA1), CUA32 and CU310-2, the following applies:
A square-wave encoder without track R is used and track monitoring (p0405.2 = 1) is activated.
Remedy: - Check the encoder/cable.
- Does the encoder supply signals and the associated inverted signals?
Note:
For SMC30 (only Article Number 6SL3055-0AA00-5CA0 and 6SL3055-0AA00-5CA1), the following applies:
- Check the setting of p0405 (p0405.2 = 1 is only possible if the encoder is connected at X520).
For a square-wave encoder without track R, the following jumpers must be set for the connection at X520 (SMC30), X220 (CUA32) or X23 (CU310-2):
- Pin 10 (homing signal R) <--> pin 7 (encoder power supply, ground)
- Pin 11 (homing signal R inverted) <--> pin 4 (encoder power supply)
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F32118 (N, A) Encoder 2: Speed change not plausible

Message class: Position/speed actual value incorrect or not available (11)
Message value: %1
Component: Encoder 2
Propagation: Local
Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Acknowledgment: PULSE INHIBIT
Cause: For an HTL/TTL encoder, the speed change has exceeded the value in p0492 over several sampling cycles.
The change to the averaged speed actual value - If applicable - Is monitored in the current controller sampling time.
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.
See also: p0492 (Maximum speed difference per sampling cycle)
Remedy: - Check the tachometer feeder cable for interruptions.
- Check the grounding of the tachometer shielding.
- If required, increase the maximum speed difference per sampling cycle (p0492).

Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F32120 (N, A) Encoder 2: Encoder power supply fault

Message class: Position/speed actual value incorrect or not available (11)
Message value: Fault cause: %1 bin
Component: Encoder 2
Propagation: Local
Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Acknowledgment: PULSE INHIBIT
Cause: An encoder power supply fault was detected.
Fault value (r0949, interpret binary):
Bit 0: Undervoltage condition on the sense line.
Bit 1: Overcurrent condition for the encoder power supply.
Bit 2: Overcurrent condition for encoder power supply on cable resolver excitation negative.
Bit 3: Overcurrent condition for encoder power supply on cable resolver excitation positive.
Bit 4: The 24 V power supply via the inverter is overloaded.
Bit 5: Overcurrent at the EnDat connection of the converter.
Bit 6: Overvoltage at the EnDat connection of the converter.
Bit 7: Hardware fault at the EnDat connection of the converter.
Note:
If the encoder cables 6FX2002-2EQ00-.... and 6FX2002-2CH00-.... are interchanged, this can result in the encoder being destroyed because the pins of the operating voltage are reversed.
Remedy: For fault value, bit 0 = 1:
- Correct encoder cable connected?
- Check the plug connections of the encoder cable.
- SMC30: Check the parameterization (p0404.22).
For fault value, bit 1 = 1:
- Correct encoder cable connected?
- Replace the encoder or encoder cable.
For fault value, bit 2 = 1:
- Correct encoder cable connected?
- Replace the encoder or encoder cable.
For fault value, bit 3 = 1:
- Correct encoder cable connected?
- Replace the encoder or encoder cable.
For fault value, bit 5 = 1:
- Measuring unit correctly connected at the converter?
- Replace the measuring unit or the cable to the measuring unit.
For fault value, bit 6, 7 = 1:
- Replace the defective EnDat 2.2 converter.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F32121 (N, A) Encoder 2: Determined commutation position incorrect

Message class: Position/speed actual value incorrect or not available (11)
Message value: -

Component: Encoder 2
Propagation: Local
Response: OFF1 (NONE, OFF2, OFF3)
Acknowledgment: PULSE INHIBIT
Cause: A commutation position actual value sensing error was detected.
Remedy: Check the encoder mounting, and if necessary, replace the encoder.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F32122 Encoder 2: Sensor Module hardware fault

Message class: Supply voltage fault (undervoltage) (3)
Message value: %1
Component: Sensor Module Encoder 2
Propagation: Global
Response: OFF1
Acknowledgment: IMMEDIATELY
Cause: An internal Sensor Module hardware fault was detected.
Fault value (r0949, interpret decimal):
1: Reference voltage error.
2: Internal undervoltage.
3: Internal overvoltage.
Remedy: Replace the Sensor Module.

F32123 (N, A) Encoder 2: Signal level A/B outside tolerance

Message class: Position/speed actual value incorrect or not available (11)
Message value: Fault cause: %1 bin
Component: Encoder 2
Propagation: Local
Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: The unipolar level (AP/AN or BP/BN) for encoder 2 is outside the permissible tolerance.
Fault value (r0949, interpret binary):
Bit 0 = 1: Either AP or AN outside the tolerance.
Bit 16 = 1: Either BP or BN outside the tolerance.
The unipolar nominal signal level of the encoder must lie in the range 2500 mV +/- 500 mV.
The response thresholds are < 1700 mV and > 3300 mV.
Note:
The signal level is not evaluated unless the following conditions are satisfied:
- Sensor Module properties available (r0459.31 = 1).
- Monitoring active (p0437.31 = 1).
Remedy: - Make sure that the encoder cables and shielding are installed in an EMC-compliant manner.
- Check the plug connections and contacts of the encoder cable.
- Check the short-circuit of a signal cable with mass or the operating voltage.
- Replace the encoder cable.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F32125 (N, A) Encoder 2: Signal level track A or B too high

Message class: Position/speed actual value incorrect or not available (11)

Message value: A track: %1, B track: %2

Component: Encoder 2

Propagation: Local

Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)

Acknowledgment: PULSE INHIBIT

Cause: The signal level (root from A^2 + B^2) of the encoder exceeds the permissible limit value.
Fault value (r0949, interpret hexadecimal):
yyyyxxxx hex:
yyyy = Signal level, track B (16 bits with sign).
xxxx = Signal level, track A (16 bits with sign).
The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %).
The response threshold is > 750 mV.
A signal level of 500 mV peak value corresponds to the numerical value 5333 hex = 21299 dec.
Note for Sensor Modules for resolvers (e.g. SMC10):
The nominal signal level is at 2900 mV (2.0 Vrms).
The response threshold is > 3582 mV.
A signal level of 2900 mV peak value corresponds to the numerical value 6666 hex = 26214 dec.
Note:
The analog values of the amplitude error are not measured at the same time with the hardware fault output by the Sensor Module.

Remedy: - Check that the encoder cables and shielding are routed in compliance with EMC.
- Replace the encoder or encoder cable.

Response upon: N: NONE

Acknowl. upon N: NONE

Response upon: A: NONE

Acknowl. upon A: NONE

F32126 (N, A) Encoder 2: Signal level track A or B too high

Message class: Position/speed actual value incorrect or not available (11)

Message value: Amplitude: %1, angle: %2

Component: Encoder 2

Propagation: Local

Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)

Acknowledgment: PULSE INHIBIT

Cause: The signal level (|A| + |B|) of the encoder exceeds the permissible limit value.
Fault value (r0949, interpret hexadecimal):
yyyyxxxx hex:
yyyy = angle
xxxx = amplitude, i.e. root of A^2 + B^2 (16 bits without sign)
The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %).
The response threshold for (|A| + |B|) is > 1120 mV or the root of (A^2 + B^2) > 955 mV.
A signal level of 500 mV peak value corresponds to the numerical value of 299A hex = 10650 dec.
The angle 0 ... FFFF hex corresponds to 0 ... 360 degrees of the fine position. Zero degrees is present at the negative zero crossover of track B.
Note:
The analog values of the amplitude error are not measured at the same time with the hardware fault output by the Sensor Module.

Remedy: - Check that the encoder cables and shielding are routed in compliance with EMC.
- Replace the encoder or encoder cable.

Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F32129 (N, A) Encoder 2: Position difference hall sensor/track C/D and A/B too large

Message class: Position/speed actual value incorrect or not available (11)
Message value: %1
Component: Encoder 2
Propagation: Local
Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Acknowledgment: PULSE INHIBIT
Cause: The error for track C/D is greater than +/-15 ° mechanical or +/-60 ° electrical or the error for the Hall signals is greater than +/-60 ° electrical.
One period of track C/D corresponds to 360 ° mechanical.
One period of the Hall signal corresponds to 360 ° electrical.
The monitoring responds if, for example, Hall sensors are connected as equivalent for the C/D tracks with the incorrect direction of rotation or supply values that are not accurate enough.
After the fine synchronization using one homing mark or 2 homing marks for distance-coded encoders, this fault is no longer initiated, but instead, Alarm A32429.
Fault value (r0949, interpret decimal):
For track C/D, the following applies:
Measured deviation as mechanical angle (16 bits with sign, 182 dec corresponds to 1 °).
For Hall signals, the following applies:
Measured deviation as electrical angle (16 bits with sign, 182 dec corresponds to 1 °).
Remedy: - Track C or D not connected.
- Correct the direction of rotation of the Hall sensor possibly connected as substitute for track C/D.
- Check that the encoder cables are routed in compliance with EMC.
- Check the adjustment of the Hall sensor.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F32130 (N, A) Encoder 2: Zero mark and position error from the coarse synchronization

Message class: Position/speed actual value incorrect or not available (11)
Message value: Angular deviation, electrical: %1, angle, mechanical: %2
Component: Encoder 2
Propagation: Local
Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Acknowledgment: PULSE INHIBIT

Cause: After initializing the pole position using track C/D, Hall signals or pole position identification routine, the zero mark was detected outside the permissible range. For distance-coded encoders, the test is carried out after passing 2 zero marks. Fine synchronization was not carried out.
When initializing via track C/D (p0404) then it is checked whether the zero mark occurs in an angular range of +/-18 ° mechanical.
When initializing via Hall sensors (p0404) or pole position identification (p1982) it is checked whether the zero mark occurs in an angular range of +/-60 ° electrical.
Fault value (r0949, interpret hexadecimal):
yyyyxxxx hex
yyyy: Determined mechanical zero mark position (can only be used for track C/D).
xxxx: Deviation of the zero mark from the expected position as electrical angle.
Scaling: 32768 dec = 180 °

Remedy:
- Check that the encoder cables are routed in compliance with EMC.
- Check the plug connections.
- If the Hall sensor is used as an equivalent for track C/D, check the connection.
- Check the connection of track C or D.
- Replace the encoder or encoder cable.

Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F32131 (N, A) Encoder 2: Position deviation incremental/absolute too high

Message class: Position/speed actual value incorrect or not available (11)
Message value: %1
Component: Encoder 2
Propagation: Local
Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Acknowledgment: PULSE INHIBIT

Cause: Absolute encoder:
When cyclically reading the absolute position, an excessively high difference to the incremental position was detected. The absolute position that was read is rejected.
Limit value for the deviation:
- EnDat encoder: Is supplied from the encoder and is a minimum of 2 quadrants (e.g. EQI 1325 > 2 quadrants, EQN 1325 > 50 quadrants).
- Other encoders: 15 pulses = 60 quadrants.

Incremental encoder:
When the zero pulse is passed, a deviation in the incremental position was detected.
For equidistant zero marks, the following applies:
- The first zero mark passed supplies the reference point for all subsequent checks. The other zero marks must have n times the distance referred to the first zero mark.

For distance-coded zero marks, the following applies:
- The first zero mark pair supplies the reference point for all subsequent checks. The other zero mark pairs must have the expected distance to the first zero mark pair.

Fault value (r0949, interpret decimal):
Deviation in quadrants (1 pulse = 4 quadrants).

Remedy:
- Check that the encoder cables are routed in compliance with EMC.
- Check the plug connections.
- Replace the encoder or encoder cable.
- Check whether the coding disk is dirty or there are strong ambient magnetic fields.
- Adapt the parameter for the clearance between zero marks (p0425).
- If message is output above the speed threshold, reduce filter time if necessary (p0438).

Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F32135 Encoder 2: Fault when determining the position (single turn)

Message class: Position/speed actual value incorrect or not available (11)
Message value: Fault cause: %1 bin
Component: Encoder 2
Propagation: Global
Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Acknowledgment: PULSE INHIBIT
Cause: The encoder has identified a position determination fault (singleturn) and supplies status information bit by bit in an internal status/fault word.
Some of these bits cause this fault to be triggered. Other bits are status displays. The status/fault word is displayed in the fault value.
Note regarding the bit designation:
The first designation is valid for DRIVE-CLiQ encoders, the second for EnDat 2.2 encoders.
Fault value (r0949, interpret binary):
Bit 0: F1 (safety status display).
Bit 1: F2 (safety status display).
Bit 2: Reserved (lighting).
Bit 3: Reserved (signal amplitude).
Bit 4: Reserved (position value).
Bit 5: Reserved (overvoltage).
Bit 6: Reserved (undervoltage)/hardware fault EnDat supply (--> F3x110, x = 1, 2, 3).
Bit 7: Reserved (overcurrent)/EnDat encoder withdrawn when not in the parked state (--> F3x110, x = 1, 2, 3).
Bit 8: Reserved (battery)/overcurrent EnDat supply (--> F3x110, x = 1, 2, 3).
Bit 9: Reserved/overvoltage EnDat supply (--> F3x110, x = 1, 2, 3).
Bit 11: Reserved/internal communication error (--> F3x110, x = 1, 2, 3).
Bit 12: Reserved/internal communication error (--> F3x110, x = 1, 2, 3).
Bit 13: Reserved/internal communication error (--> F3x110, x = 1, 2, 3).
Bit 14: Reserved/internal communication error (--> F3x110, x = 1, 2, 3).
Bit 15: Internal communication error (--> F3x110, x = 1, 2, 3).
Bit 16: Lighting (--> F3x135, x = 1, 2, 3).
Bit 17: Signal amplitude (--> F3x135, x = 1, 2, 3).
Bit 18: Singleturn position 1 (--> F3x135, x = 1, 2, 3).
Bit 19: Overvoltage (--> F3x135, x = 1, 2, 3).
Bit 20: Undervoltage (--> F3x135, x = 1, 2, 3).
Bit 21: Overcurrent (--> F3x135, x = 1, 2, 3).
Bit 22: Temperature exceeded (--> F3x405, x = 1, 2, 3).
Bit 23: Singleturn position 2 (safety status display).
Bit 24: Singleturn system (--> F3x135, x = 1, 2, 3).
Bit 25: Singleturn power down (--> F3x135, x = 1, 2, 3)
Bit 26: Multiturn position 1 (--> F3x136, x = 1, 2, 3).
Bit 27: Multiturn position 2 (--> F3x136, x = 1, 2, 3).
Bit 28: Multiturn system (--> F3x136, x = 1, 2, 3).
Bit 29: Multiturn power down (--> F3x136, x = 1, 2, 3).
Bit 30: Multiturn overflow/underflow (--> F3x136, x = 1, 2, 3).
Bit 31: Multiturn battery (reserved).

Remedy:
- Determine the detailed cause of the fault using the fault value.
- Replace the encoder if necessary.

Note:

An EnDat 2.2 encoder may only be removed and inserted in the "Park" state.

If an EnDat 2.2 encoder was removed when not in the "Park" state, then after inserting the encoder, a POWER ON (switch-off/switch-on) is necessary to acknowledge the fault.

F32136 Encoder 2: Fault when determining the position (multiturn)

Message class: Position/speed actual value incorrect or not available (11)

Message value: Fault cause: %1 bin

Component: Encoder 2

Propagation: Global

Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)

Acknowledgment: PULSE INHIBIT

Cause: The encoder has identified a position determination fault (multiturn) and supplies status information bit by bit in an internal status/fault word.

Some of these bits cause this fault to be triggered. Other bits are status displays. The status/fault word is displayed in the fault value.

Note regarding the bit designation:

The first designation is valid for DRIVE-CLiQ encoders, the second for EnDat 2.2 encoders.

Fault value (r0949, interpret binary):

Bit 0: F1 (safety status display).

Bit 1: F2 (safety status display).

Bit 2: Reserved (lighting).

Bit 3: Reserved (signal amplitude).

Bit 4: Reserved (position value).

Bit 5: Reserved (overvoltage).

Bit 6: Reserved (undervoltage)/hardware fault EnDat supply (--> F3x110, x = 1, 2, 3).

Bit 7: Reserved (overcurrent)/EnDat encoder withdrawn when not in the parked state (--> F3x110, x = 1, 2, 3).

Bit 8: Reserved (battery)/overcurrent EnDat supply (--> F3x110, x = 1, 2, 3).

Bit 9: Reserved/overvoltage EnDat supply (--> F3x110, x = 1, 2, 3).

Bit 11: Reserved/internal communication error (--> F3x110, x = 1, 2, 3).

Bit 12: Reserved/internal communication error (--> F3x110, x = 1, 2, 3).

Bit 13: Reserved/internal communication error (--> F3x110, x = 1, 2, 3).

Bit 14: Reserved/internal communication error (--> F3x110, x = 1, 2, 3).

Bit 15: Internal communication error (--> F3x110, x = 1, 2, 3).

Bit 16: Lighting (--> F3x135, x = 1, 2, 3).

Bit 17: Signal amplitude (--> F3x135, x = 1, 2, 3).

Bit 18: Singleturn position 1 (--> F3x135, x = 1, 2, 3).

Bit 19: Overvoltage (--> F3x135, x = 1, 2, 3).

Bit 20: Undervoltage (--> F3x135, x = 1, 2, 3).

Bit 21: Overcurrent (--> F3x135, x = 1, 2, 3).

Bit 22: Temperature exceeded (--> F3x405, x = 1, 2, 3).

Bit 23: Singleturn position 2 (safety status display).

Bit 24: Singleturn system (--> F3x135, x = 1, 2, 3).

Bit 25: Singleturn power down (--> F3x135, x = 1, 2, 3)

Bit 26: Multiturn position 1 (--> F3x136, x = 1, 2, 3).

Bit 27: Multiturn position 2 (--> F3x136, x = 1, 2, 3).

Bit 28: Multiturn system (--> F3x136, x = 1, 2, 3).

Bit 29: Multiturn power down (--> F3x136, x = 1, 2, 3).

Bit 30: Multiturn overflow/underflow (--> F3x136, x = 1, 2, 3).

Bit 31: Multiturn battery (reserved).

Remedy:
- Determine the detailed cause of the fault using the fault value.
- Replace the encoder if necessary.

Note:

An EnDat 2.2 encoder may only be removed and inserted in the "Park" state.

If an EnDat 2.2 encoder was removed when not in the "Park" state, then after inserting the encoder, a POWER ON (switch-off/switch-on) is necessary to acknowledge the fault.

F32137 Encoder 2: Fault when determining the position (single turn)

Message class: Hardware/software error (1)
Message value: Fault cause: %1 bin
Component: Encoder 2
Propagation: Global
Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Acknowledgment: PULSE INHIBIT

Cause:

A position determination fault has occurred in the DRIVE-CLiQ encoder.
Fault value (r0949, interpret binary):
yyxxxxxx hex: yy = encoder version, xxxxxx = bit coding of the fault cause
---
For yy = 8 (0000 1000 bin), the following applies:
Bit 1: Signal monitoring (sin/cos).
Bit 8: F1 (safety status display) error position word 1.
Bit 9: F2 (safety status display) error position word 2.
Bit 16: LED monitoring.
Bit 17: Fault when determining the position (multiturn).
Bit 18: Single-step capability monitoring singleturn from the Safety channel.
Bit 19: ECRC, configuration error in the safety channel.
Bit 23: Temperature outside the limit values.

For yy = 11 (0000 1011 bin), the following applies:
Bit 0: Position word 1 difference between rotation counter and software counter (XC_ERR).
Bit 1: Position word 1 track error of the incremental signals (LIS_ERR).
Bit 2: Position word 1 error when aligning between incremental track signals and absolute value (ST_ERR).
Bit 3: Maximum permissible temperature exceeded (TEMP_ERR).
Bit 4: Power supply overvoltage (MON_OVR_VOLT).
Bit 5: Power supply overcurrent (MON_OVR_CUR).
Bit 6: Power supply undervoltage (MON_UND_VOLT).
Bit 7: Rotation error counter (MT_ERR).
Bit 8: F1 (safety status display) error position word 1.
Bit 9: F2 (safety status display) error position word 2.
Bit 11: Position word 1 status bit: singleturn position OK (ADC_ready).
Bit 12: Position word 1 status bit: rotation counter OK (MT_ready).
Bit 13: Position word 1 memory error (MEM_ERR).
Bit 14: Position word 1 absolute position error (MLS_ERR).
Bit 15: Position word 1 LED error, lighting unit error (LED_ERR).
Bit 18: Position word 2 error when aligning between incremental track signals and absolute value (ST_ERR).
Bit 21: Position word 2 memory error (MEM_ERR).
Bit 22: Position word 2 absolute position error (MLS_ERR).
Bit 23: Position word 2 LED error, lighting unit error (LED_ERR).

For yy = 12 (0000 1100 bin), the following applies:
Bit 8: encoder fault.
Bit 10: error in the internal position data transport.

For yy = 14 (0000 1110 bin), the following applies:
Bit 0: Position word 1 temperature outside limit value.
Bit 1: Position word 1 position determination error (multiturn).
Bit 2: Position word 1 FPGA error.
Bit 3: Position word 1 velocity error.
Bit 4: Position word 1 communication error between FPGAs/error in the incremental signal.
Bit 5: Position word 1 timeout absolute value/error when determining the position (singleturn).
Bit 6: Position word 1 internal hardware fault (clock/power monitor IC/power).
Bit 7: Position word 1 internal error (FPGA communication/FPGA parameterization/self test/software).
Bit 8: F1 (safety status display) error position word 1.
Bit 9: F2 (safety status display) error position word 2.
Bit 16: Position word 2 temperature outside limit value.
Bit 17: Position word 2 position determination error (multiturn).

Bit 18: Position word 2 FPGA error.
Bit 19: Position word 2 velocity error.
Bit 20: Position word 2 communication error between FPGAs.
Bit 21: Position word 2 position determination error (singleturn).
Bit 22: Position word 2 internal hardware fault (clock/power monitor IC/power).
Bit 23: Position word 2 internal error (self test/software).

Note:
For an encoder version that is not described here, please contact the encoder manufacturer for more detailed information on the bit coding.

Remedy:
- Determine the detailed cause of the fault using the fault value.
- If required, replace the DRIVE-CLiQ encoder.

F32138 Encoder 2: Fault when determining the position (multiturn)

Message class: Hardware/software error (1)
Message value: Fault cause: %1 bin
Component: Encoder 2
Propagation: Global
Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Acknowledgment: PULSE INHIBIT

Cause:

A position determination fault has occurred in the DRIVE-CLiQ encoder.
Fault value (r0949, interpret binary):
yyxxxxxx hex: yy = encoder version, xxxxxx = bit coding of the fault cause
---
For yy = 8 (0000 1000 bin), the following applies:
Bit 1: Signal monitoring (sin/cos).
Bit 8: F1 (safety status display) error position word 1.
Bit 9: F2 (safety status display) error position word 2.
Bit 16: LED monitoring.
Bit 17: Fault when determining the position (multiturn).
Bit 19: ECRC, configuration error in the safety channel.
Bit 23: Temperature outside the limit values.

For yy = 11 (0000 1011 bin), the following applies:
Bit 0: Position word 1 difference between rotation counter and software counter (XC_ERR).
Bit 1: Position word 1 track error of the incremental signals (LIS_ERR).
Bit 2: Position word 1 error when aligning between incremental track signals and absolute value (ST_ERR).
Bit 3: Maximum permissible temperature exceeded (TEMP_ERR).
Bit 4: Power supply overvoltage (MON_OVR_VOLT).
Bit 5: Power supply overcurrent (MON_OVR_CUR).
Bit 6: Power supply undervoltage (MON_UND_VOLT).
Bit 7: Rotation error counter (MT_ERR).
Bit 8: F1 (safety status display) error position word 1.
Bit 9: F2 (safety status display) error position word 2.
Bit 11: Position word 1 status bit: singleturn position OK (ADC_ready).
Bit 12: Position word 1 status bit: rotation counter OK (MT_ready).
Bit 13: Position word 1 memory error (MEM_ERR).
Bit 14: Position word 1 absolute position error (MLS_ERR).
Bit 15: Position word 1 LED error, lighting unit error (LED_ERR).
Bit 18: Position word 2 error when aligning between incremental track signals and absolute value (ST_ERR).
Bit 21: Position word 2 memory error (MEM_ERR).
Bit 22: Position word 2 absolute position error (MLS_ERR).
Bit 23: Position word 2 LED error, lighting unit error (LED_ERR).

For yy = 14 (0000 1110 bin), the following applies:
Bit 0: Position word 1 temperature outside limit value.
Bit 1: Position word 1 position determination error (multiturn).
Bit 2: Position word 1 FPGA error.
Bit 3: Position word 1 velocity error.
Bit 4: Position word 1 communication error between FPGAs/error in the incremental signal.
Bit 5: Position word 1 timeout absolute value/error when determining the position (singleturn).
Bit 6: Position word 1 internal hardware fault (clock/power monitor IC/power).
Bit 7: Position word 1 internal error (FPGA communication/FPGA parameterization/self test/software).
Bit 8: F1 (safety status display) error position word 1.
Bit 9: F2 (safety status display) error position word 2.
Bit 16: Position word 2 temperature outside limit value.
Bit 17: Position word 2 position determination error (multiturn).
Bit 18: Position word 2 FPGA error.
Bit 19: Position word 2 velocity error.
Bit 20: Position word 2 communication error between FPGAs.
Bit 21: Position word 2 position determination error (singleturn).
Bit 22: Position word 2 internal hardware fault (clock/power monitor IC/power).

Bit 23: Position word 2 internal error (self test/software).

Note:

For an encoder version that is not described here, please contact the encoder manufacturer for more detailed information on the bit coding.

Remedy:
- Determine the detailed cause of the fault using the fault value.
- If required, replace the DRIVE-CLiQ encoder.

F32142 (N, A) Encoder 2: Battery voltage fault

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: Encoder 2
Propagation: Local
Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Acknowledgment: IMMEDIATELY
Cause: When switched-off, the encoder uses a battery to back up the multiturn information. The battery voltage is no longer sufficient to check the multiturn information.
Remedy: Replace battery.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F32150 (N, A) Encoder 2: Initialization error

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: Sensor Module Encoder 2
Propagation: Local
Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Acknowledgment: PULSE INHIBIT
Cause: Encoder functionality selected in p0404 cannot be executed.
Fault value (r0949, interpret hexadecimal):
Encoder malfunction.
The bit assignment corresponds to that of p0404 (e.g. bit 5 set: Error track C/D).
Remedy:
- Check that p0404 is correctly set.
- Check the encoder type used (incremental/absolute) and for SMCxx, the encoder cable.
- If relevant, note additional fault messages that describe the fault in detail.

Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F32151 (N, A) Encoder 2: Encoder speed for initialization AB too high

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: Sensor Module Encoder 2
Propagation: Local
Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Acknowledgment: PULSE INHIBIT
Cause: The encoder speed is too high while initializing the Sensor Module.

Remedy: Reduce the speed of the encoder accordingly during initialization.
If necessary, deactivate monitoring (p0437.29).
See also: p0437 (Sensor Module configuration extended)
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F32152 (N, A) Encoder 2: Maximum signal frequency (track A/B) exceeded

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: Sensor Module Encoder 2
Propagation: Local
Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Acknowledgment: PULSE INHIBIT
Cause: The maximum signal frequency of the encoder evaluation has been exceeded.
Fault value (r0949, interpret decimal):
Actual input frequency in Hz.
See also: p0408 (Rotary encoder pulse number)
Remedy: - Reduce the speed.
- Use an encoder with a lower pulse number (p0408).
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F32153 (N, A) Encoder 2: Identification error

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: Sensor Module Encoder 2
Propagation: Local
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: An error has occurred when identifying the encoder (waiting) p0400 = 10100.
The connected encoder was not able to be identified.
Fault value (r0949, interpret binary):
Bit 0: Data length incorrect.
See also: p0400 (Encoder type selection)
Remedy: Manually configure the encoder according to the data sheet.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

A32400 (F, N) Encoder 2: Zero mark distance error (alarm threshold exceeded)

Message class: Position/speed actual value incorrect or not available (11)
Message value: %1
Component: Encoder 2
Propagation: Local

Response: NONE
Acknowledgment: NONE
Cause: The measured zero mark distance does not correspond to the parameterized zero mark distance.
For distance-coded encoders, the zero mark distance is determined from zero marks detected pairs. This means that if a zero mark is missing, depending on the pair generation, this cannot result in a fault and also has no effect in the system.
The zero mark distance for zero mark monitoring is set in p0425.
Alarm value (r2124, interpret decimal):
Last measured zero mark distance in increments (4 increments = 1 encoder pulse).
The sign designates the direction of motion when detecting the zero mark distance.
Remedy: - Check that the encoder cables are routed in compliance with EMC.
- Check the plug connections.
- Check the encoder type (encoder with equidistant zero marks).
- Adapt the parameter for the clearance between zero marks (p0425).
- Replace the encoder or encoder cable.
Response upon: F: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A32401 (F, N) Encoder 2: Zero mark failed (alarm threshold exceeded)

Message class: Position/speed actual value incorrect or not available (11)
Message value: %1
Component: Encoder 2
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: The 1.5x parameterized zero mark distance was exceeded without a zero mark being detected.
The zero mark distance for zero mark monitoring is set in p0425.
Alarm value (r2124, interpret decimal):
Number of increments after POWER ON or since the last zero mark that was detected (4 increments = 1 encoder pulse).
Remedy: - Check that the encoder cables are routed in compliance with EMC.
- Check the plug connections.
- Check the encoder type (encoder with equidistant zero marks).
- Adapt the parameter for the clearance between zero marks (p0425).
- Replace the encoder or encoder cable.
Response upon: F: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

F32405 (N, A) Encoder 2: Temperature in the encoder evaluation exceeded

Message class: Overtemperature of the electronic components (6)
Message value: Temperature: [0.1 degrees C] %1, temperature sensor number: %2
Component: Sensor Module Encoder 2
Propagation: Local
Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Acknowledgment: IMMEDIATELY

Cause:	An inadmissibly high temperature was detected in the encoder electronics or the encoder evaluation. Fault value (r0949, interpret hexadecimal): yyxxxx hex: yy = temperature sensor number, xxxx = measured module temperature in 0.1 °C.
Remedy:	When using a Sensor Module: Reduce the ambient temperature of the Sensor Module. Otherwise: Reduce the encoder ambient temperature.
Response upon: N:	NONE
Acknowl. upon N:	NONE
Response upon: A:	NONE
Acknowl. upon A:	NONE

A32407 (F, N) Encoder 2: Function limit reached

Message class:	Position/speed actual value incorrect or not available (11)
Message value:	%1
Component:	Encoder 2
Propagation:	Local
Response:	NONE
Acknowledgment:	NONE
Cause:	The encoder has reached one of its function limits. A service is recommended. Alarm value (r2124, interpret decimal): 1: Incremental signals 3: Absolute track 4: Code connection
Remedy:	Perform service. Replace the encoder if necessary. Note: The actual functional reserve of an encoder can be displayed via r4651. See also: p4650 (Encoder function reserve data set number), r4651 (Encoder function reserve)
Response upon: F:	NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F:	IMMEDIATELY
Response upon: N:	NONE
Acknowl. upon N:	NONE

A32410 (F, N) Encoder 2: Communication error (encoder and Sensor Module)

Message class:	Position/speed actual value incorrect or not available (11)
Message value:	Fault cause: %1 bin
Component:	Encoder 2
Propagation:	Local
Response:	NONE
Acknowledgment:	NONE

Cause: Serial communication protocol transfer error between the encoder and evaluation module.
Alarm value (r2124, interpret binary):
Bit 0: Alarm bit in the position protocol.
Bit 1: Incorrect quiescent level on the data line.
Bit 2: Encoder does not respond (does not supply a start bit within 50 ms).
Bit 3: CRC error: The checksum in the protocol from the encoder does not match the data.
Bit 4: Encoder acknowledgment error: The encoder incorrectly understood the task (request) or cannot execute it.
Bit 5: Internal error in the serial driver: An illegal mode command was requested.
Bit 6: Timeout when cyclically reading.
Bit 8: Protocol is too long (e.g. > 64 bits).
Bit 9: Receive buffer overflow.
Bit 10: Frame error when reading twice.
Bit 11: Parity error.
Bit 12: Data line signal level error during the monoflop time.
Remedy: - Check that the encoder cables are routed in compliance with EMC.
- Check the plug connections.
- Replace encoder.
Response upon: F: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A32411 (F, N) Encoder 2: Encoder signals an internal alarm (detailed information)

Message class: Position/speed actual value incorrect or not available (11)
Message value: Fault cause: %1 bin, additional information: %2
Component: Encoder 2
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: The absolute encoder fault word includes alarm bits that have been set.
Alarm value (r2124, interpret binary):
yyyyxxxx hex: yyyy = supplementary information, xxxx = fault cause
yyyy = 0:
Bit 0: Frequency exceeded (speed too high).
Bit 1: Temperature exceeded.
Bit 2: Control reserve, lighting system exceeded.
Bit 3: Battery discharged.
Bit 4: Home position passed.
yyyy = 1:
Bit 0: Signal amplitude outside the control range.
Bit 1: Error multiturn interface
Bit 2: Internal data error (singleturn/multiturn not with single steps).
Bit 3: Error EEPROM interface.
Bit 4: SAR converter error.
Bit 5: Fault for the register data transfer.
Bit 6: Internal error identified at the error pin (nErr).
Bit 7: Temperature threshold exceeded or fallen below.
Remedy: Replace encoder.
Response upon: F: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY

Response upon: N: NONE
Acknowl. upon N: NONE

A32412 (F, N) Encoder 2: Encoder signals an internal alarm

Message class: Position/speed actual value incorrect or not available (11)
Message value: %1
Component: Encoder 2
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: The encoder signals an internal alarm via serial protocol.
Alarm value (r2124, interpret binary):
Bit 0: Fault bit in the position protocol.
Bit 1: Alarm bit in the position protocol.
Remedy:
- Carry out a POWER ON (switch-off/switch-on) for all components.
- Check that the encoder cables are routed in compliance with EMC.
- Check the plug connections.
- Replace encoder.

Response upon: F: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A32414 (F, N) Encoder 2: Signal level track C or D out of tolerance

Message class: Position/speed actual value incorrect or not available (11)
Message value: C track: %1, D track: %2
Component: Encoder 2
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: The signal level (C^2 + D^2) of track C or D of the encoder or from the Hall signals, is not within the tolerance bandwidth.
Alarm value (r2124, interpret hexadecimal):
yyyyxxxx hex:
yyyy = Signal level, track D (16 bits with sign).
xxxx = Signal level, track C (16 bits with sign).
The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %).
The response thresholds are < 230 mV (observe the frequency response of the encoder) and > 750 mV.
A signal level of 500 mV peak value corresponds to the numerical value 5333 hex = 21299 dec.
Note:
If the amplitude is not within the tolerance bandwidth, then it cannot be used to initialize the start position.
Remedy:
- Check that the encoder cables are routed in compliance with EMC.
- Check the plug connections.
- Replace the encoder or encoder cable.
- Check the Sensor Module (e.g. contacts).
- Check the Hall sensor box.

Response upon: F: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

N32415 (F, A) Encoder 2: Signal level track A or B outside tolerance (alarm)

Message class: Position/speed actual value incorrect or not available (11)

Message value: Amplitude: %1, angle: %2

Component: Encoder 2

Propagation: Local

Response: NONE

Acknowledgment: NONE

Cause: The signal level (root from A^2 + B^2) of the encoder is outside the permissible tolerance.
Alarm value (r2124, interpret hexadecimal):
yyyyxxxx hex:
yyyy = angle
xxxx = amplitude, i.e. root of A^2 + B^2 (16 bits without sign)
The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %).
The response threshold is < 230 mV (observe the frequency response of the encoder).
A signal level of 500 mV peak value corresponds to the numerical value 299A hex = 10650 dec.
The angle 0 ... FFFF hex corresponds to 0 ... 360 degrees of the fine position. Zero degrees is present at the negative zero crossover of track B.
Note for Sensor Modules for resolvers (e.g. SMC10):
The nominal signal level is at 2900 mV (2.0 Vrms). The response threshold is < 1414 mV (1.0 Vrms).
A signal level of 2900 mV peak value corresponds to the numerical value 3333 hex = 13107 dec.
Note:
The analog values of the amplitude error are not measured at the same time with the hardware fault output by the Sensor Module.

Remedy: - Check the speed range, frequency characteristic (amplitude characteristic) of the measuring equipment is not sufficient for the speed range.
- Check that the encoder cables and shielding are routed in compliance with EMC.
- Check the plug connections.
- Replace the encoder or encoder cable.
- Check the Sensor Module (e.g. contacts).
- If the coding disk is soiled or the lighting aged, replace the encoder.

Response upon: F: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)

Acknowl. upon F: IMMEDIATELY

Response upon: A: NONE

Acknowl. upon A: NONE

A32418 (F, N) Encoder 2: Speed change not plausible (alarm)

Message class: Position/speed actual value incorrect or not available (11)

Message value: %1

Component: Encoder 2

Propagation: Local

Response: NONE

Acknowledgment: NONE

Cause: For an HTL/TTL encoder, the speed change has exceeded the value in p0492 over several sampling cycles.
The change to the averaged speed actual value - If applicable - Is monitored in the current controller sampling time.
Alarm value (r2124, interpret decimal):
Only for internal Siemens troubleshooting.
See also: p0492 (Maximum speed difference per sampling cycle)

Remedy: - Check the tachometer feeder cable for interruptions.
- Check the grounding of the tachometer shielding.
- If required, increase the setting of p0492.

Response upon: F: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A32419 (F, N) Encoder 2: Track A or B outside tolerance

Message class: Position/speed actual value incorrect or not available (11)
Message value: %1
Component: Encoder 2
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: The amplitude/phase/offset correction for track A or B is at the limit.
Amplitude error correction: Amplitude B / Amplitude A = 0.78 ... 1.27
Phase: <84 degrees or >96 degrees
SMC20: Offset correction: +/-140 mV
SMC10: Offset correction: +/-650 mV
Alarm value (r2124, interpret hexadecimal):
xxxx1: Minimum of the offset correction, track B
xxxx2: Maximum of the offset correction, track B
xxx1x: Minimum of the offset correction, track A
xxx2x: Maximum of the offset correction, track A
xx1xx: Minimum of the amplitude correction, track B/A
xx2xx: Maximum of the amplitude correction, track B/A
x1xxx: Minimum of the phase error correction
x2xxx: Maximum of the phase error correction
1xxxx: Minimum of the cubic correction
2xxxx: Maximum of the cubic correction
Remedy: - Check mechanical mounting tolerances for encoders without their own bearings (e.g. toothed-wheel encoders).
- Check the plug connections (also the transition resistance).
- Check the encoder signals.
- Replace the encoder or encoder cable.
Response upon: F: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A32421 (F, N) Encoder 2: Determined commutation position incorrect (alarm)

Message class: Position/speed actual value incorrect or not available (11)
Message value: %1
Component: Encoder 2
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: A commutation position actual value sensing error was detected.
Alarm value (r2124, interpret decimal):
3: The absolute position of the serial protocol and track A/B differ by half an encoder pulse. The absolute position must have its zero position in the quadrants in which both tracks are negative. In the case of a fault, the position can be incorrect by one encoder pulse.

Remedy: For alarm value = 3:
- For a standard encoder with cable, contact the manufacturer where relevant.
- Correct the assignment of the tracks to the position value that is serially transferred. To do this, the two tracks must be connected, inverted, at the Sensor Module (interchange A with A* and B with B*) or, for a programmable encoder, check the zero offset of the position.

Response upon: F: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A32422 (F, N) Encoder 2: Pulses per revolution square-wave encoder outside tolerance bandwidth

Message class: Position/speed actual value incorrect or not available (11)
Message value: %1
Component: Encoder 2
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: The measured zero mark distance does not correspond to the parameterized zero mark distance.
This alarm is triggered with active square-wave encoder PPR correction and re-parameterized fault 31131 if the accumulator contains larger values than p4683 or p4684.
The zero mark distance for zero mark monitoring is set in p0425 (rotary encoder).
Alarm value (r2124, interpret decimal):
accumulated differential pulses in encoder pulses.
Remedy:
- Check that the encoder cables are routed in compliance with EMC.
- Check the plug connections.
- Check the encoder type (encoder with equidistant zero marks).
- Adapt the parameter for the clearance between zero marks (p0425).
- Replace the encoder or encoder cable.

Response upon: F: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A32429 (F, N) Encoder 2: Position difference hall sensor/track C/D and A/B too large

Message class: Position/speed actual value incorrect or not available (11)
Message value: %1
Component: Encoder 2
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: The error for track C/D is greater than +/-15 ° mechanical or +/-60 ° electrical or the error for the Hall signals is greater than +/-60 ° electrical.
One period of track C/D corresponds to 360 ° mechanical.
One period of the Hall signal corresponds to 360 ° electrical.
The monitoring responds if, for example, Hall sensors are connected as equivalent for the C/D tracks with the incorrect direction of rotation or supply values that are not accurate enough.
Alarm value (r2124, interpret decimal):
For track C/D, the following applies:
Measured deviation as mechanical angle (16 bits with sign, 182 dec corresponds to 1 °).
For Hall signals, the following applies:
Measured deviation as electrical angle (16 bits with sign, 182 dec corresponds to 1 °).

Remedy:
- Track C or D not connected.
- Correct the direction of rotation of the Hall sensor possibly connected as substitute for track C/D.
- Check that the encoder cables are routed in compliance with EMC.
- Check the adjustment of the Hall sensor.

Response upon: F: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A32431 (F, N) Encoder 2: Position deviation incremental/absolute too high (alarm)

Message class: Position/speed actual value incorrect or not available (11)
Message value: %1
Component: Encoder 2
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: When the zero pulse is passed, a deviation in the incremental position was detected.
For equidistant zero marks, the following applies:
- The first zero mark passed supplies the reference point for all subsequent checks. The other zero marks must have n times the distance referred to the first zero mark.

For distance-coded zero marks, the following applies:
- The first zero mark pair supplies the reference point for all subsequent checks. The other zero mark pairs must have the expected distance to the first zero mark pair.

Alarm value (r2124, interpret decimal):
Deviation in quadrants (1 pulse = 4 quadrants).

Remedy:
- Check that the encoder cables are routed in compliance with EMC.
- Check the plug connections.
- Replace the encoder or encoder cable.
- Clean coding disk or remove strong magnetic fields.

Response upon: F: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A32432 (F, N) Encoder 2: Rotor position adaptation corrects deviation

Message class: Position/speed actual value incorrect or not available (11)
Message value: %1
Component: Encoder 2
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: On track A/B, pulses have been lost or too many have been counted. These pulses are presently being corrected.
Alarm value (r2124, interpret decimal):
Last measured deviation of zero mark in increments (4 increments = 1 encoder pulse).
The sign designates the direction of motion when detecting the zero mark distance.

Remedy:
- Check that the encoder cables are routed in compliance with EMC.
- Check the plug connections.
- Replace the encoder or encoder cable.
- Check encoder limit frequency.
- Adapt the parameter for the clearance between zero marks (p0425).

Response upon: F: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A32442 (F, N) Encoder 2: Battery voltage alarm threshold reached

Message class: Position/speed actual value incorrect or not available (11)
Message value: -
Component: Encoder 2
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: When switched-off, the encoder uses a battery to back up the multiturn information. The multiturn information can no longer be buffered if the battery voltage drops even further.
Remedy: Replace battery.
Response upon: F: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A32443 (F, N) Encoder 2: Signal level track C/D outside tolerance (alarm)

Message class: Position/speed actual value incorrect or not available (11)
Message value: Fault cause: %1 bin
Component: Encoder 2
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: The unipolar level (CP/CN or DP/DN) for encoder 2 is outside the permissible tolerance.
Alarm value (r2124, interpret binary):
Bit 0 = 1: Either CP or CN outside the tolerance.
Bit 16 = 1: Either DP or DN outside the tolerance.
The unipolar nominal signal level of the encoder must lie in the range 2500 mV +/- 500 mV.
The response thresholds are < 1700 mV and > 3300 mV.
Note:
The signal level is not evaluated unless the following conditions are satisfied:
- Sensor Module properties available (r0459.31 = 1).
- Monitoring active (p0437.31 = 1).
Remedy: - Check that the encoder cables and shielding are routed in compliance with EMC.
- Check the plug connections and contacts of the encoder cable.
- Are the C/D tracks connected correctly (have the signal cables CP and CN or DP and DN been interchanged)?
- Replace the encoder cable.
Response upon: F: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A32470 (F, N) Encoder 2: Encoder signals an internal error (X521.7)

Message class: Position/speed actual value incorrect or not available (11)
Message value: -

Component: Encoder 2
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: For the Sensor Module Cabinet 30 (SMC30), a dirty encoder is signaled via a 0 signal at terminal X521.7.
Remedy: - Check the plug connections.
- Replace the encoder or encoder cable.
Response upon: F: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

F32500 (N, A) Encoder 2: Position tracking traversing range exceeded

Message class: Position/speed actual value incorrect or not available (11)
Message value: -
Component: None
Propagation: Global
Response: OFF1 (NONE, OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: For a configured linear axis without modulo correction, the drive/encoder has exceeded the maximum possible traversing range. The value should be read in p0412 and interpreted as the number of motor revolutions.
For p0411.0 = 1, the maximum traversing range for the configured linear axis is defined to be 64x (+/- 32x) of p0421.
For p0411.3 = 1, the maximum traversing range for the configured linear axis is preset (default value) to the highest possible value and is +/-p0412/2 (rounded off to complete revolutions). The highest possible value depends on the pulse number (p0408) and the fine resolution (p0419).
Remedy: The fault should be resolved as follows:
- Select commissioning.
- Reset the position tracking as follows (p0411.2 = 1).
- Deselect commissioning.
The fault should then be acknowledged and the absolute encoder adjusted.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F32501 (N, A) Encoder 2: Position tracking encoder position outside tolerance window

Message class: Position/speed actual value incorrect or not available (11)
Message value: %1
Component: None
Propagation: Global
Response: OFF1 (NONE, OFF2, OFF3)
Acknowledgment: IMMEDIATELY

Cause: When switched off, the drive/encoder was moved through a distance greater than was parameterized in the tolerance window. It is possible that there is no longer any reference between the mechanical system and encoder.
Fault value (r0949, interpret decimal):
Deviation (difference) to the last encoder position in increments of the absolute value.
The sign designates the traversing direction.
Note:
The deviation (difference) found is also displayed in r0477.
See also: p0413 (Measuring gearbox position tracking tolerance window), r0477 (Measuring gearbox position difference)

Remedy: Reset the position tracking as follows:
- Select commissioning.
- Reset the position tracking as follows (p0411.2 = 1).
- Deselect commissioning.
The fault should then be acknowledged.

Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F32502 (N, A) Encoder 2: Encoder with measuring gearbox without valid signals

Message class: Position/speed actual value incorrect or not available (11)
Message value: -
Component: Sensor Module Encoder 2
Propagation: Global
Response: OFF1 (OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: The encoder with measuring gearbox no longer provides any valid signals.
Remedy: It must be ensured that all of the encoders, with mounted measuring gearbox, provide valid actual values in operation.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F32503 (N, A) Encoder 2: Position tracking cannot be reset

Message class: Position/speed actual value incorrect or not available (11)
Message value: -
Component: None
Propagation: Global
Response: OFF1 (NONE, OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: The position tracking for the measuring gearbox cannot be reset.
Remedy: The fault should be resolved as follows:
- Select commissioning.
- Reset the position tracking as follows (p0411.2 = 1).
- Deselect commissioning.
The fault should then be acknowledged and the absolute encoder adjusted.

Response upon: N: NONE
Acknowl. upon N: NONE

Response upon: A: NONE
Acknowl. upon A: NONE

A32700 Encoder 2: Effectivity test does not supply the expected value

Message class: Safety monitoring channel has identified an error (10)
Message value: Fault cause: %1 bin
Component: Sensor Module Encoder 2
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The DRIVE-CLiQ encoder fault word supplies fault bits that have been set.
Alarm value (r2124, interpret binary):
Bit x = 1: Effectivity test x unsuccessful.
Remedy: Replace encoder.

N32800 (F) Encoder 2: Group signal

Message class: Position/speed actual value incorrect or not available (11)
Message value: -
Component: None
Propagation: Local
Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Acknowledgment: NONE
Cause: The motor encoder has detected at least one fault.
Remedy: Evaluation of other active messages.
Response upon: F: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

F32801 (N, A) Encoder 2 DRIVE-CLiQ: Sign-of-life missing

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Component: Control Unit (CU)
Propagation: Local
Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: There is a DRIVE-CLiQ communication error between the converter and the encoder involved.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

Error cause:
10 (= 0A hex):
The sign-of-life bit in the received telegram is not set.
Remedy: - Check the electrical cabinet design and cable routing for EMC compliance.
- Replace the component involved.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE

Acknowl. upon A: NONE

F32802 (N, A) Encoder 2: Time slice overflow

Message class: Hardware/software error (1)
Message value: %1
Component: Sensor Module Encoder 2
Propagation: Local
Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: A time slice overflow has occurred in encoder 2.
Fault value (r0949, interpret hexadecimal):
yx hex: y = function involved (Siemens-internal fault diagnostics), x = time slice involved
x = 9:
Time slice overflow of the fast (current controller clock cycle) time slice.
x = A:
Time slice overflow of the average time slice.
x = C:
Time slice overflow of the slow time slice.
yx = 3E7:
Timeout when waiting for SYNO (e.g. unexpected return to non-cyclic operation).
Remedy: Increase the current controller sampling time
Note:
For a current controller sampling time = 31.25 µs, use an SMx20 with Article No. 6SL3055-0AA00-5xA3.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F32804 (N, A) Encoder 2: Sensor Module checksum error

Message class: Hardware/software error (1)
Message value: %1
Component: Sensor Module Encoder 2
Propagation: Local
Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Acknowledgment: POWER ON
Cause: A checksum error has occurred when reading-out the program memory on the Sensor Module.
Fault value (r0949, interpret hexadecimal):
yyyyxxxx hex
yyyy: Memory area involved.
xxxx: Difference between the checksum at POWER ON and the actual checksum.
Remedy: - Carry out a POWER ON (switch-off/switch-on).
- Upgrade firmware to later version (>= V2.6 HF3, >= V4.3 SP2, >= V4.4).
- Check whether the permissible ambient temperature for the component is being maintained.
- Replace the Sensor Module.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F32805 (N, A) Encoder 2: EEPROM checksum error

Message class: Hardware/software error (1)
Message value: %1
Component: Sensor Module Encoder 2
Propagation: Local
Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: Data in the EEPROM corrupted .
Fault value (r0949, interpret hexadecimal):
01: EEPROM access error.
02: Too many blocks in the EEPROM.
Remedy: Replace the module.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F32806 (N, A) Encoder 2: Initialization error

Message class: Position/speed actual value incorrect or not available (11)
Message value: %1
Component: Sensor Module Encoder 2
Propagation: Local
Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Acknowledgment: PULSE INHIBIT

Cause: The encoder was not successfully initialized.
Fault value (r0949, interpret binary):
Bit 0, 1: Encoder initialization with the motor rotating has failed (deviation involving coarse and fine position in encoder pulses/4).
Bit 2: Mid-voltage matching for track A unsuccessful.
Bit 3: Mid-voltage matching for track B unsuccessful.
Bit 4: Mid-voltage matching for acceleration input unsuccessful.
Bit 5: Mid-voltage matching for track safety A unsuccessful.
Bit 6: Mid-voltage matching for track safety B unsuccessful.
Bit 7: Mid-voltage matching for track C unsuccessful.
Bit 8: Mid-voltage matching for track D unsuccessful.
Bit 9: Mid-voltage matching for track R unsuccessful.
Bit 10: The difference in mid-voltages between A and B is too great (> 0.5 V)
Bit 11: The difference in mid-voltages between C and D is too great (> 0.5 V)
Bit 12: The difference in mid-voltages between safety A and safety B is too great (> 0.5 V)
Bit 13: The difference in mid-voltages between A and safety B is too great (> 0.5 V)
Bit 14: The difference in mid-voltages between B and safety A is too great (> 0.5 V)
Bit 15: The standard deviation of the calculated mid-voltages is too great (> 0.3 V)
Bit 16: Internal fault - Fault when reading a register (CAFE)
Bit 17: Internal fault - Fault when writing a register (CAFE)
Bit 18: Internal fault: No mid-voltage matching available
Bit 19: Internal error - ADC access error.
Bit 20: Internal error - No zero crossover found.
Bit 28: Error while initializing the EnDat 2.2 measuring unit.
Bit 29: Error when reading out the data from the EnDat 2.2 measuring unit.
Bit 30: EEPROM checksum of the EnDat 2.2 measuring unit incorrect.
Bit 31: Data of the EnDat 2.2 measuring unit inconsistent.
Note:
Bit 0, 1: Up to 6SL3055-0AA00-5*A0
Bits 2 ... 20: 6SL3055-0AA00-5*A1 and higher

Remedy: Acknowledge fault.
If the fault cannot be acknowledged:
Bits 2 ... 9: Check encoder power supply.
Bits 2 ... 14: Check the corresponding cable.
Bit 15 with no other bits: Check track R, check settings in p0404.
Bit 28: Check the cable between the EnDat 2.2 converter and the measuring unit.
Bit 29 ... 31: Replace the defective measuring unit.

Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

A32811 (F, N) Encoder 2: Encoder serial number changed

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: Encoder 2
Propagation: Local
Response: NONE
Acknowledgment: NONE

Cause:	The encoder serial number has changed. The change is only checked for encoders with serial number (e.g. EnDat encoders). - The encoder was replaced.
Remedy:	Mechanically adjust the encoder. Accept the new serial number by copying from r0460 to p0441.
Response upon: F:	NONE (OFF1, OFF2, OFF3)
Acknowl. upon F:	IMMEDIATELY
Response upon: N:	NONE
Acknowl. upon N:	NONE

F32812 (N, A) Encoder 2: Requested cycle or RX-/TX timing not supported

Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Message value:	%1
Component:	Sensor Module Encoder 2
Propagation:	Local
Response:	OFF2
Acknowledgment:	IMMEDIATELY
Cause:	A cycle or RX/TX timing requested by the converter is not supported. Fault value (r0949, interpret decimal): 0: Application cycle is not supported. 1: DRIVE-CLiQ cycle is not supported. 2: Distance between RX and TX instants in time too low. 3: TX instant in time too early.
Remedy:	Carry out a POWER ON (switch-off/switch-on) for all components.
Response upon: N:	NONE
Acknowl. upon N:	NONE
Response upon: A:	NONE
Acknowl. upon A:	NONE

F32813 Encoder 2: Hardware logic unit failed

Message class:	Hardware/software error (1)
Message value:	Fault cause: %1 bin
Component:	Sensor Module Encoder 2
Propagation:	Global
Response:	OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Acknowledgment:	PULSE INHIBIT
Cause:	The logic unit of the DRIVE-CLiQ encoder has failed. Fault value (r0949, interpret binary): Bit 0: ALU watchdog has responded. Bit 1: ALU has detected a sign-of-life error.
Remedy:	When the error reoccurs, replace the encoder.

F32820 (N, A) Encoder 2 DRIVE-CLiQ: Telegram error

Message class:	Internal (DRIVE-CLiQ) communication error (12)
Message value:	Component number: %1, fault cause: %2
Component:	Sensor Module Encoder 2
Propagation:	Local
Response:	OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Acknowledgment:	IMMEDIATELY

Cause: There is a DRIVE-CLiQ communication error between the converter and the encoder involved.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

Error cause:
1 (= 01 hex):
Checksum error (CRC error).
2 (= 02 hex):
Telegram is shorter than specified in the length byte or in the receive list.
3 (= 03 hex):
Telegram is longer than specified in the length byte or in the receive list.
4 (= 04 hex):
The length of the received telegram does not match the receive list.
5 (= 05 hex):
The type of the received telegram does not match the receive list.
6 (= 06 hex):
The address of the component in the telegram and in the receive list do not match.
7 (= 07 hex):
A SYNC telegram is expected - but the received telegram is not a SYNC telegram.
8 (= 08 hex):
No SYNC telegram is expected - but the received telegram is one.
9 (= 09 hex):
The error bit in the received telegram is set.
16 (= 10 hex):
The received telegram is too early.

Remedy:
- Carry out a POWER ON (switch-off/switch-on).
- Check the electrical cabinet design and cable routing for EMC compliance.
- Check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).

Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F32835 (N, A) Encoder 2 DRIVE-CLiQ: Cyclic data transfer error

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Component: Sensor Module Encoder 2
Propagation: Local
Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Acknowledgment: IMMEDIATELY

Cause: There is a DRIVE-CLiQ communication error between the converter and the encoder involved. The nodes do not send and receive in synchronism.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

Error cause:
33 (= 21 hex):
The cyclic telegram has not been received.
34 (= 22 hex):
Timeout in the telegram receive list.
64 (= 40 hex):
Timeout in the telegram send list.

Remedy:
- Carry out a POWER ON.
- Replace the component involved.

Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F32836 (N, A) Encoder 2 DRIVE-CLiQ: Send error for DRIVE-CLiQ data

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Component: Sensor Module Encoder 2
Propagation: Local
Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Acknowledgment: IMMEDIATELY

Cause: There is a DRIVE-CLiQ communication error between the converter and the encoder involved. Data were not able to be sent.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

Error cause:
65 (= 41 hex):
Telegram type does not match send list.

Remedy: Carry out a POWER ON.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F32837 (N, A) Encoder 2 DRIVE-CLiQ: Component fault

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Component: Sensor Module Encoder 2

Propagation: Local
Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: Fault detected on the DRIVE-CLiQ component involved. Faulty hardware cannot be excluded.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

Error cause:
32 (= 20 hex):
Error in the telegram header.
35 (= 23 hex):
Receive error: The telegram buffer memory contains an error.
66 (= 42 hex):
Send error: The telegram buffer memory contains an error.
67 (= 43 hex):
Send error: The telegram buffer memory contains an error.

Remedy:
- Check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
- Check the electrical cabinet design and cable routing for EMC compliance.
- Replace the component involved.

Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F32845 (N, A) Encoder 2 DRIVE-CLiQ: Cyclic data transfer error

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Component: Sensor Module Encoder 2
Propagation: Global
Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: There is a DRIVE-CLiQ communication error between the converter and the encoder involved.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

Error cause:
11 (= 0B hex):
Synchronization error during alternating cyclic data transfer.

Remedy: Carry out a POWER ON (switch-off/switch-on).
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F32850 (N, A) Encoder 2: Encoder evaluation internal software error

Message class: Hardware/software error (1)
Message value: %1
Component: Sensor Module Encoder 2
Propagation: Global
Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Acknowledgment: POWER ON
Cause: An internal software error has occurred in the Sensor Module of encoder 2.
Fault value (r0949, interpret decimal):
1: Background time slice is blocked.
2: Checksum over the code memory is not correct.
10000: OEM memory of the EnDat encoder contains data that cannot be interpreted.
11000 ... 11499: Description data from EEPROM incorrect.
11500 ... 11899: Calibration data from EEPROM incorrect.
11900 ... 11999: Configuration data from EEPROM incorrect.
12000 ... 12008: Communications error with analog/digital converter.
16000: DRIVE-CLiQ encoder initialization application error.
16001: DRIVE-CLiQ encoder initialization ALU error.
16002: DRIVE-CLiQ encoder HISI / SISI initialization error.
16003: DRIVE-CLiQ encoder safety initialization error.
16004: DRIVE-CLiQ encoder internal system error.
Remedy: - Replace the Sensor Module.
- If required, upgrade the firmware.
- Contact Technical Support.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F32851 (N, A) Encoder 2 DRIVE-CLiQ: Sign-of-life missing

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Component: Sensor Module Encoder 2
Propagation: Local
Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: There is a DRIVE-CLiQ communication error between the Sensor Module involved (encoder 2) and the converter.
The DRIVE-CLiQ component did not set the sign-of-life to the converter.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

Error cause:
10 (= 0A hex):
The sign-of-life bit in the received telegram is not set.
Remedy: - Upgrade the firmware of the component involved.
- Carry out a POWER ON (switch-off/switch-on) for the component involved.
Response upon: N: NONE

Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F32860 (N, A) Encoder 2 DRIVE-CLiQ: Telegram error

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Component: Sensor Module Encoder 2
Propagation: Local
Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Acknowledgment: IMMEDIATELY

Cause: There is a DRIVE-CLiQ communication error between the Sensor Module involved (encoder 2) and the converter.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

Error cause:
1 (= 01 hex):
Checksum error (CRC error).
2 (= 02 hex):
Telegram is shorter than specified in the length byte or in the receive list.
3 (= 03 hex):
Telegram is longer than specified in the length byte or in the receive list.
4 (= 04 hex):
The length of the received telegram does not match the receive list.
5 (= 05 hex):
The type of the received telegram does not match the receive list.
6 (= 06 hex):
The address of the power unit in the telegram and in the receive list do not match.
9 (= 09 hex):
The DRIVE-CLiQ communication from the DRIVE-CLiQ component involved to the converter signals that the supply voltage has failed.
16 (= 10 hex):
The received telegram is too early.
17 (= 11 hex):
CRC error and the received telegram is too early.
18 (= 12 hex):
The telegram is shorter than that specified in the length byte or in the receive list and the received telegram is too early.
19 (= 13 hex):
The telegram is longer than that specified in the length byte or in the receive list and the received telegram is too early.
20 (= 14 hex):
The length of the received telegram does not match the receive list and the received telegram is too early.
21 (= 15 hex):
The type of the received telegram does not match the receive list and the received telegram is too early.
22 (= 16 hex):
The address of the power unit in the telegram and in the receive list does not match and the received telegram is too early.
25 (= 19 hex):
The error bit in the received telegram is set and the received telegram is too early.

Remedy:
- Carry out a POWER ON (switch-off/switch-on).
- Check the electrical cabinet design and cable routing for EMC compliance.
- Check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).

Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F32875 (N, A) Encoder 2: Supply voltage failed

Message class: Supply voltage fault (undervoltage) (3)

Message value: Component number: %1, fault cause: %2
Component: Sensor Module Encoder 2
Propagation: Local
Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: The DRIVE-CLiQ communication from the DRIVE-CLiQ component involved to the converter signals that the supply voltage has failed.
Error cause:
9 (= 09 hex):
The supply voltage for the component has failed.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: - Check the supply voltage wiring (interrupted cable, contacts, ...).
- Check the dimensioning of the 24 V supply, check cable lengths.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F32885 (N, A) Encoder 2 DRIVE-CLiQ: Cyclic data transfer error

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Component: Sensor Module Encoder 2
Propagation: Local
Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: There is a DRIVE-CLiQ communication error between the Sensor Module involved (encoder 2) and the converter.
The nodes do not send and receive in synchronism.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

Error cause:
26 (= 1A hex):
Sign-of-life bit in the received telegram not set and the received telegram is too early.
33 (= 21 hex):
The cyclic telegram has not been received.
34 (= 22 hex):
Timeout in the telegram receive list.
64 (= 40 hex):
Timeout in the telegram send list.
98 (= 62 hex):
Error at the transition to cyclic operation.
Remedy: - Check the supply voltage of the component involved.
- Carry out a POWER ON (switch-off/switch-on).
- Replace the component involved.
Response upon: N: NONE
Acknowl. upon N: NONE

Response upon: A: NONE
Acknowl. upon A: NONE

F32886 (N, A) Encoder 2 DRIVE-CLiQ: Error when sending DRIVE-CLiQ data

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Component: Sensor Module Encoder 2
Propagation: Local
Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: There is a DRIVE-CLiQ communication error between the Sensor Module involved (encoder 2) and the converter.
Data were not able to be sent.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

Error cause:
65 (= 41 hex):
Telegram type does not match send list.

Remedy: Carry out a POWER ON.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F32887 (N, A) Encoder 2 DRIVE-CLiQ: Component fault

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Component: Sensor Module Encoder 2
Propagation: Local
Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Acknowledgment: IMMEDIATELY

Cause: Fault detected on the DRIVE-CLiQ component involved (Sensor Module for encoder 2). Faulty hardware cannot be excluded.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

Error cause:
32 (= 20 hex):
Error in the telegram header.
35 (= 23 hex):
Receive error: The telegram buffer memory contains an error.
66 (= 42 hex):
Send error: The telegram buffer memory contains an error.
67 (= 43 hex):
Send error: The telegram buffer memory contains an error.
96 (= 60 hex):
Response received too late during runtime measurement.
97 (= 61 hex):
Time taken to exchange characteristic data too long.

Remedy:
- Check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
- Check the electrical cabinet design and cable routing for EMC compliance.
- Replace the component involved.

Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F32895 (N, A) Encoder 2 DRIVE-CLiQ: Alternating cyclic data transfer error

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Component: Sensor Module Encoder 2
Propagation: Local
Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: There is a DRIVE-CLiQ communication error between the Sensor Module involved (encoder 2) and the converter.

Fault value (r0949, interpret hexadecimal):
0000yyxx hex:
yy = component number,
xx = fault cause

Error cause:
11 (= 0B hex):
Synchronization error during alternating cyclic data transfer.

Remedy: Carry out a POWER ON.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F32896 (N, A) Encoder 2 DRIVE-CLiQ: Inconsistent component properties

Message class: Internal (DRIVE-CLiQ) communication error (12)

Message value: Component number: %1

Component: Sensor Module Encoder 2

Propagation: Local

Response: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)

Acknowledgment: IMMEDIATELY

Explanation of the message value: For %1
Component in target topology

Cause: The properties of the DRIVE-CLiQ component (Sensor Module for encoder 2), specified by the fault value, have changed in an incompatible fashion with respect to the properties when booted. One cause can be, e.g. that a DRIVE-CLiQ cable or DRIVE-CLiQ component has been replaced.
Fault value (r0949, interpret decimal):
Component number.

Remedy: - Carry out a POWER ON.
- When a component is replaced, the same component type and if possible the same firmware version should be used.
- When a cable is replaced, only use cables whose length is the same as or as close as possible to the length of the original cable (ensure compliance with the maximum cable length).

Response upon: N: NONE

Acknowl. upon N: NONE

Response upon: A: NONE

Acknowl. upon A: NONE

F32899 (N, A) Encoder 2: Unknown fault

Message class: Position/speed actual value incorrect or not available (11)

Message value: New message: %1

Component: Sensor Module Encoder 2

Propagation: Local

Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)

Acknowledgment: IMMEDIATELY

Cause: A fault occurred on the Sensor Module for encoder 2, which cannot be interpreted by the converter firmware.
This can occur if the firmware on this component is more recent than the converter firmware.
Fault value (r0949, interpret decimal):
Fault number.
Note:
If required, the significance of this new fault can be read about in a more recent description of the converter.

Remedy: - Replace the firmware on the Sensor Module by an older firmware version.
- Upgrade the converter firmware.

Response upon: N: NONE

Acknowl. upon N: NONE

Response upon: A: NONE

Acknowl. upon A: NONE

A32902 (F, N) Encoder 2: SPI-BUS error occurred

Message class: Hardware/software error (1)

Message value: %1

Component: Sensor Module Encoder 2

Propagation: Local

Response: NONE

Acknowledgment:	NONE
Cause:	Error when operating the internal SPI bus. Alarm value (r2124, interpret hexadecimal): Only for internal Siemens troubleshooting.
Remedy:	- Replace the Sensor Module. - If required, upgrade the firmware in the Sensor Module. - Contact Technical Support.
Response upon: F:	NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F:	IMMEDIATELY
Response upon: N:	NONE
Acknowl. upon N:	NONE

F32905 (N, A) Encoder 2: Encoder parameterization error

Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Message value:	Parameter: %1, supplementary information: %2
Component:	Sensor Module Encoder 2
Propagation:	Local
Response:	OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Acknowledgment:	IMMEDIATELY

Cause: An error was identified in the encoder parameterization.
It is possible that the parameterized encoder type does not match the connected encoder.
The parameter involved can be determined as follows:
- Determine the parameter number using the fault value (r0949).
- Determine the parameter index (p0187).
Fault value (r0949, interpret decimal):
yyyyxxxx dec: yyyy = supplementary information, xxxx = parameter
xxxx = 421:
For an EnDat/SSI encoder, the absolute position in the protocol must be less than or equal to 30 bits.
xxxx = 12008:
Compares the configuration with the properties of the Sensor Module (p0430 with r0458 or p0437 with r0459)
Only bits are set in p0430 and p0437, which are indicated in the properties of the Sensor Module (r0458 and r0459).
Bits that are not displayed in the properties of the Sensor Module must be reset to the factory setting and then a POWER ON carried out (switch-off/switch-on).
Alternatively, delete the drive, recommission and then carry out a POWER ON (switch-off/switch-on).
yyyy = 0:
No additional information available.
yyyy = 1:
The component does not support HTL level (p0405.1 = 0) combined with track monitoring A/B <> -A/B (p0405.2 = 1).
yyyy = 2:
A code number for an identified encoder has been entered into p0400, however, no identification was carried out. Please start a new encoder identification.
yyyy = 3:
A code number for an identified encoder has been entered into p0400, however, no identification was carried out. Please select a listed encoder in p0400 with a code number < 10000.
yyyy = 4:
This component does not support SSI encoders (p0404.9 = 1) without track A/B.
yyyy = 5:
For SQW encoder, value in p4686 greater than in p0425.
yyyy = 6:
DRIVE-CLiQ encoder cannot be used with this firmware version.
yyyy = 7:
For an SQW encoder, the XIST1 correction (p0437.2) is only permitted for equidistant zero marks.
yyyy = 8:
The motor pole pair width is not supported by the linear scale being used.
yyyy = 9:
The length of the position in the EnDat protocol may be a maximum of 32 bits.
yyyy = 10:
The connected encoder is not supported.
yyyy = 11:
The hardware does not support track monitoring.

Remedy: - Check whether the connected encoder type matches the encoder that has been parameterized.
- Correct the parameter specified by the fault value (r0949) and p0187.
- For parameter number = 314:
- Check the pole pair number and measuring gearbox ratio. The quotient of the "pole pair number" divided by the "measuring gearbox ratio" must be less than or equal to 1000 ((r0313 * p0433) / p0432 <= 1000).

Response upon: N: NONE

Acknowl. upon N: NONE

Response upon: A: NONE

Acknowl. upon A: NONE

F32912 Encoder 2: Device combination is not permissible

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: Encoder 2
Propagation: Global
Response: OFF1 (IASC/DCBRK, NONE)
Acknowledgment: PULSE INHIBIT
Cause: The selected device combination is not supported.
Fault value (r0949, interpret decimal):
1003:
The connected measuring unit cannot be operated with the EnDat 2.2 converter. For instance, the measuring unit has a pulse number/resolution of 2^n.
1005:
The type of measuring unit (incremental) is not supported by the EnDat 2.2 converter.
1006:
The maximum duration of the EnDat transfer (31.25 µs) was exceeded.
2001:
The set combination of current controller clock cycle, DP clock cycle and safety clock cycle is not supported by the EnDat 2.2 converter.
Remedy: For fault value = 1003, 1005, 1006:
- Use a measuring unit that is permissible.
For fault value = 2001:
- Set a permissible clock cycle combination (if required, use default settings).

A32915 (F, N) Encoder 2: Encoder configuration error

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: Sensor Module Encoder 2
Propagation: Global
Response: NONE
Acknowledgment: NONE
Cause: The configuration for encoder 2 is incorrect.
Alarm value (r2124, interpret decimal):
1:
Re-parameterization between fault/alarm is not permissible.
2:
The cyclic DQ receive telegram is too long and is limited.
3:
The cyclic DQ send telegram is too long and is limited.
419:
When the fine resolution Gx_XIST2 is configured, the encoder identifies a maximum possible absolute position actual value (r0483) that can no longer be represented within 32 bits.
Remedy: For alarm value = 1:
No re-parameterization between fault/alarm.
For alarm value = 419:
Reduce the fine resolution (p0419) or deactivate the monitoring (p0437.25), if the complete multiturn range is not required.
Response upon: F: NONE (IASC/DCBRK)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

F32916 (N, A) Encoder 2: Encoder parameterization error

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Parameter: %1, supplementary information: %2
Component: Sensor Module Encoder 2
Propagation: Global
Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Acknowledgment: IMMEDIATELY
Cause: An encoder parameter was detected as being incorrect.
It is possible that the parameterized encoder type does not match the connected encoder.
The parameter involved can be determined as follows:
- Determine the parameter number using the fault value (r0949).
- Determine the parameter index (p0187).
Fault value (r0949, interpret decimal):
Parameter number.
Remedy: - Check whether the connected encoder type matches the encoder that has been parameterized.
- Correct the parameter specified by the fault value (r0949) and p0187.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F32950 Encoder 2: Internal software error

Message class: Hardware/software error (1)
Message value: %1
Component: Sensor Module Encoder 2
Propagation: Local
Response: OFF1 (OFF2)
Acknowledgment: POWER ON
Cause: An internal software error has occurred.
Fault value (r0949, interpret decimal):
Information about the fault source.
Only for internal Siemens troubleshooting.
Remedy: - If necessary, upgrade the firmware in the Sensor Module to a later version.
- Contact Technical Support.

A32999 (F, N) Encoder 2: Unknown alarm

Message class: Position/speed actual value incorrect or not available (11)
Message value: New message: %1
Component: Sensor Module Encoder 2
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: An alarm has occurred on the Sensor Module for encoder 2, which cannot be interpreted by the converter firmware.
This can occur if the firmware on this component is more recent than the converter firmware.
Alarm value (r2124, interpret decimal):
Alarm number.
Note:
If required, the significance of this new alarm can be read about in a more recent description of the converter.

Remedy: - Replace the firmware on the Sensor Module by an older firmware version.
- Upgrade the converter firmware.
Response upon: F: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

F34803 VSM: Memory test

Message class: Hardware/software error (1)
Message value: -
Component: Voltage Sensing Module (VSM)
Propagation: Local
Response: NONE (OFF1, OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: An error has occurred during the memory test on the Voltage Sensing Module.
Remedy: - Check whether the permissible ambient temperature for the Voltage Sensing Module is being maintained.
- Replace the Voltage Sensing Module.

F34804 (N, A) VSM: CRC

Message class: Hardware/software error (1)
Message value: %1
Component: Voltage Sensing Module (VSM)
Propagation: Local
Response: NONE (OFF1, OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: A checksum error occurred when reading-out the program memory on the Voltage Sensing Module (VSM).
Remedy: - Check whether the permissible ambient temperature for the component is being maintained.
- Replace the Voltage Sensing Module.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F34805 (N, A) VSM: EEPROM checksum error

Message class: Hardware/software error (1)
Message value: %1
Component: Voltage Sensing Module (VSM)
Propagation: Local
Response: NONE (OFF1, OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: Internal parameter data is corrupted.
Fault value (r0949, interpret hexadecimal):
01: EEPROM access error.
02: Too many blocks in the EEPROM.
Remedy: - Check whether the permissible ambient temperature for the component is being maintained.
- Replace the Voltage Sensing Module (VSM).
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE

Acknowl. upon A: NONE

F34806 VSM: Initialization

Message class: Hardware/software error (1)
Message value: -
Component: Voltage Sensing Module (VSM)
Propagation: Local
Response: NONE (OFF1, OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: For the Voltage Sensing Module (VSM), a fault has occurred while initializing.
Remedy: Replace the Voltage Sensing Module.

A34807 (F, N) VSM: Sequence control time monitoring

Message class: Hardware/software error (1)
Message value: -
Component: Voltage Sensing Module (VSM)
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: Error, timeout in the sequence control on the Voltage Sensing Module (VSM).
Remedy: Replace the Voltage Sensing Module.
Response upon: F: NONE
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

F34850 VSM: Internal software error

Message class: Hardware/software error (1)
Message value: %1
Component: Voltage Sensing Module (VSM)
Propagation: Local
Response: OFF1 (NONE, OFF2, OFF3)
Acknowledgment: POWER ON
Cause: An internal software error in the Voltage Sensing Module (VSM) has occurred.
Fault value (r0949, interpret decimal):
1: Background time slice is blocked.
2: Checksum over the code memory is not correct.
Remedy: - Replace the Voltage Sensing Module (VSM).
- If required, upgrade the firmware in the Voltage Sensing Module.
- Contact Technical Support.

F34899 (N, A) VSM: Unknown fault

Message class: Infeed faulted (13)
Message value: New message: %1
Component: Voltage Sensing Module (VSM)
Propagation: Local
Response: NONE (OFF1, OFF2, OFF3)
Acknowledgment: IMMEDIATELY

Cause: A fault has occurred on the Voltage Sensing Module, which cannot be interpreted by the converter firmware.
This can occur if the firmware on this component is more recent than the firmware on the converter.
Fault value (r0949, interpret decimal):
Fault number.
Note:
If required, the significance of this new fault can be read about in a more recent description of the converter.
Remedy: - Replace the firmware on the Voltage Sensing Module by an older firmware.
- Upgrade the converter firmware.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

A34903 (F, N) VSM: I2C bus error occurred

Message class: Hardware/software error (1)
Message value: -
Component: Voltage Sensing Module (VSM)
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: An error has occurred when accessing the module-internal I2C bus.
Remedy: Replace the Terminal Module.
Response upon: F: NONE
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A34904 (F, N) VSM: EEPROM

Message class: Hardware/software error (1)
Message value: -
Component: Voltage Sensing Module (VSM)
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: An error has occurred accessing the non-volatile memory on the Terminal Module.
Remedy: Replace the Voltage Sensing Module (VSM).
Response upon: F: NONE
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

F34920 (N, A) VSM: Overtemperature or temperature sensor fault

Message class: External measured value / signal state outside the permissible range (16)
Message value: %1
Component: Voltage Sensing Module (VSM)
Propagation: Local
Response: NONE
Acknowledgment: IMMEDIATELY

Cause: When evaluating the temperature sensor, a resistance value outside the permissible range was detected.
Fault value (r0949, interpret decimal):
1: Overtemperature, wire breakage or sensor not connected.
KTY: R > 1630 Ohm, Pt1000: R > 1720 Ohm
2: Measured resistance too low.
PTC: R < 20 Ohm, KTY: R < 50 Ohm, Pt1000: R < 723 Ohm
Remedy: - Make sure that the sensor is connected correctly.
- Replace the sensor.
- Allow to cool down and then check the ambient conditions, duty cycle and cooling (fan fuse).
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F34950 VSM: Internal software error

Message class: Hardware/software error (1)
Message value: %1
Component: Voltage Sensing Module (VSM)
Propagation: Local
Response: OFF2
Acknowledgment: POWER ON
Cause: An internal software error in the Voltage Sensing Module (VSM) has occurred.
Fault value (r0949, interpret decimal):
Information about the fault source.
Only for internal Siemens troubleshooting.
Remedy: - If necessary, upgrade the firmware in the Voltage Sensing Module to a later version.
- Contact Technical Support.

A34999 (F, N) VSM: Unknown alarm

Message class: Infeed faulted (13)
Message value: New message: %1
Component: Voltage Sensing Module (VSM)
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: An alarm has occurred on the Voltage Sensing Module (VSM) that cannot be interpreted by the converter firmware.
This can occur if the firmware on this component is more recent than the firmware on the converter.
Alarm value (r2124, interpret decimal):
Alarm number.
Note:
If required, the significance of this new alarm can be read about in a more recent description of the converter.
Remedy: - Replace the firmware on the Voltage Sensing Module by an older firmware.
- Upgrade the converter firmware.
Response upon: F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

F35230	**TM: Hardware fault**
Message class:	Hardware/software error (1)
Message value:	%1
Component:	Terminal Module (TM)
Propagation:	Global
Response:	NONE
Acknowledgment:	POWER ON
Cause:	The Terminal Module (TM) used has signaled internal errors. Signals from this module may not be evaluated because they are very likely to be incorrect.
Remedy:	If required, replace the Terminal Module.

C35550	**SMT: Motor temperature fault threshold exceeded**
Message class:	Safety monitoring channel has identified an error (10)
Message value:	-
Component:	Motor
Propagation:	Local
Response:	OFF2
Acknowledgment:	IMMEDIATELY
Cause:	The motor temperature has exceeded the fault threshold. Possible causes: - Motor is overloaded. - The motor ambient temperature is too high. - PTC temperature sensor not connected or wire breakage. This fault results in an STO (Safe Torque Off). STO must be active for 60 seconds and then acknowledgment is possible.
Remedy:	- Reduce the motor load. - Check the ambient temperature and the motor ventilation. - Check the wiring and temperature sensor connection.

A35552	**SMT: Motor temperature alarm threshold exceeded**
Message class:	Safety monitoring channel has identified an error (10)
Message value:	-
Component:	Motor
Propagation:	Local
Response:	NONE
Acknowledgment:	NONE
Cause:	The motor temperature has exceeded the alarm threshold. Possible causes: - Motor is overloaded. - The motor ambient temperature is too high. - PTC temperature sensor not connected or wire breakage.
Remedy:	- Reduce the motor load. - Check the ambient temperature and the motor ventilation. - Check the wiring and temperature sensor connection.

C35553	**SMT: Internal hardware fault**
Message class:	Safety monitoring channel has identified an error (10)

Message value: %1
Component: Terminal Module (TM)
Propagation: Local
Response: OFF2
Acknowledgment: POWER ON
Cause: The OM-SMT signals a hardware fault.
Note:
This message results in an STO (Safe Torque Off) that cannot be acknowledged.
Fault value (r60049, interpret binary): Only for internal Siemens fault diagnostics.
Remedy: - Carry out a POWER ON (switch-off/switch-on) for all components.
- Replace OM-SMT.
- Contact Technical Support.

C35554 SMT: Internal hardware fault

Message class: Safety monitoring channel has identified an error (10)
Message value: %1
Component: Terminal Module (TM)
Propagation: Local
Response: OFF2
Acknowledgment: POWER ON
Cause: The OM-SMT signals a hardware fault.
Note:
This message results in an STO (Safe Torque Off) that cannot be acknowledged.
Fault value (r60049, interpret binary): Only for internal Siemens fault diagnostics.
Remedy: - Carry out a POWER ON (switch-off/switch-on) for all components.
- Replace OM-SMT.
- Contact Technical Support.

C35555 SMT: Short-circuit detected at the temperature sensor for fault

Message class: Safety monitoring channel has identified an error (10)
Message value: -
Component: Motor
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: There is a short-circuit at the temperature sensor for fault.
This fault results in an STO (Safe Torque Off).
STO must be active for 60 seconds and then acknowledgment is possible.
Remedy: Check the wiring and temperature sensor connection.
Wait at least 60 seconds until the acknowledgment can be realized.

C35557 SMT: Internal software error

Message class: Safety monitoring channel has identified an error (10)
Message value: Module: %1, line: %2
Component: Terminal Module (TM)
Propagation: Local
Response: OFF2
Acknowledgment: POWER ON

Cause:	An internal error has occurred in the Safety Integrated software of the OM-SMT. Note: This message results in an STO (Safe Torque Off). Message value (r60049, interpret hexadecimal): Only for internal Siemens fault diagnostics.
Remedy:	- Carry out a POWER ON (switch-off/switch-on) for all components. - Upgrade the OM-SMT firmware to a newer version. - Replace OM-SMT. - Contact Technical Support.

C35558 SMT: Internal software error

Message class:	Safety monitoring channel has identified an error (10)
Message value:	Module: %1, line: %2
Component:	Terminal Module (TM)
Propagation:	Local
Response:	OFF2
Acknowledgment:	POWER ON
Cause:	An internal error has occurred in the Safety Integrated software of the OM-SMT. Note: This message results in an STO (Safe Torque Off). Message value (r60049, interpret hexadecimal): Only for internal Siemens fault diagnostics.
Remedy:	- Carry out a POWER ON (switch-off/switch-on) for all components. - Upgrade the OM-SMT firmware to a newer version. - Replace OM-SMT. - Contact Technical Support.

C35559 SMT: Module temperature - limit value exceeded

Message class:	Safety monitoring channel has identified an error (10)
Message value:	-
Component:	Terminal Module (TM)
Propagation:	Local
Response:	OFF2
Acknowledgment:	IMMEDIATELY
Cause:	A safe monitoring function has detected that the module temperature of the OM-SMT has exceeded a limit value. STO (Safe Torque Off) was initiated to maintain the safe state.
Remedy:	- Check the ambient temperature - Operate the module in the permissible temperature range.

C35561 SMT: Error for data cross-check

Message class:	Safety monitoring channel has identified an error (10)
Message value:	-
Component:	Terminal Module (TM)
Propagation:	Local
Response:	OFF2
Acknowledgment:	IMMEDIATELY
Cause:	When carrying out a data cross-check between the two monitoring channels, the OM-SMT detected a difference and initiated an STO (Safe Torque Off). The monitoring no longer reliably functions, i.e. safe operation is no longer possible.

Remedy:
- Carry out a POWER ON (switch-off/switch-on) for all components.
- Upgrade firmware to later version.
- Replace OM-SMT.
- Contact Technical Support.

A35563 SMT: Checksum error has occurred

Message class: Safety monitoring channel has identified an error (10)
Message value: %1
Component: Terminal Module (TM)
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: A checksum error (CRC error) has occurred in the OM-SMT program memory.
Remedy:
- Carry out a POWER ON (switch-off/switch-on).
- Upgrade firmware to later version.
- Contact Technical Support.

A35564 SMT: Checksum error has occurred

Message class: Safety monitoring channel has identified an error (10)
Message value: %1
Component: Terminal Module (TM)
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: A checksum error (CRC error) has occurred in the OM-SMT program memory.
Remedy:
- Carry out a POWER ON (switch-off/switch-on).
- Upgrade firmware to later version.
- Contact Technical Support.

C35565 SMT: Internal safety message buffer is full

Message class: Safety monitoring channel has identified an error (10)
Message value: %1
Component: Terminal Module (TM)
Propagation: Local
Response: NONE
Acknowledgment: POWER ON
Cause: Too many safety messages have occurred within a short time so that some have not been able to be displayed.
Remedy: No remedy required.

C35567 SMT: Communication error with converter

Message class: Safety monitoring channel has identified an error (10)
Message value: %1
Component: Terminal Module (TM)
Propagation: Local
Response: NONE
Acknowledgment: IMMEDIATELY

Cause: A communication error with the converter has occurred.
Note:
This fault results in an STO (Safe Torque Off). Fault value (r60049, interpret decimal): Only for internal Siemens fault diagnostics.
Remedy: - Acknowledge this message using a safe acknowledgment mechanism (e.g. via PROFIsafe).
- Carry out a POWER ON (switch-off/switch-on) for all components.
- Check the electrical cabinet design and cable routing for EMC compliance.
- Upgrade software to a later version
- Contact Technical Support.

A35569 SMT: Short-circuit detected at the temperature sensor for alarm

Message class: Safety monitoring channel has identified an error (10)
Message value: -
Component: Motor
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: There is a short-circuit at the temperature sensor for alarm.
Remedy: Check the wiring and temperature sensor connection.

N35800 (F) TM: Group signal

Message class: General drive fault (19)
Message value: -
Component: None
Propagation: Interconnection
Response: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Acknowledgment: NONE
Cause: The Terminal Module has detected at least one fault.
Remedy: Evaluation of other active messages.
Response upon: F: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY

F35804 (N, A) TM: Checksum error has occurred

Message class: Hardware/software error (1)
Message value: %1
Component: Terminal Module (TM)
Propagation: Interconnection
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: A checksum error has occurred when reading-out the program memory on the Terminal Module.
Fault value (r0949, interpret hexadecimal):
Difference between the checksum at POWER ON and the actual checksum.
Remedy: - Check whether the permissible ambient temperature for the component is being maintained.
- Replace the Terminal Module.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F35805 (N, A) TM: EEPROM checksum error

Message class: Hardware/software error (1)
Message value: %1
Component: Terminal Module (TM)
Propagation: Interconnection
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: Internal parameter data is corrupted.
Alarm value (r2124, interpret hexadecimal):
01: EEPROM access error.
02: Too many blocks in the EEPROM.
Remedy: - Check whether the permissible ambient temperature for the component is being maintained.
- Replace the Terminal Module 31 (TM31).
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F35850 TM: Internal software error

Message class: Hardware/software error (1)
Message value: %1
Component: Terminal Module (TM)
Propagation: Interconnection
Response: OFF1 (NONE, OFF2, OFF3)
Acknowledgment: POWER ON
Cause: An internal software error in the Terminal Module (TM) has occurred.
Fault value (r0949, interpret decimal):
1: Background time slice is blocked.
2: Checksum over the code memory is not OK.
Remedy: - Replace the Terminal Module (TM).
- If required, upgrade the firmware in the Terminal Module.
- Contact Technical Support.

F35899 (N, A) TM: Unknown fault

Message class: General drive fault (19)
Message value: New message: %1
Component: Terminal Module (TM)
Propagation: Interconnection
Response: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowledgment: IMMEDIATELY
Cause: A fault occurred on the Terminal Module, which cannot be interpreted by the converter firmware.
This can occur if the firmware on this component is more recent than the converter firmware.
Fault value (r0949, interpret decimal):
Fault number.
Note:
If required, the significance of this new fault can be read about in a more recent description of the converter.
Remedy: - Replace the firmware on the Terminal Module by an older firmware version (r0158).
- Upgrade the converter firmware.
Response upon: N: NONE

Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

A35903 (F, N) TM: I2C bus error occurred

Message class: Hardware/software error (1)
Message value: -
Component: Terminal Module (TM)
Propagation: Interconnection
Response: NONE
Acknowledgment: NONE
Cause: An error has occurred while accessing the internal I2C bus of the Terminal Module.
Remedy: Replace the Terminal Module.
Response upon: F: NONE
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A35904 (F, N) TM: EEPROM

Message class: Hardware/software error (1)
Message value: -
Component: Terminal Module (TM)
Propagation: Interconnection
Response: NONE
Acknowledgment: NONE
Cause: An error has occurred accessing the non-volatile memory on the Terminal Module.
Remedy: Replace the Terminal Module.
Response upon: F: NONE
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A35905 (F, N) TM: Parameter access

Message class: Hardware/software error (1)
Message value: -
Component: Terminal Module (TM)
Propagation: Interconnection
Response: NONE
Acknowledgment: NONE
Cause: The converter attempted to write an illegal parameter value to the Terminal Module.
Remedy: - Check whether the firmware version of the Terminal Module (r0158) matches the converter firmware version.
- If required, replace the Terminal Module.
Note:
The firmware versions that match each other are in the readme.txt file on the memory card.
Response upon: F: NONE
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A35906 (F, N) TM: 24 V power supply missing

Message class: Supply voltage fault (undervoltage) (3)
Message value: %1
Component: Terminal Module (TM)
Propagation: Interconnection
Response: NONE
Acknowledgment: NONE
Cause: The 24 V power supply for the digital outputs is missing.
Alarm value (r2124, interpret hexadecimal):
01: TM17 24 V power supply for DI/DO 0 ... 7 missing.
02: TM17 24 V power supply for DI/DO 8 ... 15 missing.
04: TM15 24 V power supply for DI/DO 0 ... 7 (X520) missing.
08: TM15 24 V power supply for DI/DO 8 ... 15 (X521) missing.
10: TM15 24 V power supply for DI/DO 16 ... 23 (X522) missing.
20: TM41 24 V power supply for DI/DO 0 ... 3 missing.
Remedy: Check the terminals for the supply voltage (L1+, L2+, L3+, M or +24 V_1 for TM41).
Response upon: F: NONE
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A35907 (F, N) TM: Hardware initialization error

Message class: Hardware/software error (1)
Message value: %1
Component: Terminal Module (TM)
Propagation: Interconnection
Response: NONE
Acknowledgment: NONE
Cause: The Terminal Module was not successfully initialized.
Alarm value (r2124, interpret hexadecimal):
01: TM17 or TM41 - Incorrect configuration request.
02: TM17 or TM41 - programming not successful.
04: TM17 or TM41 - Invalid time stamp
Remedy: Carry out a POWER ON.
Response upon: F: NONE
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A35910 (F, N) TM: Module overtemperature

Message class: Overtemperature of the electronic components (6)
Message value: -
Component: Terminal Module (TM)
Propagation: Interconnection
Response: NONE
Acknowledgment: NONE
Cause: The temperature in the module has exceeded the highest permissible limit.
Remedy: - Reduce the ambient temperature.
- Replace the Terminal Module.

Response upon: F: NONE
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A35911 (F, N) TM: Isochronous operation sign-of-life missing

Message class: Communication error to the higher-level control system (9)
Message value: -
Component: None
Propagation: Interconnection
Response: NONE
Acknowledgment: NONE
Cause: The maximum permissible number of errors in the master sign-of-life (clock synchronous operation) has been exceeded in cyclic operation.
When the alarm is output, the module outputs are reset up to the next synchronization.
Remedy: - Check the physical bus configuration (terminating resistor, shielding, etc.).
- Check the interconnection of the master sign-of-life (r4201 via p0915).
- Check whether the master correctly sends the sign-of-life (e.g. set up a trace with r4201.12 ... r4201.15 and trigger signal r4301.9).
- Check the bus and master for utilization level (e.g. bus cycle time Tdp was set too short).
Response upon: F: NONE
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

F35950 TM: Internal software error

Message class: Hardware/software error (1)
Message value: %1
Component: Terminal Module (TM)
Propagation: Local
Response: OFF2 (NONE)
Acknowledgment: POWER ON
Cause: An internal software error has occurred.
Fault value (r0949, interpret decimal):
Information about the fault source.
Only for internal Siemens troubleshooting.
Remedy: - If necessary, upgrade the firmware in the Terminal Module to a later version.
- Contact Technical Support.

F36207 (N, A) Hub: Overtemperature component

Message class: Overtemperature of the electronic components (6)
Message value: %1
Component: Terminal Board (TB)
Propagation: Local
Response: NONE (OFF1, OFF2)
Acknowledgment: IMMEDIATELY
Cause: The temperature on the DRIVE-CLiQ Hub Module has exceeded the fault threshold.
Fault value (r0949, interpret decimal):
Actual temperature in 0.1 °C resolution.

Remedy: - Check ambient temperature at component installation location.
- Replace the component involved.

Response upon: N: NONE

Acknowl. upon N: NONE

Response upon: A: NONE

Acknowl. upon A: NONE

A36211 (F, N) Hub: Overtemperature alarm component

Message class: Overtemperature of the electronic components (6)

Message value: %1

Component: Terminal Board (TB)

Propagation: Local

Response: NONE

Acknowledgment: NONE

Cause: The temperature on the DRIVE-CLiQ Hub Module has exceeded the alarm threshold.
Alarm value (r2124, interpret decimal):
Actual temperature in 0.1 °C resolution.

Remedy: - Check ambient temperature at component installation location.
- Replace the component involved.

Response upon: F: NONE

Acknowl. upon F: IMMEDIATELY

Response upon: N: NONE

Acknowl. upon N: NONE

F36214 (N, A) Hub: Overvoltage fault 24 V supply

Message class: Supply voltage fault (overvoltage) (3)

Message value: %1

Component: Terminal Board (TB)

Propagation: Local

Response: NONE (OFF1, OFF2)

Acknowledgment: IMMEDIATELY

Cause: The 24 V power supply on the DRIVE-CLiQ Hub Module has exceeded the fault threshold.
Fault value (r0949, interpret decimal):
Actual operating voltage in 0.1 °C resolution

Remedy: - Check the power supply of the component.
- Replace the component involved.

Response upon: N: NONE

Acknowl. upon N: NONE

Response upon: A: NONE

Acknowl. upon A: NONE

F36216 (N, A) Hub: Undervoltage fault 24 V supply

Message class: Supply voltage fault (undervoltage) (3)

Message value: %1

Component: Terminal Board (TB)

Propagation: Local

Response: NONE (OFF1, OFF2)

Acknowledgment: IMMEDIATELY

Cause: The 24 V power supply on the DRIVE-CLiQ Hub Module has undershot the fault threshold.
Fault value (r0949, interpret decimal):
Actual operating voltage in 0.1 °C resolution
Remedy: - Check the power supply of the component.
- Replace the component involved.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

A36217 (N) Hub: Undervoltage alarm 24 V supply

Message class: Supply voltage fault (undervoltage) (3)
Message value: %1
Component: Terminal Board (TB)
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: The 24 V power supply on the DRIVE-CLiQ Hub Module has undershot the alarm threshold.
Alarm value (r2124, interpret decimal):
Actual operating voltage in 0.1 °C resolution
Remedy: - Check the power supply of the component.
- Replace the component involved.
Response upon: N: NONE
Acknowl. upon N: NONE

F36804 (N, A) Hub: Checksum error has occurred

Message class: Hardware/software error (1)
Message value: %1
Component: Terminal Board (TB)
Propagation: Local
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: A checksum error occurred when reading out the program memory on the DRIVE-CLiQ Hub Module.
Fault value (r0949, interpret hexadecimal):
Difference between the checksum at POWER ON and the actual checksum.
Remedy: - Check whether the permissible ambient temperature for the component is being maintained.
- Replace the DRIVE-CLiQ Hub Module.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F36805 (N, A) Hub: EEPROM checksum incorrect

Message class: Hardware/software error (1)
Message value: %1
Component: Terminal Board (TB)
Propagation: Local
Response: NONE
Acknowledgment: IMMEDIATELY

Cause: The internal parameter data on the DRIVE-CLiQ Hub Module is incorrect.
Alarm value (r2124, interpret hexadecimal):
01: EEPROM access error.
02: Too many blocks in the EEPROM.
Remedy: - Check whether the permissible ambient temperature for the component is being maintained.
- Replace the DRIVE-CLiQ Hub Module.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F36899 (N, A) Hub: Unknown fault

Message class: General drive fault (19)
Message value: New message: %1
Component: Terminal Board (TB)
Propagation: Local
Response: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowledgment: IMMEDIATELY
Cause: A fault occurred on the DRIVE-CLiQ Hub Module, which cannot be interpreted by the firmware.
This can occur if the firmware on this component is more recent than the firmware on the converter.
Fault value (r0949, interpret decimal):
Fault number.
Note:
If required, the significance of this new fault can be read about in a more recent description of the converter.
Remedy: - Replace the firmware on the DRIVE-CLiQ Hub Module with older firmware.
- Upgrade the converter firmware.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F36950 Hub: Internal software error

Message class: Hardware/software error (1)
Message value: %1
Component: Terminal Board (TB)
Propagation: Local
Response: OFF2 (NONE)
Acknowledgment: POWER ON
Cause: An internal software error has occurred.
Fault value (r0949, interpret decimal):
Information about the fault source.
Only for internal Siemens troubleshooting.
Remedy: - If required, upgrade the firmware in the DRIVE-CLiQ Hub Module to a more recent version.
- Contact Technical Support.

A36999 (F, N) Hub: Unknown alarm

Message class: General drive fault (19)
Message value: New message: %1
Component: Terminal Board (TB)

Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: An alarm has occurred on the DRIVE-CLiQ Hub Module, which cannot be interpreted by the firmware.
This can occur if the firmware on this component is more recent than the converter firmware.
Alarm value (r2124, interpret decimal):
Alarm number.
Note:
If required, the significance of this new alarm can be read about in a more recent description of the converter.
Remedy: - Replace the firmware on the DRIVE-CLiQ Hub Module with older firmware.
- Upgrade the converter firmware.
Response upon: F: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

A39200 IIoT: Communications problem

Message class: Line supply fault (2)
Message value: -
Component: None
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: There is a communications problem in Option Module IIoT. It is not possible to transfer data to the Siemens Industrial Edge.
Bit 0 - 7: Internal communications error
Bit 8 - 11: Ethernet configuration error identified
Bit 12 - 15: Ethernet communications error identified
Bit 16 - 19: Internal communications error
Remedy: - Check the electrical cabinet design and cable routing for EMC compliance.

N39800 (F) IIoT: Group signal

Message class: General drive fault (19)
Message value: -
Component: None
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: Option Module IIoT has detected at least one fault.
Remedy: Evaluation of other active messages.
Response upon: F: NONE
Acknowl. upon F: IMMEDIATELY

A39801 (N) IIoT: Sign-of-life missing

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Component: Control Unit (CU)
Propagation: Local
Response: NONE

Acknowledgment: NONE
Cause: There is a DRIVE-CLiQ communications error between the converter and Option Module IIoT involved.
Error cause:
10 (= 0A hex):
The sign-of-life bit in the received telegram is not set.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: - Check the DRIVE-CLiQ connection.
- Replace the component involved.
Response upon: N: NONE
Acknowl. upon N: NONE

A39802 (N) IIoT: Time slice overflow

Message class: Hardware/software error (1)
Message value: %1
Component: None
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: A time slice overflow has occurred on Option Module IIoT.
Fault value (r0949, interpret decimal):
xx: Time slice number
Remedy: - Reduce the current controller frequency.
- Carry out a POWER ON (switch-off/switch-on) for all components.
- Upgrade firmware to later version.
- Contact Technical Support.
Response upon: N: NONE
Acknowl. upon N: NONE

F39804 (N, A) IIoT: Checksum error has occurred

Message class: Hardware/software error (1)
Message value: %1
Component: None
Propagation: Local
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: A checksum error has occurred when reading-out the program memory on the Option Module IIoT.
Fault value (r0949, interpret hexadecimal):
Difference between the checksum at POWER ON and the actual checksum.
Remedy: - Check whether the permissible ambient temperature for the component is being maintained.
- Replace Option Module IIoT
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F39805 (N, A) IIoT: EEPROM checksum incorrect

Message class: Hardware/software error (1)

Message value: %1
Component: None
Propagation: Local
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: The internal parameter data on Option Module IIoT is corrupt.
Alarm value (r2124, interpret hexadecimal):
01: EEPROM access error.
02: Too many blocks in the EEPROM.
Remedy: - Check whether the permissible ambient temperature for the component is being maintained.
- Replace Option Module IIoT
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F39820 IIoT DRIVE-CLiQ: Telegram error

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Component: None
Propagation: Local
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: There is a DRIVE-CLiQ communications error between the converter and the Option Module IIoT involved.
Error cause:
1 (= 01 hex):
Checksum error (CRC error).
2 (= 02 hex):
Telegram is shorter than specified in the length byte or in the receive list.
3 (= 03 hex):
Telegram is longer than specified in the length byte or in the receive list.
4 (= 04 hex):
The length of the received telegram does not match the receive list.
5 (= 05 hex):
The type of the received telegram does not match the receive list.
6 (= 06 hex):
The address of the component in the telegram and in the receive list do not match.
7 (= 07 hex):
A SYNC telegram is expected - but the received telegram is not a SYNC telegram.
8 (= 08 hex):
No SYNC telegram is expected - but the received telegram is one.
9 (= 09 hex):
The error bit in the received telegram is set.
16 (= 10 hex):
The received telegram is too early.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: - Carry out a POWER ON (switch-off/switch-on).
- Check the electrical cabinet design and cable routing for EMC compliance.
- Check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).

F39835 IIoT DRIVE-CLiQ: Cyclic data transfer error

Message class: Internal (DRIVE-CLiQ) communication error (12)

Message value: Component number: %1, fault cause: %2

Component: None

Propagation: Local

Response: NONE

Acknowledgment: IMMEDIATELY

Cause: There is a DRIVE-CLiQ communication error between the converter and the IIoT module involved. The nodes do not send and receive in synchronism.
Error cause:
33 (= 21 hex):
The cyclic telegram has not been received.
34 (= 22 hex):
Timeout in the telegram receive list.
64 (= 40 hex):
Timeout in the telegram send list.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy:
- Carry out a POWER ON.
- Replace the component involved.

F39836 IIoT DRIVE-CLiQ: Send error for DRIVE-CLiQ data

Message class: Internal (DRIVE-CLiQ) communication error (12)

Message value: Component number: %1, fault cause: %2

Component: None

Propagation: Local

Response: NONE

Acknowledgment: IMMEDIATELY

Cause: There is a DRIVE-CLiQ communications error between the converter and Option Module IIoT involved. Data were not able to be sent.
Error cause:
65 (= 41 hex):
Telegram type does not match send list.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy: Carry out a POWER ON.

F39837 IIoT DRIVE-CLiQ: Component fault

Message class: Internal (DRIVE-CLiQ) communication error (12)

Message value: Component number: %1, fault cause: %2

Component: None

Propagation: Local

Response: NONE

Acknowledgment: IMMEDIATELY

Cause: Fault detected on the DRIVE-CLiQ component involved. Faulty hardware cannot be excluded.
Error cause:
32 (= 20 hex):
Error in the telegram header.
35 (= 23 hex):
Receive error: The telegram buffer memory contains an error.
66 (= 42 hex):
Send error: The telegram buffer memory contains an error.
67 (= 43 hex):
Send error: The telegram buffer memory contains an error.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy:
- Check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
- Check the electrical cabinet design and cable routing for EMC compliance.
- Replace the component involved.

F39845 IIoT DRIVE-CLiQ: Cyclic data transfer error

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Component: None
Propagation: Local
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: There is a DRIVE-CLiQ communications error between the converter and Option Module IIoT involved.
Error cause:
11 (= 0B hex):
Synchronization error during alternating cyclic data transfer.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: Carry out a POWER ON.

F39851 IIoT DRIVE-CLiQ (CU): Sign-of-life missing

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Component: None
Propagation: Local
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: There is a DRIVE-CLiQ communications error between the Option Module IIoT involved and the converter.
The DRIVE-CLiQ component did not set the sign-of-life to the converter.
Error cause:
10 (= 0A hex):
The sign-of-life bit in the received telegram is not set.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: Upgrade the firmware of the component involved.

F39860 IIoT DRIVE-CLiQ (CU): Telegram error

Message class: Internal (DRIVE-CLiQ) communication error (12)

Message value: Component number: %1, fault cause: %2

Component: None

Propagation: Local

Response: NONE

Acknowledgment: IMMEDIATELY

Cause: There is a DRIVE-CLiQ communications error between the Option Module IIoT involved and the converter.
Error cause:
1 (= 01 hex):
Checksum error (CRC error).
2 (= 02 hex):
Telegram is shorter than specified in the length byte or in the receive list.
3 (= 03 hex):
Telegram is longer than specified in the length byte or in the receive list.
4 (= 04 hex):
The length of the received telegram does not match the receive list.
5 (= 05 hex):
The type of the received telegram does not match the receive list.
6 (= 06 hex):
The address of the power unit in the telegram and in the receive list do not match.
9 (= 09 hex):
The DRIVE-CLiQ communication from the DRIVE-CLiQ component involved to the converter signals that the supply voltage has failed.
16 (= 10 hex):
The received telegram is too early.
17 (= 11 hex):
CRC error and the received telegram is too early.
18 (= 12 hex):
The telegram is shorter than that specified in the length byte or in the receive list and the received telegram is too early.
19 (= 13 hex):
The telegram is longer than that specified in the length byte or in the receive list and the received telegram is too early.
20 (= 14 hex):
The length of the received telegram does not match the receive list and the received telegram is too early.
21 (= 15 hex):
The type of the received telegram does not match the receive list and the received telegram is too early.
22 (= 16 hex):
The address of the power unit in the telegram and in the receive list does not match and the received telegram is too early.
25 (= 19 hex):
The error bit in the received telegram is set and the received telegram is too early.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy: - Carry out a POWER ON (switch-off/switch-on).
- Check the electrical cabinet design and cable routing for EMC compliance.

F39875 IIoT: Supply voltage failed

Message class: Supply voltage fault (undervoltage) (3)

Message value: Component number: %1, fault cause: %2

Component: None
Propagation: Local
Response: OFF1 (OFF2)
Acknowledgment: IMMEDIATELY
Cause: The component involved has signaled that the 24 V supply has failed.
Error cause:
9 (= 09 hex):
The supply voltage for the component has failed.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: - Check the supply voltage wiring (interrupted cable, contacts, ...).
- Check the dimensioning of the 24 V supply, check cable lengths.

F39885 IIoT DRIVE-CLiQ (CU): Cyclic data transfer error

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Component: None
Propagation: Local
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: There is a DRIVE-CLiQ communication error between the Option Module involved IIoT and the converter.
The nodes do not send and receive in synchronism.
Error cause:
26 (= 1A hex):
Sign-of-life bit in the received telegram not set and the received telegram is too early.
33 (= 21 hex):
The cyclic telegram has not been received.
34 (= 22 hex):
Timeout in the telegram receive list.
64 (= 40 hex):
Timeout in the telegram send list.
98 (= 62 hex):
Error at the transition to cyclic operation.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: - Check the power supply of the component involved.
- Carry out a POWER ON.
- Replace the component involved.

F39886 IIoT DRIVE-CLiQ (CU): Error when sending DRIVE-CLiQ data

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Component: None
Propagation: Local
Response: NONE
Acknowledgment: IMMEDIATELY

Cause: There is a DRIVE-CLiQ communication error between the DRIVE-CLiQ Hub Module involved and the converter.
Data were not able to be sent.
Error cause:
65 (= 41 hex):
Telegram type does not match send list.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy: Carry out a POWER ON.

F39887 IIoT DRIVE-CLiQ (CU): Component fault

Message class: Internal (DRIVE-CLiQ) communication error (12)

Message value: Component number: %1, fault cause: %2

Component: None

Propagation: Local

Response: NONE

Acknowledgment: IMMEDIATELY

Cause: Fault detected on the DRIVE-CLiQ component (Option Module IIoT) involved. Faulty hardware cannot be excluded.
Error cause:
32 (= 20 hex):
Error in the telegram header.
35 (= 23 hex):
Receive error: The telegram buffer memory contains an error.
66 (= 42 hex):
Send error: The telegram buffer memory contains an error.
67 (= 43 hex):
Send error: The telegram buffer memory contains an error.
96 (= 60 hex):
Response received too late during runtime measurement.
97 (= 61 hex):
Time taken to exchange characteristic data too long.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy: - Check the electrical cabinet design and cable routing for EMC compliance.
- Replace the component involved.

F39895 IIoT DRIVE-CLiQ (CU): Alternating cyclic data transfer error

Message class: Internal (DRIVE-CLiQ) communication error (12)

Message value: Component number: %1, fault cause: %2

Component: None

Propagation: Local

Response: NONE

Acknowledgment: IMMEDIATELY

Cause: There is a DRIVE-CLiQ communications error between the Option Module IIoT involved and the converter.
Error cause:
11 (= 0B hex):
Synchronization error during alternating cyclic data transfer.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy: Carry out a POWER ON.

F39896 IIoT DRIVE-CLiQ (CU): Inconsistent component properties

Message class: Internal (DRIVE-CLiQ) communication error (12)

Message value: Component number: %1

Component: None

Propagation: Local

Response: NONE

Acknowledgment: IMMEDIATELY

Explanation of the message value: For %1
Component in target topology

Cause: The properties of the DRIVE-CLiQ component (Option Module IIoT), specified by the fault value, have changed in an incompatible fashion with respect to the properties when running up.
Fault value (r0949, interpret decimal):
Component number.

Remedy: - Carry out a POWER ON.
- When a component is replaced, the same component type and if possible the same firmware version should be used.

F39899 (N, A) IIoT: Unknown fault

Message class: General drive fault (19)

Message value: New message: %1

Component: None

Propagation: Local

Response: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)

Acknowledgment: IMMEDIATELY

Cause: A fault occurred on Option Module IIoT that cannot be interpreted by the firmware.
This can occur if the firmware on this component is more recent than the firmware on the converter.
Fault value (r0949, interpret decimal):
Fault number.
Note:
If required, the significance of this new fault can be read about in a more recent description of the converter.

Remedy: - Replace the firmware on Option Module IIoT by an older firmware version.
- Upgrade the converter firmware.

Response upon: N: NONE

Acknowl. upon N: NONE

Response upon: A: NONE

Acknowl. upon A: NONE

F39950 IIoT: Internal software error

Message class: Hardware/software error (1)

Message value: %1

Component: None

Propagation: Local
Response: OFF2 (NONE)
Acknowledgment: POWER ON
Cause: An internal software error has occurred.
Fault value (r0949, interpret decimal):
Information about the fault source.
Only for internal Siemens troubleshooting.
Remedy: - If necessary, upgrade the firmware in Option Module IIoT to a later version.
- Contact Technical Support.

A39999 (F, N) IIoT: Unknown alarm

Message class: General drive fault (19)
Message value: New message: %1
Component: None
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: An alarm has occurred on Option Module IIoT that cannot be interpreted by the firmware.
This can occur if the firmware on this component is more recent than the firmware on the converter.
Alarm value (r2124, interpret decimal):
Alarm number.
Note:
If required, the significance of this new alarm can be read about in a more recent description of the converter.
Remedy: - Replace the firmware on Option Module IIoT by an older firmware version.
- Upgrade the converter firmware.
Response upon: F: NONE (OFF1, OFF2)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

N45800 (F) OM-AIO: Group signal

Message class: General drive fault (19)
Message value: -
Component: None
Propagation: Interconnection
Response: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Acknowledgment: NONE
Cause: The Option Module Analog I/O has detected at least one fault.
Remedy: Evaluation of other active messages.
Response upon: F: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY

A45801 (N) OM-AIO: Sign-of-life missing

Message class: General drive fault (19)
Message value: Component number: %1, fault cause: %2
Component: None
Propagation: Local
Response: NONE
Acknowledgment: NONE

Cause:	There is a DRIVE-CLiQ communications error between the converter and the Option Module Analog I/O involved. Error cause: 10 (= 0A hex): The sign-of-life bit in the received telegram is not set. Note regarding the message value: The individual information is coded as follows in the message value (r0949/r2124): 0000yyxx hex: yy = component number, xx = error cause
Remedy:	- Check the DRIVE-CLiQ connection. - Replace the component involved.
Response upon: N:	NONE
Acknowl. upon N:	NONE

A45802 (N) OM-AIO: Time slice overflow

Message class:	General drive fault (19)
Message value:	%1
Component:	None
Propagation:	Local
Response:	NONE
Acknowledgment:	NONE
Cause:	A time slice overflow has occurred on the Option Module Analog I/O Fault value (r0949, interpret decimal): xx: Time slice number
Remedy:	- Reduce the current controller frequency. - Carry out a POWER ON (switch-off/switch-on) for all components. - Upgrade firmware to later version. - Contact Technical Support.
Response upon: N:	NONE
Acknowl. upon N:	NONE

F45820 OM-AIO DRIVE-CLiQ: Telegram error

Message class:	General drive fault (19)
Message value:	Component number: %1, fault cause: %2
Component:	None
Propagation:	Local
Response:	NONE
Acknowledgment:	IMMEDIATELY

Cause: There is a DRIVE-CLiQ communications error between the converter and the Option Module Analog I/O involved.
Error cause:
1 (= 01 hex):
Checksum error (CRC error).
2 (= 02 hex):
Telegram is shorter than specified in the length byte or in the receive list.
3 (= 03 hex):
Telegram is longer than specified in the length byte or in the receive list.
4 (= 04 hex):
The length of the received telegram does not match the receive list.
5 (= 05 hex):
The type of the received telegram does not match the receive list.
6 (= 06 hex):
The address of the component in the telegram and in the receive list do not match.
7 (= 07 hex):
A SYNC telegram is expected - but the received telegram is not a SYNC telegram.
8 (= 08 hex):
No SYNC telegram is expected - but the received telegram is one.
9 (= 09 hex):
The error bit in the received telegram is set.
16 (= 10 hex):
The received telegram is too early.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy: - Carry out a POWER ON (switch-off/switch-on).
- Check the electrical cabinet design and cable routing for EMC compliance.
- Check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).

F45835 OM-AIO DRIVE-CLiQ: Cyclic data transfer error

Message class: General drive fault (19)

Message value: Component number: %1, fault cause: %2

Component: None

Propagation: Local

Response: NONE

Acknowledgment: IMMEDIATELY

Cause: There is a DRIVE-CLiQ communications error between the converter and the Option Module Analog I/O involved.
The nodes do not send and receive in synchronism.
Error cause:
33 (= 21 hex):
The cyclic telegram has not been received.
34 (= 22 hex):
Timeout in the telegram receive list.
64 (= 40 hex):
Timeout in the telegram send list.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy: - Carry out a POWER ON.
- Replace the component involved.

F45836	**OM-AIO DRIVE-CLiQ: Send error for DRIVE-CLiQ data**
Message class:	General drive fault (19)
Message value:	Component number: %1, fault cause: %2
Component:	None
Propagation:	Local
Response:	NONE
Acknowledgment:	IMMEDIATELY
Cause:	There is a DRIVE-CLiQ communications error between the converter and the Option Module Analog I/O involved. Data were not able to be sent. Error cause: 65 (= 41 hex): Telegram type does not match send list. Note regarding the message value: The individual information is coded as follows in the message value (r0949/r2124): 0000yyxx hex: yy = component number, xx = error cause
Remedy:	Carry out a POWER ON.

F45837	**OM-AIO DRIVE-CLiQ: Component fault**
Message class:	General drive fault (19)
Message value:	Component number: %1, fault cause: %2
Component:	None
Propagation:	Local
Response:	NONE
Acknowledgment:	IMMEDIATELY
Cause:	Fault detected on the DRIVE-CLiQ component involved. Faulty hardware cannot be excluded. Error cause: 32 (= 20 hex): Error in the telegram header. 35 (= 23 hex): Receive error: The telegram buffer memory contains an error. 66 (= 42 hex): Send error: The telegram buffer memory contains an error. 67 (= 43 hex): Send error: The telegram buffer memory contains an error. Note regarding the message value: The individual information is coded as follows in the message value (r0949/r2124): 0000yyxx hex: yy = component number, xx = error cause
Remedy:	- Check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...). - Check the electrical cabinet design and cable routing for EMC compliance. - Replace the component involved.

F45845	**OM-AIO DRIVE-CLiQ: Cyclic data transfer error**
Message class:	General drive fault (19)
Message value:	Component number: %1, fault cause: %2
Component:	None
Propagation:	Local
Response:	NONE
Acknowledgment:	IMMEDIATELY

Cause: There is a DRIVE-CLiQ communications error between the converter and the Option Module Analog I/O involved.
Error cause:
11 (= 0B hex):
Synchronization error during alternating cyclic data transfer.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy: Carry out a POWER ON.

F45851 OM-AIO DRIVE-CLiQ (CU): Sign-of-life missing

Message class: General drive fault (19)

Message value: Component number: %1, fault cause: %2

Component: None

Propagation: Local

Response: NONE

Acknowledgment: IMMEDIATELY

Cause: There is a DRIVE-CLiQ communications error from the Option Module Analog I/O involved and the converter.
The DRIVE-CLiQ component did not set the sign-of-life to the converter.
Error cause:
10 (= 0A hex):
The sign-of-life bit in the received telegram is not set.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy: Upgrade the firmware of the component involved.

F45860 OM-AIO DRIVE-CLiQ (CU): Telegram error

Message class: General drive fault (19)

Message value: Component number: %1, fault cause: %2

Component: None

Propagation: Local

Response: NONE

Acknowledgment: IMMEDIATELY

Cause: There is a DRIVE-CLiQ communications error from the Option Module Analog I/O involved and the converter.
Error cause:
1 (= 01 hex):
Checksum error (CRC error).
2 (= 02 hex):
Telegram is shorter than specified in the length byte or in the receive list.
3 (= 03 hex):
Telegram is longer than specified in the length byte or in the receive list.
4 (= 04 hex):
The length of the received telegram does not match the receive list.
5 (= 05 hex):
The type of the received telegram does not match the receive list.
6 (= 06 hex):
The address of the power unit in the telegram and in the receive list do not match.
9 (= 09 hex):
The DRIVE-CLiQ communication from the DRIVE-CLiQ component involved to the converter signals that the supply voltage has failed.
16 (= 10 hex):
The received telegram is too early.
17 (= 11 hex):
CRC error and the received telegram is too early.
18 (= 12 hex):
The telegram is shorter than that specified in the length byte or in the receive list and the received telegram is too early.
19 (= 13 hex):
The telegram is longer than that specified in the length byte or in the receive list and the received telegram is too early.
20 (= 14 hex):
The length of the received telegram does not match the receive list and the received telegram is too early.
21 (= 15 hex):
The type of the received telegram does not match the receive list and the received telegram is too early.
22 (= 16 hex):
The address of the power unit in the telegram and in the receive list does not match and the received telegram is too early.
25 (= 19 hex):
The error bit in the received telegram is set and the received telegram is too early.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy: - Carry out a POWER ON (switch-off/switch-on).
- Check the electrical cabinet design and cable routing for EMC compliance.

F45875 OM-AIO: Supply voltage failed

Message class: General drive fault (19)
Message value: Component number: %1, fault cause: %2
Component: None
Propagation: Local
Response: OFF1 (OFF2)
Acknowledgment: IMMEDIATELY

Cause: The component involved has signaled that the 24 V supply has failed.
Error cause:
9 (= 09 hex):
The supply voltage for the component has failed.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy:
- Check the supply voltage wiring (interrupted cable, contacts, ...).
- Check the dimensioning of the 24 V supply, check cable lengths.

F45885 OM-AIO DRIVE-CLiQ (CU): Cyclic data transfer error

Message class: General drive fault (19)

Message value: Component number: %1, fault cause: %2

Component: None

Propagation: Local

Response: NONE

Acknowledgment: IMMEDIATELY

Cause: There is a DRIVE-CLiQ communications error between the Option Module Analog I/O involved and the converter.
The nodes do not send and receive in synchronism.
Error cause:
26 (= 1A hex):
Sign-of-life bit in the received telegram not set and the received telegram is too early.
33 (= 21 hex):
The cyclic telegram has not been received.
34 (= 22 hex):
Timeout in the telegram receive list.
64 (= 40 hex):
Timeout in the telegram send list.
98 (= 62 hex):
Error at the transition to cyclic operation.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy:
- Check the power supply of the component involved.
- Carry out a POWER ON.
- Replace the component involved.

F45886 OM-AIO DRIVE-CLiQ (CU): Error when sending DRIVE-CLiQ data

Message class: General drive fault (19)

Message value: Component number: %1, fault cause: %2

Component: None

Propagation: Local

Response: NONE

Acknowledgment: IMMEDIATELY

Cause: There is a DRIVE-CLiQ communications error from the Option Module Analog I/O involved and the converter.
Data were not able to be sent.
Error cause:
65 (= 41 hex):
Telegram type does not match send list.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy: Carry out a POWER ON.

F45887 OM-AIO DRIVE-CLiQ (CU): Component fault

Message class: General drive fault (19)
Message value: Component number: %1, fault cause: %2
Component: None
Propagation: Local
Response: NONE
Acknowledgment: IMMEDIATELY

Cause: A fault was detected on the DRIVE-CLiQ component (Option Module Analog I/O) involved. Faulty hardware cannot be excluded.
Error cause:
32 (= 20 hex):
Error in the telegram header.
35 (= 23 hex):
Receive error: The telegram buffer memory contains an error.
66 (= 42 hex):
Send error: The telegram buffer memory contains an error.
67 (= 43 hex):
Send error: The telegram buffer memory contains an error.
96 (= 60 hex):
Response received too late during runtime measurement.
97 (= 61 hex):
Time taken to exchange characteristic data too long.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy: - Check the electrical cabinet design and cable routing for EMC compliance.
- Replace the component involved.

F45895 OM-AIO DRIVE-CLiQ (CU): Alternating cyclic data transfer error

Message class: General drive fault (19)
Message value: Component number: %1, fault cause: %2
Component: None
Propagation: Local
Response: NONE
Acknowledgment: IMMEDIATELY

Cause: There is a DRIVE-CLiQ communications error from the Option Module Analog I/O involved and the converter.
Error cause:
11 (= 0B hex):
Synchronization error during alternating cyclic data transfer.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: Carry out a POWER ON.

F45896 OM-AIO DRIVE-CLiQ (CU): Inconsistent component properties

Message class: General drive fault (19)
Message value: Component number: %1
Component: None
Propagation: Local
Response: NONE
Acknowledgment: IMMEDIATELY
Explanation of the message value: For %1
Component in target topology
Cause: The properties of the DRIVE-CLiQ component (Option Module Analog I/O), specified by the fault value, have changed in an incompatible fashion with respect to the properties when running up.
Fault value (r0949, interpret decimal):
Component number.
Remedy: - Carry out a POWER ON.
- When a component is replaced, the same component type and if possible the same firmware version should be used.

F45899 (N, A) OM-AIO: Unknown fault

Message class: General drive fault (19)
Message value: New message: %1
Component: None
Propagation: Local
Response: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowledgment: IMMEDIATELY
Cause: A fault has occurred on the Option Module Analog I/O, which the firmware cannot interpret.
This can occur if the firmware on this component is more recent than the firmware on the converter.
Fault value (r0949, interpret decimal):
Fault number.
Note:
If required, the significance of this new fault can be read about in a more recent description of the converter.
Remedy: - Replace the firmware on the Option Module Analog I/O by an older firmware version.
- Upgrade the converter firmware.
Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F45950 OM-AIO: Internal software error

Message class: General drive fault (19)
Message value: %1
Component: None

Propagation: Local
Response: OFF2 (NONE)
Acknowledgment: POWER ON
Cause: An internal software error has occurred.
Fault value (r0949, interpret decimal):
Information about the fault source.
Only for internal Siemens troubleshooting.
Remedy: - If necessary, upgrade the firmware on the Option Module Analog I/O to a later version.
- Contact Technical Support.

A45999 (F, N) OM-AIO: Unknown alarm

Message class: General drive fault (19)
Message value: New message: %1
Component: None
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: An alarm has occurred on the Option Module Analog I/O, which the firmware cannot interpret.
This can occur if the firmware on this component is more recent than the firmware on the converter.
Alarm value (r2124, interpret decimal):
Alarm number.
Note:
If required, the significance of this new alarm can be read about in a more recent description of the converter.
Remedy: - Replace the firmware on the Option Module Analog I/O by an older firmware version.
- Upgrade the converter firmware.
Response upon: F: NONE (OFF1, OFF2)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

N46800 (F) OM-DIO: Group signal

Message class: General drive fault (19)
Message value: -
Component: None
Propagation: Interconnection
Response: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Acknowledgment: NONE
Cause: The Option Module Digital I/O has detected at least one fault.
Remedy: Evaluation of other active messages.
Response upon: F: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY

A46801 (N) OM-DIO: Sign-of-life missing

Message class: General drive fault (19)
Message value: Component number: %1, fault cause: %2
Component: None
Propagation: Local
Response: NONE
Acknowledgment: NONE

Cause: There is a DRIVE-CLiQ communications error from the converter to the Option Module Digital I/O involved.
Error cause:
10 (= 0A hex):
The sign-of-life bit in the received telegram is not set.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy:
- Check the DRIVE-CLiQ connection.
- Replace the component involved.

Response upon: N: NONE

Acknowl. upon N: NONE

A46802 (N) OM-DIO: Time slice overflow

Message class: General drive fault (19)

Message value: %1

Component: None

Propagation: Local

Response: NONE

Acknowledgment: NONE

Cause: A time slice overflow has occurred on the Option Module Digital I/O
Fault value (r0949, interpret decimal):
xx: Time slice number

Remedy:
- Reduce the current controller frequency.
- Carry out a POWER ON (switch-off/switch-on) for all components.
- Upgrade firmware to later version.
- Contact Technical Support.

Response upon: N: NONE

Acknowl. upon N: NONE

F46820 OM-DIO DRIVE-CLiQ: Telegram error

Message class: General drive fault (19)

Message value: Component number: %1, fault cause: %2

Component: None

Propagation: Local

Response: NONE

Acknowledgment: IMMEDIATELY

Cause: There is a DRIVE-CLiQ communications error from the converter to the Option Module Digital I/O involved.
Error cause:
1 (= 01 hex):
Checksum error (CRC error).
2 (= 02 hex):
Telegram is shorter than specified in the length byte or in the receive list.
3 (= 03 hex):
Telegram is longer than specified in the length byte or in the receive list.
4 (= 04 hex):
The length of the received telegram does not match the receive list.
5 (= 05 hex):
The type of the received telegram does not match the receive list.
6 (= 06 hex):
The address of the component in the telegram and in the receive list do not match.
7 (= 07 hex):
A SYNC telegram is expected - but the received telegram is not a SYNC telegram.
8 (= 08 hex):
No SYNC telegram is expected - but the received telegram is one.
9 (= 09 hex):
The error bit in the received telegram is set.
16 (= 10 hex):
The received telegram is too early.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy:
- Carry out a POWER ON (switch-off/switch-on).
- Check the electrical cabinet design and cable routing for EMC compliance.
- Check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).

F46835 OM-DIO DRIVE-CLiQ: Cyclic data transfer error

Message class: General drive fault (19)

Message value: Component number: %1, fault cause: %2

Component: None

Propagation: Local

Response: NONE

Acknowledgment: IMMEDIATELY

Cause: There is a DRIVE-CLiQ communications error from the converter to the Option Module Digital I/O involved. The nodes do not send and receive in synchronism.
Error cause:
33 (= 21 hex):
The cyclic telegram has not been received.
34 (= 22 hex):
Timeout in the telegram receive list.
64 (= 40 hex):
Timeout in the telegram send list.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy:
- Carry out a POWER ON.
- Replace the component involved.

F46836 OM-DIO DRIVE-CLiQ: Send error for DRIVE-CLiQ data

Message class: General drive fault (19)
Message value: Component number: %1, fault cause: %2
Component: None
Propagation: Local
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: There is a DRIVE-CLiQ communications error from the converter to the Option Module Digital I/O involved. Data were not able to be sent.
Error cause:
65 (= 41 hex):
Telegram type does not match send list.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: Carry out a POWER ON.

F46837 OM-DIO DRIVE-CLiQ: Component fault

Message class: General drive fault (19)
Message value: Component number: %1, fault cause: %2
Component: None
Propagation: Local
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: Fault detected on the DRIVE-CLiQ component involved. Faulty hardware cannot be excluded.
Error cause:
32 (= 20 hex):
Error in the telegram header.
35 (= 23 hex):
Receive error: The telegram buffer memory contains an error.
66 (= 42 hex):
Send error: The telegram buffer memory contains an error.
67 (= 43 hex):
Send error: The telegram buffer memory contains an error.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: - Check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
- Check the electrical cabinet design and cable routing for EMC compliance.
- Replace the component involved.

F46845 OM-DIO DRIVE-CLiQ: Cyclic data transfer error

Message class: General drive fault (19)
Message value: Component number: %1, fault cause: %2
Component: None
Propagation: Local
Response: NONE
Acknowledgment: IMMEDIATELY

Cause: There is a DRIVE-CLiQ communications error from the converter to the Option Module Digital I/O involved.
Error cause:
11 (= 0B hex):
Synchronization error during alternating cyclic data transfer.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: Carry out a POWER ON.

F46851 OM-DIO DRIVE-CLiQ (CU): Sign-of-life missing

Message class: General drive fault (19)
Message value: Component number: %1, fault cause: %2
Component: None
Propagation: Local
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: There is a DRIVE-CLiQ communications error from the Option Module Digital I/O involved to the converter.
The DRIVE-CLiQ component did not set the sign-of-life to the converter.
Error cause:
10 (= 0A hex):
The sign-of-life bit in the received telegram is not set.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: Upgrade the firmware of the component involved.

F46860 OM-DIO DRIVE-CLiQ (CU): Telegram error

Message class: General drive fault (19)
Message value: Component number: %1, fault cause: %2
Component: None
Propagation: Local
Response: NONE
Acknowledgment: IMMEDIATELY

Cause: There is a DRIVE-CLiQ communications error from the Option Module Digital I/O involved to the converter.
Error cause:
1 (= 01 hex):
Checksum error (CRC error).
2 (= 02 hex):
Telegram is shorter than specified in the length byte or in the receive list.
3 (= 03 hex):
Telegram is longer than specified in the length byte or in the receive list.
4 (= 04 hex):
The length of the received telegram does not match the receive list.
5 (= 05 hex):
The type of the received telegram does not match the receive list.
6 (= 06 hex):
The address of the power unit in the telegram and in the receive list do not match.
9 (= 09 hex):
The DRIVE-CLiQ communication from the DRIVE-CLiQ component involved to the converter signals that the supply voltage has failed.
16 (= 10 hex):
The received telegram is too early.
17 (= 11 hex):
CRC error and the received telegram is too early.
18 (= 12 hex):
The telegram is shorter than that specified in the length byte or in the receive list and the received telegram is too early.
19 (= 13 hex):
The telegram is longer than that specified in the length byte or in the receive list and the received telegram is too early.
20 (= 14 hex):
The length of the received telegram does not match the receive list and the received telegram is too early.
21 (= 15 hex):
The type of the received telegram does not match the receive list and the received telegram is too early.
22 (= 16 hex):
The address of the power unit in the telegram and in the receive list does not match and the received telegram is too early.
25 (= 19 hex):
The error bit in the received telegram is set and the received telegram is too early.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy: - Carry out a POWER ON (switch-off/switch-on).
- Check the electrical cabinet design and cable routing for EMC compliance.

F46875 OM-DIO: Supply voltage failed

Message class: General drive fault (19)
Message value: Component number: %1, fault cause: %2
Component: None
Propagation: Local
Response: OFF1 (OFF2)
Acknowledgment: IMMEDIATELY

Cause: The component involved has signaled that the 24 V supply has failed.
Error cause:
9 (= 09 hex):
The supply voltage for the component has failed.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy:
- Check the supply voltage wiring (interrupted cable, contacts, ...).
- Check the dimensioning of the 24 V supply, check cable lengths.

F46885 OM-DIO DRIVE-CLiQ (CU): Cyclic data transfer error

Message class: General drive fault (19)

Message value: Component number: %1, fault cause: %2

Component: None

Propagation: Local

Response: NONE

Acknowledgment: IMMEDIATELY

Cause: There is a DRIVE-CLiQ communications error from the Option Module Digital I/O involved to the converter.
The nodes do not send and receive in synchronism.
Error cause:
26 (= 1A hex):
Sign-of-life bit in the received telegram not set and the received telegram is too early.
33 (= 21 hex):
The cyclic telegram has not been received.
34 (= 22 hex):
Timeout in the telegram receive list.
64 (= 40 hex):
Timeout in the telegram send list.
98 (= 62 hex):
Error at the transition to cyclic operation.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy:
- Check the power supply of the component involved.
- Carry out a POWER ON.
- Replace the component involved.

F46886 OM-DIO DRIVE-CLiQ (CU): Error when sending DRIVE-CLiQ data

Message class: General drive fault (19)

Message value: Component number: %1, fault cause: %2

Component: None

Propagation: Local

Response: NONE

Acknowledgment: IMMEDIATELY

Cause: There is a DRIVE-CLiQ communications error from the Option Module Digital I/O involved to the converter.
Data were not able to be sent.
Error cause:
65 (= 41 hex):
Telegram type does not match send list.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy: Carry out a POWER ON.

F46887 OM-DIO DRIVE-CLiQ (CU): Component fault

Message class: General drive fault (19)

Message value: Component number: %1, fault cause: %2

Component: None

Propagation: Local

Response: NONE

Acknowledgment: IMMEDIATELY

Cause: A fault was detected on the DRIVE-CLiQ component (Option Module Digital I/O) involved. Faulty hardware cannot be excluded.
Error cause:
32 (= 20 hex):
Error in the telegram header.
35 (= 23 hex):
Receive error: The telegram buffer memory contains an error.
66 (= 42 hex):
Send error: The telegram buffer memory contains an error.
67 (= 43 hex):
Send error: The telegram buffer memory contains an error.
96 (= 60 hex):
Response received too late during runtime measurement.
97 (= 61 hex):
Time taken to exchange characteristic data too long.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy: - Check the electrical cabinet design and cable routing for EMC compliance.
- Replace the component involved.

F46895 OM-DIO DRIVE-CLiQ (CU): Alternating cyclic data transfer error

Message class: General drive fault (19)

Message value: Component number: %1, fault cause: %2

Component: None

Propagation: Local

Response: NONE

Acknowledgment: IMMEDIATELY

Cause: There is a DRIVE-CLiQ communications error from the Option Module Digital I/O involved to the converter.
Error cause:
11 (= 0B hex):
Synchronization error during alternating cyclic data transfer.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy: Carry out a POWER ON.

F46896 OM-DIO DRIVE-CLiQ (CU): Inconsistent component properties

Message class: General drive fault (19)

Message value: Component number: %1

Component: None

Propagation: Local

Response: NONE

Acknowledgment: IMMEDIATELY

Explanation of the message value: For %1
Component in target topology

Cause: The properties of the DRIVE-CLiQ component (Option Module Digital I/O), specified by the fault value, have changed in an incompatible fashion with respect to the properties when running up.
Fault value (r0949, interpret decimal):
Component number.

Remedy: - Carry out a POWER ON.
- When a component is replaced, the same component type and if possible the same firmware version should be used.

F46899 (N, A) OM-DIO: Unknown fault

Message class: General drive fault (19)

Message value: New message: %1

Component: None

Propagation: Local

Response: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)

Acknowledgment: IMMEDIATELY

Cause: A fault has occurred on the Option Module Digital I/O, which the firmware cannot interpret.
This can occur if the firmware on this component is more recent than the firmware on the converter.
Fault value (r0949, interpret decimal):
Fault number.
Note:
If required, the significance of this new fault can be read about in a more recent description of the converter.

Remedy: - Replace the firmware on the Option Module Digital I/O by an older firmware version.
- Upgrade the converter firmware.

Response upon: N: NONE

Acknowl. upon N: NONE

Response upon: A: NONE

Acknowl. upon A: NONE

F46950 OM-DIO: Internal software error

Message class: General drive fault (19)

Message value: %1

Component: None

Propagation: Local
Response: OFF2 (NONE)
Acknowledgment: POWER ON
Cause: An internal software error has occurred.
Fault value (r0949, interpret decimal):
Information about the fault source.
Only for internal Siemens troubleshooting.
Remedy: - If necessary, upgrade the firmware on the Option Module Digital I/O to a later version.
- Contact Technical Support.

A46999 (F, N) OM DIO: Unknown alarm

Message class: General drive fault (19)
Message value: New message: %1
Component: None
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: An alarm has occurred on the Option Module Digital I/O, which the firmware cannot interpret.
This can occur if the firmware on this component is more recent than the firmware on the converter.
Alarm value (r2124, interpret decimal):
Alarm number.
Note:
If required, the significance of this new alarm can be read about in a more recent description of the converter.
Remedy: - Replace the firmware on the Option Module DIO by an older firmware version.
- Upgrade the converter firmware.
Response upon: F: NONE (OFF1, OFF2)
Acknowl. upon F: IMMEDIATELY
Response upon: N: NONE
Acknowl. upon N: NONE

F48604 SI: Safety EEPROM data error

Message class: Safety monitoring channel has identified an error (10)
Message value: %1
Component: Power Unit
Propagation: Global
Response: OFF2
Acknowledgment: POWER ON
Cause: Safety relevant EEPROM data are not correct.
This message results in an STO (Safe Torque Off).

Message value (r60049, interpret decimal):
1: No safety calibration
2: Safety static checksum error
3: Safety production-relevant checksum error
4: Calibration data not correct
Remedy: Replace the module

A48605 SI: Checksum error has occurred

Message class: Safety monitoring channel has identified an error (10)
Message value: %1

Component: None
Propagation: Local
Response: NONE
Acknowledgment: NONE
Cause: A checksum error (CRC error) has occurred in the converter program memory.
Remedy: - Carry out a POWER ON (switch-off/switch-on).
- Upgrade firmware to later version.
- Contact Technical Support.

F48606 SI: Safety HW version incorrect

Message class: Safety monitoring channel has identified an error (10)
Message value: %1
Component: Control Unit (CU)
Propagation: Global
Response: OFF2
Acknowledgment: POWER ON
Cause: Safety relevant EEPROM data are not correct.
This message results in an STO (Safe Torque Off).

Message value (r60049, interpret decimal):
1: No safety calibration
2: Safety static checksum error
3: Safety production-relevant checksum error
4: Calibration data not correct
Remedy: Update the software or exchange the module for this software.

C48649 SI: Internal software error

Message class: Hardware/software error (1)
Message value: Module: %1, line: %2
Component: Power Unit
Propagation: Local
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: An internal error has occurred in the Safety Integrated software.
Note:
This message results in an STO (Safe Torque Off) that cannot be acknowledged.
Message value (r60049, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Remedy: - Carry out a POWER ON (switch-off/switch-on) for all components.
- Repeat commissioning of "Safety Integrated" and carry out a POWER ON.
- Upgrade firmware to later version.
- Contact Technical Support.
- Replace hardware component.

F53430 VIBSUP EPOS not activated

Message class: General drive fault (19)
Message value: -
Component: None
Propagation: Global
Response: NONE

Acknowledgment:	IMMEDIATELY
Cause:	It was identified that the "Basic positioner, EPOS" is not activated.
Remedy:	Activate function "Basic positioner, EPOS". Note: VIBSUP: VIBration SUPpression

F53432 VIBSUP frequency fd > Shannon frequency

Message class:	General drive fault (19)
Message value:	-
Component:	None
Propagation:	Global
Response:	NONE
Acknowledgment:	IMMEDIATELY
Cause:	The VIBSUP filter frequency is higher than the Shannon frequency.
Remedy:	Reduce the VIBSUP filter frequency (p31585). Note: VIBSUP: VIBration SUPpression

Get more information

SINAMICS:
www.siemens.com/sinamics

Industry Mall:
www.siemens.com/industrymall

Industry Online Support:
www.siemens.com/online-support