

Edition

08/2023

LIST MANUAL

SINAMICS

G220

Converter

SIEMENS

SINAMICS

G220 SINAMICS G220 converters

List Manual

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Valid for firmware version 6.2

08/2023, FW V6.2
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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

All names identified by ® are registered trademarks of Siemens AG. The remaining trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

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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Introduction

1.1 About SINAMICS

Description

With the SINAMICS converter series you can solve drive tasks in the low, medium and DC voltage range. 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

Description

This documentation describes the functionality of the standard scope. This scope may differ from the scope of the functionality of the system that is actually supplied. Please refer to the ordering documentation only for the functionality of the supplied drive system.

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

Description

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 SINAMICS documentation

Description

The documentation on the SINAMICS family of converters is available under Siemens Industry Online Support (<https://support.industry.siemens.com/cs/ww/en/view/109807358>).

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

The converter documentation essentially comprises the following manuals:

Table 1-1 SINAMICS documentation

Information	Documentation class	Content
Device information	Operating Instructions	Information for installing, commissioning and operating the converter
	List Manual	Meaning, setting options and dependencies of the parameters and messages of the converter
General information	Industrial Cybersecurity Configuration Manual	Information on the Industrial Cybersecurity functions and on the safe operation of the converter

1.4 Service and Support

1.4.1 Siemens Industry Online Support on the Web

Important product information is available through Siemens Industry Online Support using the following options:

- Website: SIOS (<https://support.industry.siemens.com/cs/ww/en/>)
- App Industry Online Support (for Apple iOS and Android)

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

For products with QR code, the manual and certificate can be directly called.

1.4.2 Spare parts services

Description

The online spare part service "Spares on Web" offers certain spare parts for the product:

- Website: SOW address (<https://www.sow.siemens.com>).

1.5 Important product information

1.5.1 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>)

1.5.2 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.

1.5.3 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

2.1 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 specific customer solutions, but are only intended to provide support for 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/global/en/products/automation/topic-areas/industrial-cybersecurity.html>.

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/global/en/products/services/cert.html>.

Further information is provided on the Internet:

Industrial Cybersecurity Configuration Manual (<https://support.industry.siemens.com/cs/ww/en/view/109810578>)



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.

Parameter

3.1 Explanation of the parameter list

Description

The parameters are displayed according to the following pattern.

rxxxx	Parameter name / short parameter name				
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				

3.1 Explanation of the parameter list

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...	Adjustable parameters (read and write)
• r...	Display parameters (read-only)
• c...	Interconnection parameter (signal sink)
• p0972	Adjustable parameter 972
• p0089[0...2]	Adjustable parameter 89, indices 0 to 2
• p1001[0...n]	Adjustable 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]	Adjustable parameter 1213, index 1
• p1151[1].2	Adjustable parameter 1151, index 1 bit 2
• r0945[2]	Display parameter 945, index 2
• p0795.4	Adjustable 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	I8	8-bit integer
• Integer16	I16	16-bit integer
• Integer32	I32	32-bit integer
• Unsigned8	U8	8-bit without sign
• Unsigned16	U16	16-bit without sign
• Unsigned32	U32	32-bit without sign
• FloatingPoint32	Float	32-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

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

The commissioning tool provides additional support.

- **Can be changed in the operating state**

A parameter can only be changed in this operating state. The change only becomes active after exiting the state.

The following states exist:

- Operation
Current flows through the motor.
- Ready for operation
The motor is de-energized and commissioning is not performed. Parameters marked with "Operation" can also be changed in this state.
- Commissioning
The motor is de-energized. Commissioning is performed.
Parameters marked "Operation" or "Ready for operation" are possibly automatically changed, and can be adapted after commissioning has been completed.
- Commissioning (Safety Integrated)
Safety Integrated is commissioned.
The motor is de-energized. Commissioning is performed.
Parameters marked "Operation" or "Ready for operation" are possibly automatically changed, and can be adapted after commissioning has been completed.

3.1 Explanation of the parameter list

- **Parameter group**
A parameter group contains parameters that are functionally associated with one another.
- **Not 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
 - Parameter specifying the number of indices ($n = \text{number} - 1$).

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 adjustable 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	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	-

- 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]

3.1 Explanation of the parameter list

- **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
- Parameter

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

Only certain combinations are permitted when creating signal interconnections:

Signal source parameter	Signal sink parameter			
	Sink numeric			Binary sink
	Integer16	Integer32	Floating-Point32	Binary
Numeric: Unsigned8	x	x	-	-
Numeric: Unsigned16	x	x	-	-
Numeric: Integer16	x	x	r2050	-
Numeric: Unsigned32	x	x	-	-
Numeric: Integer32	x	x	r2060	-
Numeric: FloatingPoint32	x	x	x	-
Binary: Unsigned8	.	.	-	x
Binary: Unsigned16	.	.	-	x
Binary: Integer16	.	.	-	x
Binary: Unsigned32	.	.	-	x
Binary: Integer32	.	.	-	x

x: Signal interconnection permitted

–: Signal interconnection not permitted

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 adjustable 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: 602015000, Language: eng

Objects: G220, G220 Clean Power

r0002	Drive operating display / Drv op_display		
	Data type: Integer16	Visible in: Standard display	
	Read permission:	Read drive data or acknowledge messages	
	Write permission:	Edit device configuration or drive applications	
	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 ramp-function generator" = "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 booting/partial booting 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
 COM: 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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	Mode signals / displays	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	Calculated: -
	Unit: rpm	Unit group: -	Unit selection: -
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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	Diagnostics, Mode signals / displays	
	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:	Display and numerical signal source for 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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	Mode signals / displays	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	Calculated: -
	Unit: rpm	Unit group: -	Unit selection: -

3.2 List of parameters

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, it always has units of rpm and contrary to r0021 cannot be changed over.

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

Write permission:

Edit device configuration or drive applications

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

Write permission:

Edit device configuration or drive applications

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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	Brake control, Mode signals / displays	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	Calculated: -
	Unit:	V	Unit group: -
	Type of signal interconnection:	Source numeric	Unit selection: -
			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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	Mode signals / displays, Power unit	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	Calculated: -
	Unit:	Arms	Unit group: -
	Type of signal interconnection:	Source numeric	Unit selection: -
			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).			
r0027	Absolute actual current smoothed / I_act AbsV smth		
	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:	Mode signals / displays, Power unit	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	Calculated: -
	Unit:	Arms	Unit group: -
	Type of signal interconnection:	Source numeric	Unit selection: -
			Scaling: p2002
Description:	Displays the smoothed absolute current actual value.		
Dependency:	See also: r13068		

3.2 List of parameters

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

Write permission:

Edit device configuration or drive applications

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

Write permission:

Edit device configuration or drive applications

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

Write permission:

Edit device configuration or drive applications

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 / Torq actual value****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:

Mode signals / displays

Not relevant for motor type:

-

Dyn. index [0...n]:

-

Calculated: -**Unit:** Nm**Unit group:** -**Unit selection:** -**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

Write permission:

Edit device configuration or drive applications

Parameter group:

Mode signals / displays

Not relevant for motor type:

-

Dyn. index [0...n]:

-

Calculated: -**Unit:** kW**Unit group:** -**Unit selection:** -**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

Write permission:

Edit device configuration or drive applications

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.

3.2 List of parameters

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

Write permission:

Edit device configuration or drive applications

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:

Display and numerical signal source for the motor utilization from motor temperature model 1 (l2t) or 3.

For motor temperature model 1 (l2t) (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

Write permission:

Edit device configuration or drive applications

Parameter group:

Motor temperature, Mode signals / displays

Not relevant for motor type:

-

Dyn. index [0...n]:

-

Calculated: -

Unit: °C

Unit group: -

Unit selection: -

Type of signal interconnection: Source numeric

Scaling: p2006

Description:

Display and numerical signal source for the actual temperature in the motor.

Note

For r0035 not equal to -200.0 °C, the following applies:

- This temperature display is valid.
- A KTY/Pt1000 temperature sensor is connected.
- The thermal model for the induction motor is activated (p0612 bit 1 = 1 and temperature sensor deactivated: p0600 = 0 or p0601 = 0).

For r0035 equal to -200.0 °C, the following applies:

- This temperature display is not valid (temperature sensor error).
- A PTC sensor or bimetallic NC contact is connected.
- The temperature sensor of the synchronous motor is deactivated (p0600 = 0 or p0601 = 0).

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

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:

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**

G220

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:

Mode signals / displays, Power unit

Not relevant for motor type:

-

Dyn. index [0...n]:

-

Calculated: -

Unit: °C

Unit group: -

Unit selection: -

3.2 List of parameters

	Type of signal interconnection: Source numeric	Scaling: p2006
Description:	Display and numerical signal source for 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	
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:	Mode signals / displays, Power unit
	Not relevant for motor type:	-
	Dyn. index [0...n]:	-
	Unit: °C	Unit group: -
	Type of signal interconnection: Source numeric	Scaling: p2006
Description:	Display and numerical signal source for 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	
	Write permission:	Edit device configuration or drive applications	
	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	
	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: 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 dissipated		
	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	
	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: Wh	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.		
Index:	[0] = Energy balance (sum)		
	[1] = Energy drawn		
	[2] = Energy fed back		

3.2 List of parameters

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 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

Write permission:

Edit device configuration or drive applications

Parameter group:

Mode signals / displays, Power unit

Not relevant for motor type:

-

Dyn. index [0...n]:

-

Calculated: -

Unit: %

Unit group: -

Unit selection: -

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 signal / Missing enable sig		
	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:	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 and signal source for missing enable signals that are preventing the closed-loop drive control from being commissioned.		
Bit array:	Bit	Signal name	1 signal
	00	OFF1 enable missing	No
	01	OFF2 enable missing	No
	02	OFF3 enable missing	No
	03	Operation enable missing	No
	04	Armature short-circuit / DC braking enable missing	No
	05	STOP2 enable missing	No
	08	Safety enable missing	No
	09	Infeed enable missing	No
	10	Ramp-function generator enable missing	No
	11	Ramp-function generator start missing	No
	12	Speed setpoint enable missing	No
	15	QuickStop enable missing	No
	16	OFF1 enable internal missing	No
	17	OFF2 enable internal missing	No
	18	OFF3 enable internal missing	No
	19	Pulse enable internal missing	No
	20	Armature short-circuit/DC braking internal enable missing	No
	21	STOP2 enable internal missing	No
	25	Function bypass active	No
	26	Drive inactive or not operational	No
	27	De-magnetizing not completed	No
	28	Brake open missing	No
	30	Speed controller enable missing	No
	31	Jog setpoint active	No
Dependency:	See also: r0002		

3.2 List of parameters

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, Bit 06: 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 bit 0 (c1055) and bit 1 (c1056) have a 1 signal.

Bit 12 = 1 (enable signal missing), if:

- Signal sink c1142 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.

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 22: Being prepared

Bit 26 = 1 (enable signal missing), if:

- The drive is inactive or not capable of operation.
- The drive device is in the "PROFenergy 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 applies:

- A 0 signal is present via binary signal sink c0856.
- The function generator with current input 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 entered.

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	
	Write permission:	Edit device configuration or drive applications	
	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		

3.2 List of parameters

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	
	Write permission:	Edit device configuration or drive applications	
	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	
	Write permission:	Edit device configuration or drive applications	
	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

Write permission:

Edit device configuration or drive applications

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

Write permission:

Edit device configuration or drive applications

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 and signal source 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 request	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

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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

Write permission:

Edit device configuration or drive applications

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 and signal source 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

Write permission:

Edit device configuration or drive applications

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	Yes	No
01	Operating condition / OFF2	Yes	No
02	Operating condition / OFF3	Yes	No
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 bit 0	Yes	No
09	Jog bit 1	Yes	No
10	Master 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

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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

Write permission:

Edit device configuration or drive applications

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 and signal source for the 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

CDS: Command Data Set

DDS: Drive Data Set

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

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

Write permission:

Edit device configuration or drive applications

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 and signal source for 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

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r0060	Speed setpoint before the setpoint filter / n_set before filter
	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: Mode signals / displays, Speed setpoint filter 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 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 Write permission: Edit device configuration or drive applications Parameter group: Motor encoder, Mode signals / displays 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 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 Write permission: Edit device configuration or drive applications 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: - Unit selection: - Type of signal interconnection: Source numeric Scaling: p2000
Description:	Display and numerical signal source for 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 Write permission: Edit device configuration or drive applications 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: - Unit selection: -

	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
	Write permission:			Edit device configuration or drive applications
	Parameter group:			Speed controller, Mode signals / displays
	Not relevant for motor type:			-
	Dyn. index [0...n]:			-
	Unit:	rpm	Unit group:	-
	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
	Write permission:			Edit device configuration or drive applications
	Parameter group:			U/f control, Mode signals / displays
	Not relevant for motor type:			-
	Dyn. index [0...n]:			-
	Unit:	Hz	Unit group:	-
Description:	Displays the slip frequency for induction motors (ASM).			

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r0066	Output frequency / f_outp		
	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:	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:	Display and numerical signal source for 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	
	Write permission:	Edit device configuration or drive applications	
	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: -
	Unit selection:	-	
	Type of signal interconnection:	Source numeric	Scaling: p2002
Description:	Display and numerical signal source for 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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	U/f control, 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 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	
Description: Index:	Read permission:	Read drive data or acknowledge messages	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	Mode signals / displays, 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: p2002
	Display and numerical signal source for the measured actual phase currents as peak value.		
	[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 / V_{dc} act val		
	Data type: FloatingPoint32	Visible in: Extended display	
Description: Dependency:	Read permission:	Read drive data or acknowledge messages	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	Dynamic braking, V _{dc} -min/max controller, Flux setpoint, Mode signals / displays, 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: p2001
	Display and numerical signal source for the measured actual value of the DC link voltage.		
	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	
Description: Dependency:	Read permission:	Read drive data or acknowledge messages	
	Write permission:	Edit device configuration or drive applications	
	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: V _{rms}	Unit group: -	Unit selection: -
	Displays the maximum output voltage.		
	The maximum output voltage depends on the actual DC link voltage (r0070) and the maximum modulation depth (p1803).		

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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

Write permission:

Edit device configuration or drive applications

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

Write permission:

Edit device configuration or drive applications

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

Write permission:

Edit device configuration or drive applications

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 and numerical signal source 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: $(r0074 \times r0070) / (\sqrt{2} \times 100 \%)$.

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	
	Write permission:	Edit device configuration or drive applications	
	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: - Unit selection: -
	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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	U/f control, Current controller, 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:	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	
	Write permission:	Edit device configuration or drive applications	
	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: - Unit selection: -
	Type of signal interconnection:	Source numeric	Scaling: p2002
	Description:	Display and numerical signal source for 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.			

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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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	U/f control, Current controller, 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:	Display and numerical signal source 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	
	Write permission:	Edit device configuration or drive applications	
	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: - Unit selection: -
	Type of signal interconnection:	Source numeric	Scaling: p2003
	Description:	Display and numerical signal source for 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 / Torq actual value		
	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:	Motor model, Mode signals / displays	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	Calculated: -
	Unit:	Nm	Unit group: - Unit selection: -
	Type of signal interconnection:	Source numeric	Scaling: p2003
	Description:	Display and numerical signal source for the torque actual 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	
	Write permission:	Edit device configuration or drive applications	
	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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	Motor model, Mode signals / displays	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	Calculated: -
	Unit: kW	Unit group: -	Unit selection: -
	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	
	Write permission:	Edit device configuration or drive applications	
	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)		

3.2 List of parameters

r0084[0...1]	Flux actual value / Flux actual value
	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: 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 Write permission: Edit device configuration or drive applications 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 Write permission: Edit device configuration or drive applications Parameter group: Mode signals / displays, Power unit Not relevant for motor type: - Dyn. index [0...n]: - Calculated: - Unit: V Unit group: - Unit selection: -
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 Write permission: Edit device configuration or drive applications 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

Write permission:

Edit device configuration or drive applications

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

3.2 List of parameters

p0112	Sampling times pre-setting p0115 / t_samp for p0115		
	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:	Universal settings	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	
	Unit: -	Unit group: -	Calculated: -
	Min:	Max:	Unit selection: -
	3	5	Factory setting:
	3	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 (for rated pulse frequency = 2.0, 4.0 kHz) p0112 = 5: 250 / 250 / 1000 / 500 / 2000 / 2000 / 2000 µs		
Value:	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).		

p0115[0...6]	Sampling times for internal control loops / t_samp int ctrl		
	Data type: FloatingPoint32	Visible in: Extended 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:	Universal settings	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	
	Unit: µs	Unit group: -	Calculated: -
	Min:	Max:	Unit selection: -
	0.00 [µs]	16000.00 [µs]	Factory setting:
			[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:	Displays the sampling times for the control loops. The setting is realized using p0112.		
Index:	[0] = Current controller [1] = Speed controller [2] = Flux controller [3] = Setpoint channel [4] = Position controller [5] = Positioning [6] = Technology controller		
Dependency:	See also: p0112		

Note

For functions that can be activated (e.g. technology controller), the parameters 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	1	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 circuit configuration.		
Note			
This parameter is only assigned for drives with parallel connection with values > 1.			
p0130	Number of Motor Data Sets (MDS) / MDS 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 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:	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:
		-	0000 0000 0000 0000 bin
Description:	Configuration of the motor when commissioning the motor.		
Bit array:	Bit	Signal name	1 signal 0 signal

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	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 0 is automatically pre-assigned the connection type of the selected data set. Bit 0 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: 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: 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). For 2KJ3 and 2KJ8 motors, bit01 should not be used. 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		

3.2 List of parameters

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

Write permission:

Edit device configuration or drive applications

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
00	Support of optimized pulse patterns	Yes	No
01	Support of asynchronous pulse frequencies for vector/infeed	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
This information represents the characteristics/features of the power unit firmware. It does not provide information/data about the characteristics/features of the hardware (e.g. bit 06 = 1 means that although the firmware supports "liquid cooling", a power unit with liquid cooling does not have to be used).

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...15**Power unit firmware properties 2 / PU FW properties 2**

Data type: Unsigned32

Visible in: Extended display

Read permission:

Read drive data or acknowledge messages

Write permission:

Edit device configuration or drive applications

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

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

Write permission:

Edit device configuration or drive applications

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

3.2 List of parameters

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

Write permission:

Edit device configuration or drive applications

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: 0	Max: 65535	Factory setting: 0
Description:	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	
	Write permission:	Edit device configuration or drive applications	
	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:	100: SINAMICS S		
	114: PM240 (SINAMICS G2xx)		
	Note		
	For parallel circuit configurations, 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	
	Write permission:	Edit device configuration or drive applications	
	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
	00	Device type	DC/AC device
	01	RFI filter available	Yes
	08	Internal Braking Module	Yes
	12	Safe Brake Control (SBC) supported	No
	13	Safety Integrated supported	Yes
	19	Heat sink fan	Yes
	20	Auxiliary fan 1	Yes
	21	Auxiliary fan 2	Yes
			0 signal
			AC/AC device
			No
			No
			Yes
			No
			No
			No

r0206[0...2]	Rated power unit power / PU P_{rated}		
	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:	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).		

3.2 List of parameters

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

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

r0207[0...2] Rated power unit current / PU I_{rated}

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: 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

Dependency: See also: r0214

r0208 Rated power unit line supply voltage / PU U_{rated}

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: 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 supply 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...2] Power unit maximum current / PU 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
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

Dependency: See also: r0214

p0210	Device supply voltage / U_connect		
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	
	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 supply 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_connect		
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 supply 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.		
 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 motors could be damaged.			

3.2 List of parameters

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

G220 Clean Power

Rated line frequency / Rated line freq**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...9

G220 Clean Power

Power unit configuration / PU 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:**

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
Write permission:	Edit device configuration or drive applications
Parameter group:	System identification, Control/status words, Power unit
Not relevant for motor type:	-
Dyn. index [0...n]:	-
Unit: -	Unit group: -
Type of signal interconnection:	Source binary/numeric
	Calculated: -
	Unit selection: -
	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**

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]:	-
Unit: -	Unit group: -
Min:	Max:
0	3
	Calculated: -
	Unit selection: -
	Factory setting:
	0

Description:

Sets the external braking resistor.

Value:

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

Dependency:

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.

3.2 List of parameters

p0215	Braking resistor selection / Brk resistor sel		
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 monitoring) 3: Third-party braking resistor (with 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:	Resistance value of the connected external braking resistor.		
Dependency:	The parameter is only relevant for p0215 = 2, 3.		

p0218	Braking resistor maximum power duration / 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:	Maximum duration when operating the braking resistor at its maximum power.		
Dependency:	The parameter is only relevant for p0215 = 2, 3.		

p0219[0...1]	Braking resistor braking power / R_brake P_brake		
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.
The rated power p0219[1] can be displayed. Otherwise, the value has no influence.

3.2 List of parameters

p0219[0...1]		
G220 Clean Power	Braking resistor braking power / R_brake P_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:	Commissioning
	Parameter group:	Dynamic braking, Quick commissioning
	Not relevant for motor type:	-
	Dyn. index [0...n]:	-
	Unit: kW	Unit group: 14_6
	Min: 0.00 [kW]	Max: 20000.00 [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.		
The rated power p0219[1] can be displayed. Otherwise, the value has no influence.		
r0220[0...1]		
Infeed line filter type / INF line filt type		
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
	Parameter group:	Line filter
	Not relevant for motor type:	-
	Dyn. index [0...n]:	-
	Unit: -	Unit group: -
	Unit selection: -	
Description:		Displays the line filter type.
Value:		-1: Internal line filter 0: Configured line filter
Index:		[0] = Line filter [1] = Reserved
r0221[0...1]		
Infeed filter capacitance / INF C_filter		
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:	Line filter
	Not relevant for motor type:	-
	Dyn. index [0...n]:	-
	Unit: µF	Unit group: -
	Unit selection: -	
Description:		Displays the filter capacitance of the line filter (connected in a delta configuration).

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

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

3.2 List of parameters

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 = 4: --> 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 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:	Enter the inductance of a filter connected at the power unit output.		

Dependency: This parameter is automatically pre-set 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: Enters the capacitance of a sine-wave filter connected at the power unit output.

Dependency: This parameter is automatically pre-set 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.

3.2 List of parameters

p0240				
Infeed total DC link capacitance / INF C total				
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 0110 0001 bin
Description: Sets the configuration for the output voltage measurement of the power unit.				
Bit06: The voltage is calibrated once when the pulses are enabled.				
Bit07: The voltage is calibrated each time the pulses are enabled.				
Bit08: The voltage plausibility is performed once when the pulses are enabled.				
Bit09: The voltage plausibility is performed each time the pulses are enabled.				
Bit array:				
	Bit	Signal name	1 signal	0 signal
	00	Voltage measurement active	Yes	No
	05	Use voltage measured values for flying restart	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

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r0277[0...n]	Power unit heat sink fan wear counter / PU fan wear_count		
	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:	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. After a fan has been replaced, using an appropriate button, the value can be reset in the commissioning tool to 0.		
Dependency:	See also: A30042		

p0280	DC link voltage maximum steady-state / Vdc_max stat		
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.
Pre-setting values:
380 ... 500 V AC/AC devices: 1.6 * p0210
Maximum values:
380 ... 500 V AC/AC devices: 792 V

p0281	Line supply overvoltage alarm threshold / U_I_over A thr		
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 supply overvoltage condition. The setting is made as a percentage of the device supply voltage (p0210).		
Dependency:	See also: p0210		
p0282	Line supply undervoltage alarm threshold / U_I_under A thr		
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 supply undervoltage shutdown (trip) threshold / U_I_under tr_thr		
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 supply undervoltage. The setting is made as a percentage of the device supply voltage (p0210).		
Dependency:	See also: p0210, p0282 See also: F06100		

3.2 List of parameters

p0284			
Line supply frequency exceeded alarm threshold / f _{I_exc} A thr			
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 supply frequency undershot alarm threshold / f _{I_under} A thr			
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

Write permission:

Edit device configuration or drive applications

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).

- Reduce 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

3.2 List of parameters

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 = 10, 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]:	-	
	Unit: s	Unit group: -	
	Min:	Max:	
	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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	Power unit	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	
	Unit: V	Unit group: -	
		Calculated: -	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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	Power unit	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	
	Unit: V	Unit group: -	
		Calculated: -	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		

3.2 List of parameters

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 105: 1LE5 induction motor 108: 1PH8 induction motor 133: 2KJ3 induction motor 600: 1FP1 synchronous reluctance motor 603: 1FP3 synchronous reluctance motor OEM 608: 1PH8 synchronous reluctance motor 1000: 1LE1 induction motor 1001: 1PC1 induction motor 1005: 1LE5 induction motor 1022: 1PH8 induction motor 1040: 2KJ3 induction motor 2100: 1FZ1 synchronous motor 2101: 1FZ3 synchronous motor 6000: 1FP1 synchronous reluctance motor		

6001: 1FP3 synchronous reluctance motor OEM
 6002: 1PH8 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).

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

3.2 List of parameters

Description:	The parameter is used to select a motor from a motor parameter list. When changing the code number (with the exception to the value 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	
Write permission:	Edit device configuration or drive applications	
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 from 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	
Write permission:	Edit device configuration or drive applications	
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:	Permanent-magnet synchronous motor	
	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).		
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 pre-assigned 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).			

3.2 List of parameters

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 pre-assigned 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 pre-assigned a value that matches the power unit; this value also depends on the set standard (IEC/NEMA, 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

Only operation with U/f characteristic makes sense if more than 10 identical motors are connected in parallel.

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:
	0.00 [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).			

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 pre-assigned a value that matches the power unit; this value also depends on the set standard (IEC/NEMA, p0100).			

3.2 List of parameters

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 pre-assigned 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 (rating 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 pre-assigned 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	
	Write permission:	Edit device configuration or drive applications	
	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.			

3.2 List of parameters

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:	Induction motor, 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: -	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 the motor data. p0316 > 0: The selected 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:	Commissioning	
	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).		

3.2 List of parameters

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:	-
Min:	0.000 [Arms]	Max:	5000.000 [Arms]
		Factory setting:	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:	-
Min:	0.0 [rpm]	Max:	210000.0 [rpm]
		Factory setting:	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.		

3.2 List of parameters

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, a 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: $p0328 = 3/2 * \text{pole pair number} * (\text{stator leakage inductance} - \text{stator leakage inductance, d axis})$ 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		

3.2 List of parameters

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	
	Write permission:	Edit device configuration or drive applications	
	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	
	Write permission:	Edit device configuration or drive applications	
	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	
	Write permission:	Edit device configuration or drive applications	
	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	
Write permission:	Edit device configuration or drive applications	
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	
Write permission:	Edit device configuration or drive applications	
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.

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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 pre-set 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 motor model. 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).			

r0337[0...n]	Rated motor EMF / Mot EMF _{rated}		
	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:	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	
Description:	Read permission:	Read drive data or acknowledge messages	
	Write permission:	Edit device configuration or drive applications	
	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: -
	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	
Description:	Read permission:	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]
	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	
Description:	Read permission:	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: -

3.2 List of parameters

	Min: 1.000	Max: 10000.000	Factory setting: 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	
	Write permission:	Edit device configuration or drive applications	
	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, 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 for the automatic calculation.		
	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 canceled.		
	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).		

3.2 List of parameters

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: -	Unit selection: -
	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: -	Unit selection: -
	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: -	Unit selection: -

	Min: 0.00000 [ohm]	Max: 120.00000 [ohm]	Factory setting: 0.00000 [ohm]
Description:	Resistance of the power cable between the power unit and 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 zero, 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:	-
Min: 0.000 [mH]	Max: 1000000.000 [mH]	Factory setting: 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:	-
Min: 0.00000 [ohm]	Max: 300.00000 [ohm]	Factory setting: 0.00000 [ohm]	
Description:	Sets the rotor/secondary section resistance of the motor at the ambient temperature p0625.		
Dependency:	See also: p0625		

3.2 List of parameters

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:** -**Unit selection:** -**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:** -**Unit selection:** -**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: -	Unit selection: -
	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: -	Unit selection: -
	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).		

3.2 List of parameters

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:	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 1st 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: p0366		
	Note		
	For induction motors, p0362 = 100 % corresponds to the rated motor flux. For permanent-magnet synchronous motors, p0362 = 100 % corresponds to the product of the saturated quadrature inductance (p0356) and the 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.		

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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.		

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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	
	Write permission:	Edit device configuration or drive applications	
	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: -	Unit selection: -
Description:	Displays the rotor/secondary section resistance of the motor for the ambient 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	
	Write permission:	Edit device configuration or drive applications	
	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: -	Unit selection: -
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	
	Write permission:	Edit device configuration or drive applications	
	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: -	Unit selection: -

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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
Write permission: Edit device configuration or drive applications
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:** - **Unit selection:** -

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
Write permission: Edit device configuration or drive applications
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:** -

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
Write permission: Edit device configuration or drive applications
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:** -

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	
	Write permission:	Edit device configuration or drive applications	
	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: -
	Unit selection:	-	
	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	
	Write permission:	Edit device configuration or drive applications	
	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	
	Write permission:	Edit device configuration or drive applications	
	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.			

3.2 List of parameters

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 disabled 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	
	Write permission:	Edit device configuration or drive applications	
	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: -	Unit selection: -
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.			

3.2 List of parameters

r0396[0...n]	Actual rotor resistance / R_rotor 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:	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: -	Unit selection: -
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:	Motor encoder, 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 a third-party encoder (p0400 = 9999).

3.2 List of parameters

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:

Motor encoder

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 pre-set 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:

Motor encoder

Not relevant for motor type:

-

Dyn. index [0...n]:

EDS n defined by: p0140

Unit: -

Unit group: -

Min:

Max:

-

-

Calculated: -

Unit selection: -

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 (only SMC30)	Yes	No
23	Resolver excitation	Yes	No

3.2 List of parameters

NOTICE

This parameter is automatically pre-assigned 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 monitoring of the zero mark distance (p0424/p0425, linear/rotary) or in the case of the linear encoder with 1 zero mark and p0424 = 0 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:

Motor encoder

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 pre-assigned 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 entered via an encoder interface.

For bit 06:

When the function is activated, a clockwise and counterclockwise signal (CW/CCW) for traveling can be entered 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:	Motor encoder	
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 pre-assigned 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 inversion actual value / Enc inv ActV

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 encoder	
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

3.2 List of parameters

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:

Motor encoder

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:

Motor encoder

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 pre-set with p0421 and can be changed.

p0411.3 = 1:

The parameter value is pre-set 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 pre-set 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:

Motor encoder

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

4294967300.00

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 integer (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).

3.2 List of parameters

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:	Motor encoder	
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	0

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:	Motor encoder	
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 pre-assigned 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:	Motor encoder	
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 pre-assigned 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.

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:	Motor encoder	
	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 pre-assigned 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:	Motor encoder	
	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 pre-assigned 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.

3.2 List of parameters

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:	Motor encoder	
	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 pre-assigned 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:	Motor encoder		
	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 pre-assigned 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:	Motor encoder	
	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 pre-assigned 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:	Motor encoder		
	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.				

3.2 List of parameters

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 $\pm 1/4$ 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:

Motor encoder, 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:	Motor encoder	
	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 factors 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:	Motor encoder	
	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 factors 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: $(p0314 * p0433) / p0432$		

3.2 List of parameters

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:	Motor encoder	
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:	Motor encoder	
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:**

Motor encoder

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:**

Motor encoder

Not relevant for motor type:

-

Dyn. index [0...n]:

EDS n defined by: p0140

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

3.2 List of parameters

	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 22:				
When the bit is set, the resolution of the absolute position in the serial protocol is set using distribution factor in p4630. The resolution for the absolute position is then calculated using p0407/p4630.				
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:	Motor encoder	
	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:	Motor encoder	
	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).			

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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:	Motor encoder	
	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:	Motor encoder	
	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 pre-assigned 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:	Motor encoder	
	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 pre-assigned 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:	Motor encoder	
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 pre-assigned 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:	Motor encoder	
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 pre-assigned 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.

3.2 List of parameters

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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	Motor encoder	
	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:	Motor encoder	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	EDS n defined by: p0140	Calculated: -
	Unit: ms	Unit group: -	Unit selection: -
	Min: 0.10 [ms]	Max: 10000.00 [ms]	Factory setting: 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:	Motor encoder	
	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

Dependency:	04 Extended cyclic DRIVE-CLiQ telegram	Yes	No
	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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	Motor encoder	
	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 (only SMC30)	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.		

3.2 List of parameters

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
Write permission:			Edit device configuration or drive applications
Parameter group:			Motor encoder
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 (only SMC30)	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
Write permission:			Edit device configuration or drive applications
Parameter group:			Motor encoder
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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	Motor encoder	
	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
	00	Encoder data available	Yes
	01	Motor data available	Yes
	02	Temperature sensor connection available	Yes
	03	Connection for PTC for motor with DRIVE-CLiQ also available	Yes
	04	Module temperature available	Yes
	07	Hall sensor can be combined with actual value inversion	Yes
	08	Evaluation through several temperature channels possible	Yes
	10	Speed diagnostics in the Sensor Module	Yes
	15	Evaluation function reserve	Yes
	16	Pole position identification	Yes
	19	Safety position actual value sensing	Yes
	20	Extended speed calculation being used (only SMC30)	Yes
	21	Zero mark tolerance	Yes
	22	Rotor position adaptation	Yes
	23	Commutation with zero mark can be deselected	Yes
	24	Commutation with selected zero mark	Yes
	25	Disconnection of encoder power supply on parking supported	Yes
	26	Parking with temperature evaluation	Yes
	27	SSI position value extrapolation	Yes
Dependency:	See also: p0437, p0600, p0601		

3.2 List of parameters

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

Write permission:

Edit device configuration or drive applications

Parameter group:

Motor encoder

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

Write permission:

Edit device configuration or drive applications

Parameter group:

Motor encoder

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

Write permission: Edit device configuration or drive applications

Parameter group: Motor encoder

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

Write permission: Edit device configuration or drive applications

Parameter group: Motor encoder

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 encoder position actual value Gn_XIST1 according to PROFIdrive for diagnostics.

In contrast to r0482, the value is updated in each 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.

3.2 List of parameters

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:	Motor encoder	
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	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Motor encoder	
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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	Motor encoder	
	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 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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	Motor encoder	
	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.			

3.2 List of parameters

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	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Motor encoder	
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	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Motor encoder	
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
Write permission:			Edit device configuration or drive applications
Parameter group:			Motor encoder
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:	-
Min:		Max:	
	0		215
		Factory setting:	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

3.2 List of parameters

 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:

Motor encoder, 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.

3.2 List of parameters

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:

Motor encoder, 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).

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:	Motor encoder	
	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)		

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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: $360^\circ \leftrightarrow 2^{32}$
 For p0496 = 7, 8: input voltage in mV
 For p0496 = 10 (resolver): 2900 mV $\leftrightarrow$ 26214 dec
 For p0496 = 10, 20 (sin/cos 1 Vpp, EnDat): 500 mV $\leftrightarrow$ 21299 dec
 For p0496 = 11 (resolver): 2900 mV $\leftrightarrow$ 13107 dec, internal processor offset is corrected
 For p0496 = 11, 21 (sin/cos 1 Vpp, EnDat): 500 mV $\leftrightarrow$ 10650 dec, internal processor offset is corrected
 For p0496 = 12: 180° fine position $\leftrightarrow$ 32768 dec
 For p0496 = 13 (resolver): 2900 mV $\leftrightarrow$ 13107 dec
 For p0496 = 13 (sin/cos 1 Vpp, EnDat): 500 mV $\leftrightarrow$ 10650 dec
 For p0496 = 14: $1^\circ \leftrightarrow$ 286 dec, 100 % $\leftrightarrow$ 16384 dec
 For p0496 = 15: 100 % $\leftrightarrow$ 16384 dec
 For p0496 = 16 (resolver): channel A: 2900 mV $\leftrightarrow$ 26214 dec, channel B: 2900 mV $\leftrightarrow$ 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 $\leftrightarrow$ 21299 dec, channel B: 500 mV $\leftrightarrow$ 21299 dec, channel A and channel B can be shifted by one sample (in time)
 For p0496 = 17 (resolver): absolute value: 2900 mV $\leftrightarrow$ 13107 dec, number: 1 ... 8
 For p0496 = 17 (sin/cos 1 Vpp, EnDat): absolute value 500 mV $\leftrightarrow$ 10650 dec, number: 1 ... 8
 For p0496 = 18 (resolver): angle: signal period $\leftrightarrow$ 2^{16} , absolute value: 2900 mV $\leftrightarrow$ 13107 dec
 For p0496 = 18 (sin/cos 1 Vpp, EnDat): angle: signal period $\leftrightarrow$ 2^{16} , absolute value: 500 mV $\leftrightarrow$ 10650 dec
 For p0496 = 19 (resolver): counter: dec, channel A: 2900 mV $\leftrightarrow$ 26214 dec
 For p0496 = 19 (sin/cos 1 Vpp, EnDat): counter: dec, channel A: 500 mV $\leftrightarrow$ 21299 dec
 For p0496 = 22: $180^\circ \leftrightarrow$ 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 $\leftrightarrow$ 21299 dec
 For p0496 = 30: Rotary: 1 singleturn measuring step $\leftrightarrow$ 1 dec, linear: 1 measuring step $\leftrightarrow$ 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 $\leftrightarrow$ $(R_{KTY}/1 \text{ kOhm} - 0.9) * 32768$
 For p0496 = 42: 2500 Ohm $\leftrightarrow$ 2^{32}
 For p0496 = 51: 1 rpm $\leftrightarrow$ 1000 dec
 For p0496 = 52: ln 1/4 encoder pulses
 For p0496 = 60: voltage, channel A in mV, voltage, channel B in mV
 For p0496 = 61: Channel A: encoder periods $\leftrightarrow$ 2^{16} , channel B: encoder periods $\leftrightarrow$ 2^{16}
 For p0496 = 62: encoder periods $\leftrightarrow$ 2^{16}
 For p0496 = 70: r: 100% $\leftrightarrow$ 10000 dec, phase: $180^\circ \leftrightarrow$ 18000 dec
 For p0496 = 80, 81, 85, 86: 1V $\leftrightarrow$ 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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	Motor encoder	
	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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	Motor encoder	
	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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	Motor encoder	
	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		

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p0500[0...n]	Technology 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:	Quick commissioning	
	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 technology 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:	For p0504 = 1, 2 (Standard, Dynamic Drive Control), p0500 cannot be changed. 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

The calculation of parameters dependent on the technology application can be called up as follows:

- When exiting quick commissioning, if r3925 bit 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 the same as for p0500 = 0
- p1610 = 80 %, p1611 = 80 % (average up to 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 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 entered 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.

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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:	Quick commissioning	
	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 technology 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 calculation of parameters dependent on the technology application can be called up as follows: - When exiting quick commissioning, if r3925 bit 0 = 0 For p0501 = 0, 1 and when the calculation is initiated, the following parameters are set: - p1401.30 = 0, 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:	Quick commissioning	
	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 technology 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.
 The calculation of parameters dependent on the technology application can be called up as follows:
 - When exiting quick commissioning, if r3925 bit 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 %, 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 %, p1611 = 30 % (only effective, if the drive is switched-on with 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 "voltage reserve, dynamic" is preassigned.

For p0502 = 6: (for high moments of inertia with/without gearbox coupling)

- p1574, p1750.2, p1802, p1803, p1610, 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 entered 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:	Quick commissioning	
Not relevant for motor type:	-	
Dyn. index [0...n]:	DDS n defined by: p0180	Calculated: -
Unit: -	Unit group: -	Unit selection: -

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	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		
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). 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). Depending on the setting, after quick commissioning and/or automatic parameterization, 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, automatic parameterization is performed when commissioning is exited. This can be prevented if, before changing p0504, the diagnostic mode is activated in p1400.30.			

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, then the maximum speed p1082, which is also associated with quick commissioning, is preassigned appropriately. 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, then the maximum speed p1082, which is also associated with quick commissioning, is preassigned appropriately. 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.		

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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, then the maximum speed p1082, which is also associated with quick commissioning, is preassigned appropriately.			

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: -

3.2 List of parameters

	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: 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 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: -

3.2 List of parameters

	Unit: -	Unit group: -	Unit selection: -
	Min:	Max:	Factory setting:
	0	4294967295	1
Description:	Display and 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: 0.00 [Nm]	Max: 1000000.00 [Nm]	Factory setting: 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: 0.000000 [kgm ²]	Max: 100000.000000 [kgm ²]	Factory setting: 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: 0	Max: 215	Factory setting: 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		
	CAUTION In order to prevent incorrect measurement values, these parameters may not be written during an active measurement.		

3.2 List of parameters

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
	Write permission: Edit device configuration or drive applications
	Parameter group: Measuring probe
	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 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
	Write permission: Edit device configuration or drive applications
	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
	Write permission: Edit device configuration or drive applications
	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.

3.2 List of parameters

r0589	Measuring probe wait time / MT t_delay		
	Data type: Unsigned32	Visible in: Extended display	
	Read permission:	Read drive data or acknowledge messages	
	Write permission:	Edit device configuration or drive applications	
	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.			

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, 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		

3.2 List of parameters

Note

Temperature sensor KTY/Pt1000: Valid temperature range -48 °C ... 248 °C.

Temperature sensor PTC/bimetallic 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:** -**Unit selection:** -**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.

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:** -**Unit selection:** -**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 (l2t, 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.
 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: 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.

3.2 List of parameters

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, p0614, 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:

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 warm-up time of the cold stator winding when loaded with the motor standstill current (rated motor current, if the motor standstill current is not parameterized) up until a temperature rise of 63 % of the continuously permissible winding temperature has been reached.

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 pre-set 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.

3.2 List of parameters

p0612[0...n].0...2 Mot_temp_mod 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	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.
 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

Mot_temp_mod: motor temperature model

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 1FK7/1FG1 motors without encoder.

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: -	Unit selection: -
Min:	Max:	Factory setting:
-40 [°C]	100 [°C]	20 [°C]

Description: 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.

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.

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: -	Unit selection: -
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.

3.2 List of parameters

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:	-
Min:	0	Max:	2
		Factory setting:	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:	-
Min:	0	Max:	3
		Factory setting:	0

3.2 List of parameters

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) 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		
	Write permission:	Edit device configuration or drive applications		
	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: -	Unit selection: -	
	Min:	Max:	Factory setting:	
	-100.0 [K]	100.0 [K]	0.0 [K]	

3.2 List of parameters

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: -

Unit selection: -

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: -

Unit selection: -

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 pre-set 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: -	Unit selection: -
	Min: 15 [K]	Max: 200 [K]	Factory setting: 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 pre-set 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: -	Unit selection: -
	Min: 20 [K]	Max: 200 [K]	Factory setting: 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 pre-set as a function of p0307 and p0311. See also: p0625		

3.2 List of parameters

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

Write permission:

Edit device configuration or drive applications

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

Write permission:

Edit device configuration or drive applications

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

Write permission:

Edit device configuration or drive applications

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:** -**Unit selection:** -**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	
	Write permission:	Edit device configuration or drive applications	
	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: -	Unit selection: -
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, Quick commissioning	
	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).	

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p0644[0...n]	Current limit excitation induction motor / I _{max} 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 disabled. 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 disabled. 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																																													
	Write permission:	Edit device configuration or drive applications																																													
	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:	Display and signal source for the status of the digital inputs.																																														
Bit array:	<table><tr><th>Bit</th><th>Signal name</th><th>1 signal</th><th>0 signal</th></tr><tr><td>00</td><td>DI 0 (X131.1)</td><td>High</td><td>Low</td></tr><tr><td>01</td><td>DI 1 (X131.2)</td><td>High</td><td>Low</td></tr><tr><td>02</td><td>DI 2 (X131.5)</td><td>High</td><td>Low</td></tr><tr><td>03</td><td>DI 3 (X131.6)</td><td>High</td><td>Low</td></tr><tr><td>04</td><td>DI 4 (X131.8)</td><td>High</td><td>Low</td></tr><tr><td>05</td><td>DI 5 (X131.9)</td><td>High</td><td>Low</td></tr><tr><td>11</td><td>DI 11 (X132.1/2) AI0</td><td>High</td><td>Low</td></tr><tr><td>12</td><td>DI 12 (X132.5/6) AI1</td><td>High</td><td>Low</td></tr><tr><td>21</td><td>DI 21 (X130.2/3)</td><td>High</td><td>Low</td></tr><tr><td>22</td><td>DI 22 (X130.6/7)</td><td>High</td><td>Low</td></tr></table>	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) AI0	High	Low	12	DI 12 (X132.5/6) AI1	High	Low	21	DI 21 (X130.2/3)	High	Low	22	DI 22 (X130.6/7)	High	Low		
Bit	Signal name	1 signal	0 signal																																												
00	DI 0 (X131.1)	High	Low																																												
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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) AI0	High	Low																																												
12	DI 12 (X132.5/6) AI1	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																																														

3.2 List of parameters

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		
	Write permission:	Edit device configuration or drive applications		
	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:	Display and signal source for 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) AI0	High	Low
	12	DI 12 (X132.5/6) AI1	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		
	Write permission:	Edit device configuration or drive applications		
	Parameter group:	Digital inputs, Relay 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: The control has access authority to the digital output via PROFIBUS or direct access. Bit = 0: 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:	Relay outputs, 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:	Relay outputs, 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.			

3.2 List of parameters

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:	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	
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	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Relay outputs, Digital outputs	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	Calculated: -
Unit: -	Unit group: -	Unit selection: -

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 / DO 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:	Relay outputs, 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		
	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:	Source binary	Scaling: -	
Description:	Display and binary signal source for the status of the analog inputs.			
Bit array:	Bit	Signal name	1 signal	0 signal
	00	Analog input AI0 wire breakage	Yes	No
	01	Analog input AI1 wire breakage	Yes	No
	08	Analog input AI0 no wire breakage	Yes	No
	09	Analog input AI1 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		
	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:	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] = AI0 (X132.1 / 2) [1] = AI1 (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			

3.2 List of parameters

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] = AI0 (X132.1 / 2)			
	[1] = AI1 (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		
	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:	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] = AI0 (X132.1 / 2)		
[1] = AI1 (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 to +20 mA) 4: Bipolar voltage input (-10 V ... +10 V)
Index:	[0] = AI0 (X132.1 / 2) [1] = AI1 (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] = AI0 (X132.1 / 2) [1] = AI1 (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: -

3.2 List of parameters

	Unit: % Min: -1000.00 [%] Unit group: - Max: 1000.00 [%] Unit selection: - Factory setting: 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] = AI0 (X132.1 / 2) [1] = AI1 (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]: - Unit: - Unit group: - Min: -50.000 Max: 160.000 Calculated: - Unit selection: - Factory setting: 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] = AI0 (X132.1 / 2) [1] = AI1 (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]: - Unit: % Unit group: - Min: -1000.00 [%] Max: 1000.00 [%] Calculated: - Unit selection: - Factory setting: 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] = AI0 (X132.1 / 2) [1] = AI1 (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]:			-
Unit:	-	Unit group:	-
Min:	0.00	Max:	20.00
		Factory setting:	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] = AI0 (X132.1 / 2)
[1] = AI1 (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]:			-
Unit:	ms	Unit group:	-
Min:	0 [ms]	Max:	1000 [ms]
		Factory setting:	100 [ms]

Description: Sets the delay time for the wire breakage monitoring of the analog inputs.

Index: [0] = AI0 (X132.1 / 2)
[1] = AI1 (X132.5 / 6)

Note

AI: Analog Input

3.2 List of parameters

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 outputs	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	
	Unit: -	Unit group: -	Calculated: -
	Min:	Max:	Unit selection: -
	-20.000	20.000	Factory setting:
			0.000
Description:	Sets the offset for the analog inputs. The offset is added to the input signal before the scaling characteristic.		
Index:	[0] = AI0 (X132.1 / 2) [1] = AI1 (X132.5 / 6)		
	Note		
	AI: Analog Input		
p0764[0...1]	Analog inputs dead zone / AI dead zone		
	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]:	-	
	Unit: -	Unit group: -	Calculated: -
	Min:	Max:	Unit selection: -
	0.000	20.000	Factory setting:
			0.000
Description:	Determines the width of the dead zone 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 dead zone.		
Index:	[0] = AI0 (X132.1 / 2) [1] = AI1 (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 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 of the analog input signals.		
Value:	0: No absolute value generation 1: Absolute value generation switched in		
Index:	[0] = AI0 (X132.1 / 2) [1] = AI1 (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 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 input signals.		
Index:	[0] = AI0 (X132.1 / 2) [1] = AI1 (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 outputs	
	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 [%]

3.2 List of parameters

Description: Sets the window for noise suppression of the analog inputs.
Changes less than the window are suppressed.

Index: [0] = AI0 (X132.1 / 2)
[1] = AI1 (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 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: 1

Description: Signal to enable the analog inputs.

Index: [0] = AI0 (X132.1 / 2)
[1] = AI1 (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] = AO0 (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

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: -

Description: Displays the actual referred output value of the analog output.

Index: [0] = AO0 (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] = A00 (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	
	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: -
Description:	Displays the actual output voltage or output current at the analog output.		
Index:	[0] = A00 (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		

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Index:	1: Absolute value generation switched in		
	[0] = AO0 (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] = AO0 (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] = AO0 (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] = AO0 (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] = AO0 (X132.10/11)

Dependency:

See also: p0776

NOTICE
This parameter is automatically overwritten when changing p0776 (analog output type).

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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:**

0.000

Max:

20.000

Factory setting:

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] = AO0 (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] = AO0 (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] = AO0 (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) AI0	Simulation	Terminal eval	
12	DI 12 (X132.5/6) AI1	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				

3.2 List of parameters

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
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) AI0	High	Low
12	DI 12 (X132.5/6) AI1	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] = AI0 (X132.1 / 2)		
	[1] = AI1 (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] = AI0 (X132.1 / 2) [1] = AI1 (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:		
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	
	Unit: µs	Unit group: -	Unit selection: -
			Calculated: -
			Factory setting: -

3.2 List of parameters

	Min: 0.00 [μs]	Max: 5000.00 [μs]	Factory setting: [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
Write permission:	Edit device configuration or drive applications
Parameter group:	Commissioning interface
Not relevant for motor type:	-
Dyn. index [0...n]:	-
Unit: -	Unit group: -
Type of signal interconnection:	Source binary
	Calculated: -
	Unit selection: -
	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]:	-
Unit: -	Unit group: -
Type of signal interconnection:	Sink binary
Factory interconnection:	Parameter: 722.3
	Calculated: -
	Unit selection: -

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

3.2 List of parameters

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	
	Write permission:	Edit device configuration or drive applications	
	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:	Display and signal source for the status word of the data set switchover.		
Bit array:	Bit	Signal name	1 signal
	00	Motor changeover active	No
	01	Encoder changeover active	No
	02	Internal parameter calculation active	No
	04	Armature short circuit active	No
	05	Identification running	No
	06	Friction characteristic plot running	No
	07	Rotating measurement running	No
	08	Motor data identification running	No
	10	Wait for pulse cancellation	No

3.2 List of parameters

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

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: 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

Write permission:

Edit device configuration or drive applications

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:	Shutdown functions, 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.

3.2 List of parameters

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:	Shutdown functions, 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:	Shutdown functions, 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**

When "master control from PC" is activated, then this binary signal sink is effective.

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: Shutdown functions, 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 "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 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.
	Note For drives with closed-loop torque control (activated using c1501), the following applies: 0 signal: - No dedicated braking response, but pulse cancellation 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: Shutdown functions, 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 is possible)
	 CAUTION When "master control from PC" is activated, then this binary signal sink is effective.

3.2 List of parameters

Note

For drives with closed-loop torque control (activated using c1501), the following applies:

0 signal:

- No dedicated braking response, but pulse cancellation 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:

Shutdown functions, 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 / Master ctrl 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:

Shutdown functions, 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 there is no control system available, then binary signal sink c0854 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 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 If "enable speed controller" is withdrawn, then an existing brake will be closed. If "enable speed controller" is withdrawn, the pulses are not canceled.			
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: -

3.2 List of parameters

	Min: 100.0 [ms]	Max: 60000.0 [ms]	Factory setting: 10000.0 [ms]
Description:	Sets the monitoring time for the power unit. The monitoring time is started after an 0/1 edge of the ON/OFF1 command. If the power unit does not return a READY signal within the monitoring time, 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 the precharging is started after the ON command (c0840 = 0/1 signal). Fault F30027 is output when the maximum precharging duration is exceeded.			
Note			
The factory setting for p0857 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 into p0857, then after enable, this results in the 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 entered.		

c0860	Line contactor feedback signal / Line contact fdbk		
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		
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 (c0860 = 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		
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). If a feedback signal is not received from the line contactor within the time, then a message is output (F07300).		
Dependency:	See also: c0860, r0863 See also: F07300		

3.2 List of parameters

Note The monitoring function is deactivated for the factory setting of c0860.			
p0861	Line contactor monitoring time / Line cont t_mon		
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 The monitoring function is deactivated for the factory setting of c0860.			
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	
	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:	Source binary/numeric	Scaling: -
Description:	Display and signal source for the status word and control word 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. When the operating signal is transferred via the binary signal source r0863.0, then this allows several drives to start (run-up) staggered over time when they are simultaneously switched on. To realize this, the following connections/interconnections are required: Drive 1: Interconnect binary signal sink c0864 with binary signal source r0863.0 of the infeed unit Drive 2: Interconnect binary signal sink c0864 with binary signal source r0863.0 of drive 1 Drive 3: Interconnect binary signal sink c0864 with binary signal source r0863.0 of drive 2, etc. 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.			

c0864	
G220 Clean Power	Infeed operation / INF operation 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: Shutdown functions, 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.

3.2 List of parameters

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		
Write permission:		Edit device configuration or drive applications		
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 numerical signal source for the control word of the sequence control.			
Bit array:	Bit	Signal name	1 signal	0 signal
	00	ON/OFF1	Yes	No
	01	Operating condition / OFF2	Yes	No
	02	Operating condition / OFF3	Yes	No
	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	Yes	No
	09	Jog 2	Yes	No
	10	Master control by PLC	Yes	No
	12	Enable speed controller	Yes	No
	14	Command close brake	Yes	No
Note				
OC: Operating condition				

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		
Write permission:		Edit device configuration or drive applications		
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.			
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 request	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.

r0922**PROFIdrive PZD telegram / PZD telegr**

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:

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
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".

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

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: -

Description:

Displays the position of the "Pulses enabled" status signal in the PROFIdrive telegram.

Index:

[0] = Signal number

[1] = Bit position

3.2 List of parameters

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	
	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: -
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	
	Write permission:	Edit device configuration or drive applications	
	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 Write permission: Edit device configuration or drive applications 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 (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	

r0947[0...63]	Fault number / Fault number
	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: 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.	

3.2 List of parameters

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

Write permission:

Edit device configuration or drive applications

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

Write permission:

Edit device configuration or drive applications

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

r0964[0...6]

Device identification / Device ID

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:	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

3.2 List of parameters

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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	Configuration	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	
	Unit: -	Unit group: -	Calculated: -
			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 unit reset / Drv_unit 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]:	-	
	Unit: -	Unit group: -	Calculated: -
			Unit selection: -
	Min:	Max:	Factory setting:
	0	3	0
Description:	Sets the required procedure to execute a hardware reset for the drive unit.		
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 drive units.

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 unit 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	
	Write permission:	Edit device configuration or drive applications	
	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		

3.2 List of parameters

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 parameters of the drive system.

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 power supply 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	
	Write permission:	Edit device configuration or drive applications	
	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	
	Write permission:	Edit device configuration or drive applications	
	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.		
Dependency:	See also: r0981, r0989		
	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 (e.g. PROFIBUS master).		

3.2 List of parameters

r0981[0...299]	List of existing parameters 2 / List avail par 2		
	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:	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.		
Dependency:	See also: r0980, r0989		
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 expert list of the commissioning tool. However, they can be read from a higher-level control system.			

r0989[0...299]	List of existing parameters 10 / List avail par 10		
	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:	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.		
Dependency:	See also: r0980, r0981		
Note			
Modified parameters are displayed in indices 0 to 298. If an index contains the value 0, then the list ends here.			
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		
	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:	Setting and numerical signal source for 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		
	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:	Setting and numerical signal source for 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		
	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:	Setting and numerical signal source for 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		
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:	-

3.2 List of parameters

	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:	Setting and numerical signal source for 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		
	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:	Setting and numerical signal source for 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		
	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:	Setting and numerical signal source for 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		
	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
Description: Dependency:	Min:	Max:	Factory setting:
	-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]
	Setting and numerical signal source for fixed speed setpoint 7.		
	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		
	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
Description: Dependency:	Min:	Max:	Factory setting:
	-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]
	Setting and numerical signal source for fixed speed setpoint 8.		
	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		
	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]

3.2 List of parameters

Description: Setting and numerical signal source for 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

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: Setting and numerical signal source for 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

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: Setting and numerical signal source for 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		
	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
Description: Dependency:	Min:	Max:	Factory setting:
	-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]
	Setting and numerical signal source for fixed speed setpoint 12.		
	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		
	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
Description: Dependency:	Min:	Max:	Factory setting:
	-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]
	Setting and numerical signal source for fixed speed setpoint 13.		
	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		
	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]

3.2 List of parameters

Description: Setting and numerical signal source for 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**

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: Setting and numerical signal source for 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 entered 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 entered via the fixed speed setpoints p1001 ... p1015.

c1020[0...n]	Fixed speed setpoint selection bit 0 / n_set_fixed 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:	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		
	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		
	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.		

3.2 List of parameters

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**

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**

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: Fixed setpoints
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:

Display and numerical signal source 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	
	Write permission:	Edit device configuration or drive applications	
	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:	Display and binary signal source for 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

	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

3.2 List of parameters

Note

For bit 00:

0: The setpoint for the motorized potentiometer is not saved and after ON is entered 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 setpoint raise / MoP raise**

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**

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: -

Description:	Type of signal interconnection: Sink binary
	Factory interconnection: Fixed value: 0
Dependency:	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).
	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		
Description:	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: -	Unit selection: -
	Min:	Max:	Factory setting:
	-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]
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		
Description:	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: -	Unit selection: -
	Min:	Max:	Factory setting:
	-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]
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.			

3.2 List of parameters

c1039[0...n]	Motorized potentiometer inversion / MoP inv		
	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		
	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: -	Unit selection: -
	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		
	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		
	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		
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		
	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).

3.2 List of parameters

r1045	Mot potentiometer speed setpoint in front of ramp-function gen / MoP n_set bef RFG		
	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]:	-	Calculated: -
	Unit: rpm	Unit group: -	Unit selection: -
	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		
	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		
	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		
	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:	Motorized potentiometer	
	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 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		
	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		
	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.		

3.2 List of parameters

c1055[0...n] Jog bit 0 / Jog bit 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:	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: 722.0 [2] Fixed value: 0 [3] Fixed value: 0	

Description: Signal for jogging 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 bit 1 / Jog bit 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:	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: 722.1 [2] Fixed value: 0 [3] Fixed value: 0	

Description: Signal for jogging 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		
	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: -	Unit selection: -
	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		
	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: -	Unit selection: -
	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.		

3.2 List of parameters

r1061	Universal setpoint output / Universal setpoint		
	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]:	-	Calculated: -
	Unit: rpm	Unit group: -	Unit selection: -
	Type of signal interconnection:	Source numeric	Scaling: p2000
Description:	Display and signal source of the universal setpoint.		
Dependency:	See also: c1060		
p1063[0...n]	Setpoint channel speed limit / Set_chan n_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:	Speed setpoint	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	DDS n defined by: p0180	Calculated: -
	Unit: rpm	Unit group: -	Unit selection: -
	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		
	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		
	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		
	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]:	-	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		
	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		
	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.			

3.2 List of parameters

r1077	Supplementary setpoint effective / Suppl setpoint eff		
	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]:	-	Calculated: -
	Unit: rpm	Unit group: -	Unit selection: -
	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		
	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]:	-	Calculated: -
	Unit: rpm	Unit group: -	Unit selection: -
	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**

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, Quick commissioning

Not relevant for motor type:

-

Dyn. index [0...n]:

DDS n defined by: p0180

Calculated: -

Unit: rpm

Unit group: -

Unit selection: -

Min:

Max:

Factory setting:

0.000 [rpm]

19500.000 [rpm]

0.000 [rpm]

Description:

Sets the lowest possible motor speed.

This value is not undershot 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 entered 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: -

3.2 List of parameters

	Min: 100.00 [%]	Max: 105.00 [%]	Factory setting: 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: -	Unit selection: -
	Min: 0.000 [rpm]	Max: 210000.000 [rpm]	Factory setting: 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 dU/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, p0532

Note

The parameter applies for both motor directions.

The parameter has a limiting effect and is the reference quantity 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 appropriately when p0310, p0311, p0322, p0324, p0530, p0531 and p0532 are changed.

$p1082 \leq \min(p0324, p0532)$ if $p0324 > 0$ and $p0532 > 0$

$p1082 \leq p0322$, if $p0324 = 0$ or $p0532 = 0$ and $p0322 > 0$

$p1082 \leq 60 \times \text{minimum}(15 \times p0310, 650 \text{ Hz}) / r0313$

$p1082 \leq 60 \times \text{Maximum power unit pulse frequency} / (k \times r0313)$

k = 12 for vector control, k = 6.5 for U/f control

For the automatic calculation, the value of the parameter is pre-assigned the maximum motor speed (p0322). If p0322 = 0, the rated motor speed (p0311) is used as default (pre-assignment) value. For induction motors that are not catalog motors (p0301 = 0), the synchronous no-load speed is used as default (pre-assignment) value ($p0310 \times 60 / r0313$).

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, Quick commissioning	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	DDS n defined by: p0180	Calculated: -
	Unit:	rpm	Unit group: -
	Unit selection:	-	Scaling: p2000
Description:	Type of signal interconnection:	Source numeric	Factory setting:
	Min:	Max:	
	0.000 [rpm]	210000.000 [rpm]	40000.000 [rpm]
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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	Speed limiting, Speed messages, Speed setpoint filter	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	Calculated: -
	Unit:	rpm	Unit group: -
	Unit selection:	-	Scaling: p2000
	Description:	Type of signal interconnection:	Source numeric
Display and numerical signal source for 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		
	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:	-	Scaling: p2000
	Description:	Type of signal interconnection:	Sink numeric
Factory interconnection:		Parameter: 1083[0]	
Signal for the speed limit of the positive direction.			

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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, Quick commissioning	
	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]	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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	Speed limiting, Speed messages, Speed setpoint filter	
	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:	Display and numerical signal source for the active negative speed limit.		
Dependency:	See also: p1082, p1086, c1088		

c1088[0...n]	Speed limit in negative direction of rotation / n_limit neg		
	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		
	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: -	Unit selection: -
	Min: 0.000 [rpm]	Max: 210000.000 [rpm]	Factory setting: 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		
	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: -	Unit selection: -
	Min: 0.000 [rpm]	Max: 210000.000 [rpm]	Factory setting: 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		
	Data type: FloatingPoint32	Visible in: Extended display	
	Read permission:	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: -	Unit selection: -
	Min: 0.000 [rpm]	Max: 210000.000 [rpm]	Factory setting: 0.000 [rpm]

3.2 List of parameters

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

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: 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:** - **Unit selection:** -
Min: 0.000 [rpm] **Max:** 210000.000 [rpm] **Factory setting:** 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

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

Data type: Unsigned32 **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]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source binary/numeric **Scaling:** -

Description: Display and signal source for the skip bands.

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**

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: -

Unit selection: -

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**

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.

3.2 List of parameters

c1110[0...n]	Inhibit negative direction / Inhib neg dir		
	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		
	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		
	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]:	-	Calculated: -
	Unit: rpm	Unit group: -	Unit selection: -
	Type of signal interconnection:	Source numeric	Scaling: p2000
	Factory interconnection:	Fixed value: 0	
Description:	Displays the speed setpoint after the minimum limiting.		
Dependency:	See also: p1091, p1092, p1093, p1094, p1101		
c1113[0...n]	Setpoint inversion / Set 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:	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**

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, Speed limiting	
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 speed/velocity setpoint after the changeover and limiting the direction.

p1115**Ramp-function generator selection / RFG 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:	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**

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:	Ramp-function generator	
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 setpoint at the input of the ramp-function generator.

3.2 List of parameters

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**

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: 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.		

3.2 List of parameters

p1130[0...n]	Ramp-function generator initial rounding-off time / RFG t_start_round		
	Data type: FloatingPoint32	Visible in: Extended display	
	Read permission:	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		
	Data type: FloatingPoint32	Visible in: Extended display	
	Read permission:	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, Shutdown functions, 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		
	Data type: FloatingPoint32	Visible in: Extended display	
	Read permission:	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		
	Data type: FloatingPoint32	Visible in: Extended display	
	Read permission:	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		
	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.

3.2 List of parameters

c1139[0...n]	Ramp-function generator ramp-down time scaling / RFG t_RD 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:	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

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.

3.2 List of parameters

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	
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	
Data type:	FloatingPoint32	Visible in:	Extended display
Read permission:		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:	0.0	Max:	Factory setting:
		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: If at least one speed setpoint filter is activated (p1416), then the ramp-function generator tracking should be deactivated (p1145 = 0.0). 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 greater 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).

- 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		
	Data type: FloatingPoint32	Visible in: Extended display	
	Read permission:	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: -	Unit selection: -
	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		
	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]:	-	Calculated: -
	Unit: rev/s ²	Unit group: -	Unit selection: -
	Type of signal interconnection:	Source numeric	Scaling: p2007
Description:	Displays the acceleration of the ramp-function generator.		
Dependency:	See also: p1145		

3.2 List of parameters

r1150 Ramp-function generator speed setpoint at the output / RFG n_set at outp

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:	Ramp-function generator, Setpoint addition
Not relevant for motor type:	-
Dyn. index [0...n]:	-
Unit: rpm	Unit group: -
Type of signal interconnection:	Source numeric
	Calculated: -
	Unit selection: -
	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

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
Unit: -	Unit group: -
Min:	Max:
-	-
	Calculated: -
	Unit selection: -
	Factory setting:
	0000 bin

Description: Sets the configuration for the extended ramp-function generator.

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 effective. 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 effective (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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	Ramp-function generator, Setpoint addition	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	Calculated: -
	Unit: rpm	Unit group: -	Unit selection: -
	Type of signal interconnection:	Source numeric	Scaling: p2000

3.2 List of parameters

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

Write permission:

Edit device configuration or drive applications

Parameter group:

Setpoint addition

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: Display and numerical signal source for 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 PROFIBUS 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

Write permission:

Edit device configuration or drive applications

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****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:

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:**

Display and signal source for 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	Bypass ramp-function generator	Yes	No

r1199.0...8**Ramp-function generator status word / RFG ZSW****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:

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.

3.2 List of parameters

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.			
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 a synchronous reluctance motor: 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.		

3.2 List of parameters

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 pre-setting, 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		
	Write permission:	Edit device configuration or drive applications		
	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

Write permission:

Edit device configuration or drive applications

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:**

Display and signal source for the status for checking and monitoring flying restart states with vector control.

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

3.2 List of parameters

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
 If the automatic restart is activated ($p1210 > 1$), if there is an ON command (refer to c0840), 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 entered 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

3.2 List of parameters

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 starts immediately when a fault occurs. The start attempt is considered to be 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. If p1213 is set lower than the sum of p1212, the magnetizing time p0346 and the additional wait time due to the flying restart, then fault F07320 is generated at each restart. If, for p1210 = 1, the time in p1213 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	
	Write permission:	Edit device configuration or drive applications	
	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

3.2 List of parameters

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

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 the configuration is set to "no holding brake present" when booting, then the motor holding brake will be automatically identified. If a motor holding brake is detected, the configuration is set to "motor holding brake as for sequence control". If a motor holding brake is used via the brake connection of the Motor Module integrated in the drive, then it is not permissible that p1215 is set to 3. if an external motor holding brake is being used, then p1215 should be set to 3 and r0899.12 should be interconnected as control signal. The parameter can only be set to zero when the pulses are inhibited.			

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:	
0 [ms]		10000 [ms]	
Factory setting:	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.			

3.2 List of parameters

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				
	<table><tr><td>NOTICE</td></tr><tr><td>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.</td></tr></table>			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.
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, Shutdown functions	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	DDS n defined by: p0180	Calculated: -
	Unit: rpm	Unit group: -	Unit selection: -
	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).

NOTICE
For reasons relating to the compatibility to earlier firmware versions, a parameter value of 0 in indices 1 to 31 is overwritten with the parameter value in index 0 when the converter runs-up.

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, Shutdown functions	
	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 p1226.		
Dependency:	After this, the brake control is started, the system waits for the closing time in p1217 and then the pulses are canceled. 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 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.

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.

3.2 List of parameters

p1228[0...n]	Pulse cancellation delay time / Pulse suppr 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, Shutdown functions	
	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	
	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	
	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 during the demagnetization time (p0347) the motor rotates and a mechanical brake is then only closed while the motor is still rotating.

3.2 List of parameters

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. It is also always activated in the case of 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 the 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 the OFF1 or OFF3 command is present. 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 via fault response continues to be 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, following upstream de-magnetization (see p0347), the braking current p1232 is injected for the time set in p1233. The drive then changes into 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 via fault response continues to be 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).			

3.2 List of parameters

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:	DC braking	
	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:	DC braking	
	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:	DC braking	
	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 wait 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 longer 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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	DC braking	
	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		

3.2 List of parameters

- 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 the state "S4: Operation" or in S5x (see function diagram 2610).
- The internal pulse enable is missing (r0046.19 = 0).

For state "switched out" (r1238 = 0):

- The external armature short-circuit can be selected with p1231 = 1.

For state "ready" (r1238 = 1):

- As soon as the activation criterion is fulfilled, then a transition is made into the state "active" (r1238 = 2).

Regarding the state "active" (r1238 = 2), "active - Feedback signal "Closed" OK" (r1238 = 3), "active - Feedback signal "Closed" missing" (r1238 = 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 3.
- If a contactor feedback signal is connected, then a transition is made into state 3 if the feedback signal at c1235 goes to "1" (closed) within the monitoring time (p1236).
- Otherwise, a transition is made into state 4.

For state "prompt to remove the armature short-circuit" (r1238 = 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 1.
- 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 1. If this does not occur within the monitoring time (p1236), then a transition is made into state 6.

For state "active - Feedback signal "Open" missing" (r1238 = 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

Write permission:

Edit device configuration or drive applications

Parameter group:

DC braking, Control/status words

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 0 ... 3):

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 4 ... 6):

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 the state "S4: Operation" or in S5x (see function diagram 2610).
- The internal pulse enable is missing (r0046.19 = 0).

For bits 12, 13:

Only effective for p1231 = 14.

3.2 List of parameters

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		
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 operated from the same DC link busbar, then it is recommended that the Udc control is only activated for the drives with high moments of inertia. If the Udc controls for various drives are simultaneously active, then they can mutually influence one another. In this case, the controller dynamic performance should be reduced or the Udc control of individual drives should be deactivated.

Drives with Udc 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

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-on level for the Vdc_max controller.
$$r1242 = p1241 * \sqrt{2} * V_{line} = 1.15 * \sqrt{2} * p0210 \text{ (supply voltage)}$$
Dependency: The parameter only has influence for 1254 = 0 (automatic sensing of the switch-on level = off).

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

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-on level for the Vdc_max controller.
$$r1242 = p1241 * 1.5 * V_{line} = 1.15 * 1.5 * p0210 \text{ (supply voltage)}$$
Dependency: The parameter only has influence for 1254 = 0 (automatic sensing of the switch-on level = off).

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.

3.2 List of parameters

r1242	Vdc_max controller switch-in level / Vdc_max on_level		
G220	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:	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_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) r1242 = Vdc_max - 25.0 V (for 230 V power units)		
NOTICE If the activation 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 activated.			
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		
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:	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_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)		
NOTICE If the activation 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 activated.			
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		
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-on 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 1294 = 0 (automatic sensing of the switch-on level = off). 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.

3.2 List of parameters

p1244[0...n]	Vdc_max controller factor switch-on level (U/f) / Vdc_max on_factor		
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-on 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 1294 = 0 (automatic sensing of the switch-on level = off). 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	
	Write permission:	Edit device configuration or drive applications	
	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).			

3.2 List of parameters

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 ON level detection / 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-in level for the Vdc_max controller.		
Value:	0: Automatic detection inhibited		
	1: Automatic detection enabled		

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: -	Unit selection: -

3.2 List of parameters

	Min: 0.00 [rpm]	Max: 210000.00 [rpm]	Factory setting: 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	
	Write permission:	Edit device configuration or drive applications	
	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: -	Unit selection: -
	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.		
p1260	Bypass configuration / Bypass 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:	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: 0	Max: 3	Factory setting: 0
Description:	Sets the configuration for the bypass function.		
Value:	0: Bypass deactivated 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...14				
Bypass control/status word / Bypass STW / ZSW				
Data type: Unsigned32		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:		Source binary/numeric	Scaling: -	
Description: Display and signal source 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	
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	
10	Bypass in process sequence	Yes	No	
11	Bypass enabled	Yes	No	
13	Bypass control is ready	Yes	No	
14	Debypass without flying restart selected	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				
Data type: FloatingPoint32		Visible in: Extended display		
Read permission:		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]).				

3.2 List of parameters

p1263	Debypass delay time / Debypass 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:	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		
Data type: FloatingPoint32	Visible in: Extended display		
Read permission:	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		
Data type: FloatingPoint32	Visible in: Extended display		
Read permission:	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: -		Unit selection: -
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 entered 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**

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**

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.

3.2 List of parameters

c1269[0...1]	Bypass switch feedback signal / Bypass FS		
	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...3 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:
	-	-	1001 bin

Description: Sets the configuration for the "flying restart function" function.

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

**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.

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		
	Data type: FloatingPoint32	Visible in: Extended display	
	Read permission:	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 See also: F07311, F07312		
	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.		

3.2 List of parameters

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 Udc controls for various drives are simultaneously active, then they can mutually influence one another. In this case, the controller dynamic performance should be reduced or the Udc control of individual drives should be deactivated. Drives with Udc 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	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)

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

G220	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:	Vdc-min/max controller
	Not relevant for motor type:	-
	Dyn. index [0...n]:	-
	Unit: V	Unit group: -
		Unit selection: -

Description: Displays the switch-in 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:
 $r1282 = Vdc\_max - 50.0 \text{ V}$ (Vdc_max: Overvoltage threshold of the power unit)
 $r1282 = Vdc\_max - 25.0 \text{ V}$ (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 activation 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 activated.

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.

3.2 List of parameters

r1282	Vdc_max controller switch-in level (U/f) / Vdc_max on_level		
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:	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_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 activation 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 activated.			
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 Min: 0.000 [s]	Unit group: - Max: 300.000 [s]	Unit selection: - Factory setting: 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: 65 [%]	Max: 150 [%]	Factory setting: 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	
	Write permission:	Edit device configuration or drive applications	
	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

3.2 List of parameters

	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: 0 [ms]	Max: 1000 [ms]	Factory setting: 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 detection ON signal 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: 0	Max: 1	Factory setting: 0
Description:	Activates/deactivates the automatic sensing of the switch-in 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 connection voltage p0210.		
Value:	0: Automatic detection inhibited 1: Automatic detection enabled		
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: 0.000 [s]	Max: 10000.000 [s]	Factory setting: 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)		

3.2 List of parameters

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:** -**Unit selection:** -**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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	U/f control, Vdc-min/max controller	
	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 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 type / 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, Quick commissioning	
	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/reductance 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		

3.2 List of parameters

NOTICE

Active slip compensation is required in the U/f 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 effective 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:

Closed-loop torque control can only be switched over in operation (p1300 = 20, 21) by selecting closed-loop speed control (c1501). At the changeover, the setting of p1300 does not change. In this case, the actual state is displayed in r1407, bit 2 and bit 3.

For the open-loop control modes p1300 = 5 and 6 (textile sector), slip compensation p1335, resonance damping p1338, and the I_{max} frequency controller are switched off internally so that the output frequency can be set precisely. The I_{max} 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 I _{q_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 entered 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 I_q 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} (U_a) 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 [%]

3.2 List of parameters

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: $\text{Voltage boost [V]} = 1.732 \times p0305 (\text{rated motor current [A]}) \times r0395 (\text{stator/primary section resistance [ohm]}) \times p1310 (\text{permanent voltage boost [\%]}) / 100 \%$ 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: $\text{Voltage boost [V]} = 1.732 \times p0305 (\text{rated motor current [A]}) \times r0395 (\text{stator/primary section resistance [ohm]}) \times p1311 (\text{voltage boost when accelerating [\%]}) / 100 \%$		
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		

3.2 List of parameters

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.		

3.2 List of parameters

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: -	Unit selection: -
	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)		

3.2 List of parameters

⚠ 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	
	Write permission:	Edit device configuration or drive applications	
	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: -

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	Min: 0.00	Max: 100.00	Factory setting: 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: 1.00 [ms]	Max: 1000.00 [ms]	Factory setting: 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: 0.000	Max: 0.500	Factory setting: 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

p1341 = 0:

I_{max} frequency controller deactivated and I_{max} voltage controller activated over the complete speed range.

p1341[0...n]	I_{max} frequency controller integral time / I_{max}_ctrl T_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:	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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	U/f control	
	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 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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	U/f control	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	Calculated: -
	Unit: Vrms	Unit group: -	Unit selection: -
Description:	Displays the amount by which the converter output voltage is reduced.		

3.2 List of parameters

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: 0.000 **Max:** 100000.000 **Factory setting:** 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: 0.000 [s] **Max:** 50.000 [s] **Factory setting:** 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
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]: - **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)			

3.2 List of parameters

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	
	Write permission:	Edit device configuration or drive applications	
	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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:		
	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 measured actual phase currents as peak value. This value is averaged for display in the speed controller sampling time.	
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)		

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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_ctrl 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) . 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]

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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 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 bit 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

3.2 List of parameters

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: Synchronous-reluctance motor (RESM): activation of the load-dependent optimum flux characteristic. For bit 06 (not for induction motors): Magnetizing is carried out with the maximum current ($0.9 * r0067 \leq p0644 * r0207$). 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 sets the maximum speed by opening the torque limits as far as the current limits (bit 8 = 0) or taking the torque limits into account (bit 8 = 1). 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: PESH: 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 entered 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
Write permission:	Edit device configuration or drive applications
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]:	-
Unit: -	Calculated: -
Unit group: -	Unit selection: -
Type of signal interconnection: Source binary/numeric	Scaling: -

Description: Display and signal source for 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

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	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	
	Write permission:		Edit device configuration or drive applications	
	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:	Display and signal source for 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	
	Write permission:	Edit device configuration or drive applications	
	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:	Display and signal source for the status word of the current controller.		
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: -

3.2 List of parameters

	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 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_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:	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 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]: - Calculated: - Unit: rpm Unit group: - Unit selection: - Type of signal interconnection: Source numeric Scaling: p2000
Description:	Display and numerical signal source 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: -

3.2 List of parameters

	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 characteristics (in time) 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 characteristics (in time) 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	
	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]:	-	Calculated: -
	Unit: rpm	Unit group: -	Unit selection: -
	Type of signal interconnection:	Source numeric	Scaling: p2000
Description:	Display and numerical signal source for 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	
	Write permission:	Edit device configuration or drive applications	
	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: -	Unit selection: -
	Type of signal interconnection:	Source numeric	Scaling: p2000
Description:	Display and numerical signal source of 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	
	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]:	-	Calculated: -
	Unit: rpm	Unit group: -	Unit selection: -
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		

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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.			

3.2 List of parameters

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 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]: - Calculated: - Unit: rpm Unit group: - Unit selection: - 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 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]: - Calculated: - Unit: rpm Unit group: - Unit selection: -
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 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]: - Calculated: - Unit: rpm Unit group: - Unit selection: - Type of signal interconnection: Source numeric Scaling: p2000
Description:	Display and numerical signal source for the actual smoothed speed actual value of the 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	
	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]:	-	Calculated: -
	Unit: rpm	Unit group: -	Unit selection: -
	Type of signal interconnection:	Source numeric	Scaling: p2000
Description:	Display and numerical signal source for 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		

3.2 List of parameters

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: % Min: 0.0 [%]	Unit group: - Max: 200000.0 [%]	Unit selection: - Factory setting: 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		

3.2 List of parameters

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: -	Unit selection: -
	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.			

3.2 List of 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: -	Unit selection: -
	Min: 0.00 [rpm]	Max: 210000.00 [rpm]	Factory setting: 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 effective 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	
	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]:	-	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 to improve the resolution by a factor of 100.
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
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]: - **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)

3.2 List of parameters

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: -

Description:	Type of signal interconnection: Sink binary
Dependency:	Factory interconnection: Fixed value: 0
	Signal to set the integrator setting value (c1478).
	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.		
Dependency:	The setting value of the speed controller integrator is weighted with the scaling factor of the signal source c1479.		
	If c1478 is interconnected to the integral output of the speed controller (r1482), the integral component of the controller is set to the last value before the pulse inhibit after the magnetizing time (p0346) and when the speed controller is enabled. This value is set if no setting command (c1477) is interconnected or, at the instant that the pulses were inhibited, a setting command is active, and is not deactivated up to the next time that the pulses are enabled. For sensorless vector control, in addition p1400.1 should be set to 1 so that when the drive is stopped, the integral component of the speed controller is not controlled down to zero.		
	In order that when setting the integrator output, only the static torque is detected, we recommend that the accelerating torque is completely precontrolled (e.g. p1496).		
	If c1478 is interconnected to an output other than r1482, then after magnetizing and speed controller enable, the integral output is also set once 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 l_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		

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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	
	Write permission:	Edit device configuration or drive applications	
	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: - Unit selection: -
	Type of signal interconnection:	Source numeric	Scaling: p2003
	Description:	Display and numerical signal source for the torque setpoint at the output of the PI speed controller.	
Dependency:	Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)		
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	
	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]:	-	Calculated: -
	Unit:	Nm	Unit group: - Unit selection: -
	Type of signal interconnection:	Source numeric	Scaling: p2003
	Description:	Display and numerical signal source 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	
	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]:	-	Calculated: -
	Unit:	Nm	Unit group: - Unit selection: -
	Type of signal interconnection:	Source numeric	Scaling: p2003
	Description:	Display and numerical signal source for 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 active acceleration precontrol of the speed controller (refer to p1496), it is not recommended that p1488 is set to 1, as this could result in positive coupling effects. Instead of this, the output signal of the speed controller should be used as input signal for the droop feedback, which generally sets the load torque.

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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:		
	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	
	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]:	-	Calculated: -
	Unit: rpm	Unit group: -	Unit selection: -
	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	
	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]:	-	Calculated: -
	Unit: kgm ²	Unit group: 25_1	Unit selection: p0100
	Type of signal interconnection:	Source numeric	Scaling: -
Description:	Display and numerical signal source for the parameterized total moment of inertia. The value is calculated as follows: (p0341 * p0342) * p1496 * p0306. The 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 entered 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.		

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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:

0.00000 [kgm²]

100000.00000 [kgm²]

0.00000 [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 closed-loop torque control is not activated (p1300), and a switch is made to closed-loop torque control (c1501), OFF1 (c0840) does not have its own braking response; however, pulse cancellation 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	

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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. For operation with encoder, p1400.23 must also be set to 1.			
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 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	
	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]:	-	Calculated: -
	Unit: Nm	Unit group: -	Unit selection: -
	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 to scale 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: -

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	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	
	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]:	-	Calculated: -
	Unit: Nm	Unit group: -	Unit selection: -
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	
	Write permission:	Edit device configuration or drive applications	
	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: -	Unit selection: -
	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
Read permission:	Visible in: Standard display
Write permission:	Read drive data or acknowledge messages
Can be changed in the operating state:	Edit device configuration or drive applications
Parameter group:	Operation
Not relevant for motor type:	Torque limiting
Dyn. index [0...n]:	Synchronous or reluctance motor with starting cage
Unit:	DDS n defined by: p0180
Type of signal interconnection:	Source numeric
Min:	Unit group: -
Max:	Calculated: automatic
Factory setting:	Unit selection: -
Description:	Sets the fixed, upper torque limit.
Dependency:	See also: p1521, c1522, c1523, r1538, r1539
	-1000000.00 [Nm] 2000000.00 [Nm] 0.00 [Nm]
	 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
Read permission:	Visible in: Standard display
Write permission:	Read drive data or acknowledge messages
Can be changed in the operating state:	Edit device configuration or drive applications
Parameter group:	Operation
Not relevant for motor type:	Torque limiting
Dyn. index [0...n]:	Synchronous or reluctance motor with starting cage
Unit:	DDS n defined by: p0180
Type of signal interconnection:	Source numeric
Min:	Unit group: -
Max:	Calculated: automatic
Factory setting:	Unit selection: -
Description:	Sets the fixed, lower torque limit.
Dependency:	See also: p1520, c1522, c1523, p1532
	-2000000.00 [Nm] 1000000.00 [Nm] 0.00 [Nm]
	 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).

3.2 List of parameters

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: -
	Type of signal interconnection:	Sink numeric	Unit selection: -
	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: -
	Type of signal interconnection:	Sink numeric	Unit selection: -
	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: -
	Type of signal interconnection:	Source numeric	Unit selection: -
Min:	Max:	Scaling: PERCENT	
-2000.0 [%]	2000.0 [%]	Factory setting:	
		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	
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]:	-	Calculated: -
Unit: Nm	Unit group: -	Unit selection: -
Type of signal interconnection:	Source numeric	Scaling: p2003

Description:

Display and numerical signal source for 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	
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]:	-	Calculated: -
Unit: Nm	Unit group: -	Unit selection: -

3.2 List of parameters

Description:	Type of signal interconnection: Source numeric	Scaling: p2003
Dependency:	Display and numerical signal source for the lower torque limit of all torque limits. 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: -	Unit selection: -
	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: -	Unit selection: -
	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 pre-set 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: -	Unit selection: -
	Type of signal interconnection:	Source numeric	Scaling: p2003

3.2 List of parameters

	Min: -100000.00 [Nm]	Max: 100000.00 [Nm]	Factory setting: 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	
	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]:	-	Calculated: -
	Unit: Arms	Unit group: -	Unit selection: -
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	
	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]:	-	Calculated: -
	Unit: Nm	Unit group: -	Unit selection: -
	Type of signal interconnection:	Source numeric	Scaling: p2003
Description:	Display and numerical signal source for 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	
	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]:	-	Calculated: -
	Unit: Nm	Unit group: -	Unit selection: -
	Type of signal interconnection:	Source numeric	Scaling: p2003
Description:	Display and numerical signal source for 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	
	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]:	-	Calculated: -
	Unit: Arms	Unit group: -	Unit selection: -
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	
	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]:	-	Calculated: -
	Unit: Arms	Unit group: -	Unit selection: -
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	
	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]:	-	Calculated: -
	Unit: Nm	Unit group: -	Unit selection: -
	Type of signal interconnection:	Source numeric	Scaling: p2003
Description:	Display and numerical signal source for the actual 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).		

3.2 List of parameters

r1539	Lower effective torque limit / M_max lower eff		
	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 limiting	
	Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
	Dyn. index [0...n]:	-	Calculated: -
	Unit: Nm	Unit group: -	Unit selection: -
	Type of signal interconnection:	Source numeric	Scaling: p2003
Description:	Display and numerical signal source for 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	
	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]:	-	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: Travel to fixed stop is active 0: 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	
	Write permission:	Edit device configuration or drive applications	
	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: -	Unit selection: -
	Type of signal interconnection:	Source numeric	Scaling: p2003
	Description:	Displays the torque limit to limit the speed controller output.	

3.2 List of parameters

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		
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]:	-	Calculated:	-
Unit:	Arms	Unit group:	-
Type of signal interconnection:	Source numeric	Unit selection:	-
		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. c1551 = 1 signal: The variable torque limit applies (fixed torque limit + scaling). c1551 = 0 signal: The fixed torque limit applies. 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)

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:	-
Min:	80.0 [%]	Max:	130.0 [%]
		Factory setting:	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:	-
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)

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:	-
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

3.2 List of parameters

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: Ready for 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

340.28235E36

0.00

Description:

Sets the scaling for the motoring and negative regenerative power limit.
A value of 0 means no power limiting.

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

3.2 List of parameters

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	
	Write permission:	Edit device configuration or drive applications	
	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 (synchronous reluctance 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
NOTICE The signal input is after the torque limit (r1538, r1539). For vector drives, the signals that are entered are only limited by the current and power limits.	
Note The signal input is preferably used to enter the friction characteristic. The friction compensation is also effective if the speed controller output reaches its torque limits, but the current limits have still not been reached (this only applies to vector drives).	
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: 50.0 [%] Max: 200.0 [%] Factory setting: 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.	

3.2 List of parameters

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: -	Unit selection: -
	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: 50.00 [%]	Max: 300.00 [%]	Factory setting: 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 supply 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: 20 [ms]	Max: 5000 [ms]	Factory setting: 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: 0 [ms]	Max: 5000 [ms]	Factory setting: 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.		

3.2 List of parameters

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: -
	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	
	Write permission:	Edit device configuration or drive applications	
	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: -	Unit selection: -
	Type of signal interconnection:	Source numeric	Scaling: p2002
Description:	Display and numerical signal source for the output of the field weakening controller (synchronous motor) or the 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.		

3.2 List of parameters

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		
Write permission:	Edit device configuration or drive applications		
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).			

3.2 List of parameters

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	
	Write permission:	Edit device configuration or drive applications	
	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: -	Unit selection: -
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	
	Write permission:	Edit device configuration or drive applications	
	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: -	Unit selection: -
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	
	Write permission:		Edit device configuration or drive applications	
	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: -	Unit selection: -
	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	
	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)			

3.2 List of parameters

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, 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:
 $f_{3dB} \text{ bandwidth} = 2 * D_{denominator} * f_{bandstop} \text{ frequency}$

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: 0.001	Max: 10.000	Factory setting: 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: 0.5 [Hz]	Max: 16000.0 [Hz]	Factory setting: 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: 0.000	Max: 10.000	Factory setting: 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)			

3.2 List of parameters

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, 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: $f_{3dB \text{ bandwidth}} = 2 * D_{denominator} * f_{bandstop \text{ frequency}}$		
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: 0.001	Max: 10.000	Factory setting: 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: 0.5 [Hz]	Max: 16000.0 [Hz]	Factory setting: 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: 0.000	Max: 10.000	Factory setting: 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	
	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: 1	Max: 2	Factory setting: 2

3.2 List of parameters

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, 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:

$$f_{\_3dB \text{ bandwidth}} = 2 * D_{\_denominator} * f_{\_bandstop \text{ frequency}}$$

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	
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: 0.5 [Hz]	Max: 16000.0 [Hz]	Factory setting: 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	
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: 0.001	Max: 10.000	Factory setting: 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	
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	
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.

3.2 List of parameters

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: 0.0 [%] **Max:** 200.0 [%] **Factory setting:** 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: 0.0 [%] **Max:** 200.0 [%] **Factory setting:** 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.			

3.2 List of parameters

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: 0.00 [ms]	Max: 1000.00 [ms]	Factory setting: 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		
	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: Vrms	Unit group: -	Unit selection: -	
	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		
	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: Vrms	Unit group: -	Unit selection: -	
	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	

3.2 List of parameters

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

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]

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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

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: Vrms

Unit group: -

Unit selection: -

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

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: Vrms

Unit group: -

Unit selection: -

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:

Defines the gain of the controller for resonance damping for operation with sensorless vector control in the range that current is injected.

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: -	Unit selection: -
	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.		

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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	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Motor model, Messages / Monitoring	
Not relevant for motor type:	Synchronous or reluctance motor with starting cage	
Dyn. index [0...n]:	-	
Unit: %	Unit group: -	Calculated: -
		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

Signal 0 is not calculated during the motor excitation phase and only in the low speed range (below $p1755 * (100\% - p1756)$).
Signal 1 is only calculated for synchronous-reluctance motors.
Signal 2 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, Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage	
	Dyn. index [0...n]:	DDS n defined by: p0180	Calculated: automatic
	Unit: rpm	Unit group: -	Unit selection: -
	Min:	Max:	Factory setting:
	0.00 [rpm]	210000.00 [rpm]	0.00 [rpm]
Description:	Sets the transition (corner) speed for the transition into the small signal motor model for encoderless operation of the synchronous-reluctance motor (RESM).		
Dependency:	Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)		
	Note		
	RESM: reluctance synchronous motor (synchronous reluctance motor)		
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:	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: -
	Min:	Max:	Factory setting:
	0.00 [%]	99.00 [%]	50.00 [%]
Description:	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.		

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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 0 = 1: Forces open-loop speed-controlled starting (ASM).

Bit 1 = 1: Forces the system to pass through frequency zero, open-loop-controlled (ASM).

Bit 2 = 1: Drive remains in full closed-loop control mode, even at zero frequency (ASM).

Bit 3 = 1: Motor model evaluates the saturation characteristic (ASM).

Bit 5 = 1: Test signal technique (pulse technique) to estimate how the rotor position changes (RESM).

Bit 6 = 1: If the motor is blocked, sensorless vector control remains speed-controlled (ASM).

For a stalled (blocked) synchronous motor (PMSM), the sensorless vector control remains open-loop speed controlled.

Bit 7 = 1: Use rugged switchover limits to switchover the model between open-loop and closed-loop controlled operation (ASM).

Bit 8 = 1: Open-loop speed controlled operation independent of the speed setpoint (except for OFF3) (ASM).

Bit 9 = 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: Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)

**CAUTION**

Do not use bit 6 = 1 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 6 is preassigned for induction motors if commissioning the Dynamic Drive Control (p0504) was selected.

Note

Bit 0 ... 3 only have influence for sensorless vector control, bit 4 only for vector control with encoder. Bit 2 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 2 = 1, then bit 3 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 0 and 1 is ignored.

For bit 02 = 0:

If the model feedback is deactivated (p1784 = 0), with bit 2 = 0, then bit 3 is also automatically set to 0.

For bit 05:

This test signal technique (pulse technique) is only supported for synchronous-reluctance motors (RESM).

It is only possible to change bit 5 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 0, 1, 2

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

Write permission:

Edit device configuration or drive applications

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

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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

PMSM: permanent-magnet synchronous motor

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 motor are a precondition for model-based current controller adaptation (p1402).

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 Min: 0.00 [rpm]	Unit group: - Max: 210000.00 [rpm]	Unit selection: - Factory setting: 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 Read permission: Write permission: Can be changed in the operating state: Parameter group: Not relevant for motor type: Dyn. index [0...n]: Unit: % Min: 0.0 [%]		
		Visible in: Extended display Read drive data or acknowledge messages Edit device configuration or drive applications Operation Motor model Synchronous or reluctance motor with starting cage DDS n defined by: p0180 Unit group: - Max: 90.0 [%]	Calculated: automatic Unit selection: - Factory setting: 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 Read permission: Write permission: Can be changed in the operating state: Parameter group: Not relevant for motor type: Dyn. index [0...n]: Unit: rpm Min: 0.00 [rpm]		
		Visible in: Extended display Read drive data or acknowledge messages Edit device configuration or drive applications Operation Motor model Synchronous or reluctance motor with starting cage DDS n defined by: p0180 Unit group: - Max: 210000.00 [rpm]	Calculated: automatic Unit selection: - Factory setting: 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		

3.2 List of parameters

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/closed-loop control / MotMod t op_cl		
	Data type: FloatingPoint32	Visible in: Extended display	
	Read permission:	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 minimum time for a transition from open-loop controlled to closed-loop controlled operation 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: -

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	Min: 0 [ms]	Max: 1000 [ms]	Factory setting: 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: 0.000	Max: 100000.000	Factory setting: 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: 1 [ms]	Max: 200 [ms]	Factory setting: 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 closed-loop control / MotMod t_cl_ctrl		
	Data type: FloatingPoint32	Visible in: Extended display	
	Read permission:	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: 0 [ms]	Max: 10000 [ms]	Factory setting: 0 [ms]
Description:	Sets the wait time for a transition from open-loop controlled to closed-loop controlled operation after twice the lower changeover speed p1755 * (1 - p1756 / 100 %) has been exceeded - and below the upper switchover 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
Write permission: Edit device configuration or drive applications
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:** - **Unit selection:** -
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
Write permission: Edit device configuration or drive applications
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:** - **Unit selection:** -
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
Write permission: Edit device configuration or drive applications
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)

3.2 List of parameters

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	
Write permission:	Edit device configuration or drive applications	
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
10	Filter time combination current like current ctrl integral time	Yes	No
11	Fast flying restart with voltage model for induction motor	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

Dependency:	15	RESM Q flux model linear	Yes	No
	In U/f characteristic operating mode, only bit 7 and bit 11 are relevant.			
	For active motor model feedback (see p1784), the Lh adaptation is internally deactivated automatically.			
	For induction motors (ASM), bit 11 is not changed when calculating the closed-loop control parameters, bit 2 is always 1.			
	Not visible in operating mode: "Standard Drive Control" (SDC, p0504 = 1)			
	 CAUTION			
	For bit 11:			
	The selection is not enabled for dv/dt filters (see p0230).			
	NOTICE			
	It is only permissible to change bit 11 if the drive is switched off.			
When selecting bit 11, also for U/f characteristic operation, a standstill measurement must have been performed to set the current controller required for a fast flying restart.				
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				
Synchronous reluctance motor (RESM): bits 6, 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 11:				
This bit has no influence on flying restart with speed encoder. Depending on the motor, the fast flying restart is suitable for speeds of maximum 1.5x to 4x the rated motor speed.				
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:	-
Min:		Max:	
0.0 [%]		1000.0 [%]	
Factory setting:			0.0 [%]
Description:	Sets the scaling for model fault feedback.		

3.2 List of parameters

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	
	Write permission:	Edit device configuration or drive applications	
	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	
	Write permission:	Edit device configuration or drive applications	
	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, 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]	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)		

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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	
	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 pre-set to the rated converter value when the drive is first commissioned.		
Dependency:	Minimum pulse frequency: $1000 * p1800 \geq 10 * p1082 * r0313 / 60$		
	Values that can be set are: 2 kHz, 4 kHz, 8kHz, 12 kHz, 16 kHz.		
	See also: p0230		
	Note		
	The maximum and minimum possible pulse frequency is also determined by the power unit being used (minimum pulse frequency: 2 kHz or 4 kHz).		
	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	
	Write permission:	Edit device configuration or drive applications	
	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:	Display and numerical signal source for 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)x 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		
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 (for an ideal drive converter without any switching delay).		

3.2 List of parameters

p1803[0...n]	Maximum modulation depth / Mod_depth max		
	G220 Clean Power		
Description:	Data type: FloatingPoint32	Visible in: Extended display	
	Read permission:	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 [%]
Note			
p1803 = 100% is the overcontrol limit for space vector modulation (for an ideal drive converter without any switching delay).			
p1806[0...n]	Filter time constant Vdc correction / Tc_filt Vdc_corr		
	G220 Clean Power		
Description:	Data type: FloatingPoint32	Visible in: Extended display	
	Read permission:	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]
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		
	G220 Clean Power		
Description:	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:	Power unit	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	Calculated: -
	Unit: V	Unit group: -	Unit selection: -
	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	
	Write permission:		Edit device configuration or drive applications	
	Parameter group:		Power unit	
	Not relevant for motor type:		-	
	Dyn. index [0...n]:		-	
	Unit: -		Unit group: -	
	Type of signal interconnection:		Source numeric	
	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]:		-	
	Unit: -		Unit group: -	
	Min:		Max:	
		-		
		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 1 = 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.				

3.2 List of parameters

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 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 (if 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 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. The following parameters can be used to set the direction of rotation for safety monitoring: - p9516.1 "Position actual value sign change" (only for operation with encoder) - p9539 "SI gearbox direction of rotation reversal" (also in encoderless operation)			

3.2 List of parameters

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: μ s

Unit group: -

Unit selection: -

Min:

Max:

Factory setting:

0.00 [μ s]

8.00 [μ s]

0.00 [μ s]

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 l_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. Above the current level, the dead time - Resulting from the converter switching delays - Is compensated by a previously calculated constant value. If the relevant phase current setpoint falls below the absolute value defined by p1832, the corrective 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	
	Write permission:	Edit device configuration or drive applications	
	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		

3.2 List of parameters

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 frequency reduction (active for p1810.8 = 1).

For index [1]:

Frequency limit for the second pulse frequency reduction (active for p1810.9 = 1).

r1837.0...25**Gating unit configuration / Gating unit config**

G220

Data type: Unsigned32**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:** -**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	Angle prerotation active in the software	Yes	No
15	Power unit with PS interface	Yes	No
17	Actual value averaging temporarily suppressed	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			
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		
	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	Angle prerotation active in the software	Yes	No
	15	Power unit with PS interface	Yes	No
	17	Actual value averaging temporarily suppressed	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...22	Gating unit status words 1 and 2 / Gating unit ZSW1			
	Data type: Unsigned32	Visible in: Extended display		
	Read permission:	Read drive data or acknowledge messages		
	Write permission:	Edit device configuration or drive applications		
	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:	Display and signal source for status word 1 of the power unit.			
Bit array:	Bit	Signal name	1 signal	0 signal

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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	Wobulation 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

Note

The bits that are not written to are used for internal diagnostics.

r1839.0...21**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

Write permission:

Edit device configuration or drive applications

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 control word 2 of the power 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	Activate compound brake	Active	Not active

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:

Quick commissioning, Motor data identification routine, Rotating measurement/speed controller 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 (only induction motor), 12:

The same as p1900 = 1, 2 with the difference, that after the measurement, the system immediately goes into operation. For this purpose, p1909.18 is set = p1959.13 is set = 1.

p1900 = 99:

In the current 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)

3.2 List of parameters

- 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

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...8**Test pulse evaluation status / Test puls ev stat**

Data type: Unsigned32

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: -

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	Motor phase interrupted	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: -

3.2 List of parameters

	Min:	Max:	Factory setting:
	0	90	0
Description:	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 entered, 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 and with the pulses not enabled, the function is only executed the next time that the pulses are enabled. When selecting the encoder fine calibration, the changeover of the motor data sets is suppressed.

p1906[0...n].0**Encoder adjustment configuration / Encod adjust 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 bin	

Description: Sets the configuration for encoder adjustment.

Bit array:	Bit	Signal name	1 signal	0 signal
	00	Encoder adjustment in operation	Yes	No

Dependency: See also: p1990
See also: A07975

Note

Bit 0 = 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 0 = 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).

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 OA	Yes	No

3.2 List of parameters

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 L_d and the quadrature inductance L_q 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 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 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) and acceptance of motor data

2: Complete identification (ID) of motor data without acceptance

Dependency:

"Quick commissioning" must have been carried out (see r3925 bit 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 bit 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:

1. "With acceptance" means:

The parameters specified in the description are overwritten with the identified values and therefore have an influence on the controller setting.

2. "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 reset to 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
Write permission:	Edit device configuration or drive applications
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 bit 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
Write permission:	Edit device configuration or drive applications
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.

3.2 List of parameters

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.			

3.2 List of parameters

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, no manual changes should be made.

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	
	Write permission:	Edit device configuration or drive applications	
	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.

3.2 List of parameters

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	
	Write permission:	Edit device configuration or drive applications	
	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	
	Write permission:	Edit device configuration or drive applications	
	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:	Sets 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

3.2 List of parameters

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 motor 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 Write permission: Edit device configuration or drive applications 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 Write permission: Edit device configuration or drive applications 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

PollID: 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 transfer), 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: -

3.2 List of parameters

	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																																																
	Write permission:	Edit device configuration or drive applications																																																
	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]:	-																																																
	Unit: -	Unit group: -																																																
	Type of signal interconnection:	Source binary/numeric																																																
		Calculated: -																																																
		Unit selection: -																																																
		Scaling: -																																																
Description:	Display and signal source for the diagnostics information of the pole position identification (polID).																																																	
Bit array:	<table><tr><td>Bit</td><td>Signal name</td><td>1 signal</td><td>0 signal</td></tr><tr><td>00</td><td>Critical encoder fault occurred</td><td>Yes</td><td>No</td></tr><tr><td>02</td><td>Encoder parking active</td><td>Yes</td><td>No</td></tr><tr><td>05</td><td>Encoder fault Class 1</td><td>Yes</td><td>No</td></tr><tr><td>06</td><td>Encoder fault Class 2</td><td>Yes</td><td>No</td></tr><tr><td>07</td><td>Pole position identification for encoder carried out</td><td>Yes</td><td>No</td></tr><tr><td>08</td><td>Fine synchronization carried out</td><td>Yes</td><td>No</td></tr><tr><td>09</td><td>Coarse synchronization carried out</td><td>Yes</td><td>No</td></tr><tr><td>10</td><td>Commutation information available</td><td>Yes</td><td>No</td></tr><tr><td>11</td><td>Speed information available</td><td>Yes</td><td>No</td></tr><tr><td>12</td><td>Position information available</td><td>Yes</td><td>No</td></tr><tr><td>15</td><td>Zero mark passed</td><td>Yes</td><td>No</td></tr></table>	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	
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
	Unit: %	Unit group: -
	Min:	Unit selection: -
	10 [%]	Factory setting:
		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: -
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, r2004

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 PROFIBUS (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. 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: -
Min:	Max:	Factory setting:
10 [Vrms]	100000 [Vrms]	1000 [Vrms]

3.2 List of parameters

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]:	-
Unit: Arms	Unit group: -
Min:	Max:
0.10 [Arms]	100000.00 [Arms]
	Calculated: automatic
	Unit selection: -
	Factory setting:
	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]:	-
Unit: Nm	Unit group: -
	Calculated: automatic
	Unit selection: -

	Min: 0.01 [Nm]	Max: 20000000.00 [Nm]	Factory setting: 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.		
r2004	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	
	Parameter group:	Reference variables	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	Calculated: -
	Unit: kW	Unit group: -	Unit selection: -
	Type of signal interconnection:	Source numeric	Scaling: -
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: $- 2 * \pi * \text{reference speed} / 60 * \text{reference torque (motor)}$		
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: -
	Min: 90.00 [°]	Max: 180.00 [°]	Factory setting: 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).		

3.2 List of parameters

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: -	Unit selection: -
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/s ²	Unit group: -	Unit selection: -
Min:	Max:	Factory setting:
0.01 [rev/s ²]	500000.00 [rev/s ²]	0.01 [rev/s ²]

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}			
	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: -
		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)			
r2043.0...2	PROFIdrive PZD state / PD PZD state			
		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:	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			

3.2 List of parameters

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
Write permission:	Edit device configuration or drive applications
Parameter group:	Receive direction
Not relevant for motor type:	-
Dyn. index [0...n]:	-
Unit: -	Unit group: -
Type of signal interconnection: Source binary/numeric	Unit selection: -
	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]:	-
Unit: -	Unit group: -
Type of signal interconnection: Sink numeric	Unit selection: -
Factory interconnection: Fixed value: 0	Scaling: 4000H

Description: Signal of the PZD (actual values) in the word format, which is sent to the fieldbus controller.

3.2 List of parameters

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.

r2060[0...30]**PROFIdrive PZD receive double word / PZD rcv DW**

Data type: Integer32	Visible in: Standard display	
Read permission:	Read drive data or acknowledge messages	
Write permission:	Edit device configuration or drive applications	
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.		

3.2 List of parameters

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]:	-	
	Unit: -	Unit group: -	Calculated: -
	Min:	Max:	Unit selection: -
	0	7	Factory setting:
			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.

3.2 List of parameters

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: -

Description:	Type of signal interconnection: Sink binary	
	Factory interconnection: [0] Parameter: 722.2[1] Fixed value: 0[2] Fixed value: 0[3] Fixed value: 0	
	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		
Description: Dependency:	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	
	Signal for external fault 1.		
See also: F07860			
Note			
An external fault is initiated with a 1->0 edge.			
If this fault is initiated at the Control Unit, then it is transferred to all of the drive objects available.			

c2107[0...n]	External fault 2 / External fault 2		
G220	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:	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	
	Signal for external fault 2.		
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.			

c2107[0...n]	External fault 2 / External fault 2		
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:	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	
	Signal for external fault 2.		
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.			

3.2 List of parameters

Description:	Type of signal interconnection: Sink binary
	Factory interconnection: Fixed value: 1
Dependency:	Signal for external fault 2. See also: F07861
Note An external fault is initiated with a 1->0 edge.	
r2109[0...63]	Fault time removed in milliseconds / tflt removed ms
Description:	Data type: Unsigned32
	Visible in: Extended display
Dependency:	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]: -
	Unit: ms
	Unit group: -
	Calculated: -
	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
Description:	Data type: Unsigned16
	Visible in: Extended display
Dependency:	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]: -
	Unit: -
	Unit group: -
	Calculated: -
	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
Description:	Data type: Unsigned32
	Visible in: Standard display
Dependency:	Read permission: Read drive data or acknowledge messages
	Write permission: Edit device configuration or drive applications
	Parameter group: Diagnostics general
	Not relevant for motor type: -
	Dyn. index [0...n]: -
	Unit: -
	Unit group: -
	Calculated: -
	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: 0 **Max:** 65535 **Factory setting:** 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: 1 **Max:** 3 **Factory setting:** 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.

3.2 List of parameters

r2121	Counter alarm buffer changes / A buff changed		
	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:	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	
	Write permission:	Edit device configuration or drive applications	
	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	
	Write permission:	Edit device configuration or drive applications	
	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
Write permission:	Edit device configuration or drive applications
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
Write permission:	Edit device configuration or drive applications
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
Write permission:	Edit device configuration or drive applications
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

3.2 List of parameters

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:** Standard 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]:

-

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:** Standard 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]:

-

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

Write permission:

Edit device configuration or drive applications

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		
	Write permission:	Edit device configuration or drive applications		
	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: Standard 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]:	-	Calculated: -	
	Unit: -	Unit group: -	Unit selection: -	
	Type of signal interconnection:	Source binary/numeric	Scaling: -	
Description:	Display and signal source for 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_ft rem days			
	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:	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).				

3.2 List of parameters

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		
	Write permission:	Edit device configuration or drive applications		
	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:	Display and signal source for 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: -	Unit selection: -	
	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: -	Unit selection: -
	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: -	Unit selection: -
	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 = enable) of the motor stall 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.		

3.2 List of parameters

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	
	Write permission:	Edit device configuration or drive applications	
	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 removed in days / t_alarm rem days		
	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:	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 removed.		
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: -	Unit selection: -
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

3.2 List of parameters

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: -	Unit selection: -
	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: -

3.2 List of parameters

	Min: 0.0 [ms]	Max: 10000.0 [ms]	Factory setting: 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: -	Unit selection: -
	Min: 0.00 [rpm]	Max: 210000.00 [rpm]	Factory setting: 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: 0 [ms]	Max: 10000 [ms]	Factory setting: 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: -	Unit selection: -
	Min: 0.00 [rpm]	Max: 210000.00 [rpm]	Factory setting: 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: -

Unit selection: -

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: -

Unit selection: -

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	Min: 0.00 [rpm]	Max: 60000.00 [rpm]	Factory setting: 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: $p2162 \leq 0.1 * p0311$ For p0322 > 0, the following applies: $p2162 \leq 1.02 * p0322 - p1082$ 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: -	Unit selection: -
	Min: 0.00 [rpm]	Max: 210000.00 [rpm]	Factory setting: 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: -	Unit selection: -
	Min: 0.00 [rpm]	Max: 200.00 [rpm]	Factory setting: 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: -	Unit selection: -
	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, Shutdown functions	
	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, Shutdown functions	
	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]

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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: -	Unit selection: -
Min:	Max:	Factory setting:
0.00 [Nm]	20000000.00 [Nm]	10000000.00 [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	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Speed messages, Load torque monitoring	
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: Display and numerical signal source of 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: -	Unit selection: -
	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: -	Unit selection: -
	Min:	Max:	Factory setting:
	0 [V]	2000 [V]	800 [V]
Description:	Sets the DC link voltage threshold value for the following messages:		
	"Vdc_act <= Vdc_threshold p2172" (r2197.9)		
	"Vdc_act > Vdc_threshold p2172" (r2197.10)		
Dependency:	See also: p2173		

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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: -	Unit selection: -
	Min:	Max:	Factory setting:
	0.00 [Nm]	20000000.00 [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: -	Unit selection: -
	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).		

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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_Id 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: -	Unit selection: -
	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		

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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: -	Unit selection: -
	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: -	Unit selection: -
	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: -	Unit selection: -
	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: -	Unit selection: -
	Min:	Max:	Factory setting:
	0.00 [Nm]	20000000.00 [Nm]	10000000.00 [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.			

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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: -	Unit selection: -
	Min: 0.00 [Nm]	Max: 20000000.00 [Nm]	Factory setting: 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: -	Unit selection: -
	Min: 0.00 [Nm]	Max: 20000000.00 [Nm]	Factory setting: 10000000.00 [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: -	Unit selection: -

	Min: 0.00 [Nm]	Max: 20000000.00 [Nm]	Factory setting: 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: -	Unit selection: -
	Min: 0.00 [Nm]	Max: 20000000.00 [Nm]	Factory setting: 10000000.00 [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: -	Unit selection: -
	Min: 0.00 [Nm]	Max: 20000000.00 [Nm]	Factory setting: 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.			

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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: -	Unit selection: -
	Min:	Max:	Factory setting:
	0.00 [Nm]	20000000.00 [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
	Unit: %	Unit group: -
	Min:	Max:
	0.00 [%]	100.00 [%]
		Calculated: automatic
		Unit selection: -
		Factory setting:
		90.00 [%]
Description:	Sets the torque threshold value for the message "Torque utilization < torque threshold value 2" (BO: r2199.11). The message "torque setpoint < p2174" (r2198.10) and "torque utilization < p2194" (r2199.11) are only evaluated after the run-up 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
	Unit: ms	Unit group: -
	Min:	Max:
	0.0 [ms]	1000.0 [ms]
		Calculated: -
		Unit selection: -
		Factory setting:
		800.0 [ms]
Description:	Sets the switch-off delay time for the negated signal "run-up completed". The message "torque setpoint < p2174" (r2198.10) and "torque utilization < p2194" (r2199.11) are only evaluated after the run-up and the delay time has expired.	
Dependency:	See also: p2174, p2194	

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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		
	Write permission:	Edit device configuration or drive applications		
	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:	Display and signal source for 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

Write permission: Edit device configuration or drive applications

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:

Display and signal source for 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	l_act < l_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

3.2 List of parameters

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

Write permission:

Edit device configuration or drive applications

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:**

Display and signal source for 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 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****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		
	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: -	Unit selection: -
	Type of signal interconnection:	Source numeric	Scaling: PERCENT
Description: Dependency:	Min:	Max:	Factory setting:
	-200.00 [%]	200.00 [%]	10.00 [%]
	Sets the value for fixed value 1 of the technology controller.		
	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		
	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: -	Unit selection: -
	Type of signal interconnection:	Source numeric	Scaling: PERCENT
Description: Dependency:	Min:	Max:	Factory setting:
	-200.00 [%]	200.00 [%]	20.00 [%]
	Sets the value for fixed value 2 of the technology controller.		
	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		
	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: -	Unit selection: -
	Type of signal interconnection:	Source numeric	Scaling: PERCENT
	Min:	Max:	Factory setting:
	-200.00 [%]	200.00 [%]	30.00 [%]

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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

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: -

Unit selection: -

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

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: -

Unit selection: -

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		
	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: -	Unit selection: -
	Type of signal interconnection:	Source numeric	Scaling: PERCENT
Description:	Min:	Max:	Factory setting:
	-200.00 [%]	200.00 [%]	60.00 [%]
Dependency:	Sets the value for fixed value 6 of the technology controller.		
	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		
	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: -	Unit selection: -
	Type of signal interconnection:	Source numeric	Scaling: PERCENT
Description:	Min:	Max:	Factory setting:
	-200.00 [%]	200.00 [%]	70.00 [%]
Dependency:	Sets the value for fixed value 7 of the technology controller.		
	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		
	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: -	Unit selection: -
	Type of signal interconnection:	Source numeric	Scaling: PERCENT
Description:	Min:	Max:	Factory setting:
	-200.00 [%]	200.00 [%]	80.00 [%]
Dependency:	Sets the value for fixed value 8 of the technology controller.		
	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.			

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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

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: -

Unit selection: -

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

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: -

Unit selection: -

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		
	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: -	Unit selection: -
	Type of signal interconnection:	Source numeric	Scaling: PERCENT
Description:	Min:	Max:	Factory setting:
	-200.00 [%]	200.00 [%]	110.00 [%]
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		
	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: -	Unit selection: -
	Type of signal interconnection:	Source numeric	Scaling: PERCENT
Description:	Min:	Max:	Factory setting:
	-200.00 [%]	200.00 [%]	120.00 [%]
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		
	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: -	Unit selection: -
	Type of signal interconnection:	Source numeric	Scaling: PERCENT
Description:	Min:	Max:	Factory setting:
	-200.00 [%]	200.00 [%]	130.00 [%]

3.2 List of parameters

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

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: -

Unit selection: -

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

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: -

Unit selection: -

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

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

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

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

3.2 List of parameters

c2222[0...n]	Technology controller fixed value selection bit 2 / Tec_ctrl sel bit 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:	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		
	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		
	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:	Fixed setpoints	
	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 and numerical signal source for the selected and active fixed speed of the technology controller.		
Dependency:	See also: r2229		
r2225.0	Technology controller fixed value selection status word / Tec_ctr FixVal ZSW		
	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:	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:	Display and signal source for 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

Data type: Unsigned32	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]:	-
Unit: -	Unit group: -
	Calculated: -
	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

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
Unit: -	Unit group: -
Min:	Max:
-	-
	Calculated: -
	Unit selection: -
	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

3.2 List of parameters

Note

For bit 00:

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 and after ON is entered 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:

$$r = 0.0001 \times \max(p2237, |p2238|) [\%] / 0.13^2 [s^2]$$

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

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]:

-

Calculated: -

Unit: %

Unit group: -

Unit selection: -

Description:

Displays the setpoint memory for the motorized potentiometer of the technology controller.

For p2230.0 = 1, the last setpoint that was saved is entered after ON.

Dependency:

See also: p2230

c2235[0...n] Technology controller motorized potentiometer raise setpoint / Tec_ctrl moP raise

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		
	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		
	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: -	Unit selection: -
	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		
	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: -	Unit selection: -
	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		

3.2 List of parameters

p2240[0...n]	Technology controller motorized potentiometer starting value / Tec_ctrl moP 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:	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:
	-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 entered after ON.		
Dependency:	See also: p2230		
r2245	Technology controller mot. potentiometer setpoint before RFG / Tec_ctr mop befRFG		
	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:	Motorized potentiometer	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	
	Unit: %	Unit group: -	Unit selection: -
	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		
	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		
	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		
	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:	Motorized potentiometer	
	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 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		
	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).		

3.2 List of parameters

p2252.0...8		Technology controller configuration / Tec_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:	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:	<table><tr><th>Bit</th><th>Signal name</th><th>1 signal</th><th>0 signal</th></tr><tr><td>00</td><td>Ramp-up/down time independent of setpoint sign</td><td>Yes</td><td>No</td></tr><tr><td>01</td><td>Integrator independent of Kp</td><td>Yes</td><td>No</td></tr><tr><td>02</td><td>Shutdown output signal without ramp</td><td>Yes</td><td>No</td></tr><tr><td>03</td><td>Actual value limit</td><td>Yes</td><td>No</td></tr><tr><td>04</td><td>Ramp-up/ramp-down function generator bypass</td><td>Deactivated</td><td>Activated</td></tr><tr><td>05</td><td>Integrator active for skip speeds</td><td>Yes</td><td>No</td></tr><tr><td>06</td><td>Internal controller limit not displayed</td><td>Yes</td><td>No</td></tr><tr><td>07</td><td>Activate Kp adaptation</td><td>Yes</td><td>No</td></tr><tr><td>08</td><td>Activate Tn adaptation</td><td>Yes</td><td>No</td></tr></table>	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		
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 exhibits a positive gradient, the ramp-up time (p2257) is active; when it exhibits 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:

In r2349, bit 10 and bit 11 are not displayed when reaching internal limits (e.g. for OFF1/OFF3).

c2253[0...n]**Technology controller setpoint 1 / Tec_ctrl set 1**

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 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 [%]

3.2 List of parameters

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		
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:	-
Type of signal interconnection:	Sink numeric	Unit selection:	-
Factory interconnection:	Fixed value: 0.00 [%]	Scaling:	PERCENT
Description:	Signal for setpoint 2 of the technology controller.		
Dependency:	See also: c2253, p2256		

p2255	Technology controller setpoint 1 scaling / Tec_ctrl set1 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:	Technology PID controller		
Not relevant for motor type:	-		
Dyn. index [0...n]:	-	Calculated:	-
Unit:	%	Unit group:	-
Min:	0.00 [%]	Unit selection:	-
		Factory setting:	
			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		
Data type:	FloatingPoint32	Visible in:	Extended display
Read permission:	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:	-
Min:	0.00 [%]	Unit selection:	-
		Factory setting:	
			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		
	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: 0.00 [s]	Max: 650.00 [s]	Factory setting: 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		
	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: 0.00 [s]	Max: 650.00 [s]	Factory setting: 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		
	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:	Source numeric	Scaling: PERCENT
	Description:	Displays the total setpoint of the technology controller before the ramp-function generator.	

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r2260	Technology controller setpoint after ramp-function generator / Tec_ctr set aftRFG		
	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 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 setpoint after the ramp-function generator of the technology controller.		
p2261	Technology controller setpoint filter time constant / Tec_ctrl set Tc		
	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]	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		
	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 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 and numerical signal source for the smoothed setpoint after the setpoint filter (PT1) of the technology controller.		
p2263	Technology controller type / Tec_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:	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:	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		
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 PID controller		
Not relevant for motor type:	-		
Dyn. index [0...n]:	CDS n defined by: p0170	Calculated:	-
Unit:	%	Unit group:	-
Type of signal interconnection:	Sink numeric	Unit selection:	-
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		
	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]	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		
	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 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 and numerical signal source 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		
	Data type: FloatingPoint32	Visible in: Extended display	
	Read permission:	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: -

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	Unit: %	Unit group: -	Unit selection: -
	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 See also: F07426		

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**

	Data type: FloatingPoint32	Visible in: Extended display
	Read permission:	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]:	-
	Unit: %	Unit group: -
	Min:	Max:
	-10000.00 [%]	10000.00 [%]
		Calculated: -
		Unit selection: -
		Factory setting:
		-200.00 [%]
Description:	Sets the lower limit for the actual value signal of the technology controller.	
Dependency:	See also: p2252, c2264, p2265, p2271 See also: F07426	

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**

	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]:	-
	Unit: %	Unit group: -
	Min:	Max:
	0.00 [%]	500.00 [%]
		Calculated: -
		Unit selection: -
		Factory setting:
		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		
	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	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		
	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 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).

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r2272	Technology controller actual value scaled / Tec_ctrl ActV scal		
	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 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 and numerical signal source 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		
	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:	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		
	Data type: FloatingPoint32	Visible in: Extended display	
	Read permission:	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		
	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: - Min: 0.000	Unit group: - Max: 1000.000	Unit selection: - Factory setting: 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		
	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: 0.000 [s]	Max: 10000.000 [s]	Factory setting: 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		
	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.		

3.2 List of parameters

c2289[0...n]	Technology controller precontrol signal / Tec_ctr prectr_sig		
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			
	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			
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		
	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		
	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.		
	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		
	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 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 and numerical signal source for output signal of the technology controller.	
See also: p2295			

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p2295	Technology controller output scaling / Tec_ctrl outp 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:	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		
	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		
	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		
	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		
	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		
	Data type: FloatingPoint32	Visible in: Extended display	
	Read permission:	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.		

3.2 List of parameters

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****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****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		
	Data type: FloatingPoint32	Visible in: Extended display	
	Read permission:	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		
	Data type: FloatingPoint32	Visible in: Extended display	
	Read permission:	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		
	Data type: FloatingPoint32	Visible in: Extended display	
	Read permission:	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: -

3.2 List of parameters

	Min: 0.00 [%]	Max: 400.00 [%]	Factory setting: 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

Data type:	FloatingPoint32	Visible in:	Extended display
Read permission:			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]:			-
Unit:	%	Unit group:	-
Min:	0.00 [%]	Max:	400.00 [%]
		Factory setting:	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

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]:			-
Unit:	%	Unit group:	-
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		
	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:	Source numeric	Scaling: -
Description:	Display and numerical signal source 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		
	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		
	Data type: FloatingPoint32	Visible in: Extended display	
	Read permission:	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: 0.000 [s]	Max: 60.000 [s]	Factory setting: 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.			

3.2 List of parameters

p2319	Technology controller Tn adaptation lower value / Tn adapt lower 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:	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		
	Data type: FloatingPoint32	Visible in: Extended display	
	Read permission:	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		
	Data type: FloatingPoint32	Visible in: Extended 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

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: s **Unit group:** - **Unit selection:** -
Type of signal interconnection: Source numeric **Scaling:** -

Description: Display and numerical signal source 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

Data type: FloatingPoint32 **Visible in:** Extended display
Read permission: 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 [%] 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.

3.2 List of parameters

r2344	Technology controller last speed setpoint (smoothed) / Tec_ctrl n_set_sm		
	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:	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		
	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 See also: F07426		
	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 during ramping up to the starting setpoint p2302, this starting setpoint is retained as the final value (there is no changeover to the fault response setpoint).		

r2349.0...13 Technology controller status word / Tec_ctrl ZSW				
Data type: Unsigned32		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:		Source binary/numeric	Scaling: -	
Description:	Display and signal source for 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
Dependency:	Bit 12 is only active in the mode "technology controller as speed main setpoint" (p2251 = 0).			

p2940[0...n].0...2 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 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

3.2 List of parameters

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:	Positive end 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, 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: %	Unit group: -	Unit selection: -	
Min:	Max:	Factory setting:	
-500 [%]	0 [%]	-150 [%]	
Description:	Negative end 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:	End of 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:	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:	Scaling of 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 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:	Extrapolation range of the magnetic in-line axis to extend the measured saturation characteristic.		
Dependency:	The value is referred to the rated motor current p0305.		

3.2 List of parameters

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:	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		
	Write permission:	Edit device configuration or drive applications		
	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:	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			
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		
	Write permission:	Edit device configuration or drive applications		
	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 and signal source 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	Network 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 load 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 load cycles and limits that have been set. Check the ambient temperature / motor cooling.

For bit 07:

The communication to the higher-level control system (internal coupling, PROFIBUS, PROFINET, ...) is either 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: -

3.2 List of parameters

	Min: 0	Max: 1	Factory setting: 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	
	Write permission:	Edit device configuration or drive applications	
	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	
	Write permission:	Edit device configuration or drive applications	
	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	
	Write permission:	Edit device configuration or drive applications	
	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.

For bits 20 ... 16:

Bits 20, 19, 18, 17, 16 = 0, 0, 0, 0, 0 --> PROFIdrive message class 0: not assigned

Bits 20, 19, 18, 17, 16 = 0, 0, 0, 0, 1 --> PROFIdrive message class 1: hardware fault/software error

Bits 20, 19, 18, 17, 16 = 0, 0, 0, 1, 0 --> PROFIdrive message class 2: line fault

Bits 20, 19, 18, 17, 16 = 0, 0, 0, 1, 1 --> PROFIdrive message class 3: supply voltage fault

Bits 20, 19, 18, 17, 16 = 0, 0, 1, 0, 0 --> PROFIdrive message class 4: DC link fault

Bits 20, 19, 18, 17, 16 = 0, 0, 1, 0, 1 --> PROFIdrive message class 5: power electronics faulted

Bits 20, 19, 18, 17, 16 = 0, 0, 1, 1, 0 --> PROFIdrive message class 6: overtemperature electronic components

Bits 20, 19, 18, 17, 16 = 0, 0, 1, 1, 1 --> PROFIdrive message class 7: ground fault/phase fault detected

Bits 20, 19, 18, 17, 16 = 0, 1, 0, 0, 0 --> PROFIdrive message class 8: motor overload

Bits 20, 19, 18, 17, 16 = 0, 1, 0, 0, 1 --> PROFIdrive message class 9: communication error to the higher-level control

Bits 20, 19, 18, 17, 16 = 0, 1, 0, 1, 0 --> PROFIdrive message class 10: safe monitoring channel has identified an error

Bits 20, 19, 18, 17, 16 = 0, 1, 0, 1, 1 --> PROFIdrive message class 11: incorrect position actual value/speed actual value or not available

Bits 20, 19, 18, 17, 16 = 0, 1, 1, 0, 0 --> PROFIdrive message class 12: internal (DRIVE-CLiQ) communication error

Bits 20, 19, 18, 17, 16 = 0, 1, 1, 0, 1 --> PROFIdrive message class 13: infeed unit faulted

Bits 20, 19, 18, 17, 16 = 0, 1, 1, 1, 0 --> PROFIdrive message class 14: braking controller/Braking Module faulted

Bits 20, 19, 18, 17, 16 = 0, 1, 1, 1, 1 --> PROFIdrive message class 15: line filter faulted

Bits 20, 19, 18, 17, 16 = 1, 0, 0, 0, 0 --> PROFIdrive message class 16: external measured value/signal state outside the permissible range

Bits 20, 19, 18, 17, 16 = 1, 0, 0, 0, 1 --> PROFIdrive message class 17: application/technology function faulted

Bits 20, 19, 18, 17, 16 = 1, 0, 0, 1, 0 --> PROFIdrive message class 18: error in the parameterization/configuration/commissioning sequence

Bits 20, 19, 18, 17, 16 = 1, 0, 0, 1, 1 --> PROFIdrive message class 19: general drive fault

Bits 20, 19, 18, 17, 16 = 0, 1, 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

Write permission:

Edit device configuration or drive applications

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

3.2 List of parameters

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.

For bits 20 ... 16:

Bits 20, 19, 18, 17, 16 = 0, 0, 0, 0, 0 --> PROFIdrive message class 0: not assigned

Bits 20, 19, 18, 17, 16 = 0, 0, 0, 0, 1 --> PROFIdrive message class 1: hardware fault/software error

Bits 20, 19, 18, 17, 16 = 0, 0, 0, 1, 0 --> PROFIdrive message class 2: line fault

Bits 20, 19, 18, 17, 16 = 0, 0, 0, 1, 1 --> PROFIdrive message class 3: supply voltage fault

Bits 20, 19, 18, 17, 16 = 0, 0, 1, 0, 0 --> PROFIdrive message class 4: DC link fault

Bits 20, 19, 18, 17, 16 = 0, 0, 1, 0, 1 --> PROFIdrive message class 5: power electronics faulted

Bits 20, 19, 18, 17, 16 = 0, 0, 1, 1, 0 --> PROFIdrive message class 6: overtemperature electronic components

Bits 20, 19, 18, 17, 16 = 0, 0, 1, 1, 1 --> PROFIdrive message class 7: ground fault/phase fault detected

Bits 20, 19, 18, 17, 16 = 0, 1, 0, 0, 0 --> PROFIdrive message class 8: motor overload

Bits 20, 19, 18, 17, 16 = 0, 1, 0, 0, 1 --> PROFIdrive message class 9: communication error to the higher-level control

Bits 20, 19, 18, 17, 16 = 0, 1, 0, 1, 0 --> PROFIdrive message class 10: safe monitoring channel has identified an error

Bits 20, 19, 18, 17, 16 = 0, 1, 0, 1, 1 --> PROFIdrive message class 11: incorrect position actual value/speed actual value or not available

Bits 20, 19, 18, 17, 16 = 0, 1, 1, 0, 0 --> PROFIdrive message class 12: internal (DRIVE-CLiQ) communication error

Bits 20, 19, 18, 17, 16 = 0, 1, 1, 0, 1 --> PROFIdrive message class 13: infeed unit faulted

Bits 20, 19, 18, 17, 16 = 0, 1, 1, 1, 0 --> PROFIdrive message class 14: braking controller/Braking Module faulted

Bits 20, 19, 18, 17, 16 = 0, 1, 1, 1, 1 --> PROFIdrive message class 15: line filter faulted

Bits 20, 19, 18, 17, 16 = 1, 0, 0, 0, 0 --> PROFIdrive message class 16: external measured value/signal state outside the permissible range

Bits 20, 19, 18, 17, 16 = 1, 0, 0, 0, 1 --> PROFIdrive message class 17: application/technology function faulted

Bits 20, 19, 18, 17, 16 = 1, 0, 0, 1, 0 --> PROFIdrive message class 18: error in the parameterization/configuration/commissioning sequence

Bits 20, 19, 18, 17, 16 = 1, 0, 0, 1, 1 --> PROFIdrive message class 19: general drive fault

Bits 20, 19, 18, 17, 16 = 0, 1, 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: -	Unit selection: -
	Min:	Max:	Factory setting:
	0.00 [rpm]	210000.00 [rpm]	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:	Max:	Factory setting:
	0 [ms]	1000000 [ms]	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.		

3.2 List of parameters

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: -	Unit selection: -
	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: -	Unit selection: -
	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:	Messages / Monitoring																													
	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:	<table> <tr> <th>Bit</th><th>Signal name</th><th>1 signal</th><th>0 signal</th></tr> <tr> <td>00</td><td>Activate function 1</td><td>Active</td><td>Not active</td></tr> <tr> <td>01</td><td>Function 1 comparison with sign</td><td>With sign</td><td>Without sign</td></tr> <tr> <td>02</td><td>Activate function 2</td><td>Active</td><td>Not active</td></tr> <tr> <td>03</td><td>Function 2 comparison with sign</td><td>With sign</td><td>Without sign</td></tr> <tr> <td>04</td><td>Activate function 3</td><td>Active</td><td>Not active</td></tr> <tr> <td>05</td><td>Function 3 comparison with sign</td><td>With sign</td><td>Without sign</td></tr> </table>			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
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.

3.2 List of parameters

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:	Messages / Monitoring
Not relevant for motor type:	-
Dyn. index [0...n]:	-
Unit: -	Unit group: -
Type of signal interconnection:	Sink numeric
Factory interconnection:	Fixed value: 0
	Calculated: -
	Unit selection: -
	Scaling: -

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
Write permission:	Edit device configuration or drive applications
Parameter group:	Messages / Monitoring
Not relevant for motor type:	-
Dyn. index [0...n]:	-
Unit: -	Unit group: -
Type of signal interconnection:	Source binary
	Calculated: -
	Unit selection: -
	Scaling: -

Description: Display and binary signal source of 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:	Messages / Monitoring
Not relevant for motor type:	-
Dyn. index [0...n]:	-
Unit: -	Unit group: -
Min:	Max:
-340.28235E36	340.28235E36
	Calculated: -
	Unit selection: -
	Factory setting:
	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: Messages / Monitoring
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: - **Unit group:** - **Unit selection:** -
Min: 0.000 **Max:** 340.28235E36 **Factory setting:** 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: Messages / Monitoring
Not relevant for motor type: -
Dyn. index [0...n]: - **Calculated:** -
Unit: ms **Unit group:** - **Unit selection:** -
Min: 0 [ms] **Max:** 10000 [ms] **Factory setting:** 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])

3.2 List of parameters

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:** Messages / Monitoring**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:** Messages / Monitoring**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	
Write permission:	Edit device configuration or drive applications	
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.

3.2 List of parameters

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																					
Write permission:		Edit device configuration or drive applications																					
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:	<table><tr><td>Bit</td><td>Signal name</td><td>1 signal</td><td>0 signal</td></tr><tr><td>00</td><td>ON</td><td>Yes</td><td>No</td></tr><tr><td>01</td><td>Reversing</td><td>Yes</td><td>No</td></tr><tr><td>02</td><td>ON inverted</td><td>Yes</td><td>No</td></tr><tr><td>03</td><td>Reversing inverted</td><td>Yes</td><td>No</td></tr></table>	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		
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																						

3.2 List of parameters

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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	Motor model	
	Not relevant for motor type:	Induction motor, Permanent-magnet synchronous 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:	Display and numerical signal source for 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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	Motor model	
	Not relevant for motor type:	Induction motor, Permanent-magnet synchronous motor, Synchronous or reluctance motor with starting cage	
	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 of 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		

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, Permanent-magnet synchronous 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				
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		
	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	CleanPower mode	On	Off
	03	Vdc controller	On	Off	
Dependency:	See also: p0210				
r3402	Infeed internal state / INF status int				
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		
	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			

3.2 List of parameters

5:	Prechrg running
6:	Pulse enable missing
7:	Synchronization PLL running
8:	Voltage ramp-up active
9:	Operation
10:	Shutdown running
13:	Synchronization PLL when precharging
14:	Synchronization of PHASES running

r3405.1...3**Infeed status word / Inf ZSW**

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
Parameter group:	Control/status words, Mode signals / displays
Not relevant for motor type:	-
Dyn. index [0...n]:	-
Unit: -	Unit group: -
Type of signal interconnection:	Source binary/numeric

Calculated: -**Unit selection:** -**Scaling:** -**Description:**

Display and signal source for the status word of the infeed unit.

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**

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]:	-
Unit: -	Unit group: -
Min:	Max:
0	1
	Factory setting:
	1

Description:

Sets the mode to detect the line frequency.

Value:

- 0: Line supply frequency setting 50/60 Hz off
1: Line supply 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**

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:

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, p3614

Note

The internal settings of the closed-loop current controller are derived from this value and p3425[0].

For the inductance of the line reactor, the following applies: r3421 - r3424

r3422**Infeed DC link capacitance / INF C_DCL**

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:

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: 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**

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:

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.

3.2 List of parameters

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**

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:	-
Min:	1.00 [%]	Max:	1000.00 [%]
		Factory setting:	[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	
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	
	Parameter group:	Line supply PLL, Mode signals / displays	
	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	
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	
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:	Line supply PLL, Mode signals / displays	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	Calculated: -
	Unit: °	Unit group: -	Unit selection: -
Description:	Displays the PLL system deviation.		

3.2 List of parameters

r3461	Infeed PLL system deviation after filtering / INF PLL SysDev sm		
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:	Line supply PLL, Mode signals / displays	
	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		
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		
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:
	-180.0 [°]	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		
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).

3.2 List of parameters

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 ($r3452 \geq 4$) 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]

G220 Clean Power

Infeed phase current rms value smoothed / INF I_{ph} rms smth**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:

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:**

Display and numerical signal source for 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]

G220 Clean Power

Infeed current alpha/beta / INF I_{a/b}**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, 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]

G220 Clean Power

Infeed voltage alpha/beta / INF U a/b

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, 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 supply 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

G220 Clean Power

Infeed reactive current filter / INF I_react filt

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:

Line filter, Reactive current controller, 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 reactive current requirement as a result of 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.

3.2 List of parameters

p3472[0...4]	Infeed PLL line voltage smoothing time / INF PLL U_I t_{sm}		
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 supply voltage for the line supply PLL.		
Index:	[0] = Model line voltage smoothing time [1] = Measurement line supply voltage smoothing time [2] = Detection line supply undervoltage smoothing time [3] = Detection line supply overvoltage smoothing time [4] = Detection line supply voltage step smoothing time		
Dependency:	See also: r3400		
Note			
For the precontrol of the line supply voltage, a smoothed value of the line supply voltage is used in the closed-loop control.			
p3472[0]: Sets the PT1 time constant to smooth the line voltage for operation with filter voltage model.			
p3472[1]: Sets the PT1 time constant to smooth the line voltage for operation with filter voltage measurement.			
p3472[2]: Sets the smoothing time constant to slowly detect a line supply undervoltage (F06100).			
p3472[3]: Sets the smoothing time constant to quickly detect line supply overvoltages for phase failure (A06205).			
p3472[4]: Sets the smoothing time constant to quickly adapt the line supply precontrol for line supply voltage steps.			

p3480	Infeed modulation depth limit / INF mod_{depth} lim		
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		
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		
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:	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		
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, Shutdown functions	
	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		

3.2 List of parameters

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

G220 Clean Power

Infeed I-offset measurement monitoring time / INF I_offs 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:

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

G220 Clean Power

Infeed, line supply undervoltage delay time / INF U_line 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:

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 supply undervoltage condition (F06100).

After the line supply undervoltage is detected, the power unit is tripped (shut down) after this delay time has expired.

If, during this delay time, the line supply 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 supply voltage can be increased by parameterizing this delay value.

However, the following should be noted:

- The infeed power decreases proportionally (linearly) with the line supply voltage.

- when other components are connected, for low line supply 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		
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: V	Unit group: -	Unit selection: -
	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		
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			

3.2 List of parameters

p3521[0...3]	Infeed precontrol power scaling / INF prectrl P scal		
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		
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:	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		
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:	DC link voltage controller	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	Calculated: -
	Unit: Arms	Unit group: -	Unit selection: -
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		
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		
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		
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:
	20 [ms]	1000 [ms]	20 [ms]
Description:	Sets the ramp time for the DC link voltage (Vdc) when switching on and switching off.		

3.2 List of parameters

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 supply voltage).

r3602**Infeed control status / INF ctrl status**

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

Parameter group:

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**

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.

r3606	Infeed active current controller system deviation / INF I_act ctrl dev		
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:	Active current controller	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	Calculated: -
	Unit: Arms	Unit group: -	Unit selection: -
Description:	Displays the system deviation of the active current controller.		

r3608	Infeed reactive current controller system deviation / INF I_reactCtrlDev		
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:	Reactive current controller	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	Calculated: -
	Unit: Arms	Unit group: -	Unit selection: -
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		
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:	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).

3.2 List of parameters

p3615	Infeed current controller P gain / INF I_ctrl Kp		
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		
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		
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:	Active current controller	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	Calculated: -
	Unit: Vrms	Unit group: -	Unit selection: -
Description:	Displays the integral component of the active current controller.		

r3619	Infeed reactive current controller integral component / INF I_react_ctrlTn		
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:	Reactive current controller	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	Calculated: -
	Unit: Vrms	Unit group: -	Unit selection: -
Description:	Displays the integral action component of the reactive current controller.		
r3624[0...1]	Infeed harmonics controller order / INF harm_ctr order		
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	
	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 supply 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		
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.		

3.2 List of parameters

r3626[0...1]	Infeed harmonics control output / INF harm_ctrl outp		
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:	Harmonics controller	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	Calculated: -
	Unit: Vrms	Unit group: -	Unit selection: -
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		
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, Mode signals / displays	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	Calculated: -
	Unit: Vrms	Unit group: -	Unit selection: -
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		
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, Mode signals / displays	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	Calculated: -
	Unit: Vrms	Unit group: -	Unit selection: -
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		
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, 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:	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		
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:	Negative phase-sequence system controller	
	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 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		
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		

3.2 List of parameters

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

G220 Clean Power

Negative phase-sequence system controller configuration / Neg_sys ctr 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:**

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		
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:		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 and numerical signal source 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		
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:		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			

3.2 List of parameters

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

G220 Clean Power

Neg phase-seq system controller Vdc actual value filter damping / NegSysCtr FiltDamp**Data type:** FloatingPoint32**Visible in:** Extended display**Read permission:**

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]

G220 Clean Power

Negative phase-sequence system controller integral component / neg_sys_ctrl int**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:

Negative phase-sequence system controller

Not relevant for motor type:

-

Dyn. index [0...n]:

-

Calculated: -**Unit:** Vrms**Unit group:** -**Unit selection:** -**Description:**

Displays the integral components of the negative phase-sequence system controller.

Index:

[0] = Active

[1] = Reactive

p3647[0...2]

G220 Clean Power

Negative phase-sequence system controller phase asymmetry / Neg_seq ctrl asym**Data type:** FloatingPoint32**Visible in:** Extended display**Read permission:**

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.	

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: -	Unit selection: -
	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: -	Unit selection: -
	Min:	Max:	Factory setting:
	0.00 [rpm]	210000.00 [rpm]	30.00 [rpm]

3.2 List of parameters

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: -	Unit selection: -
	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: -	Unit selection: -
	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: -	Unit selection: -

	Min: 0.00 [rpm]	Max: 210000.00 [rpm]	Factory setting: 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: -	Unit selection: -
	Min: 0.00 [rpm]	Max: 210000.00 [rpm]	Factory setting: 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: -	Unit selection: -
	Min: 0.00 [rpm]	Max: 210000.00 [rpm]	Factory setting: 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

3.2 List of parameters

	Unit: rpm	Unit group: -	Unit selection: -
	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: -	Unit selection: -
	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: -	Unit selection: -
	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: -	Unit selection: -
	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: -	Unit selection: -
	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: -	Unit selection: -
	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		

3.2 List of parameters

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: -	Unit selection: -
	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: -	Unit selection: -
	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: -	Unit selection: -
	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: -	Unit selection: -
	Min: -1000000.0000 [Nm]	Max: 1000000.0000 [Nm]	Factory setting: 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: -	Unit selection: -
	Min: -1000000.0000 [Nm]	Max: 1000000.0000 [Nm]	Factory setting: 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: -	Unit selection: -
	Min: -1000000.0000 [Nm]	Max: 1000000.0000 [Nm]	Factory setting: 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		

3.2 List of parameters

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: -	Unit selection: -
	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	
	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]:	-	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 friction characteristic.		
Bit array:	Bit	Signal name	1 signal0 signal
	00	Friction characteristic OK	YesNo
	01	Record friction characteristic activated	YesNo
	02	Record friction characteristic completed	YesNo
	03	Record friction characteristic canceled	YesNo
	08	Friction characteristic positive direction	YesNo
	09	Friction torque model controlled status	UpperLower
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	
	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]:	-	Calculated: -
	Unit: Nm	Unit group: -	Unit selection: -
	Type of signal interconnection:	Source numeric	Scaling: p2003
Description:	Display and numerical signal source for 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	
Description:	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: $0.0 < p3820 < p3821 < \dots < p3829 \leq p0322$ or $p1082$, if $p0322 = 0$ For torque values, the following applies: $0 \leq p3830, p3831 \dots p3839 \leq r0333$		
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	
Description:	Can be changed in the operating state:	Operation	
	Parameter group:	Friction characteristic	
Value:	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: -

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	Min: 0.00 [ms]	Max: 10000.00 [ms]	Factory setting: 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: 0	Max: 4	Factory setting: 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: 0	Max: 9	Factory setting: 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
Unit: s	Unit group: -
Min:	Max:
0.000 [s]	999999.000 [s]
	Unit selection: -
	Factory setting:
	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

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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).
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

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
	Unit: -	Unit group: -
	Min:	Max:
	-	-
		Calculated: automatic
		Unit selection: -
		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

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
	Unit: -	Unit group: -
	Min:	Max:
	-	-
		Calculated: automatic
		Unit selection: -
		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

3.2 List of parameters

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:

Compound braking current is used to define the amount of DC current that is produced on stopping the motor during U/f control to further increase the DC braking function.

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: $p3856 < 100 \% \times (r0209 - r0331) / p0305 / 2$

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, especially when the Vdc_max control is simultaneously active (refer to 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	
	Write permission:	Edit device configuration or drive applications	
	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		
r3925[0...n].0...19	Commissioning status / Commission status		
	Data type: Unsigned32	Visible in: Extended display	
	Read permission:	Read drive data or acknowledge messages	
	Write permission:	Edit device configuration or drive applications	
	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

3.2 List of parameters

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 parameterization as Standard Drive Control	Yes	No
12	Automatic parameterization as Dynamic Drive Control	Yes	No
13	Automatic parameterization 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

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	
Write permission:	Edit device configuration or drive applications	
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 0A	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
Write permission: Edit device configuration or drive applications
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: Second motor code number.

Dependency: See also: p0301

3.2 List of parameters

r3962[0...1]	Actual value sensing time information / ActV time info		
	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:		
	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		
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	
	Write permission:	Edit device configuration or drive applications	
	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: -	Unit selection: -
	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] = Final value alpha		
	[3] = Final 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	
	Write permission:	Edit device configuration or drive applications	
	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	
	Write permission:	Edit device configuration or drive applications	
	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
Write permission: Edit device configuration or drive applications
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	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
Write permission: Edit device configuration or drive applications
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).

3.2 List of parameters

c4441[0...15]	IIOT signal sinks / IIOT signal sinks		
	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: 37[4][1] Parameter: 35[2] Parameter: 63[0][3] Parameter: 62[4] Parameter: 80[0][5] Parameter: 68[0][6] Parameter: 70[7] Parameter: 66[8] Parameter: 72[9] Parameter: 755[0][10] Parameter: 36[0][11] Parameter: 64[12] Parameter: 69[6] [13] Parameter: 78[0][14] Parameter: 1801[0][15] Fixed value: 0.00	
Description:	The signal sinks defined in the parameter are transferred to the IIOT module via DRIVE-CLiQ.		
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	ILOT status / ILOT status		
	Data type: Unsigned32	Visible in: Extended display	
	Read permission:	Read drive data or acknowledge messages	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	IloT	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	Calculated: -
	Unit: -	Unit group: -	Unit selection: -
Description:	The parameter indicates the status of the ILOT module.		
Bit array:	Bit	Signal name	1 signal 0 signal
	00	Cyclic communication to Edge active	Yes No
	16	SFTP access active	Yes No
	17	Valid key	Yes No

p4447.0				
I/IOT configuration / I/IOT 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:		I/IOT		
Not relevant for motor type:		-		
Dyn. index [0...n]:		-	Calculated: -	
Unit: -		Unit group: -	Unit selection: -	
Min:		Max:	Factory setting:	
-		-	0001 bin	
Description:	The parameter is used to configure the I/IOT module.			
Bit array:	Bit	Signal name	1 signal	0 signal
	00	Activate cyclic communication to Edge	Yes	No

p4448				
I/IOT sampling time cyclic signal transfer / I/IOT sampling 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:		Ready for operation		
Parameter group:		I/IOT		
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:	The sampling time of the I/IOT module is entered here, with which data is transferred to the I/IOT module via DRIVE-CLIQ. This is generally the current controller sampling time.			

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		

3.2 List of parameters

	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 effective 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 effective only when p0601 = 10.			
PTC thermistor: Tripping resistance = 1650 Ohm			
Information on using temperature sensors is provided in the product documentation.			

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
	Write permission:	Edit device configuration or drive applications
	Parameter group:	Diagnostics
	Not relevant for motor type:	-
	Dyn. index [0...n]:	-
	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:	Motor encoder	
	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:	Motor encoder	
	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.

3.2 List of parameters

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:	Motor encoder																	
	Not relevant for motor type:	-																	
	Dyn. index [0...n]:	-																	
	Unit: -	Unit group: -	Calculated: -																
	Min:	Max:	Unit selection: -																
	-	-	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 re-referenced. 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:	<table> <tr> <th>Bit</th><th>Signal name</th><th>1 signal</th><th>0 signal</th></tr> <tr> <td>00</td><td>For a pulse inhibit, temporarily set bit r0481.14</td><td>Yes</td><td>No</td></tr> <tr> <td>01</td><td>Bit r0481.14 = 0 for pulse inhibit at standstill with brake</td><td>Yes</td><td>No</td></tr> <tr> <td>02</td><td>For a pulse inhibit, do not set bit r0481.14</td><td>Yes</td><td>No</td></tr> </table>			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
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 referenced 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
Write permission:	Edit device configuration or drive applications
Parameter group:	Motor encoder
Not relevant for motor type:	-
Dyn. index [0...n]:	-
Unit: -	Unit group: -
	Calculated: -
	Unit selection: -

	Type of signal interconnection:	Source binary/numeric	Scaling: -	
Description:	Display and signal source for 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				
Maintenance work may have to be carried out on the encoder.				
Note				
For bit 00: For test purposes, the bit can be set using p4642 = 3. The bit is 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:	Motor encoder	
	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:	Setting the selection.			

3.2 List of parameters

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	
	Write permission:	Edit device configuration or drive applications	
	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:	Motor encoder	
	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

Write permission:

Edit device configuration or drive applications

Parameter group:

Motor encoder

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 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

Write permission:

Edit device configuration or drive applications

Parameter group:

Motor encoder

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 to reset 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.

3.2 List of parameters

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:	Motor encoder	
	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:	Motor encoder	
	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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	Motor encoder	
	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:	Motor encoder	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	EDS n defined by: p0140	Calculated: -
	Unit: -	Unit group: -	Unit selection: -
	Min: 0	Max: 1000	Factory setting: 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:	Motor encoder	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	EDS n defined by: p0140	Calculated: -
	Unit: -	Unit group: -	Unit selection: -
	Min: 0	Max: 1000	Factory setting: 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.		

3.2 List of parameters

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:**

Motor encoder

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:**

Motor encoder

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:	Motor encoder	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	EDS n defined by: p0140	Calculated: -
	Unit: -	Unit group: -	Unit selection: -
	Min: -100001	Max: 0	Factory setting: -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:	Motor encoder	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	EDS n defined by: p0140	Calculated: -
	Unit: -	Unit group: -	Unit selection: -
	Min: 0	Max: 20	Factory setting: 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:	Motor encoder	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	EDS n defined by: p0140	Calculated: -
	Unit: -	Unit group: -	Unit selection: -

3.2 List of parameters

	Min: 0	Max: 10	Factory setting: 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:	Motor encoder	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	Calculated: -
	Unit: -	Unit group: -	Unit selection: -
	Type of signal interconnection:	Source numeric	Scaling: -
	Min: -2147483648	Max: 2147483647	Factory setting: 0
Description:	Display and numerical signal source for the identified incorrect pulses in pulses. 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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	Motor encoder	
	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.		

r4705[0...1]				
Trace status / Trace status				
Data type: Integer16		Visible in: Extended display		
Read permission:		Read drive data or acknowledge messages		
Write permission:		Edit device configuration or drive applications		
Parameter group:		Trace		
Not relevant for motor type:		-		
Dyn. index [0...n]:		-	Calculated: -	
Unit: -		Unit group: -		Unit selection: -
Description:	Displays the actual status of the trace.			
Value:	0: Trace inactive			
	1: Trace is recording presamples			
	2: Trace is waiting for trigger event			
	3: Trace is recording			
	4: Recording (trace) ended			
	5: Trace inactive with permissible configuration data			
	6: Trace inactive with inadmissible configuration data			
Index:	[0] = Trace 0			
	[1] = Trace 1			

r4818				
Function generator output signal / FG outp_sig				
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:		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 Online / One Button Tuning configuration / Ot OBT 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 online tuning / One Button Tuning.			
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)			

3.2 List of parameters

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

Write permission:

Edit device configuration or drive applications

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:
	-340.28235E36 [s ²]	340.28235E36 [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:
	-340.28235E36 [kgm ²]	340.28235E36 [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		

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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:
	-340.28235E36 [s ²]	340.28235E36 [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:
	-340.28235E36 [kgm ²]	340.28235E36 [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: 10.00 [ms]	Max: 5000.00 [ms]	Factory setting: 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: 1.0000	Max: 2.0000	Factory setting: 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 $n = 0 \dots 1$ [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: 0 [W]	Max: 100000 [W]	Factory setting: 10000 [W]
Description:	Sets the constant power loss offset of the stator for motor temperature model 3. Example: Power loss of the brake.		

3.2 List of parameters

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

3.2 List of parameters

	Min: 0.000 [kW sec/K]	Max: 10000.000 [kW sec/K]	Factory setting: 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: 0.000 [kW sec/K]	Max: 10000.000 [kW sec/K]	Factory setting: 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: 0.000 [kW sec/K]	Max: 10000.000 [kW sec/K]	Factory setting: 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	Signal name	1 signal	0 signal
00	Activation of 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.

3.2 List of parameters

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 min ² /(1000 ² K)	Unit group: 48_3	Unit selection: p0100
	Min:	Max:	Factory setting:
	-10000.0000 [W min ² /(1000 ² K)]	10000.0000 [W min ² /(1000 ² K)]	0.0000 [W min ² /(1000 ² 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

3.2 List of parameters

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	
	Write permission:	Edit device configuration or drive applications	
	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 and numerical signal source 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 value indicates the active remaining time until 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 value indicates the calculated time that remains until a fault is output when using the model. For index [2]: The value indicates the time that remains until a fault is output after an alarm has occurred when using the model (p0605, r5387). For index [3]: The value indicates the calculated time that remains until a fault is output when measuring. For index [4]: The value indicates the time that remains until a fault is output after an alarm has occurred when measuring (p0606). For index [5]: The value indicates the calculated remaining time up to initiating the additional motor overload protection (p5375).		
Index:	[0] = Active time [1] = Calculated remaining time using the model [2] = Calculated remaining time after alarm using the model [3] = Calculated remaining time using measurement [4] = Calculated remaining time after alarm using measurement [5] = Calculated remaining time for addit. motor overload protection		
	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	
	Write permission:	Edit device configuration or drive applications	
	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		
Write permission:		Edit device configuration or drive applications		
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 and signal source 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			

3.2 List of parameters

Note

For bit 00, 04:

The motor temperature is measured using a temperature sensor (p0600, p0601). When the bit is set, a high temperature is identified, and a corresponding signal is additionally output.

For bit 01, 05:

The motor temperature is monitored based on a temperature model (p0612). When the bit is set, a high temperature is identified, and a corresponding signal is additionally output.

For bit 02:

The encoder temperature is measured using a temperature sensor. When the bit is set, a high temperature is identified, and a corresponding signal is additionally output.

For bit 03, 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 / 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: Induction motor, Synchronous or reluctance motor with starting cage

Dyn. index [0...n]: MDS n defined by: p0130

Calculated: -

Unit: °C

Unit group: -

Unit selection: -

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 / F 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:	Induction motor, Synchronous or reluctance motor with starting cage	
	Dyn. index [0...n]:	MDS n defined by: p0130	Calculated: -
	Unit: °C	Unit group: -	Unit selection: -
	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	
	Write permission:	Edit device configuration or drive applications	
	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	
	Write permission:	Edit device configuration or drive applications	
	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.		

3.2 List of parameters

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	
	Write permission:	Edit device configuration or drive applications	
	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).		

r5600	PROFenergy energy-saving mode ID / Pe mode ID		
	Data type: Integer16	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: -
Description:	Displays the PROFenergy mode ID of the effective energy-saving mode.		
Value:	0: POWER OFF 2: Energy-saving mode 240: Operation 255: Ready		

p5611.0...2		PROFlenergy 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]:	-		
		Unit: -	Unit group: -	Calculated: -	
		Min:	Max:	Unit selection: -	
		-	-	Factory setting: 0000 bin	
Description:		Sets the general properties for energy-saving.			
Bit array:		Bit	Signal name	1 signal	0 signal
		00	Inhibit PROFlenergy 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			
		PROFlenergy is a profile for energy management in production systems.			
		PROFIdrive state S3: ready			
		PROFIdrive state S4: operation			

r5613.0...1		PROFlenergy energy saving active/inactive / Pe save act/inact			
		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]:	-		
		Unit: -	Unit group: -	Calculated: -	
		Type of signal interconnection:	Source binary/numeric	Unit selection: -	
		Scaling: -			
Description:		State displays as to whether PROFlenergy energy saving is active or inactive.			
Bit array:		Bit	Signal name	1 signal	0 signal
		00	PROFlenergy active	Yes	No
		01	PROFlenergy inactive	Yes	No
		Note			
		Bit 0 and bit 1 are inverse of one another.			

p6450		Center potential controller mode / MP mod			
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]:	-		
		Unit: -	Unit group: -	Calculated: -	
		Unit selection: -			

3.2 List of parameters

	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 topside bias modulation		

p6451.0...1**Center potential controller configuration / CPC config**

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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]:	-
Unit: -	Unit group: -
Min:	Max:
-	-
	Calculated: -
	Unit selection: -
	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.

Bit array:

Bit	Signal name	1 signal	0 signal
00	DC link voltage asymmetry	Notch filter	PT1 filter
01	Uniformly distribute losses between the phases	Yes	No

r6452.0...6**Center potential controller status / CPC int status**

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
Parameter group:	Mean potential control
Not relevant for motor type:	-
Dyn. index [0...n]:	-
Unit: -	Unit group: -
Type of signal interconnection:	Source binary/numeric
	Calculated: -
	Unit selection: -
	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**

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**

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] 50.00 [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.

3.2 List of parameters

r6464[0...1] Center potential controller partial DC link voltage actual value / PartVdc actual val

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:

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 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

r6465[0...1] Center potential controller partial voltages VdcN, VdcP smoothed / CPC VdcN/P smooth

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:

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

r6466[0...3] Center potential controller system deviation / CPC sys_dev

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:

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

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Center potential controller active power smoothed / CPC P_act smooth**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:

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**

G220 Clean Power

Center potential controller FLBM/FTBM hysteresis / CPC FLBM/FTBM 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:

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]

G220 Clean Power

Center potential controller angle limit / CPC_angle_lim_l_0**Data type:** FloatingPoint32**Visible in:** Extended display**Read permission:**

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: -

3.2 List of parameters

	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		
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]:	-	
	Unit: %	Unit group: -	Calculated: -
	Min:	Max:	Unit selection: -
	0.00 [%]	110.00 [%]	Factory setting:
			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 topside bias modulation		
p6475	Center potential controller Kp current setpoint / CP Kp Iset		
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]:	-	
	Unit: A/V	Unit group: -	Calculated: -
	Min:	Max:	Unit selection: -
	-1000.00000 [A/V]	1000.00000 [A/V]	Factory setting:
			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		
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:	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]	IloT IP address actual / IloT IP addr act		
	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:		
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	Calculated: -
	Unit: -	Unit group: -	Unit selection: -
Description:	Displays the actual IP address for the IloT interface (X128) on the Control Unit.		
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	
	Write permission:	Edit device configuration or drive applications	
	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		

3.2 List of parameters

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	
	Write permission:	Edit device configuration or drive applications	
	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

3.2 List of parameters

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
Write permission:	Edit device configuration or drive applications
Parameter group:	Diagnostics
Not relevant for motor type:	-
Dyn. index [0...n]:	-
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	
	Write permission:	Edit device configuration or drive applications	
	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	
	Write permission:	Edit device configuration or drive applications	
	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	
	Write permission:	Edit device configuration or drive applications	
	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	
	Write permission:	Edit device configuration or drive applications	
	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		

3.2 List of parameters

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:	ACX_UNIT_COMPENSATION_CORR
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

3.2 List of parameters

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)

3.2 List of parameters

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

Write permission:

Edit device configuration or drive applications

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/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).

r8401[0...2]

Time / Time

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:

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

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: Source binary

Scaling: -

Description:

In manual operation with operating unit/web server: Display of the specified STW1 (control word 1).

Bit array:

Bit	Signal name	1 signal	0 signal
00	ON/OFF1	Yes	No
01	Operating condition / OFF2	Yes	No
02	Operating condition / OFF2	Yes	No
03	Reserved	Yes	No
04	Reserved	Yes	No
05	Reserved	Yes	No
06	Reserved	Yes	No
07	Acknowledge fault	Yes	No
08	Jog bit 0	Yes	No
09	Jog bit 1	Yes	No
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

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: -

3.2 List of parameters

		Type of signal interconnection:	Source numeric	Scaling:	p2000	
Description:	In manual operation with operating unit/web server: Display of the specified speed setpoint.					
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:	In the manual mode with operating unit/web server: Setting of the signal sources for the active STW1 (control word 1).					
Index:	[0] = ON/OFF1 [1] = Operating condition / OFF2 [2] = Operating condition / OFF3 [3] = Enable operation [4] = Enable ramp-function generator [5] = Continue ramp-function generator [6] = Enable speed setpoint [7] = Acknowledge fault [8] = Jog bit 0 [9] = Jog bit 1 [10] = Master control by PLC [11] = Direction reversal (setpoint) [12] = Enable speed controller [13] = Motorized potentiometer raise [14] = Motorized potentiometer lower [15] = CDS bit 0					
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				
	Factory interconnection:	Parameter: 8541				
Description:	In the manual mode with operating unit/web server: Signal for the active speed setpoint.					

c8558	Signal to switch over between manual/automatic operation / s_s manual/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.		

r8936[0...1]	PN cyclic connection state / PN cyc conn state		
	Data type: Integer16	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: -
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.	

3.2 List of parameters

r8937[0...5]	PN cyclic connection diagnostics / PN cycl conn diag		
	Data type: Unsigned32	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: -
	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 when the "PROFINET Device" protocol is selected.			
For index [5]:			
Bit 0 = 1: there is at least one RT connection.			
Bit 1 = 1: there is an IRT connection.			
r8961[0...3]	PN controller IP address / PN Ctrl IP Addr		
	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:	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:	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 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 setting the factory setting.

c8997[0...2]**PROFINET X150 enable / PN X150 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:

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

Description:

Signal to enable PROFINET interface X150 for applications.

Index:

- [0] = Secure S7 Protocol Startdrive
- [1] = Web server HTTPS
- [2] = S7 protocol PCS7

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 setting the factory setting.

r9280[0...n]**CDS name / CDS name**

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: -

Description:

Names of all CDS

3.2 List of parameters

r9281[0...n]	DDS name / DDS name		
	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]:	-	Calculated: -
	Unit: -	Unit group: -	Unit selection: -
Description:	Names of all DDS		

r9282	CDS name total length / CDS name length		
	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:	Command data sets CDS	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	Calculated: -
	Unit: -	Unit group: -	Unit selection: -
Description:	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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	Drive data sets DDS	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	Calculated: -
	Unit: -	Unit group: -	Unit selection: -
Description:	The length of the DDS 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:	Extended functions	
	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	
Description: Value:	Read permission:	Read drive data or acknowledge messages	
	Write permission:	Edit Safety Integrated application	
	Parameter group:	Extended functions	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	Calculated: -
	Unit: -	Unit group: -	Unit selection: -
	Displays the axis type (linear axis or rotary axis/spindle).		
	0: Linear axis		
	1: Rotary axis/spindle		
	Note		
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:	Extended functions	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	Calculated: -
	Unit: ms	Unit group: -	Unit selection: -
	Min: 1.00000 [ms]	Max: 8.00000 [ms]	Factory setting: 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.		
Dependency:	- 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.		
Note	See also: C01652		
	The monitoring clock cycle from p9500 must be an integer multiple of this parameter.		
When online safety commissioning has been completed, a change results in an automatic restart.	For motion monitoring functions with encoder, the cycle time of the actual value sensing must be an integer multiple of the current controller cycle.		
p9516.1	SI encoder configuration, safety functions / SI enc_config		
	Data type: Unsigned16	Visible in: Standard display	
Description: Value:	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: -

3.2 List of parameters

	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:	0.1000 [mm]	Max:	8388.0000 [mm]
Factory setting:	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:	1	Max:	2147000000
Factory setting:	1		

Description: Sets the denominator for the selected gearbox between SI encoder 1 (or motor in the case of encoderless monitoring functions) 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]:	-	
	Unit: -	Unit group: -	Calculated: -
	Min:	Max:	Unit selection: -
	1	2147000000	Factory setting:
			1
Description:	Sets the numerator for the selected gearbox between SI encoder 1 (or motor in the case of encoderless monitoring functions) 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]:	-	
	Unit: mm	Unit group: -	Calculated: -
	Min:	Max:	Unit selection: -
	0.000 [mm]	100.000 [mm]	Factory setting:
			1.000 [mm]
Description:	Sets the tolerance for the function "Safe Operating Stop" (SOS).		
Dependency:	See also: C01707		
	Note		
	SOS: Safe Operating Stop		
p9530	SI SOS standstill tolerance / SI standst_tol		
G220 (Safety rot), G220 Clean Power (Safety 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]:	-	
	Unit: °	Unit group: -	Calculated: -
	Min:	Max:	Unit selection: -
	0.000 [°]	100.000 [°]	Factory setting:
			1.000 [°]

3.2 List of parameters

Description: Sets the tolerance for the function "Safe Operating Stop" (SOS).

Dependency: See also: C01707

Note

SOS: Safe Operating Stop

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**

G220 (Safety rot),
G220 Clean Power
(Safety 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:

0.00 [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]:	-	
	Unit: %	Unit group: -	Calculated: -
	Min:	Max:	Unit selection: -
	0.000 [%]	100.000 [%]	Factory setting:
			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.		
	A value of 0 signifies that the setpoint speed limiting is not active.		
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 entered 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]:	-	
	Unit: -	Unit group: -	Calculated: -
	Min:	Max:	Unit selection: -
	0	1	Factory setting:
			0
Description:	Sets the direction of rotation reversal for the gearbox.		
	0: No direction of rotation reversal		
	1: Direction of rotation reversal		
Value:	0: No direction of rotation reversal		
	1: Direction of rotation reversal		
Index:	[0] = Gearbox 1		
	[1...7] = Reserved		
Dependency:	See also: p9521		

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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 SSM feedback signal to detect standstill.		
	Note		
	The filter time is only active if the function is enabled (p9604.12 = 1).		
	SSM: Safe Speed Monitor (safety-relevant feedback signal from the speed monitoring)		
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 SSM feedback signal to detect standstill.		
	When this limit value is undershot (take into account the parameterized hysteresis), signal "SSM feedback signal active" is set.		
	Note		
	SSM: Safe Speed Monitor (safety-relevant feedback signal from the speed monitoring)		
p9546 G220 (Safety rot), G220 Clean Power (Safety rot)	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: 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 SSM feedback signal to detect standstill.		
	When this limit value is undershot (take into account the parameterized hysteresis), signal "SSM feedback signal active" is set.		

Note

SSM: Safe Speed Monitor (safety-relevant feedback signal from the speed monitoring)

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 velocity hysteresis for the SSM feedback signal 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: $p9546 * 0.75 \geq p9547$

SSM: Safe Speed Monitor (safety-relevant feedback signal from the speed monitoring)

p9547G220 (Safety rot),
G220 Clean Power
(Safety rot)**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: rpm	Unit group: -	Unit selection: -
Min:	Max:	Factory setting:
0.0010 [rpm]	500.0000 [rpm]	30.0000 [rpm]

Description: Sets the velocity hysteresis for the SSM feedback signal 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: $p9546 * 0.75 \geq p9547$

SSM: Safe Speed Monitor (safety-relevant feedback signal from the speed monitoring)

3.2 List of parameters

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		
G220 (Safety rot), G220 Clean Power (Safety 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:
	0.00 [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.

p9555**SI transition time SCF to SS1 / SI t SCF->SS1**

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]	0.00 [ms]

Description: Sets the transition time from SCF (Safety Channel Failure) to SS1 (Safe Stop 1).

Dependency: See also: 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:	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]	3600000.00 [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:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	Calculated: -
Unit: mm/min	Unit group: -	Unit selection: -

3.2 List of parameters

	Min: 0.00 [mm/min]	Max: 6000.00 [mm/min]	Factory setting: 0.00 [mm/min]
Description:	Sets the shutdown velocity for activating STO (Safe Torque Off). Below this speed "standstill" is assumed, and for SS1 (Safe Stop 1) 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 SBR (Safe Brake Ramp).		
Dependency:	See also: p9556		
	Note The shutdown velocity has no effect for a value = 0.		

p9560	SI STO shutdown velocity / SI STO v_shutdown		
G220 (Safety rot), G220 Clean Power (Safety 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: 0.00 [rpm]	Max: 6000.00 [rpm]	Factory setting: 0.00 [rpm]
Description:	Sets the shutdown velocity for activating STO (Safe Torque Off). Below this speed "standstill" is assumed, and for SS1 (Safe Stop 1) 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 SBR (Safe Brake Ramp).		
Dependency:	See also: p9556		
	Note The shutdown velocity has no effect for a value = 0.		

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: 0	Max: 1	Factory setting: 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)		
Index:	[0] = Limit value SLS1 [1] = Limit value SLS2 [2] = Limit value SLS3 [3] = Limit value SLS4		

Dependency: See also: p9531

Note

SI: Safety Integrated
 SLS: Safely-Limited Speed
 SS1: Safe Stop 1
 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**

G220 (Safety rot),
 G220 Clean Power
 (Safety 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:
0.001 [°]	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

3.2 List of parameters

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, then for a maximum of this time, motion in the monitored direction is permissible. 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	1	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)		
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: 0.00 [mm/min]	Max: 1000.00 [mm/min]	Factory setting: 0.00 [mm/min]
Description:	Sets the velocity limit for the "SAM (Safe Acceleration Monitor)" function. The SAM limit value is limited downward to this value.		
p9568 G220 (Safety rot), G220 Clean Power (Safety rot)	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]:	-	
	Unit: rpm	Unit group: -	Calculated: -
	Min: 0.00 [rpm]	Max: 1000.00 [rpm]	Unit selection: -
			Factory setting: 0.00 [rpm]
Description:	Sets the velocity limit for the "SAM (Safe Acceleration Monitor)" function. The SAM limit value is limited downward to this value.		
p9581	SI SBR reference velocity / 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]:	-	
	Unit: mm/min	Unit group: -	Calculated: -
	Min: 600.0000 [mm/min]	Max: 1000000.0000 [mm/min]	Unit selection: -
			Factory setting: 1500.0000 [mm/min]
Description:	Sets the reference velocity for monitoring SBR (Safe Brake Ramp). The SBR brake ramp gradient depends on p9581 (reference velocity) and p9583 (reference time).		
Dependency:	See also: p9582, p9583		
p9581 G220 (Safety rot), G220 Clean Power (Safety rot)	SI SBR reference velocity / 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]:	-	
	Unit: rpm	Unit group: -	Calculated: -
	Min: 600.0000 [rpm]	Max: 1000000.0000 [rpm]	Unit selection: -
			Factory setting: 1500.0000 [rpm]
Description:	Sets the reference velocity for monitoring SBR (Safe Brake Ramp). The SBR brake ramp gradient depends on p9581 (reference velocity) and p9583 (reference time).		

3.2 List of parameters

Dependency: See also: p9582, p9583

p9582**SI SAM/SBR delay time / 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).
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 2 safety monitoring clock cycles (2 * p9500).

p9583**SI SBR reference time / 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).
The SBR brake ramp gradient depends on p9581 (reference velocity) and p9583 (reference time).

Dependency: See also: p9581, p9582

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: 0.00 [ms]	Max: 600000.00 [ms]	Factory setting: 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]:	-	
	Unit: -	Unit group: -	Calculated: -
	Min:	Max:	Unit selection: -
	-	-	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 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]:	-	
	Unit: -	Unit group: -	Calculated: -
	Min:	Max:	Unit selection: -
	-	-	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
	07	Enable SOS	Enable Inhibit
	08	Enable SLS	Enable Inhibit

3.2 List of parameters

09	Enable SLS dynamic	Enable	Inhibit
11	Enable SDI	Enable	Inhibit
12	Enable SSM	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:	Safety Integrated		
Not relevant for motor type:	-		
Dyn. index [0...n]:	-	Calculated:	-
Unit:	-	Unit group:	-
Min:	0	Max:	2
		Factory setting:	0
Description:	Sets the function specification of the SS1 (Safe Stop 1) safety function integrated in the drive.		
Value:	0: SS1-t time-controlled 1: SS1-a acceleration-monitored 2: SS1-r ramp-monitored		

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:	-
Min:	Max:	Factory setting:	
0	65534	0	
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.		

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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]:	-	
	Unit: ms	Unit group: -	Calculated: -
	Min: 0 [ms]	Max: 65535 [ms]	Unit selection: - Factory setting: 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]:	-	
	Unit: rpm	Unit group: -	Calculated: -
	Min: 0 [rpm]	Max: 300000000 [rpm]	Unit selection: - Factory setting: 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]:	-	
	Unit: °	Unit group: -	Calculated: -
	Min: 0.000 [°]	Max: 360.000 [°]	Unit selection: - Factory setting: 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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	Extended functions	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	Calculated: -
Description:	Unit: rpm	Unit group: -	Unit selection: -
	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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	Extended functions	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	Calculated: -
Description:	Unit: °	Unit group: -	Unit selection: -
	Displays the safe position accuracy for the rotary encoder (encoder side) that was detected.		
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:	-	
Description:	Dyn. index [0...n]:	-	Calculated: -
	Unit: -	Unit group: -	Unit selection: -
	Min:	Max:	Factory setting:
	0	4294967295	0
	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:	-	
Description:	Dyn. index [0...n]:	-	Calculated: -
	Unit: -	Unit group: -	Unit selection: -
	Min:	Max:	Factory setting:
	0	4294967295	0
	Module identifier of the Sensor Module.		

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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:	Basic functions	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	
	Unit: -	Unit group: -	
	Min:	Max:	Calculated: -
	0	1	Unit selection: -
			Factory setting:
			1
Description:	Sets the enable for the "Alarm filtering" function.		
Value:	0: Deactivate alarm filtering		
	1: Activate alarm filtering		
	Note		
	Parameter is active after a POWER ON		
r9708	SI diagnostics safe position / SI safe pos		
	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:	Extended functions	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	
	Unit: mm	Unit group: -	
	Type of signal interconnection:	Source numeric	
			Calculated: -
			Unit selection: -
			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		
G220 (Safety rot), G220 Clean Power (Safety rot)	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:	Extended functions	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	
	Unit: °	Unit group: -	
	Type of signal interconnection:	Source numeric	
			Calculated: -
			Unit selection: -
			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.		

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r9714[0...4]	SI diagnostics velocity / SI diag v		
	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:	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] = Actual SAM/SBR velocity limit [2] = Actual SLS velocity limit [3] = Reserved [4] = Load side filtered velocity actual value		
Dependency:	See also: r9732		
	NOTICE For index [1]: If several SAM and/or SBR monitoring functions are simultaneously active, then the lowest of the limit values is indicated here. 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...4]	SI diagnostics velocity / SI diag v		
G220 (Safety rot), G220 Clean Power (Safety rot)	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:	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] = Actual SAM/SBR velocity limit [2] = Actual SLS velocity limit [3] = Reserved [4] = Load side filtered velocity actual value		
Dependency:	See also: r9732		
	NOTICE For index [1]: If several SAM and/or SBR monitoring functions are simultaneously active, then the lowest of the limit values is indicated here. 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...15**SI control word / SI STW**

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: Extended 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:

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
03	Deselect SOS	Yes	No
04	Deselect SLS	Yes	No
07	Acknowledgment	Signal edge active	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

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...15**SI status signals / SI status signals**

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: Extended 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:

Display and signal source for the status signals for 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
03	SOS active	Yes	No
04	SLS active	Yes	No
07	Internal event	No	Yes
09	Active SLS limit value bit 0	Set	Not set
10	Active SLS limit value bit 1	Set	Not set
12	SDI positive active	Yes	No
13	SDI negative active	Yes	No

3.2 List of parameters

15 SSM (speed below limit value) 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

Write permission:

Edit device configuration or drive applications

Parameter group:

Extended functions

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

Write permission:

Edit device configuration or drive applications

Parameter group:

Extended functions

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:	Extended functions	
	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	
	Write permission:	Edit device configuration or drive applications	
	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 with encoder (otherwise "0").		
r9730	SI Safe maximum velocity / SI safe v_max		
G220 (Safety rot), G220 Clean Power (Safety rot)	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:	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 with encoder (otherwise "0").		

3.2 List of parameters

r9731	SI safe position accuracy / SI pos_accuracy		
	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:	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.		
	Note		
	The parameter is only of significance for enabled safety with encoder (otherwise "0").		
r9731	SI safe position accuracy / SI pos_accuracy		
G220 (Safety rot), G220 Clean Power (Safety rot)	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:	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.		
	Note		
	The parameter is only of significance for enabled safety 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	
	Write permission:	Edit device configuration or drive applications	
	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 accuracy 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]

G220 (Safety rot),
G220 Clean Power
(Safety rot)

SI velocity resolution / SI v_res

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:

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 accuracy 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

Write permission:

Edit device configuration or drive applications

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: p2000

3.2 List of parameters

Description:	Displays the necessary setpoint velocity limit as a result of the selected motion monitoring functions. Contrary to the parameterization of the SI 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: $r9733[0] = p9531[x] \times p9533$ (converted from the load side to the motor side) For SDI negative: $r9733[0] = 0$ For SLS: $r9733[1] = -p9531[x] \times p9533$ (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: $p9522 / (p9521 \times p9520)$ - 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 entered 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
Write permission:	Edit device configuration or drive applications
Parameter group:	Safety Integrated
Not relevant for motor type:	-
Dyn. index [0...n]:	-
Unit: -	Unit group: -
Type of signal interconnection: Source binary/numeric	Calculated: -
	Unit selection: -
	Scaling: -

Description: Display and signal source for status word S_ZSW1B of the Safety Information Channel.

Bit array:	Bit	Signal name	1 signal	0 signal
	00	STO selected or active	Yes	No
	01	SS1 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
	09	Select SLS bit0	Yes	No

10	Select SLS bit1	Yes	No
12	SDI positive selected	Yes	No
13	SDI negative selected	Yes	No
15	Safety message present	Yes	No

Note

SIC: Safety Information Channel

For bit 07:

An internal event is displayed if a stop function is active.

r9745[0...63] SI components / SI comp

Data type: Unsigned32	Visible in: Extended display
Read permission:	Read drive data or acknowledge messages
Write permission:	Edit device configuration or drive applications
Parameter group:	Extended functions
Not relevant for motor type:	-
Dyn. index [0...n]:	-
Unit: -	Calculated: -
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
Write permission:	Edit device configuration or drive applications
Parameter group:	Extended functions
Not relevant for motor type:	-
Dyn. index [0...n]:	-
Unit: -	Calculated: -
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

3.2 List of parameters

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.

For bits 20 ... 16:

Bits 20, 19, 18, 17, 16 = 0, 0, 0, 0, 0 --> PROFIdrive message class 0: not assigned

Bit 20, 19, 18, 17, 16 = 0, 0, 0, 0, 1 --> PROFIdrive message class 1: hardware fault/software error

Bits 20, 19, 18, 17, 16 = 0, 0, 0, 1, 0 --> PROFIdrive message class 2: line fault

Bits 20, 19, 18, 17, 16 = 0, 0, 0, 1, 1 --> PROFIdrive message class 3: supply voltage fault

Bits 20, 19, 18, 17, 16 = 0, 0, 1, 0, 0 --> PROFIdrive message class 4: DC link fault

Bits 20, 19, 18, 17, 16 = 0, 0, 1, 0, 1 --> PROFIdrive message class 5: power electronics faulted

Bits 20, 19, 18, 17, 16 = 0, 0, 1, 1, 0 --> PROFIdrive message class 6: overtemperature electronic components

Bits 20, 19, 18, 17, 16 = 0, 0, 1, 1, 1 --> PROFIdrive message class 7: ground fault/phase fault detected

Bits 20, 19, 18, 17, 16 = 0, 1, 0, 0, 0 --> PROFIdrive message class 8: motor overload

Bits 20, 19, 18, 17, 16 = 0, 1, 0, 0, 1 --> PROFIdrive message class 9: communication error to the higher-level control

Bits 20, 19, 18, 17, 16 = 0, 1, 0, 1, 0 --> PROFIdrive message class 10: safe monitoring channel has identified an error

Bits 20, 19, 18, 17, 16 = 0, 1, 0, 1, 1 --> PROFIdrive message class 11: incorrect position actual value/speed actual value or not available

Bits 20, 19, 18, 17, 16 = 0, 1, 1, 0, 0 --> PROFIdrive message class 12: internal (DRIVE-CLiQ) communication error

Bits 20, 19, 18, 17, 16 = 0, 1, 1, 0, 1 --> PROFIdrive message class 13: infeed unit faulted

Bits 20, 19, 18, 17, 16 = 0, 1, 1, 1, 0 --> PROFIdrive message class 14: braking controller/Braking Module faulted

Bits 20, 19, 18, 17, 16 = 0, 1, 1, 1, 1 --> PROFIdrive message class 15: line filter faulted

Bits 20, 19, 18, 17, 16 = 1, 0, 0, 0, 0 --> PROFIdrive message class 16: external measured value/signal state outside the permissible range

Bits 20, 19, 18, 17, 16 = 1, 0, 0, 0, 1 --> PROFIdrive message class 17: application/technology function faulted

Bits 20, 19, 18, 17, 16 = 1, 0, 0, 1, 0 --> PROFIdrive message class 18: error in the parameterization/configuration/commissioning sequence

Bits 20, 19, 18, 17, 16 = 1, 0, 0, 1, 1 --> PROFIdrive message class 19: general drive fault

Bits 20, 19, 18, 17, 16 = 0, 1, 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

Write permission:

Edit device configuration or drive applications

Parameter group:

Extended functions

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

Write permission:

Edit device configuration or drive applications

Parameter group:

Extended functions

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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	Extended functions	
	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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	Extended functions	
	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	
	Write permission:	Edit device configuration or drive applications	
	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 also displayed (5 bytes).

3.2 List of parameters

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	
	Write permission:	Edit device configuration or drive applications	
	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 also 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	
	Write permission:	Edit device configuration or drive applications	
	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	
	Write permission:	Edit device configuration or drive applications	
	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

Write permission:

Edit device configuration or drive applications

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
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 has been replaced. Retentively save (save all parameters, p0977 = 1)

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

Write permission:

Edit device configuration or drive applications

Parameter group:

Safety Integrated

Not relevant for motor type:

-

Dyn. index [0...n]:

-

Calculated: -

Unit: -

Unit group: -

Unit selection: -

3.2 List of parameters

Description:	Displays the checksum to track changes for Safety Integrated. These are additional checksums that are created to track changes (fingerprint for the "safety logbook" functionality) to safety parameters (that are relevant for checksums).
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	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Safety Integrated	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	Calculated: -
Unit: -	Unit group: -	Unit selection: -

Description:	Displays the time stamps for the checksums for tracking changes for Safety Integrated. The time stamps for the checksums for tracking changes (fingerprint for the "safety logbook" functionality) made to safety parameters are saved in parameters r9780[0] and r9780[1].
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

NOTICE

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	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Safety Integrated	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	Calculated: -
Unit: ms	Unit group: -	Unit selection: -

Description:	Displays the time stamps for the checksums for tracking changes for Safety Integrated. The time stamps for the checksums for tracking changes (fingerprint for the "safety logbook" functionality) made to safety parameters are saved in parameters r9780[0] and r9780[1].
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

NOTICE

The time comprises r9781 (days) and r9782 (milliseconds).

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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	Basic functions	
	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:	Basic functions	
	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 parameters to enable 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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	Extended functions	
	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:	Extended functions	
	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

3.2 List of parameters

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

Write permission:

Edit device configuration or drive applications

Parameter group:

Basic functions

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:

Basic functions

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

Write permission:

Edit device configuration or drive applications

Parameter group:

Extended functions

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:	Extended functions	
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	
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: -

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:		
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 parameters to enable 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	
Write permission:	Edit device configuration or drive applications	
Parameter group:	Extended functions	
Not relevant for motor type:	-	
Dyn. index [0...n]:	-	Calculated: -
Unit: -	Unit group: -	Unit selection: -

3.2 List of parameters

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:			
Not relevant for motor type:	-		
Dyn. index [0...n]:	-	Calculated:	-
Unit:	-	Unit group:	-
Min:	0000 hex	Max:	FFFF FFFF hex
		Factory setting:	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		
Write permission:	Edit device configuration or drive applications		
Parameter group:	Basic functions		
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:	Basic functions		
Not relevant for motor type:	-		
Dyn. index [0...n]:	-	Calculated:	-
Unit:	-	Unit group:	-
Unit selection:	-		
Min:	0000 hex	Max:	FFFF FFFF hex
		Factory setting:	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														
	Write permission:	Edit device configuration or drive applications														
	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:	<table><tr><th>Bit</th><th>Signal name</th><th>1 signal</th><th>0 signal</th></tr><tr><td>00</td><td>Alarm for connection error</td><td>Yes</td><td>No</td></tr><tr><td>08</td><td>Reset error counter</td><td>Yes</td><td>No</td></tr></table>	Bit	Signal name	1 signal	0 signal	00	Alarm for connection error	Yes	No	08	Reset error counter	Yes	No			
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 automatically disappears after 5 seconds. For bit 08: With p9937.8 = 1, the error counters are reset (r9936[0...199]). After the reset, p9937.8 is automatically set to 0.																

3.2 List of parameters

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 of 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: -

3.2 List of parameters

	Min: 0 [ms]	Max: 50 [ms]	Factory setting: 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]:	-	
	Unit: s	Unit group: -	Calculated: -
	Min: 10 [s]	Max: 3600 [s]	Unit selection: -
			Factory setting: 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]:	-	
	Unit: ms	Unit group: -	Calculated: -
	Min: 4 [ms]	Max: 150 [ms]	Unit selection: -
			Factory setting: 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 Read permission: Write permission: Parameter group: Not relevant for motor type: Dyn. index [0...n]: Unit: - Type of signal interconnection: Factory interconnection:	Visible in: Standard display Read drive data or acknowledge messages Edit Safety Integrated application Safety Integrated - - Unit group: - Sink binary Parameter: 10071.0 Calculated: - Unit selection: -
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 Read permission: Write permission: Parameter group: Not relevant for motor type: Dyn. index [0...n]: Unit: - Type of signal interconnection: Factory interconnection:	Visible in: Standard display Read drive data or acknowledge messages Edit Safety Integrated application Safety Integrated - - Unit group: - Sink binary Fixed value: 1 Calculated: - Unit selection: -
Description:	Signal for selecting function "SS1 (Safe Stop 1)".	
	Note F-DI: Failsafe Digital Input	
c10025	SI SOS input terminal / SI SOS F-DI	
	Data type: Unsigned8 Read permission: Write permission: Parameter group: Not relevant for motor type: Dyn. index [0...n]: Unit: - Type of signal interconnection: Factory interconnection:	Visible in: Standard display Read drive data or acknowledge messages Edit Safety Integrated application Safety Integrated - - Unit group: - Sink binary Fixed value: 1 Calculated: - Unit selection: -
Description:	Signal for selecting function "SOS (Safe Operating Stop)".	
	Note F-DI: Failsafe Digital Input	

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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 Read permission: Write permission: Parameter group: Not relevant for motor type: Dyn. index [0...n]: Unit: - Type of signal interconnection: Factory interconnection:	Visible in: Standard display Read drive data or acknowledge messages Edit Safety Integrated application Safety Integrated - - - Sink binary Fixed value: 1 Calculated: - Unit selection: -
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 Read permission: Write permission: Parameter group: Not relevant for motor type: Dyn. index [0...n]: Unit: - Type of signal interconnection: Factory interconnection:	Visible in: Standard display Read drive data or acknowledge messages Edit Safety Integrated application Safety Integrated - - - Sink binary Fixed value: 1 Calculated: - Unit selection: -
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 Read permission: Write permission: Parameter group: Not relevant for motor type: Dyn. index [0...n]: Unit: - Type of signal interconnection: Factory interconnection:	Visible in: Standard display Read drive data or acknowledge messages Edit Safety Integrated application Safety Integrated - - - Sink binary Fixed value: 1 Calculated: - Unit selection: -
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	

3.2 List of parameters

r10038	SI Safe State status / SI Safe State			
	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:		Safety Integrated	
	Not relevant for motor type:		-	
	Dyn. index [0...n]:		-	
	Unit: -		Unit group: -	Calculated: -
	Type of signal interconnection:		Source binary/numeric	Unit selection: -
Description:	Display and signal source for "Safe State".			
p10039.0...10	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]:		-	
	Unit: -		Unit group: -	Calculated: -
	Min:		Max:	Unit selection: -
	-		-	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
	07	SLS active	Selected	Not selected
	08	SDI pos active	Selected	Not selected
	09	SDI neg active	Selected	Not selected
	10	SSM (speed below limit value)	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]:		-	
	Unit: -		Unit group: -	Calculated: -
	Min:		Max:	Unit selection: -
	-		-	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		

3.2 List of parameters

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	
	Write permission:		Edit device configuration or drive applications	
	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 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:				
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 for 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).				
F-DI: Failsafe Digital Input				
NC contact:				
24V at the input -> logical "1"				
0V at the input -> logical "0"				

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	
	Write permission:		Edit device configuration or drive applications	
	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 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				

3.2 List of parameters

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	
	Write permission:		Edit device configuration or drive applications	
	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...15	SI PROFIsafe control word / SI S_STW2			
	Data type: Unsigned32		Visible in: Extended display	
	Read permission:		Read drive data or acknowledge messages	
	Write permission:		Edit device configuration or drive applications	
	Parameter group:		Extended 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 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
	04	Deselect SLS	Yes	No
	07	Acknowledgment	Signal edge active	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

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	
	Write permission:		Edit device configuration or drive applications	
	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: 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...15 SI status signals channel A / SI status chA

Data type: Unsigned32 **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]: -

Unit: -

Type of signal interconnection: Source binary/numeric

Calculated: -

Unit selection: -

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
	04	SLS active	Yes	No
	07	Internal event	No	Yes
	09	Active SLS limit value bit 0	Set	Not set
	10	Active SLS limit value bit 1	Set	Not set
	12	SDI positive active	Yes	No
	13	SDI negative active	Yes	No
	15	SSM (speed below limit value)	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
Write permission: Edit device configuration or drive applications

Parameter group: Basic functions

Not relevant for motor type: -

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

Unit: -

Unit group: -

Calculated: -

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

3.2 List of parameters

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:	Basic functions		
	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		
	Write permission:	Edit device configuration or drive applications		
	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		
	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:	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

Write permission:

Edit device configuration or drive applications

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

Write permission:

Edit device configuration or drive applications

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

3.2 List of parameters

r10175.0...15	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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	Extended functions	
	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
	04	Deselect SLS	Yes No
	07	Acknowledgment	Signal edge active 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

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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	Extended functions	
	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...15	SI status signals channel B / SI status chB		
	Data type: Unsigned32	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:	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
	04	SLS active	Yes No
	07	Internal event	No Yes
	09	Active SLS limit value bit 0	Set Not set
	10	Active SLS limit value bit 1	Set Not set
	12	SDI positive active	Yes No

13	SDI negative active	Yes	No
15	SSM (speed below limit value)	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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	Basic functions	
	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:	Basic functions	
	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		
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	
	Write permission:	Edit device configuration or drive applications	
	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

3.2 List of parameters

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
12	Stop response	High	Low
14	Response to parameterizing error	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

Write permission:

Edit device configuration or drive applications

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

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

Write permission:

Edit device configuration or drive applications

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		
Write permission:		Edit device configuration or drive applications		
Parameter group:		Safety Integrated		
Not relevant for motor type:		-		
Dyn. index [0...n]:		-		
Unit: -		Unit group: -		
Type of signal interconnection:		Source binary/numeric		
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		
Write permission:		Edit device configuration or drive applications		
Parameter group:		Safety Integrated		
Not relevant for motor type:		-		
Dyn. index [0...n]:		-		
Unit: -		Unit group: -		
Type of signal interconnection:		Source binary/numeric		
Description: Displays the reason why SDI (Safe Direction) positive was selected.				
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		
Write permission:		Edit device configuration or drive applications		
Parameter group:		Safety Integrated		
Not relevant for motor type:		-		
Dyn. index [0...n]:		-		
Unit: -		Unit group: -		
Type of signal interconnection:		Source binary/numeric		
Description: Displays the reason why SDI (Safe Direction) negative was selected.				
Bit array:				
	Bit	Signal name	1 signal	0 signal
	00	Selection via F-DI	High	Low
	01	Selection via PROFIsafe	High	Low

3.2 List of parameters

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		
Write permission:		Edit device configuration or drive applications		
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 why function SSM (Safe Speed Monitor) was selected.			
Bit array:	Bit	Signal name	1 signal	0 signal
	00	Selection via F-DI	High	Low
	01	Selection via PROFIsafe	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		
Write permission:		Edit device configuration or drive applications		
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
	12	Stop response	High	Low
	14	Response to parameterizing error	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		
Write permission:		Edit device configuration or drive applications		
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

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	
	Write permission:	Edit device configuration or drive applications	
	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	
	Write permission:	Edit device configuration or drive applications	
	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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	Safety Integrated	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	Calculated: -
	Unit: -	Unit group: -	Unit selection: -
Description:	Displays the reason why SDI (Safe Direction) positive was selected 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

3.2 List of parameters

r10461.0...1				
SI SDIneg select cause channel B / SI SDInegSelCauseB				
Data type: Unsigned32		Visible in: Extended display		
Read permission:		Read drive data or acknowledge messages		
Write permission:		Edit device configuration or drive applications		
Parameter group:		Safety Integrated		
Not relevant for motor type:		-		
Dyn. index [0...n]:		-	Calculated: -	
Unit: -		Unit group: -		Unit selection: -
Description: Displays the reason why SDI (Safe Direction) negative was selected 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		
Write permission:		Edit device configuration or drive applications		
Parameter group:		Safety Integrated		
Not relevant for motor type:		-		
Dyn. index [0...n]:		-	Calculated: -	
Unit: -		Unit group: -		Unit selection: -
Description: Displays the reason why SI function SSM (Safe Speed Monitor) was selected 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

r13002				
Infeed operating display / INF op_display				
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		
		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 booting/partial booting		
	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)
 COM: Commissioning

r13024**Infeed line frequency smoothed / Line freq smooth**

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
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 supply 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 supply voltage.
 Scaling is carried out via p2008 (not via p2000).

r13025**Infeed input voltage smoothed / U_inp smth**

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
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: Display and numerical signal source for the smoothed actual value of the voltage at the line connection terminals.

Dependency: See also: r13072

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 input voltage is available smoothed (r13025) and unsmoothed (r13072[1]).

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r13032	Infeed active power actual value smoothed / Active power ActV		
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:	Power unit	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	Calculated: -
	Unit: kW	Unit group: -	Unit selection: -
	Type of signal interconnection:	Source numeric	Scaling: r2004
Description:	Display and numerical signal source for the smoothed actual value of the active power drawn from the line supply.		
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 The active power is available smoothed (r13032 with 300 ms) and unsmoothed (r13082).		
r13036	Infeed power unit overload I2t / PU overload I2t		
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:	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, where 100% results in a trip.		
Dependency:	See also: F29005		
r13037[0...10]	Infeed power unit temperatures / PU temperatures		
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:	Power unit, Mode signals / displays	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	Calculated: -
	Unit: °C	Unit group: -	Unit selection: -
	Type of signal interconnection:	Source numeric	Scaling: p2006
Description:	Display and numerical signal source for temperatures in the infeed power unit.		

3.2 List of parameters

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.

r13037[0]: Maximum value of infeed temperatures.

In the case of a fault, the particular shutdown threshold depends on the power unit, and cannot be read out.

r13038

G220 Clean Power

Infeed power factor smoothed / Cos phi smooth

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:	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

G220 Clean Power

Infeed missing enable signals / Missing enable sig

Data type:	Unsigned32	Visible in:	Extended display
Read permission:	Read drive data or acknowledge messages		
Write permission:	Edit device configuration or drive applications		
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 and signal source 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				
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:		Line supply PLL, Mode signals / displays	
	Not relevant for motor type:		-	
	Dyn. index [0...n]:		-	
	Unit: Hz		Unit group: -	Calculated: -
	Type of signal interconnection:		Source numeric	Unit selection: -
				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			

3.2 List of parameters

Note

The line frequency is also available with an adjustable smoothing (r13024).

A positive sign of the frequency is obtained when the line supply 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 supply voltage.

Scaling is carried out via p2008 (not via p2000).

r13067[0...1]

G220 Clean Power

Infeed absolute current value permissible / Abs current perm**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 limits, Power unit, Mode signals / displays

Not relevant for motor type:

-

Dyn. index [0...n]:

-

Calculated: -**Unit:** Arms**Unit group:** -**Unit selection:** -**Description:**

Displays the actual permissible absolute line-side current.

Index:

[0] = Motoring mode

[1] = Generating mode

r13068

G220 Clean Power

Infeed absolute current actual value / I_{act} AbsV**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:

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 actual absolute current.

Dependency:

See also: r13027

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]

G220 Clean Power

Infeed phase current actual value / I_{phase} ActV**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:

Power unit, Mode signals / displays

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 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		
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:	DC link voltage controller, Power unit, 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:	Display and numerical signal source for the measured actual value of the DC link voltage.		

r13072[0...4]	Infeed input voltage / U_inp		
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:	Power unit, 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:	Display and numerical signal source for the actual input voltage of the power unit (infeed).		
Index:	[0] = Power unit input terminals		
	[1] = Line filter input terminals		
	[2] = Line voltage source (model)		
	[3] = Line voltage source smoothed (model)		
	[4] = Line voltage source strongly smoothed (model)		

3.2 List of parameters

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

G220 Clean Power

Infeed modulation depth / mod_depth**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:

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:**

Display and numerical signal source 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: $(r13074 \times r13070) / (\sqrt{2} \times 100 \%)$.

r13075

G220 Clean Power

Infeed reactive current setpoint / I_react_set**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:

Reactive 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:**

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		
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:	Reactive 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:	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		
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:	Active 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:	Display and numerical signal source for the active current setpoint (Iq_set).		

r13078	Infeed current actual value / I_active_act		
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:	Active 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:	Display and numerical signal source for 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		
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:	Power unit, Mode signals / displays	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	Calculated: -
	Unit: kW	Unit group: -	Unit selection: -
	Type of signal interconnection:	Source numeric	Scaling: r2004

3.2 List of parameters

Description: Displays the instantaneous active power.

Dependency: See also: r13032

Note

The active power is available smoothed (r13032) and unsmoothed (r13082).

r13088

G220 Clean Power

Infeed DC link voltage setpoint / Vdc setpoint**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:

DC link voltage controller, 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:**

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]

G220 Clean Power

Infeed phase voltage actual value / U_phase ActV**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:

Power unit, Mode signals / displays

Not relevant for motor type:

-

Dyn. index [0...n]:

-

Calculated: -**Unit:** V**Unit group:** -**Unit selection:** -**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 [1, 2, 3]:

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		
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:	Line supply PLL, 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.		
	Note		
	The transformation angle corresponds to the line supply angle.		

r13192.0...26	Infeed firmware properties 1 / PU FW properties 1		
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	
	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
	00	Support of optimized pulse patterns	Yes
	01	Support of asynchronous pulse frequencies for vector/infeed	Yes
	08	Support of the simulation mode	Yes
	09	Support of internal armature short-circuit	Yes
	10	Support of autonomous armature short-circuit	Yes
	16	Reserved	Yes
	18	Reserved	Yes
	19	Support of closed-loop current limiting control	Yes
	20	Support of component status	Yes
	22	Support of lower device supply voltage	Yes
	23	Support of test pulse operation	Yes
	26	Support of phase mode	Yes
Dependency:	See also: r13193		
	NOTICE		
	This information represents the characteristics/features of the line-side inverter firmware. They provide information about hardware attributes/properties.		

r13193.5...15	Infeed firmware properties 2 / PU FW properties 2		
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	
	Parameter group:	System identification	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	Calculated: -
	Unit: -	Unit group: -	Unit selection: -

3.2 List of parameters

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	Motor holding brake with variable brake voltage	Yes	No

Dependency: See also: r13192

r13200[0...n] Infeed power unit current code number / INF PU curr codeNo

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
	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

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: Code number of the infeed. 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

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
	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	DC/AC 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}		
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:	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}		
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:	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 supply voltage / INF PU U_{rated}		
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:	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 supply voltage of the power unit. r0208 = 400: 380 - 500 V +/-10 % r0208 = 690: 525 - 690 V +/-10 %		

3.2 List of parameters

r13209[0...1]	Infeed power unit maximum current / INF PU I_max		
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:	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		
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:	Mode signals / displays, Power unit	
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	Calculated: -
	Unit: °C	Unit group: -	Unit selection: -
	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]

G220 Clean Power

Infeed 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 infeed (r13209).

3.2 List of parameters

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

Dependency: See also: F30021

r13801 Infeed actual pulse frequency / Pulse freq act

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: 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: Display and numerical signal source for the actual infeed switching frequency.

r13802 Infeed modulator mode / Modulator mode

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
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...2] Infeed DC link voltage to calculate the modulation depth / VdcActValMod_depth

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

Note

For indices [1] and [2]:
Only for internal Siemens diagnostics.

p13810.0...11	Infeed modulator configuration / Modulator config		
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 2 = 1 and bit 11 = 1 are left. 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	Compensation of the partial DC link voltages in the power unit	Yes No
	01	DC link voltage compensation in the power unit	Yes No
	02	Activate pulse frequency wobulation	Yes No
	11	Current controller dynamics higher	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 wobulation 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 wobulation 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 wobulation only becomes effective after saving the parameters and a 24V power on.

3.2 List of parameters

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.

Bit 00 = 0:

No compensation of the partial DC link voltages in the power unit of the infeed.

Bit 00 = 1:

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:

DC link voltage compensation in the current controller.

For bit 01 = 1:

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...22

G220 Clean Power

Gating unit status words 1 and 2 / Gating unit ZSW1

Data type: Unsigned32

Visible in: Extended display

Read permission:

Read drive data or acknowledge messages

Write permission:

Edit device configuration or drive applications

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 status word 1 of the power unit.

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	Wobulation 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

r13839.0...26	Gating unit control words 1 and 2 / Gating unit STW1/2			
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		
	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 control word 2 of the power 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	Asynchronous pulse frequency	Yes	No
	17	Activate wobulation	Active	Not active
	18	Reset wobulation	Active	Not active
	19	Activate modulator	Active	Not active
	20	Activate event samples measuring configuration	Active	Not active
	21	Activate compound brake	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	Not active

c13840[0...n]	Infeed ON/OFF (OFF1) / ON / OFF (OFF1)			
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, Shutdown functions		
	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		

3.2 List of parameters

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 0/1 signal edge: ON (precharging contactor/line contactor close, 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

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, Shutdown functions

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

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, Shutdown functions

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 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 effective.

c13852[0...n] Enable infeed operation/inhibit infeed operation / Enable operation

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, Shutdown functions
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 / Master ctrl by PLC

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, Shutdown functions
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.

3.2 List of parameters

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

G220 Clean Power

Infeed drive coupling status word/control word / CoupleZSW/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:

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:**

Display and signal source for the status word and control word 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

G220 Clean Power

Voltage setpoint filter modulator type / Uset_filt mod 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:

Digital filters, Power unit

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		
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	
	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 numerical signal source for the control word of the sequence control for the infeed.		
Bit array:	Bit	Signal name	1 signal 0 signal
	00	ON/OFF1	Yes No
	01	Operating condition / OFF2	Yes No
	03	Enable operation	Yes No
	10	Master control by PLC	Yes No
	Note		
	OC: Operating condition		
r13899.0...12	Infeed status word sequence control / ZSW seq_ctrl INF		
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	
	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 request	Yes No
	11	Precharging complete	Yes No
	12	Line contactor closed	Yes No
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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:		
	Not relevant for motor type:	-	
	Dyn. index [0...n]:	-	Calculated: automatic
	Unit: rpm	Unit group: -	Unit selection: -

3.2 List of parameters

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

Write permission:

Edit device configuration or drive applications

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

Write permission:

Edit device configuration or drive applications

Parameter group:

Extended functions

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

Write permission:

Edit device configuration or drive applications

Parameter group:

Extended functions

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

Write permission:

Edit device configuration or drive applications

Parameter group:

Extended functions

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,

3.2 List of parameters

r60048[0...63]	SI message time received in milliseconds / SI t_msg rcv ms		
	Data type: Unsigned32	Visible in: Extended display	
	Read permission:	Read drive data or acknowledge messages	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	Extended functions	
	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	
	Write permission:	Edit device configuration or drive applications	
	Parameter group:	Extended functions	
	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:	Extended functions	
	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	
	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: -
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

Write permission:

Edit device configuration or drive applications

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 Name of Station / PN name of station

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:

Configuration

Not relevant for motor type:

-

Dyn. index [0...n]:

-

Calculated: -

Unit: -

Unit group: -

Unit selection: -

Description:

Displays PROFINET Name of Station.

r61001[0...3] PROFINET IP of Station / PN IP of station

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:

Configuration

Not relevant for motor type:

-

Dyn. index [0...n]:

-

Calculated: -

Unit: -

Unit group: -

Unit selection: -

Description:

Displays PROFINET IP of Station.

3.2 List of parameters

Function diagrams

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 712)

1021 – Explanation of symbols (2) (Page 713)

1022 – Explanation of symbols (3) (Page 714)

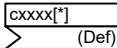
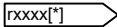
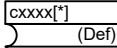
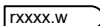
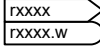
Parameters		Signal interconnection		Source			
Symbol	Meaning	Symbol	Meaning	Symbol	Meaning		
Name [Unit] rxxx[*] ↑	Monitoring parameter with unit [Unit] and index, index range or data set [*]	Name cxxx[*]  (Def)	Numerical sink with index, index range or data set [*] and factory interconnection (Def) to a parameter or a fixed value	Name [Unit] rxxx[*] 	Source numeric with unit [Unit] and index, index range or data set [*]		
Name from ... to [Unit] pxxx[*] (Def) ↓	Setting parameter with min/max value and unit [Unit], factory setting (Def) and index, index range or data set [*]	Name cxxx[*]  (Def)	Binary sink with index, index range or data set [*] and factory interconnection (Def) to a parameter or a fixed value	Name rxxx.w 	Source binary with bit or bit range w		
Name [Unit] pxxx[*] (Def) ↓	Setting parameter with unit [Unit], factory setting (Def) and index, index range or data set [*]			Name rxxx rxxx.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				Data sets			
Symbol	Meaning	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.	pxxx[C] →	Parameter belongs to the Command Data Set (CDS).				
txxx = txxx[y..z] txxx[y] txxx[DS] txxx[*].v..w txxx[*].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	pxxx[D] →	Parameter belongs to the Drive Data Set (DDS).				
		pxxx[E] →	Parameter belongs to the Encoder Data Set (EDS).				
		pxxx[M] →	Parameter belongs to the Motor Data Set (MDS).				
		pxxx[P] →	Parameter belongs to the Power unit Data Set (PDS).				
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.						
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 AG	
Explanation of the symbols (part 1)						V6.02.00	
						- 1020 -	

Figure 4-1 1020 – Explanation of symbols (Part 1)

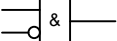
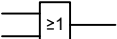
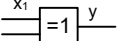
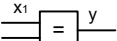
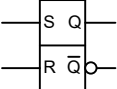
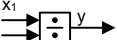
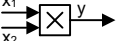
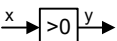
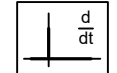
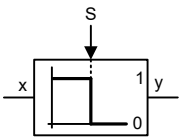
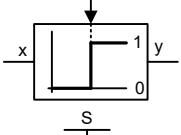
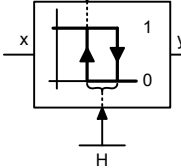
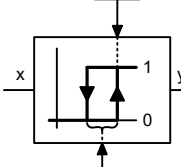
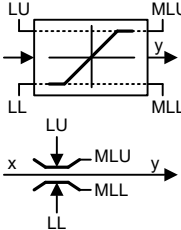
Pre-assigned signal interconnections		Symbols for logic functions			Symbols for computational and closed-loop control functions		
General Name from ... to [Unit] pxxxx[*] (Def)  Adjustable parameter of a preassigned, numerical source with minimum/maximum value, unit, index or data set [*] and factory setting (def) Fixed speed values Fixed speed setpoint 1 -210000.000 ... 210000.000 [rpm] p1001 [D] (0.000) ... Fixed speed setpoint 15 -210000.000 ... 210000.000 [rpm] p1015 [D] (0.000)		Symbols for logic functions NOT element Logical inversion (negation)  AND element with logical inversion of an input  OR element  XOR element $y = 1$ when $x_1 \neq x_2$ is.  Comparator $y = 1$ when $x_1 = x_2$ is.  R/S flip-flop S = setting input R = reset input Q = non-inverted output Q̄ = inverted output  Symbols for computational and closed-loop control functions Sign reversal $y = -x$  Absolute value generator $y = x$  Divider $y = \frac{x_1}{x_2}$  Multiplier $y = x_1 \cdot x_2$  Comparator greater than 0 $y = 1$, if the analog signal $x > 0$, i.e. is positive.  Differentiator $y = \frac{dx}{dt}$ 			Threshold value switch 1/0 Outputs at y a logical "1" if $x < S$.  Threshold value switch 0/1 Outputs at y a logical "1" if $x > S$.  Threshold value 1/0 with hysteresis Outputs a logical "1" at y if $x < S$. If $x \geq S + H$ then y returns to 0.  Threshold value 0/1 with hysteresis Outputs a logical "1" at y if $x > S$. If $x \leq S - H$ then y returns to 0.  Limiter x is limited to the upper limit LU and the lower limit LL and output at y. The digital signals MLU and MLL have the value "1", if the upper or lower limit is active.  Sample & Hold element Sample and hold element. $y = x$ if SET = 1 (not retentively saved at POWER OFF) 		
1	2	3	4	5	6	7	8
Explanations on the function diagrams						© Siemens AG	- 1021 -
Explanation of the symbols (part 2)						V6.02.00	

Figure 4-2 1021 – Explanation of symbols (Part 2)

4.1 Explanations about the function diagrams

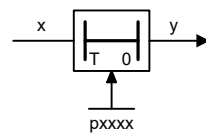
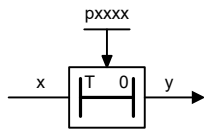
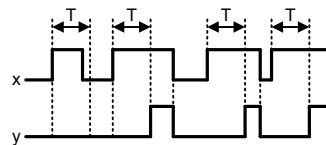
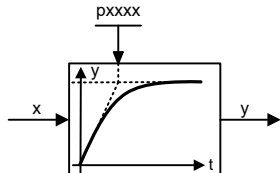
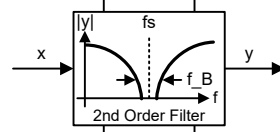
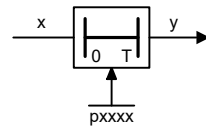
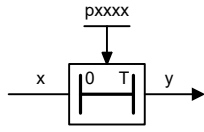
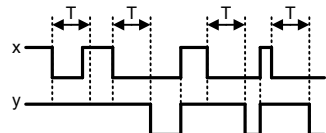
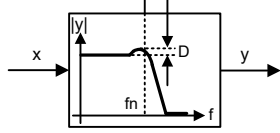
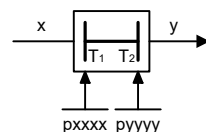
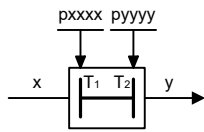
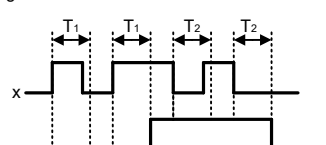
Switch-on delay  The digital signal x must have the value "1" without any interruption during the time T before output y changes to "1". 			PT1 element  Delay element, first order. pxxxx = time constant			2nd-order filter (bandstop/general filter)  Natural frequency, numerator fn_n pzzzz Damping, numerator D_n pwwwww Natural frequency, denominator fn_d pxxxx Damping, denominator D_d pyyyy <u>Used as bandstop filter</u> - center frequency fs: fn_n = fs fn_d = fs - bandwidth f_B: D_n = 0 D_d = $\frac{f\_B}{2 \cdot fs}$ <u>Transfer function when used as general filter</u> $H(s) = \frac{\left(\frac{s}{2\pi fn\_n}\right)^2 + \frac{2 \cdot D\_n}{2\pi fn\_n} \cdot s + 1}{\left(\frac{s}{2\pi fn\_d}\right)^2 + \frac{2 \cdot D\_d}{2\pi fn\_d} \cdot s + 1}$		
Switch-off delay  The digital signal x must have the value "0" without interruption during the time T before output y changes to "0". 			PT2 low pass  Natural frequency, denominator fn_d pxxxx Damping, denominator D_d pyyyy					
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. 			Transfer function $H(s) = \frac{1}{\left(\frac{s}{2\pi fn\_d}\right)^2 + \frac{2 \cdot D\_d}{2\pi fn\_d} \cdot s + 1}$					
1	2	3	4	5	6			
Explanations on the function diagrams						© Siemens AG		- 1022 -
Explanation of the symbols (part 3)						V6.02.00		

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 716)
- 2221 – Digital inputs isolated (DI 0 ... DI 5, DI 21 ... DI 22) (Page 717)
- 2242 – Digital outputs (DO 0 ... DO 2) (Page 718)
- 2251 – Analog inputs 0 ... 1 (AI 0 ... AI 1) (Page 719)
- 2256 – Analog inputs as digital inputs (DI 11 ... DI 12) (Page 720)
- 2261 – Analog outputs 0 ... 1 (AO 0 ... AO 1) (Page 721)
- 2272 – 2-wire control (Page 722)
- 2273 – 3-wire control (Page 723)

4.2 Input/output terminals

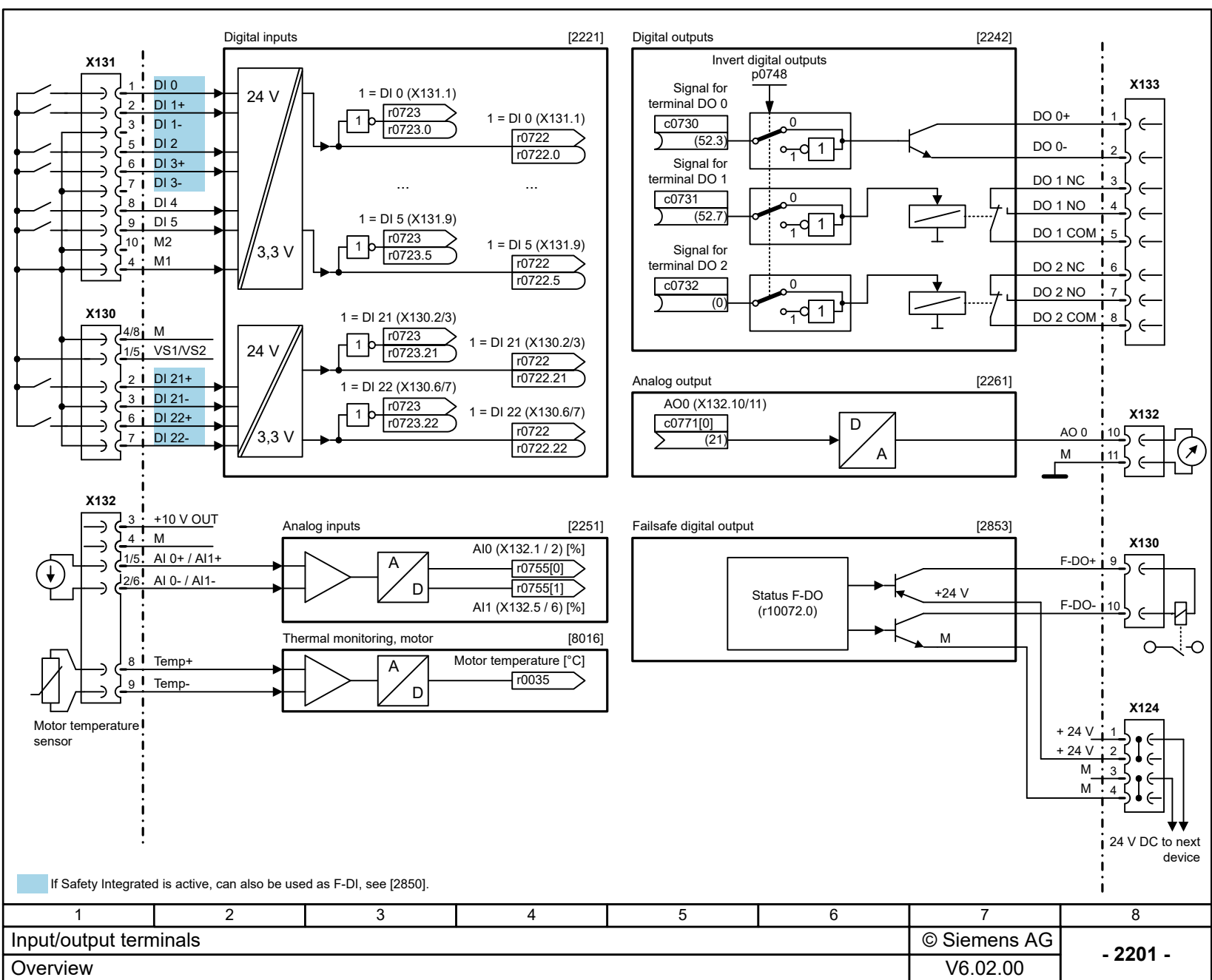
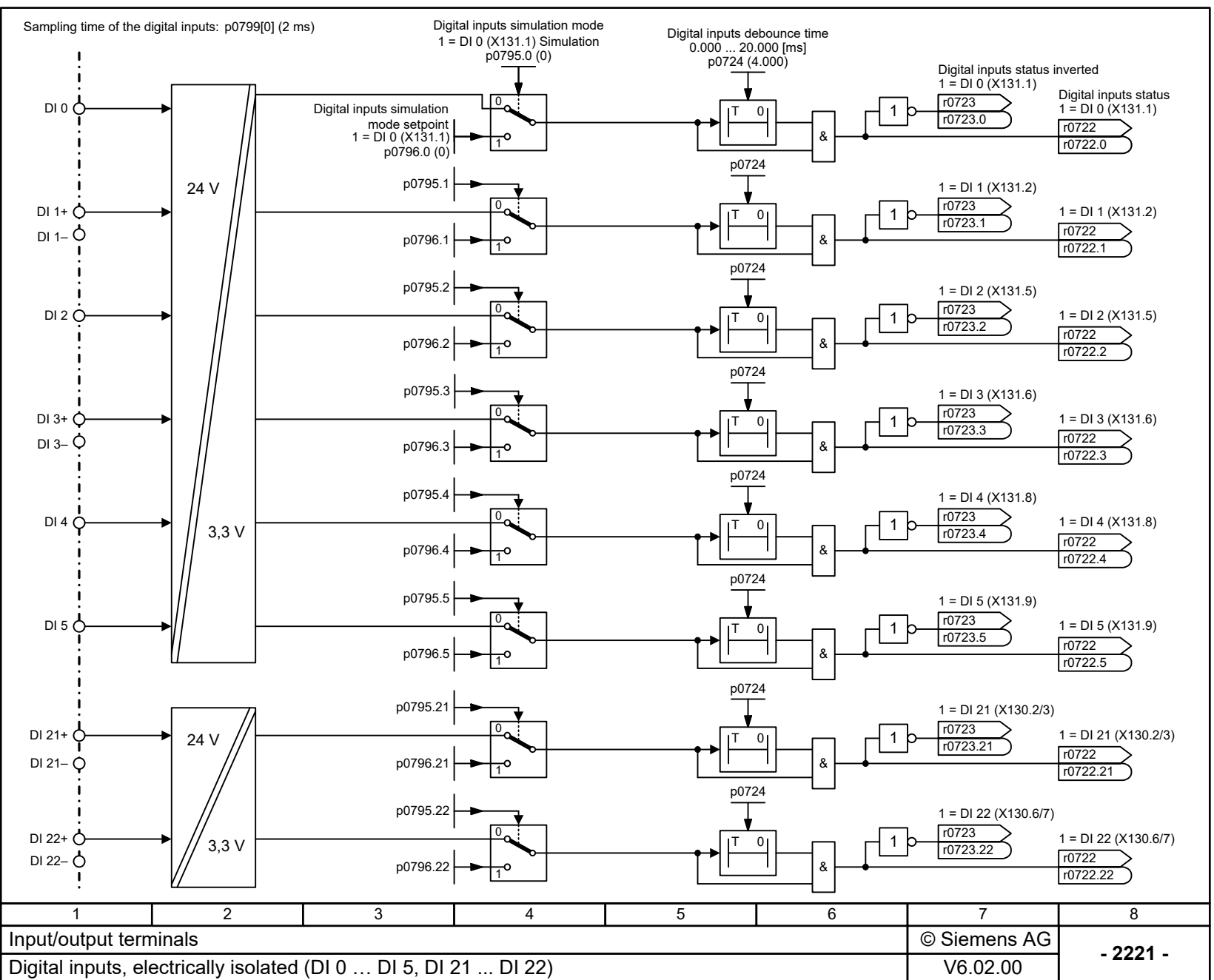


Figure 4-4 2201 – Connection overview



4.2 Input/output terminals

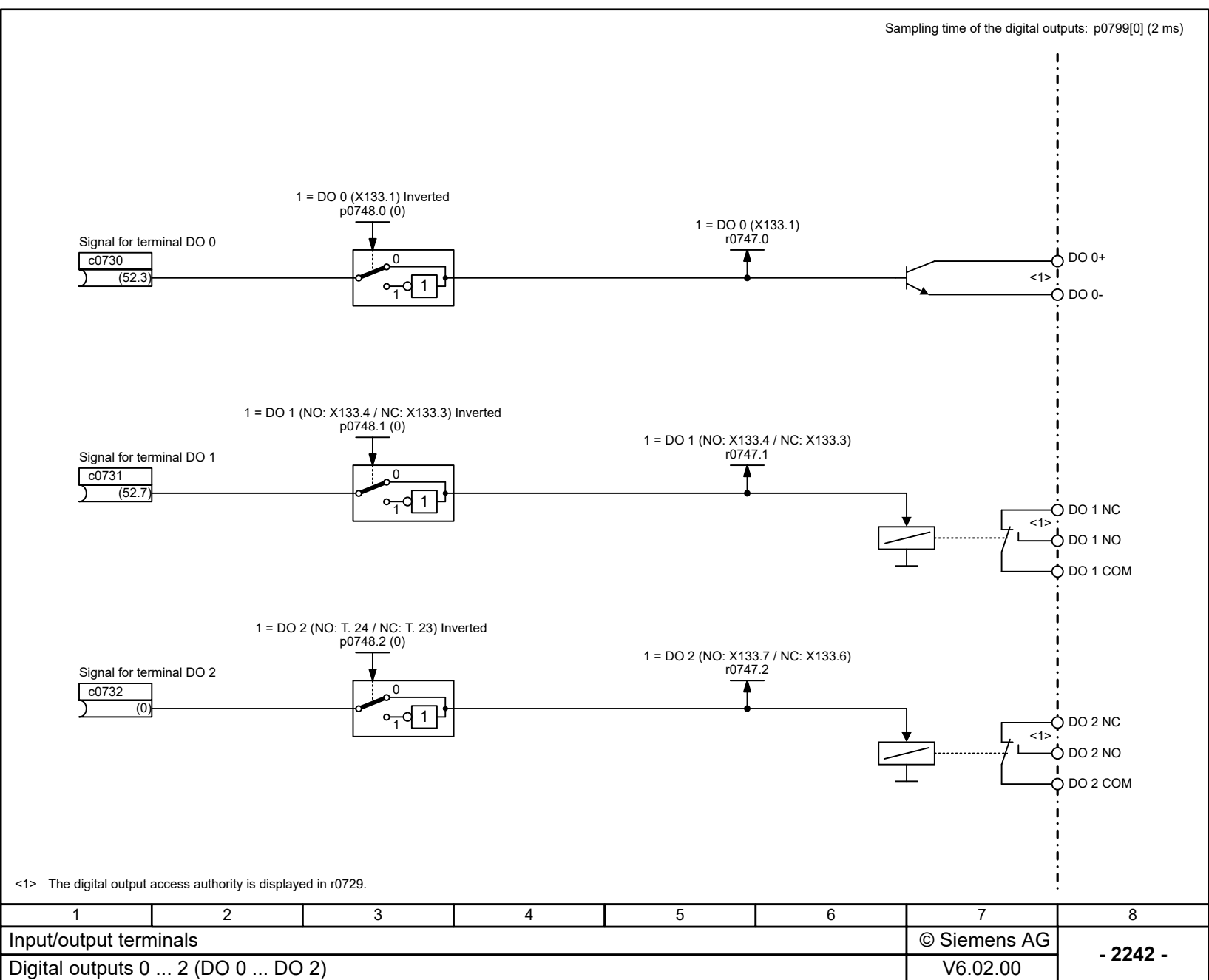
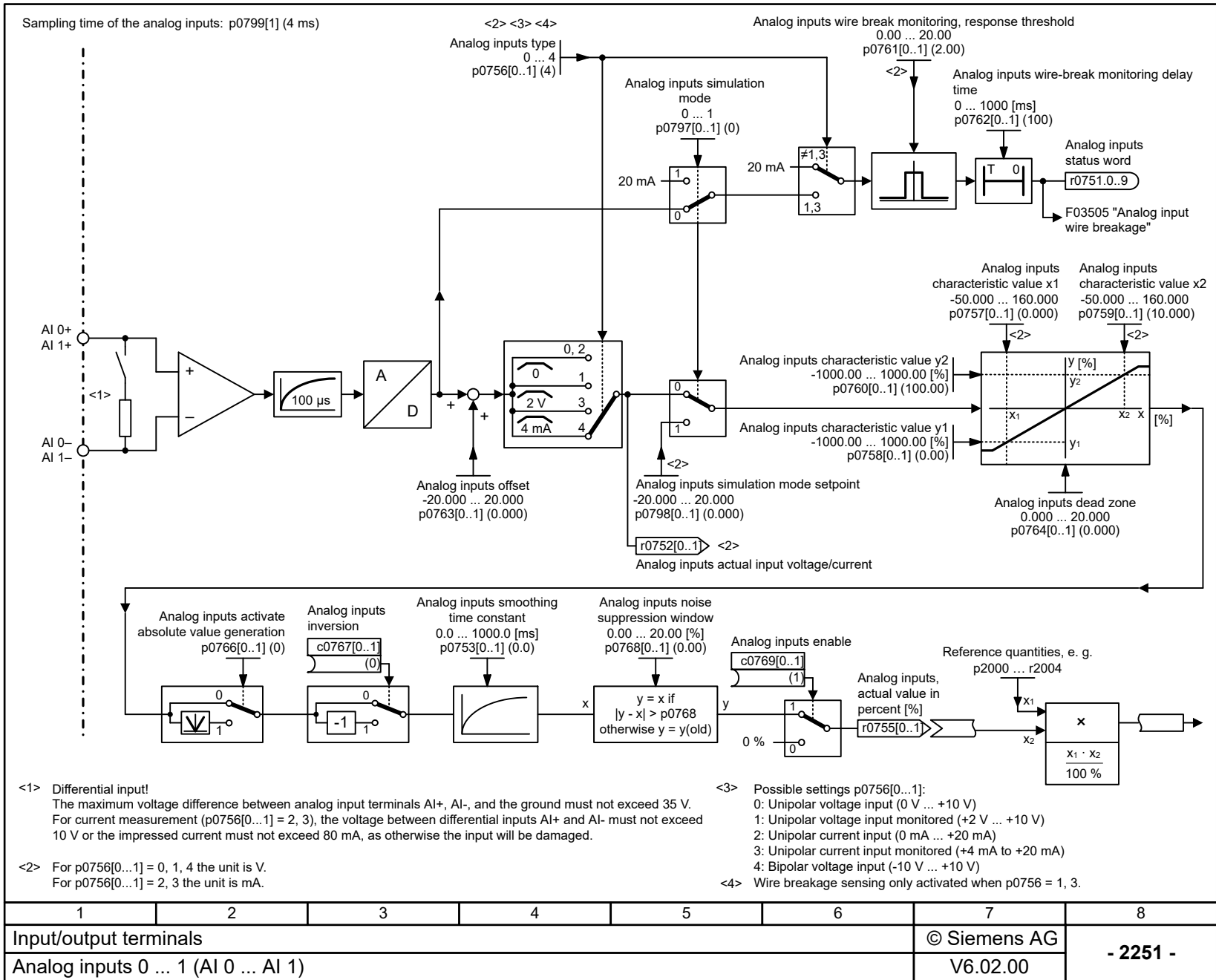


Figure 4-6 2242 - Digital outputs (DO0 ... DO2)

Figure 4-7 2251 - Analog inputs 0 ... 1 (AI 0 ... AI 1)



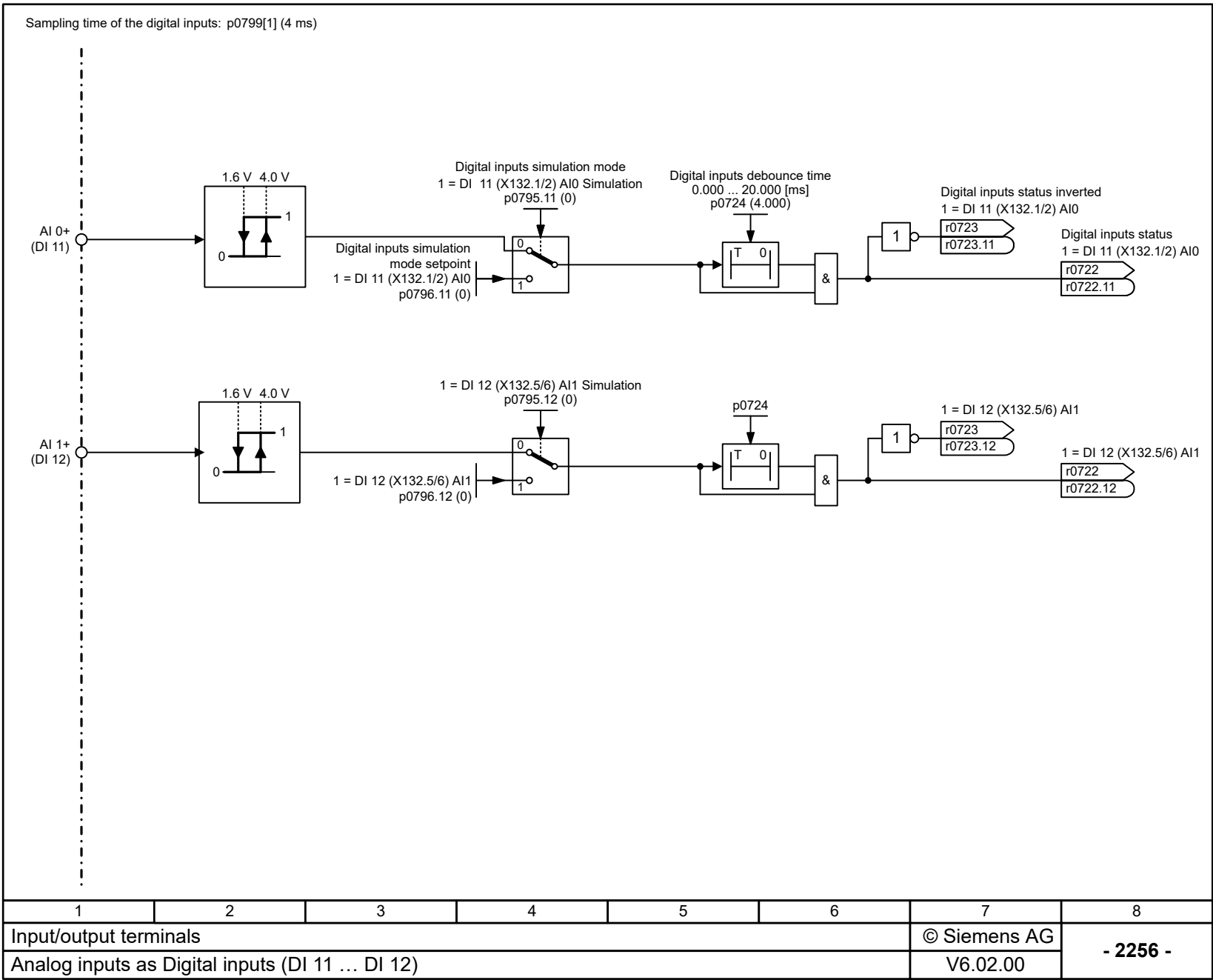
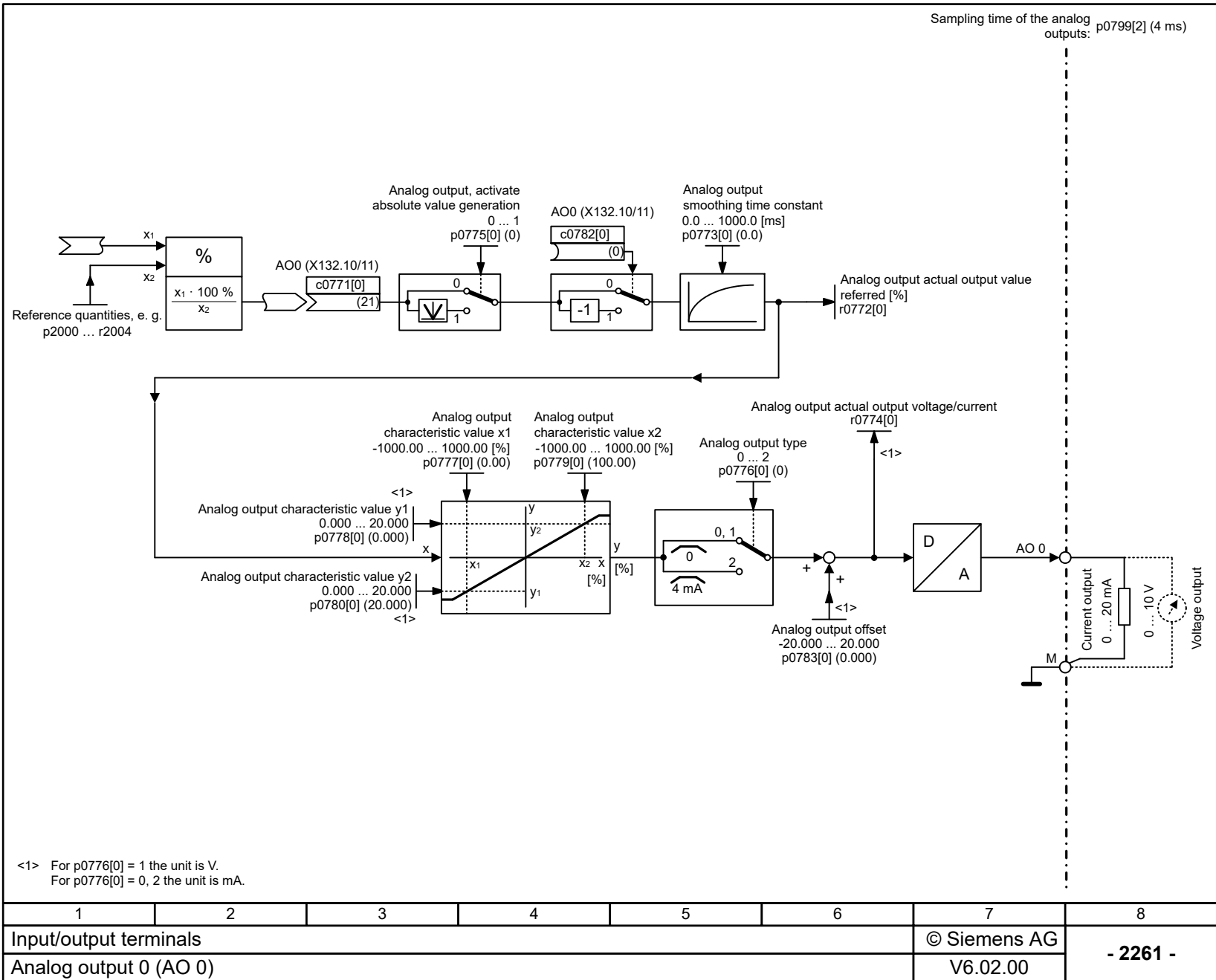


Figure 4-8 2256 - Analog inputs as digital inputs (DI 11 ... DI 12)



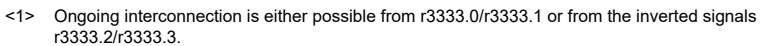


Figure 4-10 2272 - 2-wire control

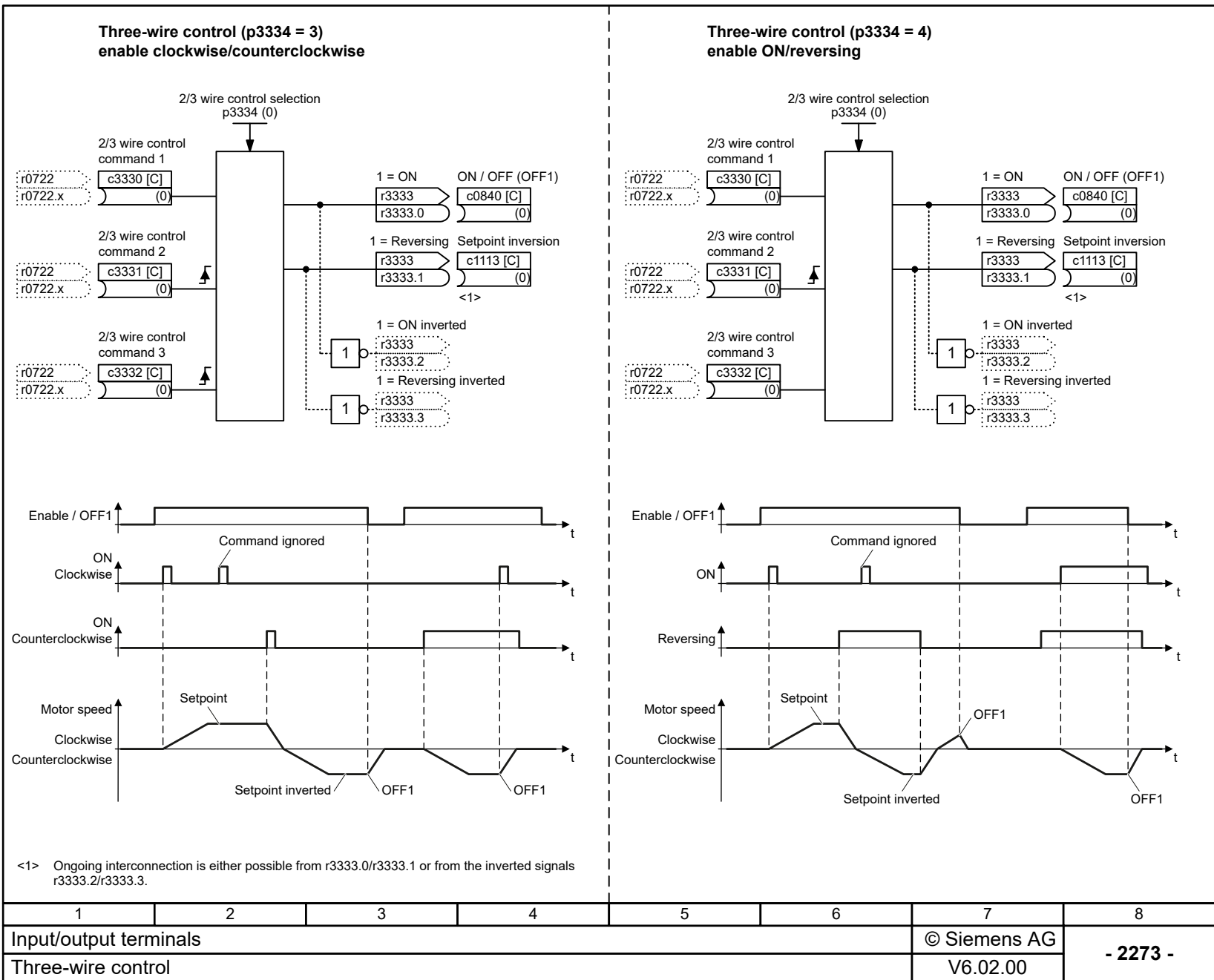


Figure 4-11 2273 - 3-wire control

4.3 PROFlenergy

Overview

The following function diagrams describe the PROFlenergy function.

Function diagrams

2381 – Control commands and interrogation commands (Page 725)

2382 – States (Page 726)

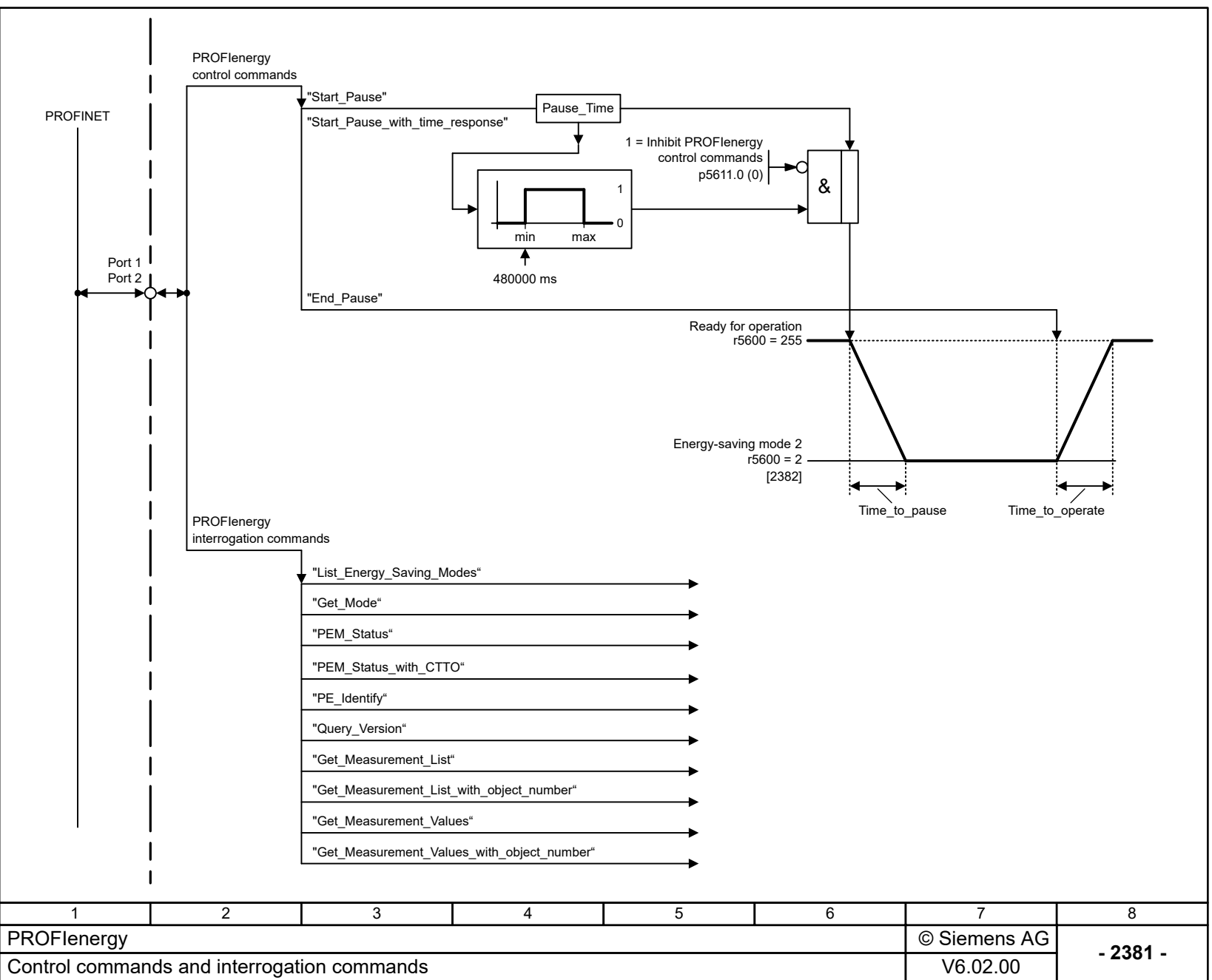
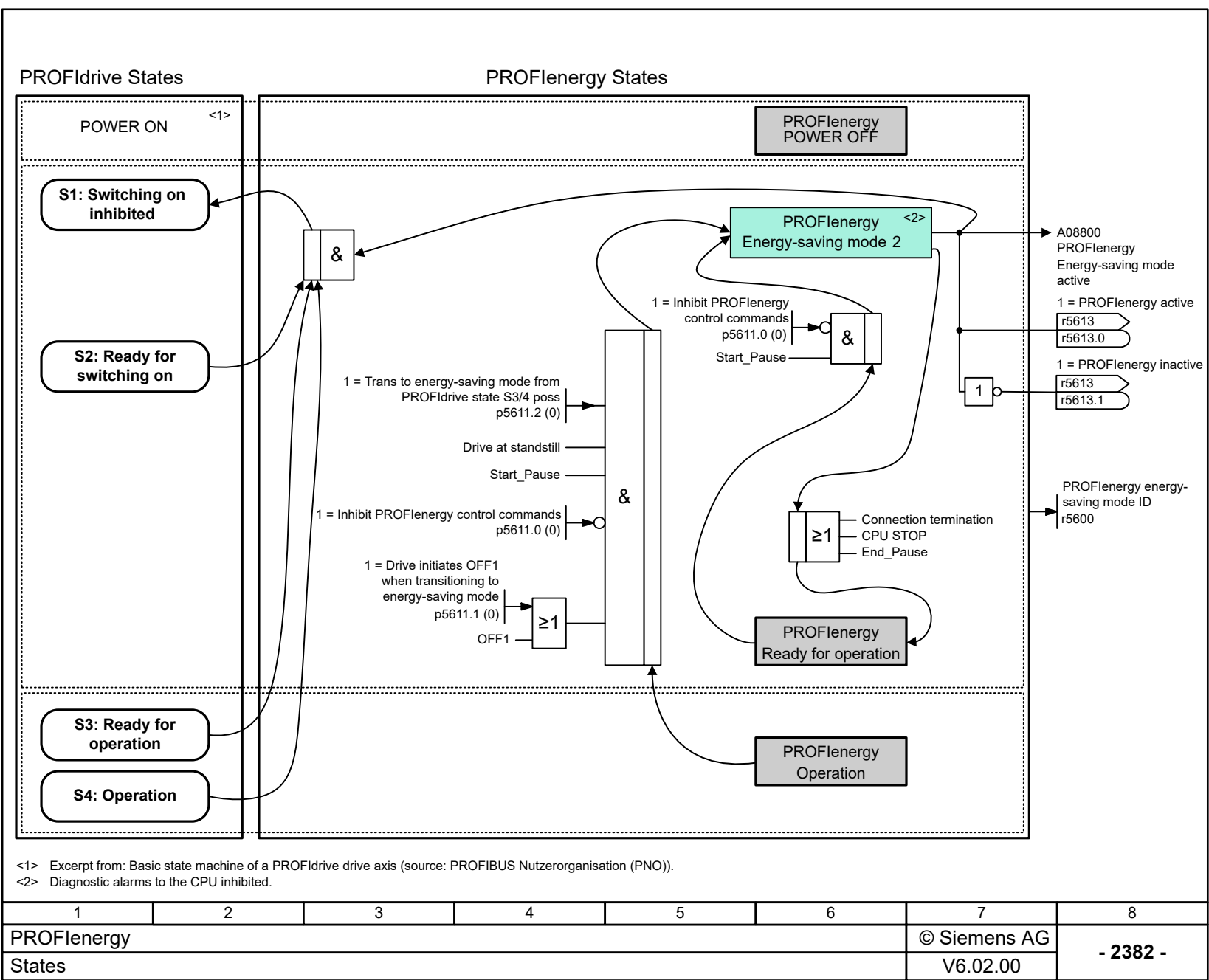


Figure 4-12 2381 - Control commands and interrogation commands



4.4 PROFIdrive

Overview

The following function diagrams describe the PROFIdrive function.

Function diagrams

- 2401 – Overview (Page 728)
- 2415 – Standard telegrams and process data (PZD) (Page 729)
- 2418 – Manufacturer-specific telegrams and process data (PZD) (Page 730)
- 2423 – Supplementary/free telegrams and process data (PZD) (Page 731)
- 2440 – PZD receive signals interconnection (Page 732)
- 2441 – STW1 control word interconnection in Interface Mode 3 (VIK/NAMUR) (Page 733)
- 2442 – STW1 control word interconnection in Interface Mode 1 (Page 734)
- 2443 – STW1 control word interconnection in Interface Mode 2 (Page 735)
- 2444 – STW2 control word interconnection (Page 736)
- 2445 – STW2 control word interconnection in Interface Mode 2 (Page 737)
- 2450 – PZD send signals interconnection (Page 738)
- 2451 – ZSW1 status word interconnection in Interface Mode 3 (VIK/NAMUR) (Page 739)
- 2452 – ZSW1 status word interconnection in Interface Mode 1 (Page 740)
- 2453 – ZSW1 status word interconnection in Interface Mode 2 (Page 741)
- 2454 – ZSW2 status word interconnection in Interface Mode 1 (Page 742)
- 2455 – ZSW2 status word interconnection in Interface Mode 2 (Page 743)
- 2460 – MELDW status word interconnection (Page 744)
- 2468 – Receive telegram free interconnection (Page 745)
- 2470 – Send telegram free interconnection (Page 746)

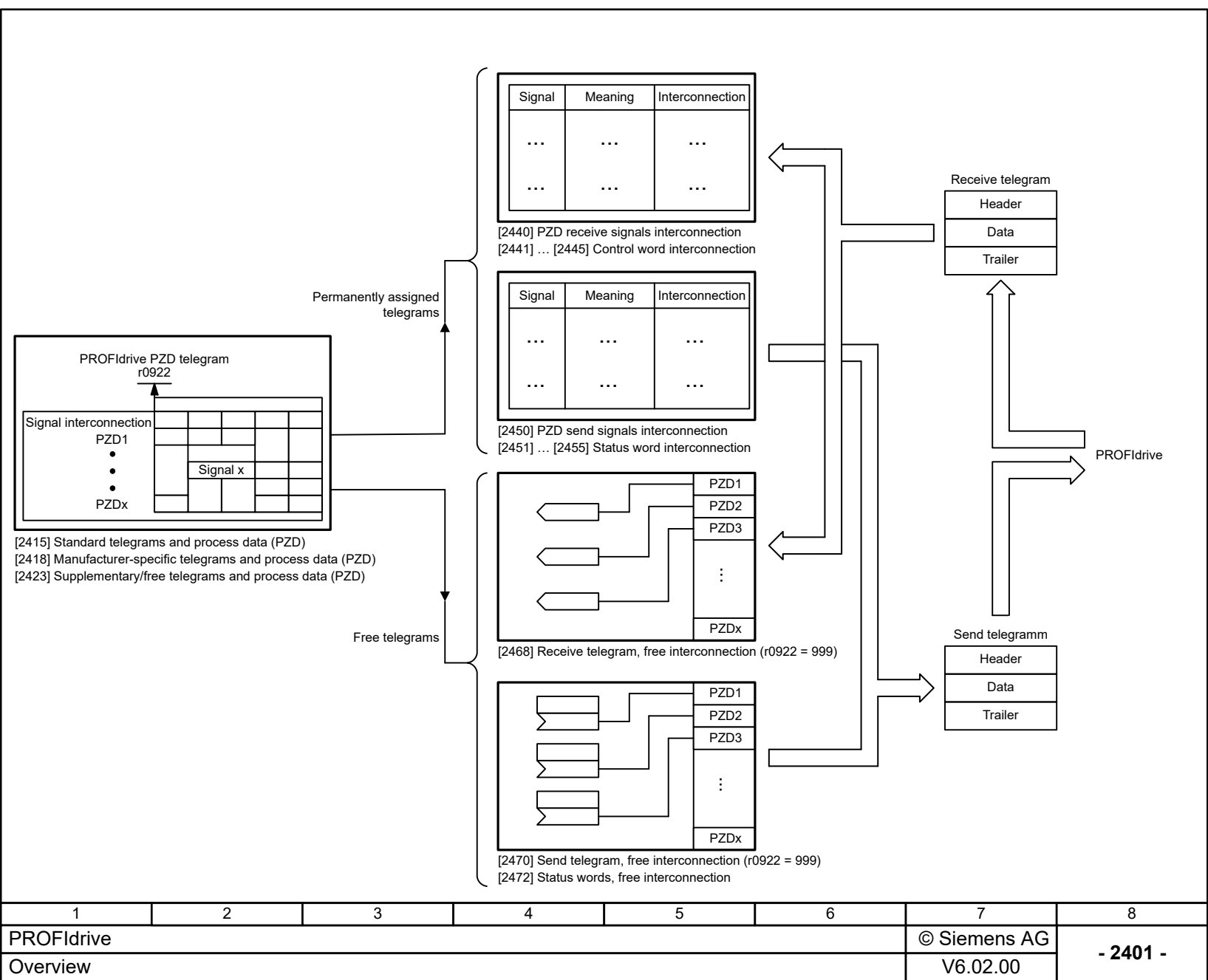


Figure 4-14 2401 – Overview

Subslot 3: standard/SIEMENS r60100[2] PROFIdrive PZD telegram r0922											
Interconnection is made according to		[2440], [2450] automatically									
Telegram	1		2		3		4		20		
Application class	1		1		1, 4		1, 4		1		
Interface Mode	1		1		1		1		3		
PZD1	STW1	ZSW1	STW1	ZSW1	STW1	ZSW1	STW1	ZSW1	STW1	ZSW1	
PZD2	NSOLL_A	NIST_A	NSOLL_B	NIST_B	NSOLL_B	NIST_B	NSOLL_B	NIST_B	NSOLL_A	NIST_A_GLATT	
PZD3										IAIST_GLATT	
PZD4			STW2	ZSW2	STW2	ZSW2	STW2	ZSW2		MIST_GLATT	
PZD5					G1_STW	G1_ZSW	G1_STW	G1_ZSW		PIST_GLATT	
PZD6						G1_XIST1	G2_STW	G1_XIST1		MELD_NAMUR	
PZD7											
PZD8						G1_XIST2		G1_XIST2			
PZD9											
PZD10								G2_ZSW			
PZD11								G2_XIST1			
PZD12											
PZD13								G2_XIST2			
PZD14											
PZD15											
PZD16											
PZD17											
PZD18											
PZD19											
PZD20											
PZD21											
PZD22											
PZD23											
PZD24											
PZD25											
PZD26											
PZD27											
PZD28											
PZD29											
PZD30											
PZD31											
PZD32											
	↑↑ Receive telegram from PRPFIBUS/PROFINET	↓↓ Send telegram to PROFIBUS/PROFINET	↑↑ Receive telegram from PRPFIBUS/PROFINET	↓↓ Send telegram to PROFIBUS/PROFINET	↑↑ Receive telegram from PRPFIBUS/PROFINET	↓↓ Send telegram to PROFIBUS/PROFINET	↑↑ Receive telegram from PRPFIBUS/PROFINET	↓↓ Send telegram to PROFIBUS/PROFINET	↑↑ Receive telegram from PRPFIBUS/PROFINET	↓↓ Send telegram to PROFIBUS/PROFINET	
<2>											
<1> The telegram assignment is automatically established when switching from a free telegram (r0922 = 999) to another telegram. When switching from any telegram (r0922 ≠ 999) to the free telegram (r0922 = 999) the "previous" telegram assignment is kept.											
<2> Not suitable for sensorless vector control (SLVC).											
1	2	3	4	5	6	7	8				
PROFIdrive							© Siemens AG		- 2415 -		
Standard telegrams and process data (PZD)							V6.02.00				

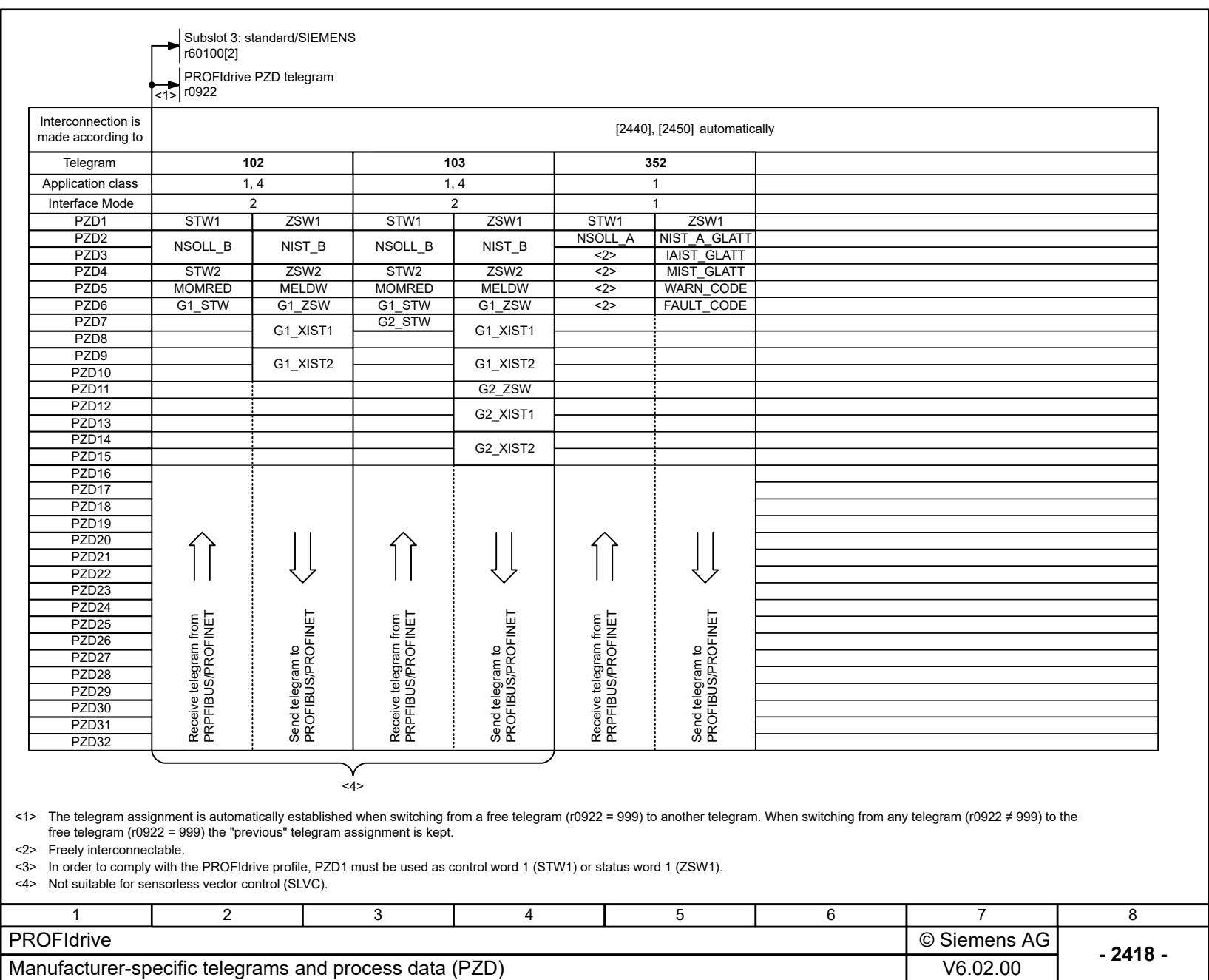


Figure 4-16 2418 – Manufacturer-specific telegrams and process data (PZD)

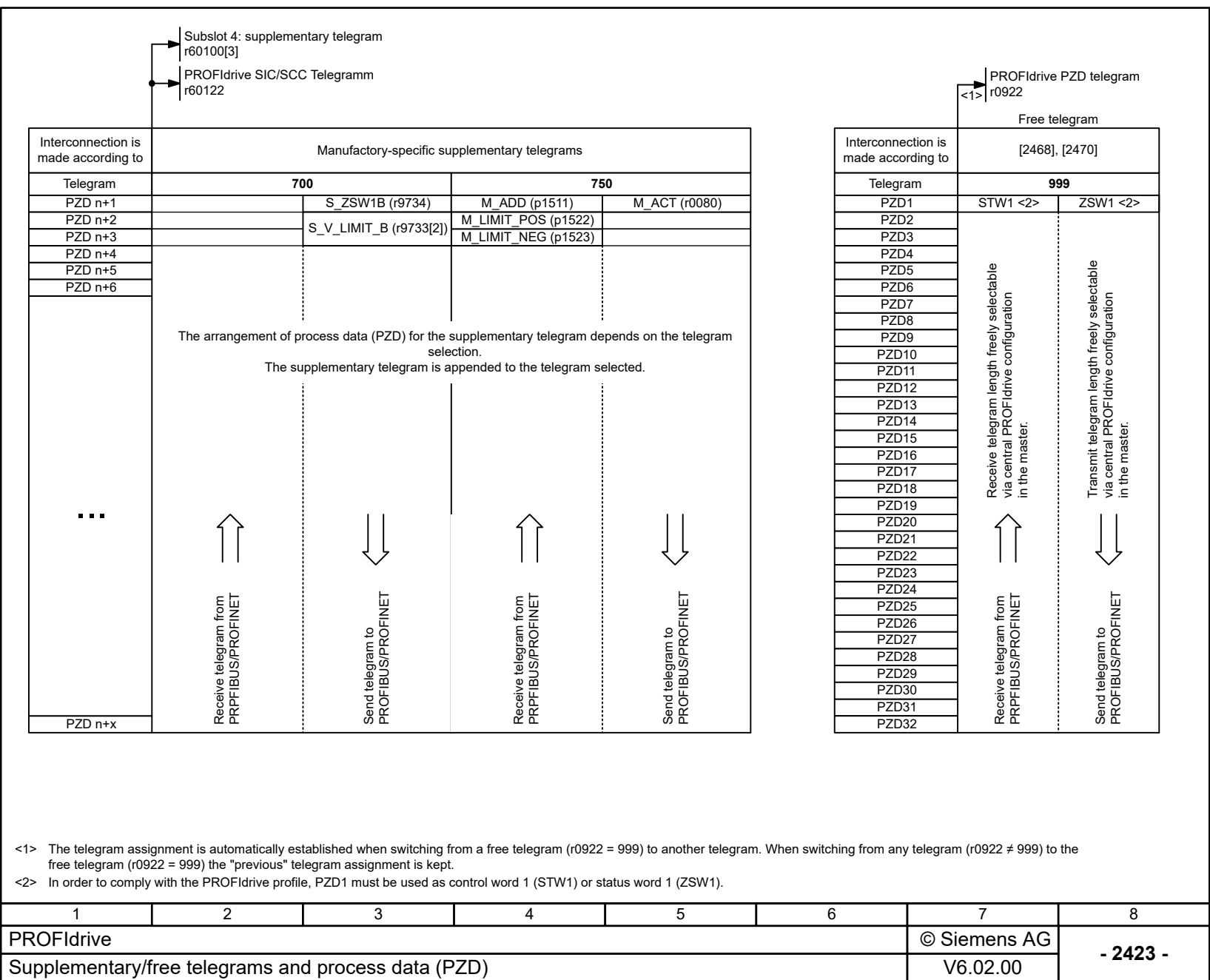
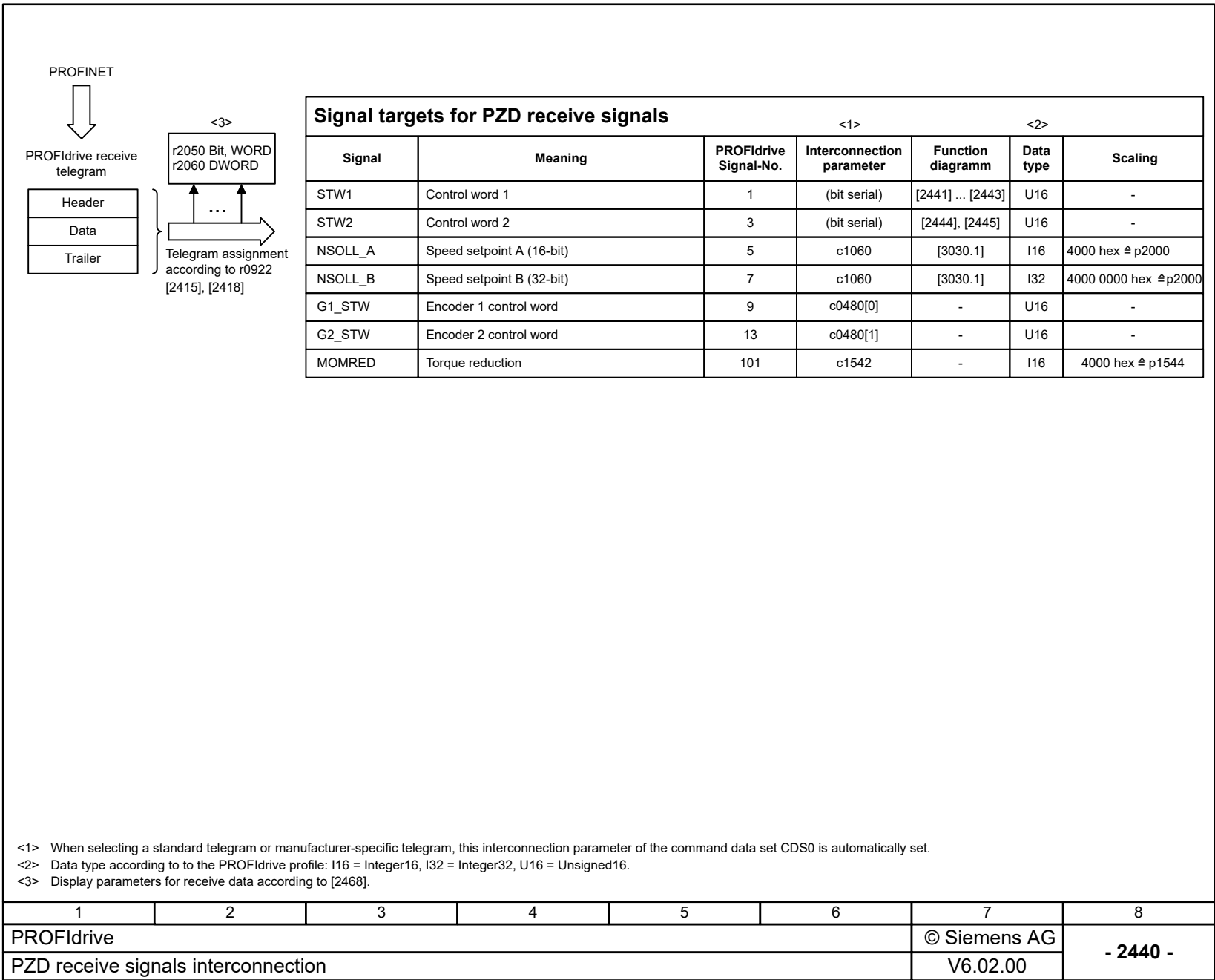


Figure 4-17 2423 – Supplementary/free telegrams and process data (PZD)



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	 = 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	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 AG	- 2441 -
STW1 control word interconnection in Interface Mode 3 (VIK/NAMUR)						V6.02.00	

Figure 4-19 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, 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 AG	- 2442 -
STW1 control word interconnection in Interface Mode 1						V6.02.00	

Figure 4-20 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 AG	- 2443 -
STW1 control word interconnection in Interface Mode 2						V6.02.00	

Figure 4-21 2443 – STW1 control word interconnection in Interface Mode 2

Signal targets for STW2 in Interface Mode 1								<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 1, 2, 3, 4, 352.															
1		2		3		4		5		6		7		8	
PROFIdrive												© Siemens AG		- 2444 -	
STW2 control word interconnection in Interface Mode 1												V6.02.00			

Figure 4-22 2444 – STW2 control word interconnection in Interface Mode 1

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 AG	- 2445 -
STW2 control word interconnection in Interface Mode 2						V6.02.00	

Figure 4-23 2445 – STW2 control word interconnection in Interface Mode 2

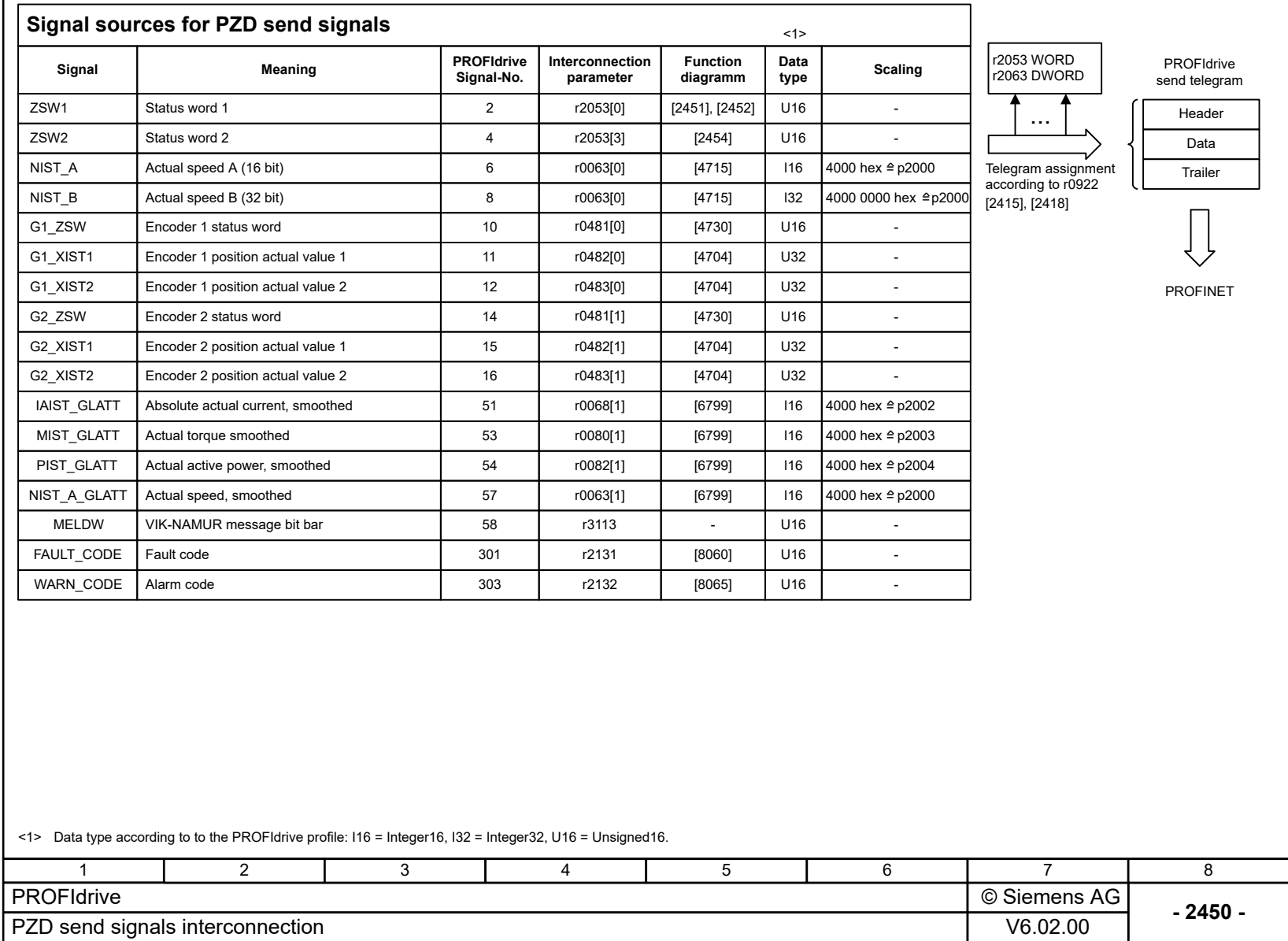


Figure 4-24 2450 - PZD send signals interconnection

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 = r0052.11	[2510.7]	-			
ZSW1.12	Reserved	-	-	-			
ZSW1.13	1 = No motor overtemperature alarm	c2053[0].13 = r2135.6	[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.							
1	2	3	4	5	6	7	8
PROFIdrive						© Siemens AG	- 2451 -
ZSW1 status word interconnection in Interface Mode 3 (VIK-NAMUR)						V6.02.00	

Figure 4-25 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 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 = r0052.11	[2510.7]	-	
ZSW1.12	1 = Open holding brake	c2053[0].12 = r0899.12	[2503.7]	[2701]	
ZSW1.13	1 = No motor overtemperature alarm	c2053[0].13 = r2135.6	[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 = r2135.7	[2549.7]	[8021]	

<1> Used in telegram 1, 2, 3, 4, 352.
<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 AG	- 2452 -
ZSW1 status word interconnection in Interface Mode 1						V6.02.00	

Figure 4-26 2452 – ZSW1 status word interconnection in Interface Mode 1

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 AG	- 2453 -
ZSW1 status word interconnection in Interface Mode 2						V6.02.00	

Figure 4-27 2453 – ZSW1 status word interconnection in Interface Mode 2

Signal sources for ZSW2 in Interface Mode 1						<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 1, 2, 3, 4, 352.																	
<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 AG				- 2454 -	
ZSW2 status word interconnection in Interface Mode 1												V6.02.00					

Figure 4-28 2454 – ZSW2 status word interconnection in Interface Mode 1

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 AG				- 2455 -	
ZSW2 status word interconnection in Interface Mode 2												V6.02.00					

Figure 4-29 2455 – ZSW2 status word interconnection in Interface Mode 2

Signal sources for MELDW					<1> <2>	
Signal	Meaning	Interconnection parameter	[Function diagram] internal control word	[Function diagram] signal target		
MELDW.0	1 = Ramp-up/ramp-down completed	c2053[4].0 = r2199.5	[2537.7]	[8011]		
MELDW.1	1 = Torque utilization < torque threshold value 2 (p2194)	c2053[4].1 = r2199.11	[2537.7]	[8012]		
MELDW.2	1 = n_act < speed threshold value 3 (p2161)	c2053[4].2 = r2199.0	[2537.7]	[8010]		
MELDW.3	1 = n_act > speed threshold value 2 (p2155)	c2053[4].3 = r2197.1	[2534.7]	[8010]		
MELDW.4	1 = Vdc_min controller active	c2053[4].4 = r0056.15	[2526.7]	[6220], [6320]		
MELDW.5	Variable signaling function 1 output signal	c2053[4].5 = r3294.0	-	[8024]		
MELDW.6	1 = No motor overtemperature alarm	c2053[4].6 = r2135.6	[2549.7]	[8016]		
MELDW.7	1 = No alarm, thermal overload, power unit	c2053[4].7 = r2135.7	[2549.7]	[8021]		
MELDW.8	1 = Speed setpoint - actual value deviation within tolerance t_on	c2053[4].8 = r2199.4	[2537.7]	[8011]		
MELDW.9	Reserved	-	-	-		
MELDW.10	Reserved	-	-	-		
MELDW.11	1 = Controller enable	c2053[4].11 = r0899.8	[2503.7]	[2610]		
MELDW.12	1 = Drive ready	c2053[4].12 = r0899.7	[2503.7]	[2610]		
MELDW.13	1 = Pulses enabled	c2053[4].13 = r0899.11	[2503.7]	[2610]		
MELDW.14	Variable signaling function 2 output signal	c2053[4].14 = r3294.1	-	[8024]		
MELDW.15	Variable signaling function 3 output signal	c2053[4].15 = r3294.2	-	[8024]		

<1> Used in telegram 102, 103.
<2> The MELDW is generated using c2053[4].0...15.

1	2	3	4	5	6	7	8
PROFIdrive						© Siemens AG	- 2460 -
MELDW status word interconnection						V6.02.00	

Figure 4-30 2460 - MELDW status word interconnection

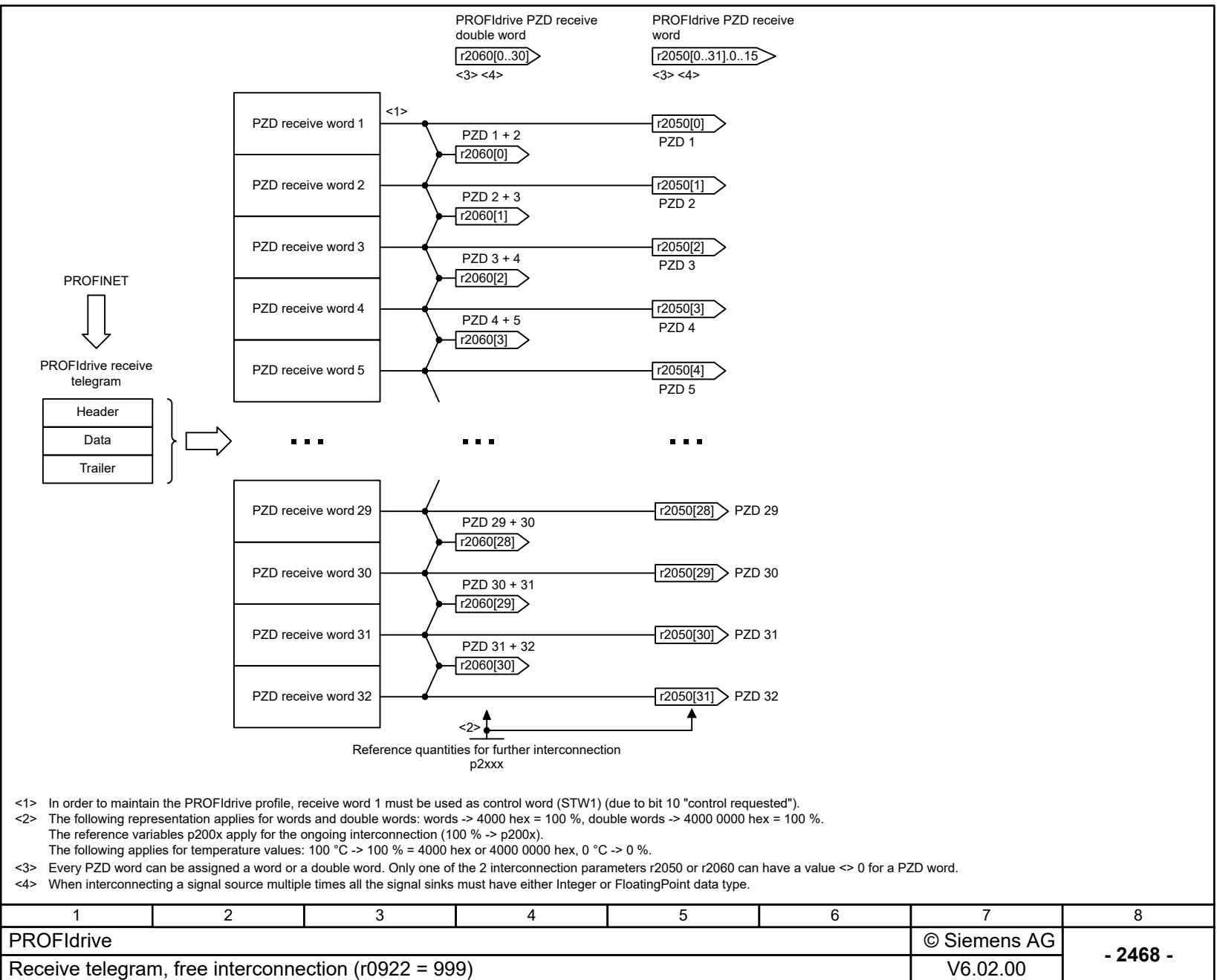
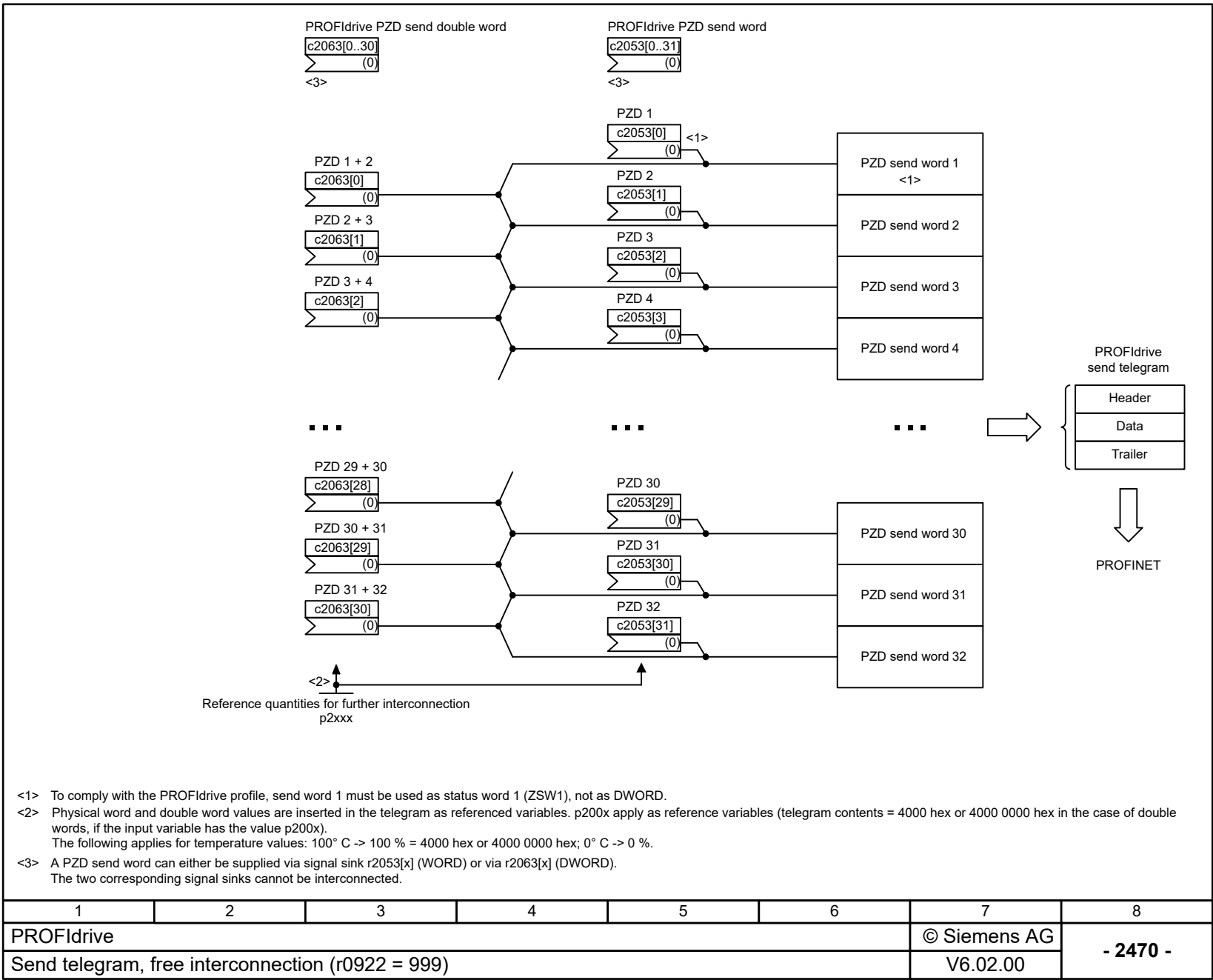


Figure 4-31 2468 - Receive telegram free interconnection



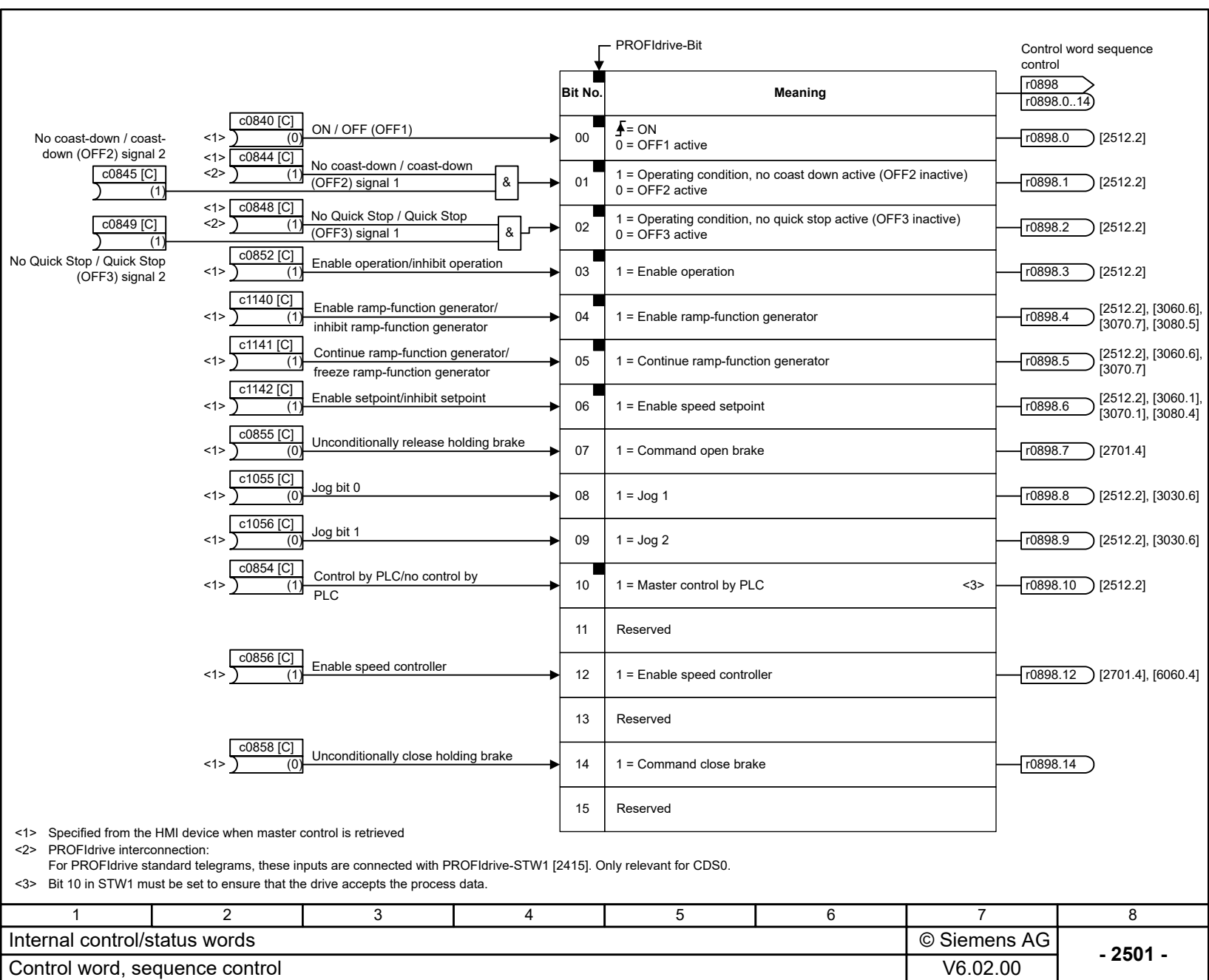
4.5 Internal control/status words

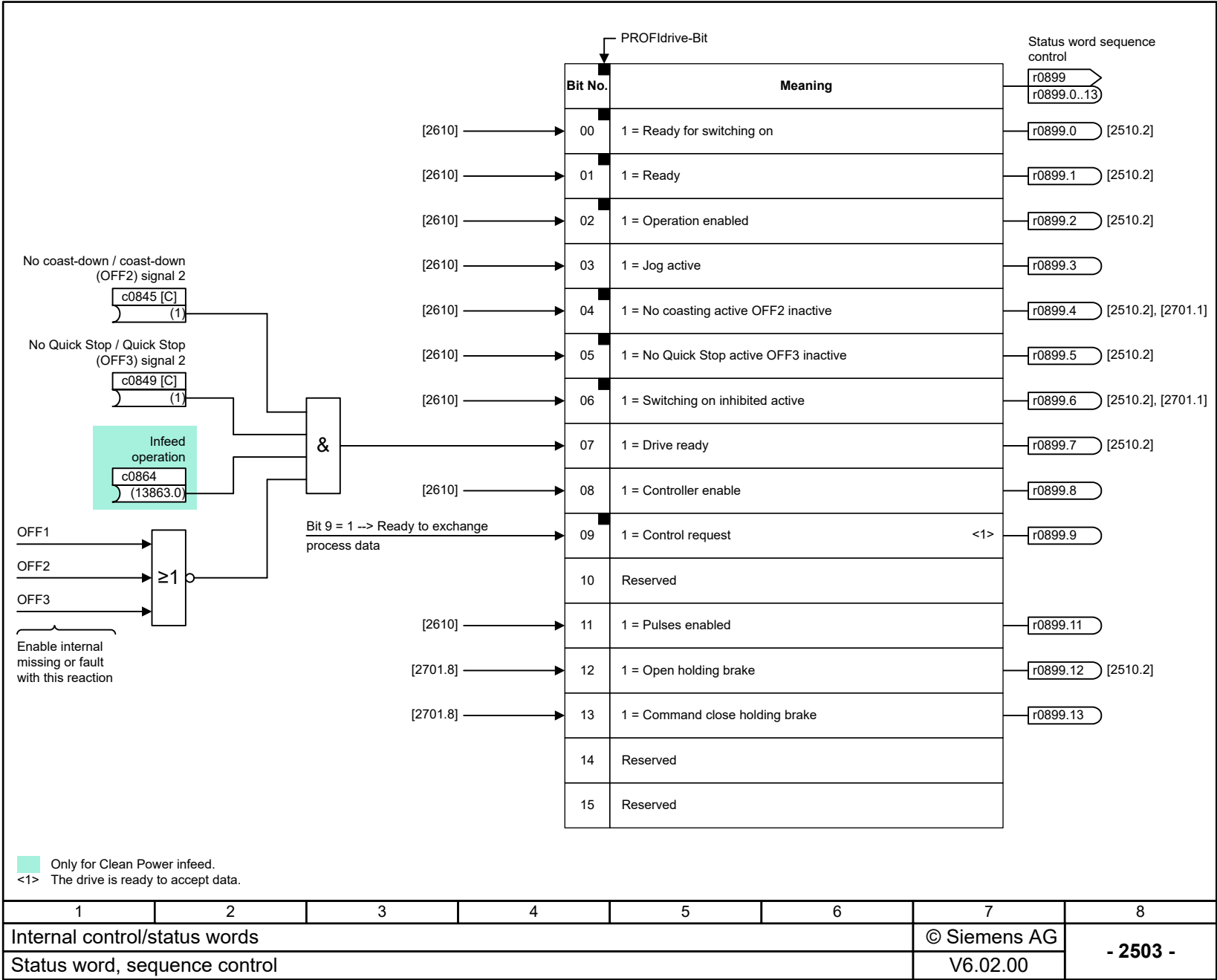
Overview

The following function diagrams describe the internal control and status words.

Function diagrams

- 2501 – Control word sequence control (Page 748)
- 2503 – Status word sequence control (Page 749)
- 2505 – Control word setpoint channel (Page 750)
- 2510 – Status word 1 (Page 751)
- 2511 – Status word 2 (Page 752)
- 2512 – Control word 1 (Page 753)
- 2513 – Control word 2 (Page 754)
- 2520 – Control word speed controller (Page 755)
- 2522 – Status word speed controller (Page 756)
- 2526 – Status word closed-loop control (Page 757)
- 2530 – Status word closed-loop current control (Page 758)
- 2534 – Status word monitoring functions 1 (Page 759)
- 2536 – Status word monitoring functions 2 (Page 760)
- 2537 – Status word monitoring functions 3 (Page 761)
- 2548 – Status word faults/alarms 1 (Page 762)
- 2549 – Status word faults/alarms 2 (Page 763)
- 2610 – Sequence control - sequencer (Page 764)
- 2634 – Sequence control - missing data (Page 765)





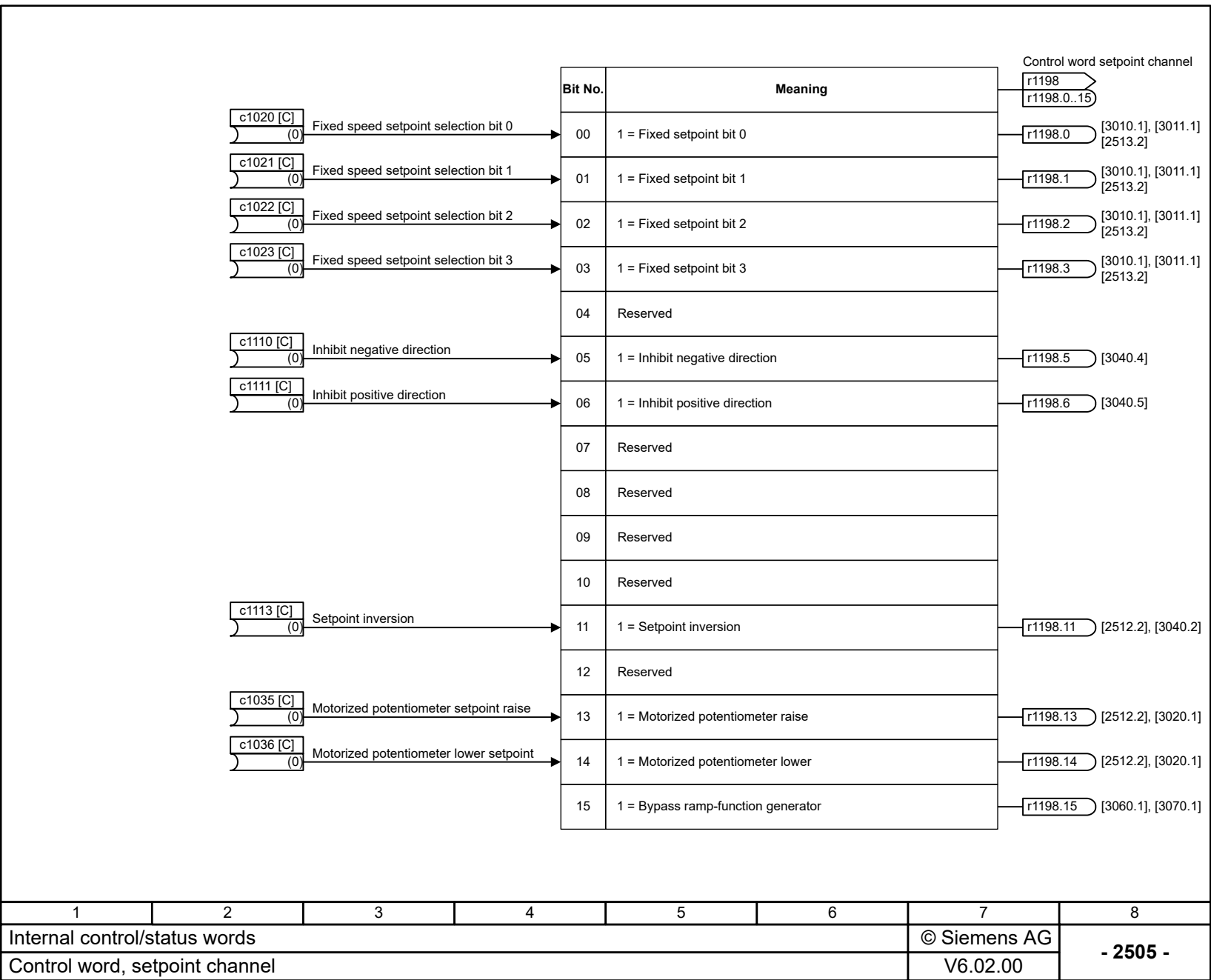
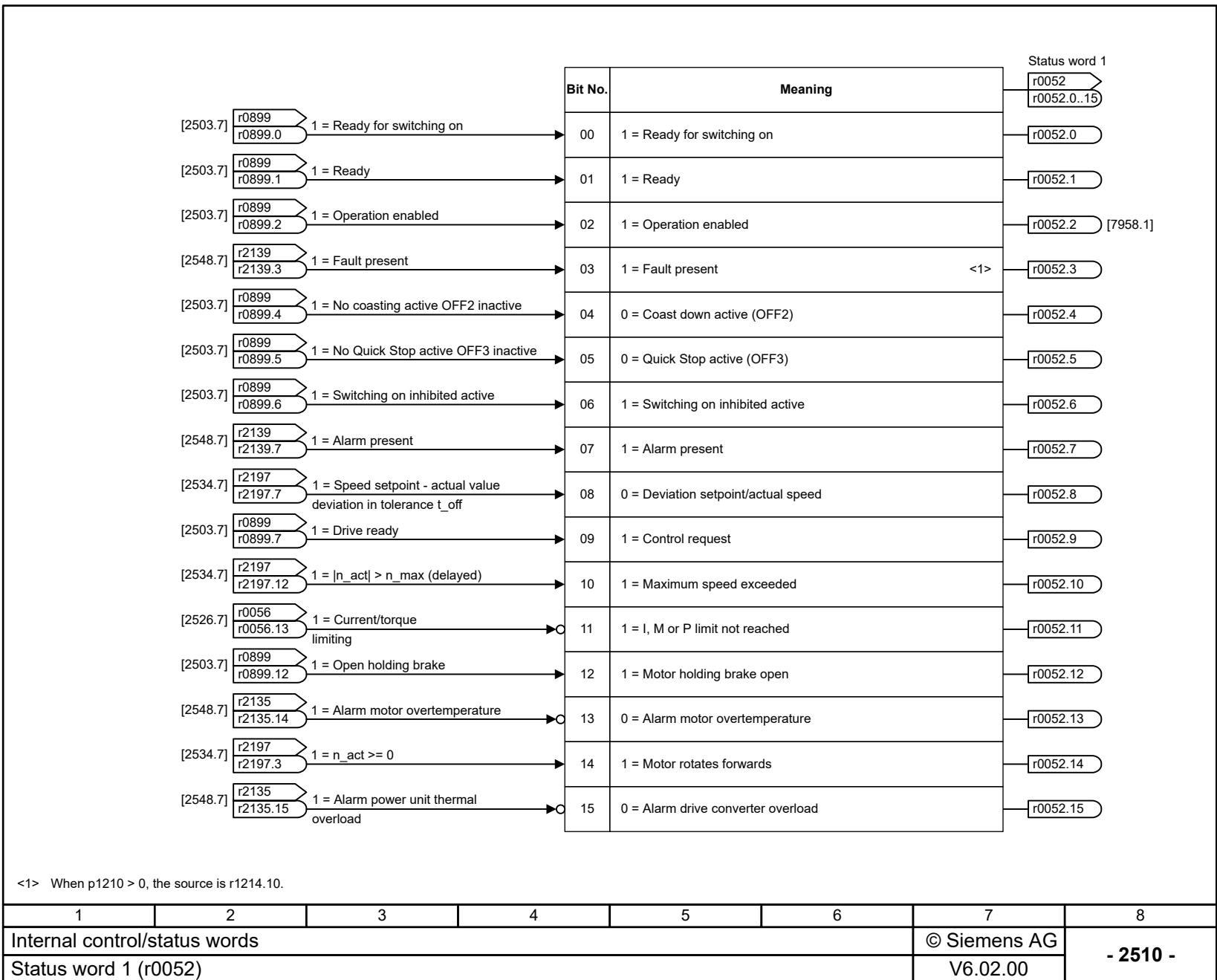
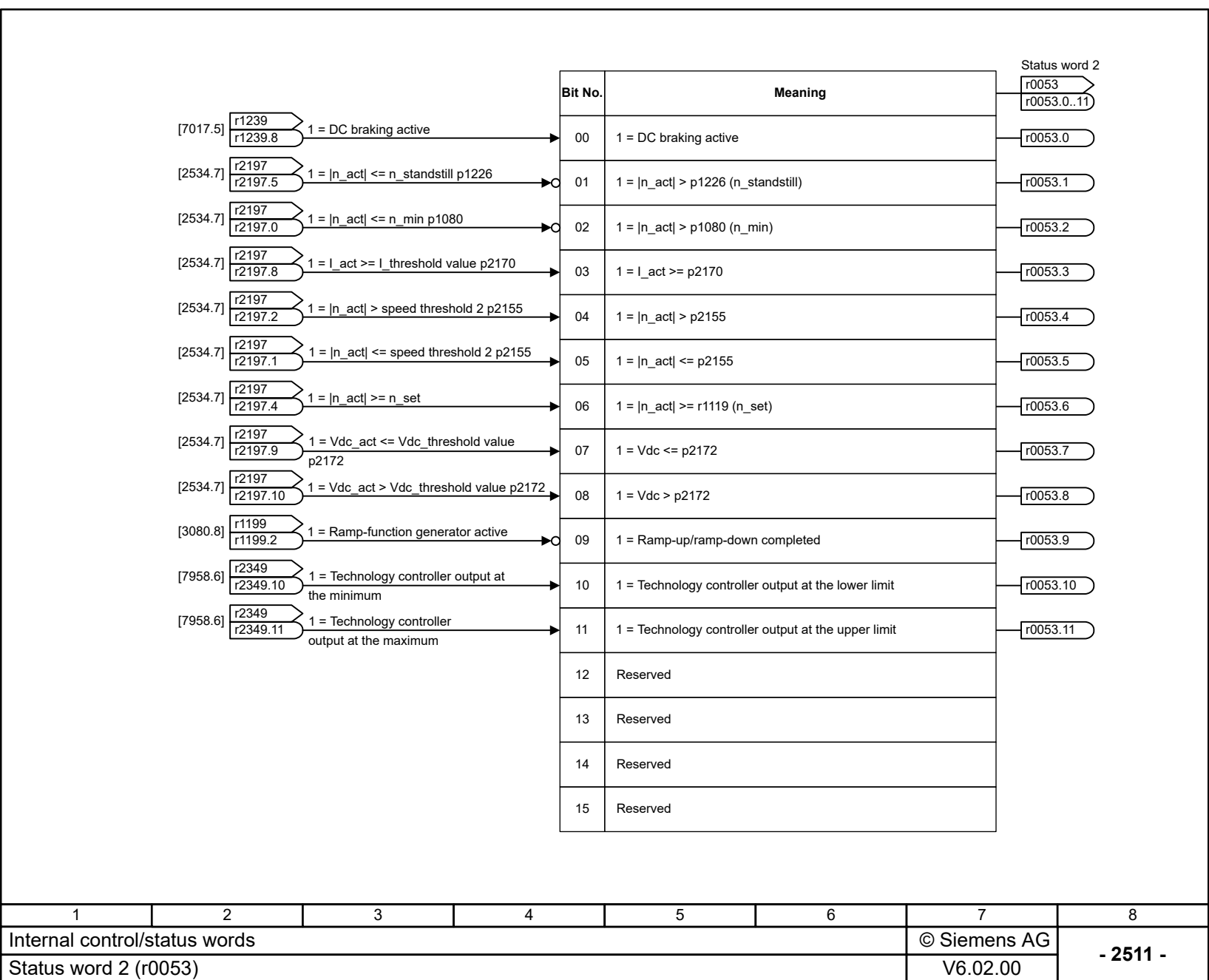
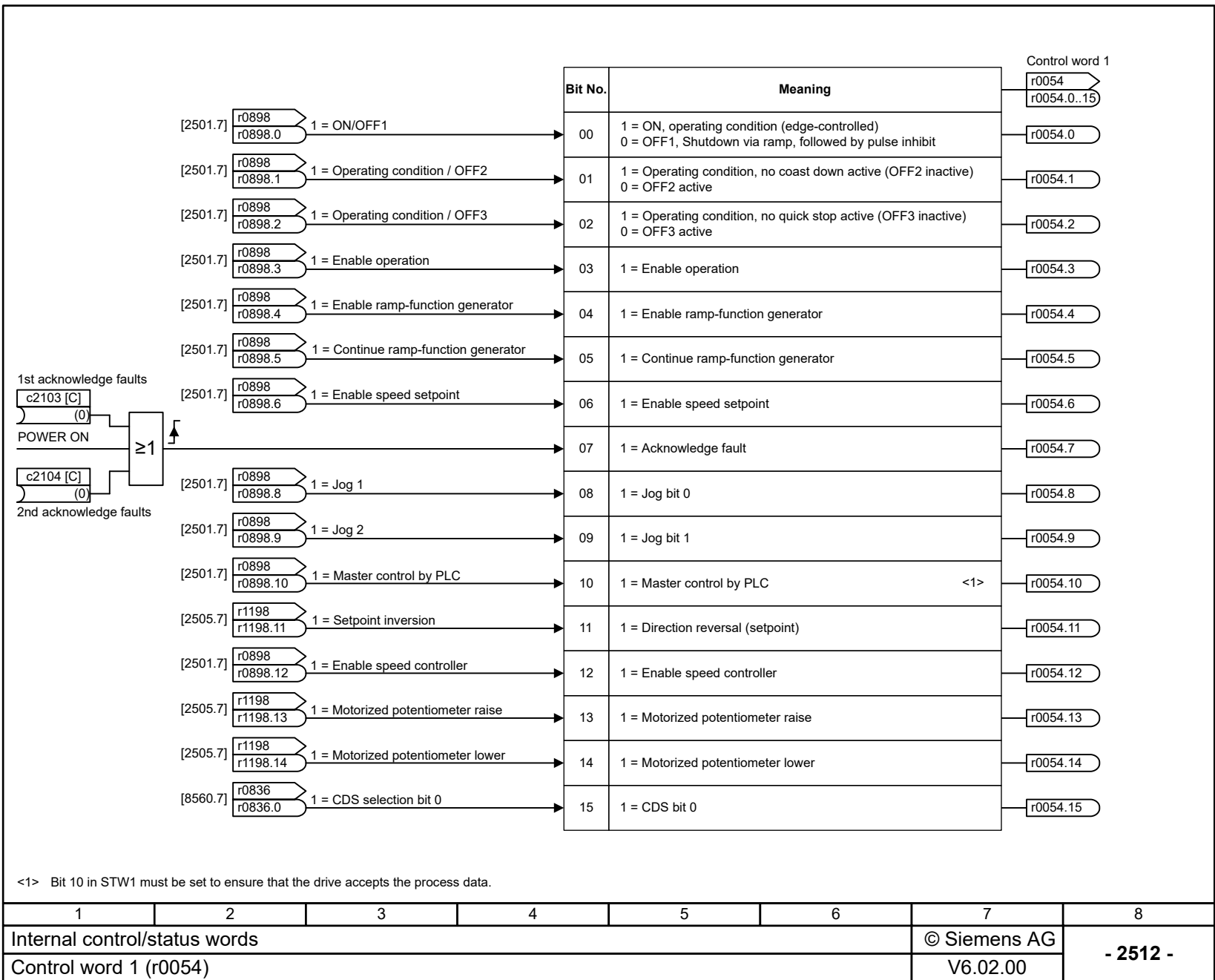
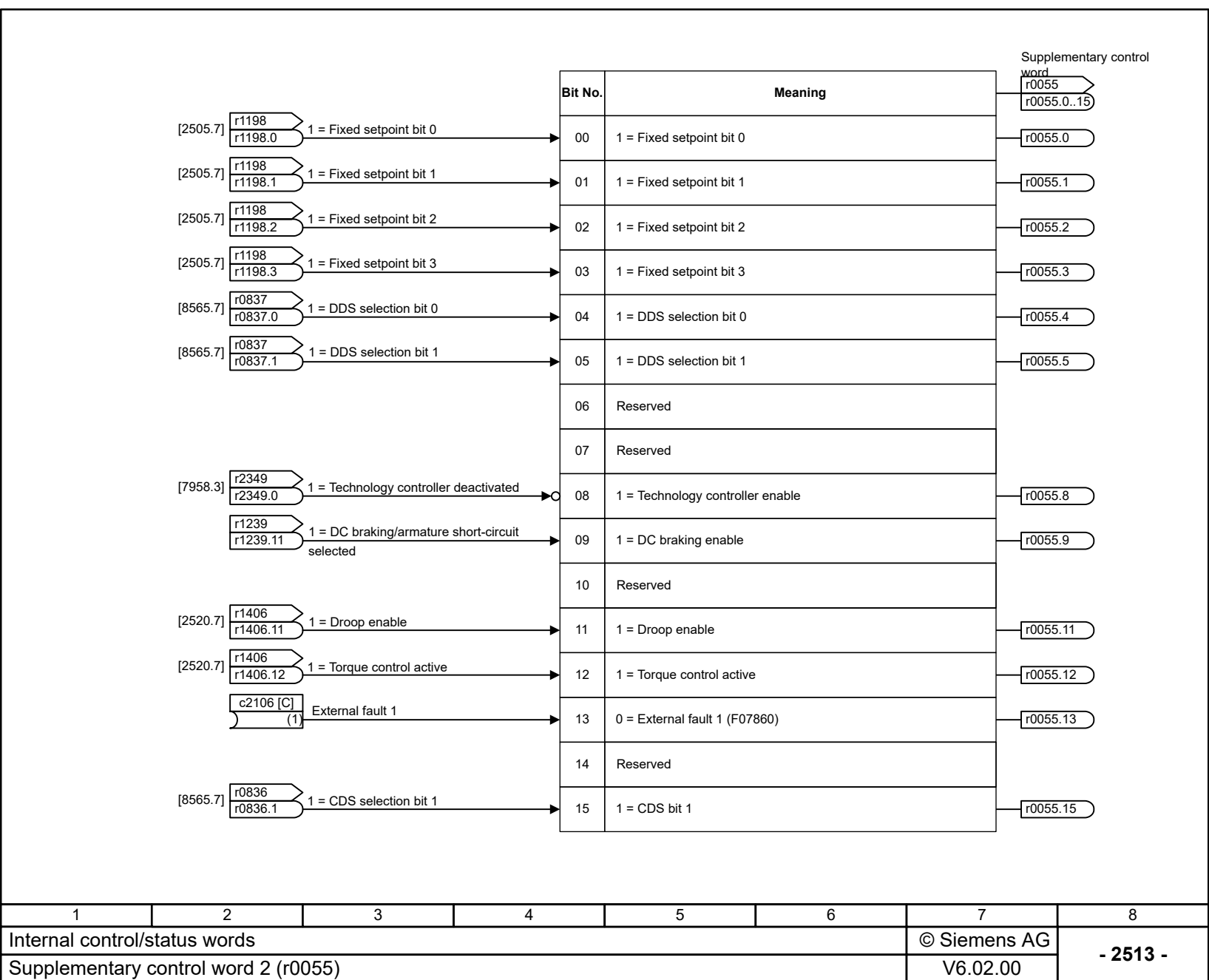


Figure 4-35 2505 - Control word setpoint channel









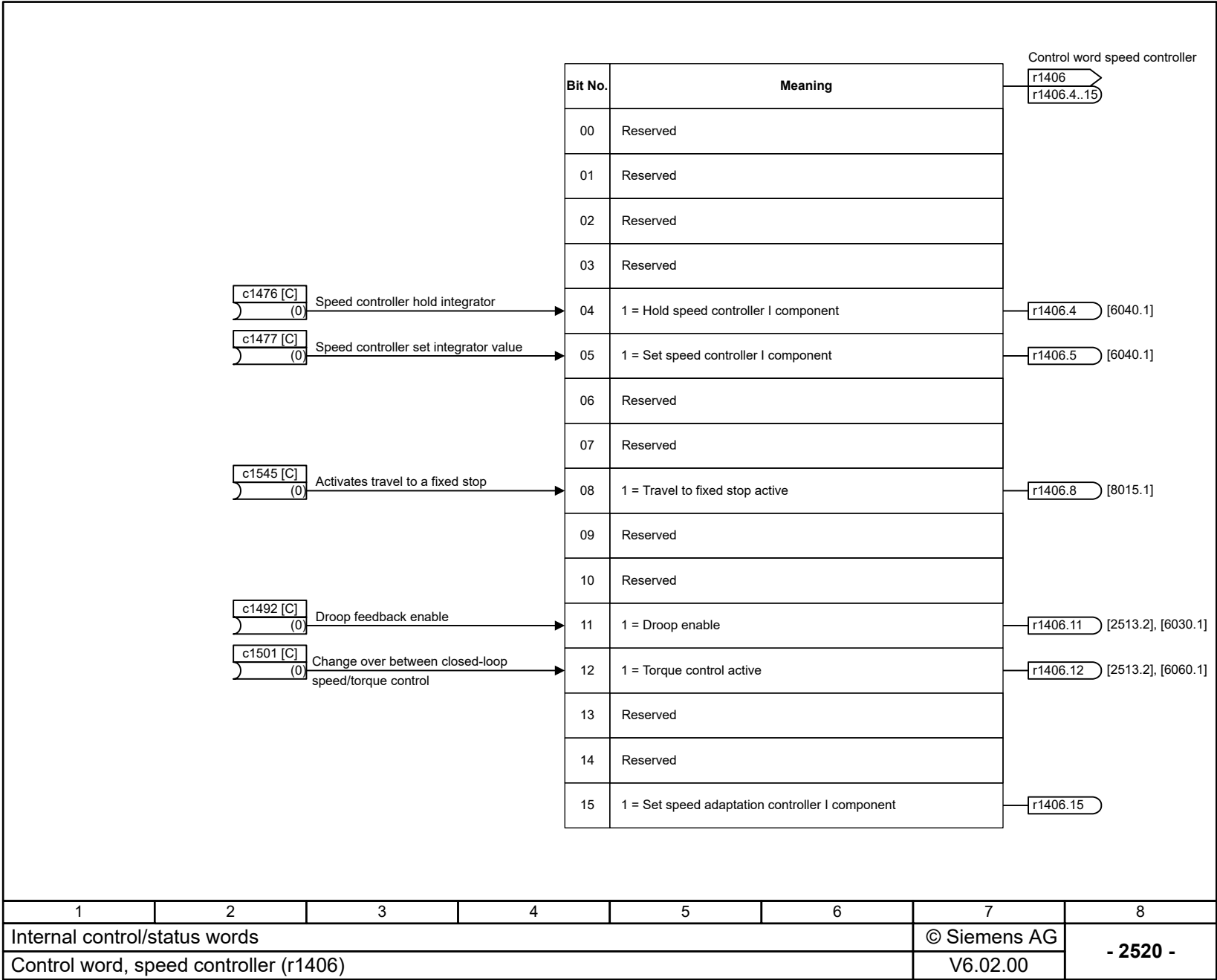
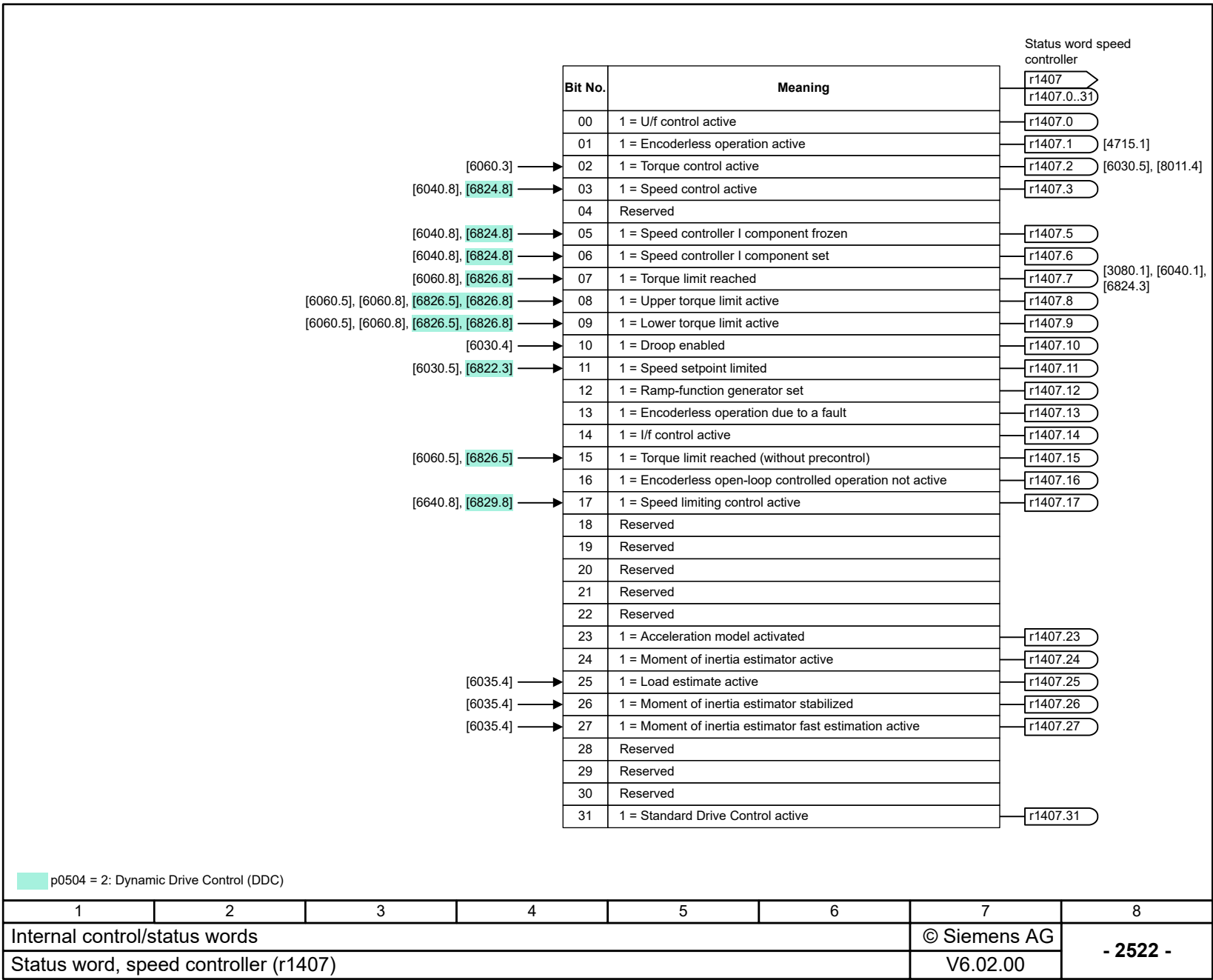
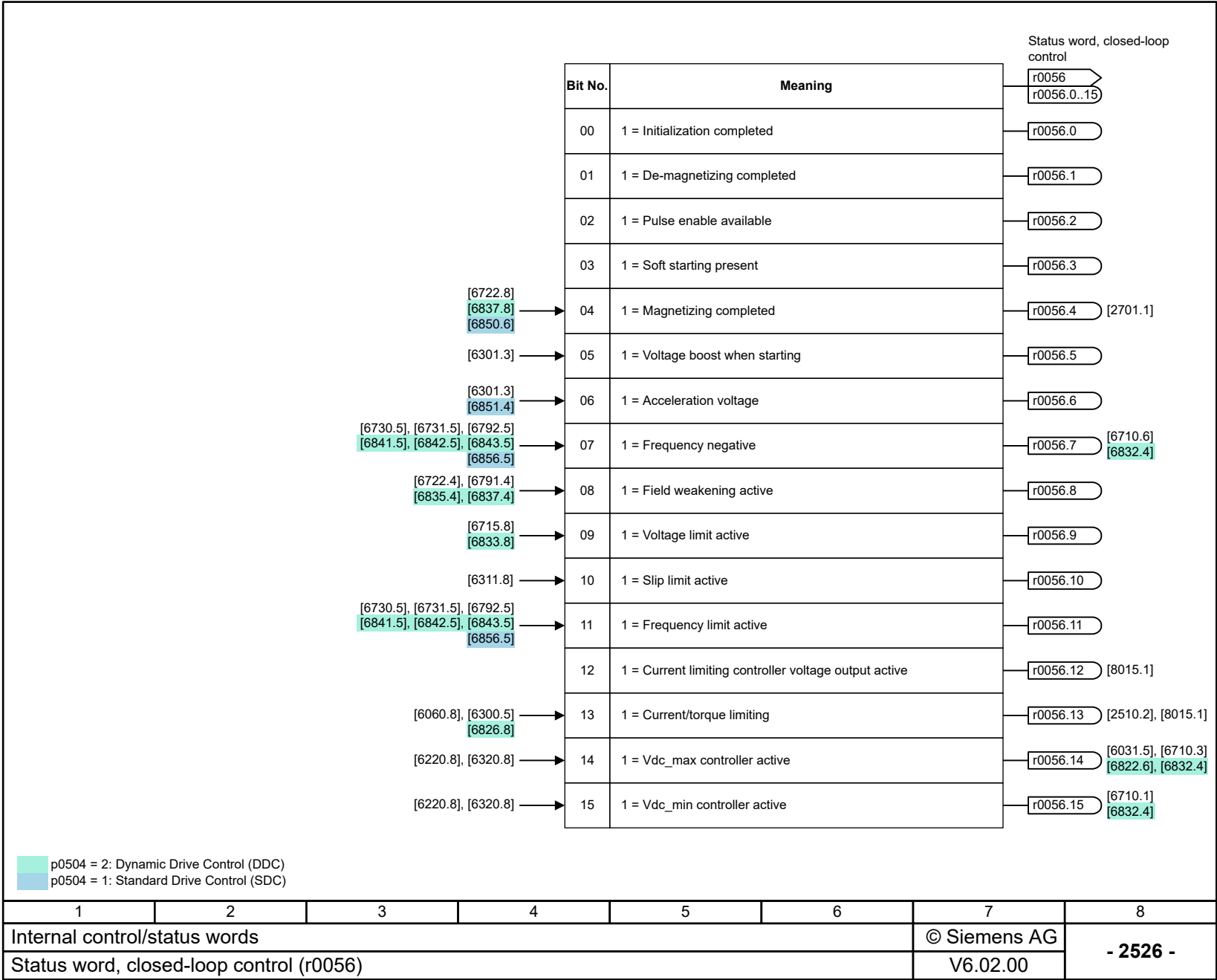
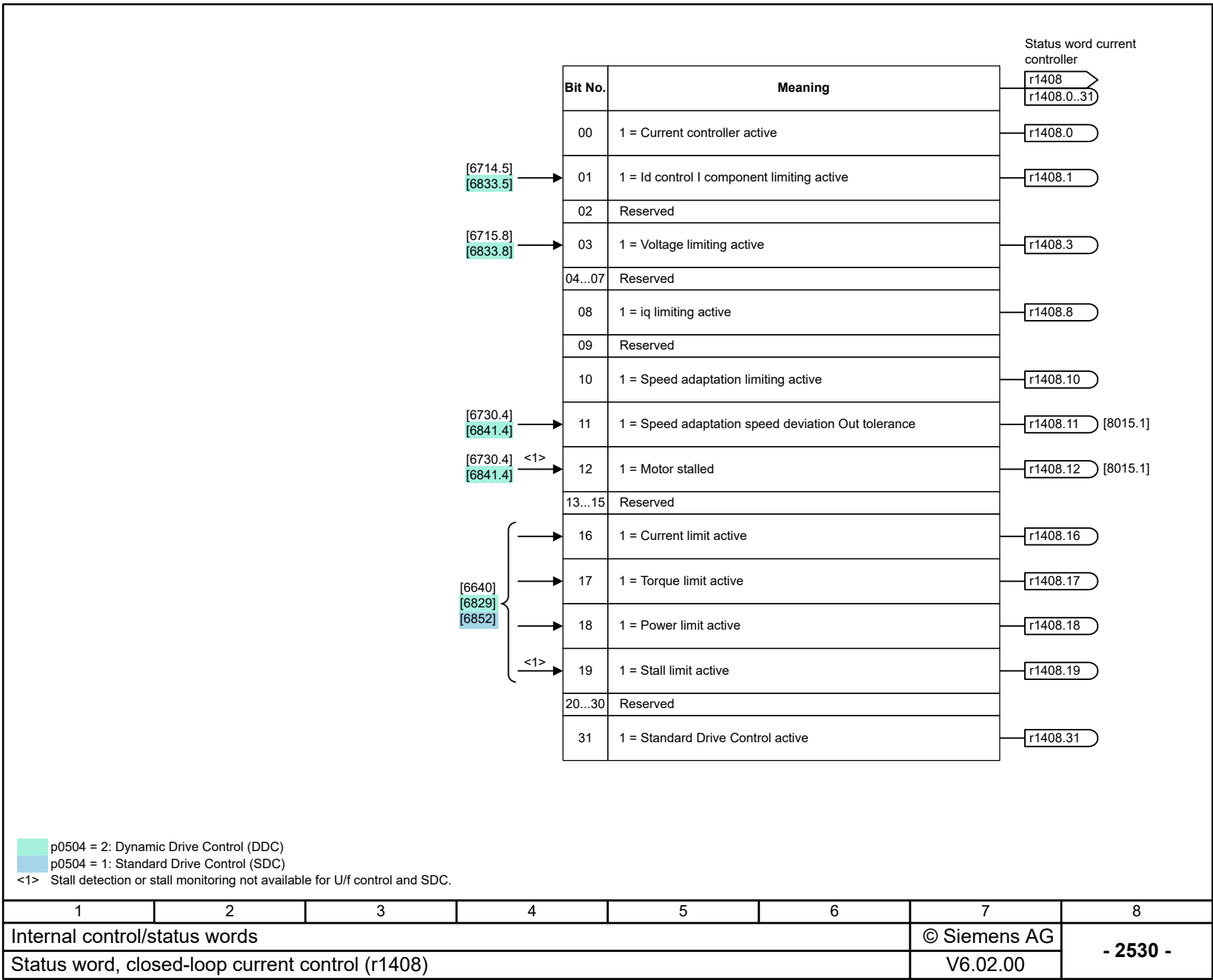
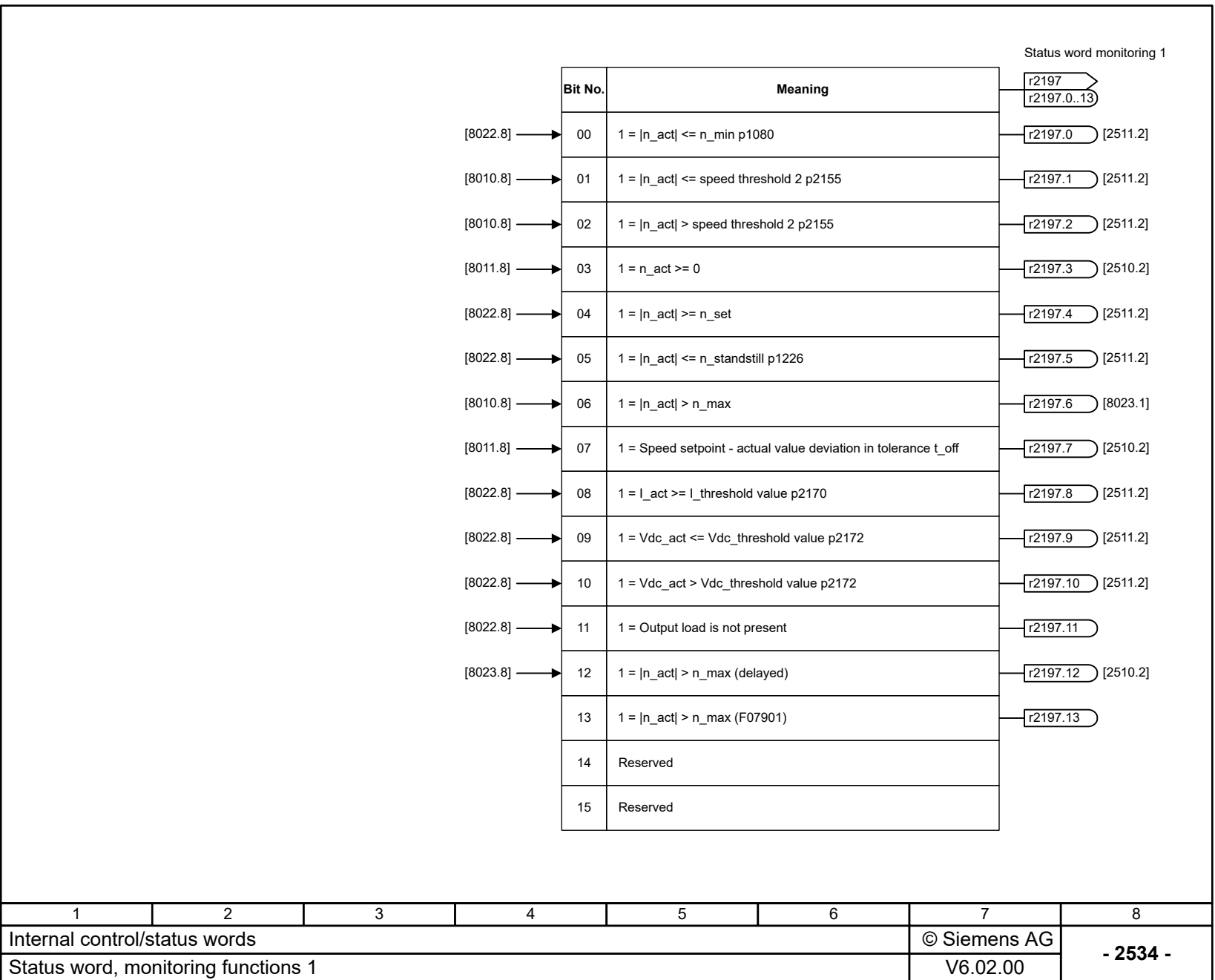


Figure 4-40 2520 - Control word speed controller









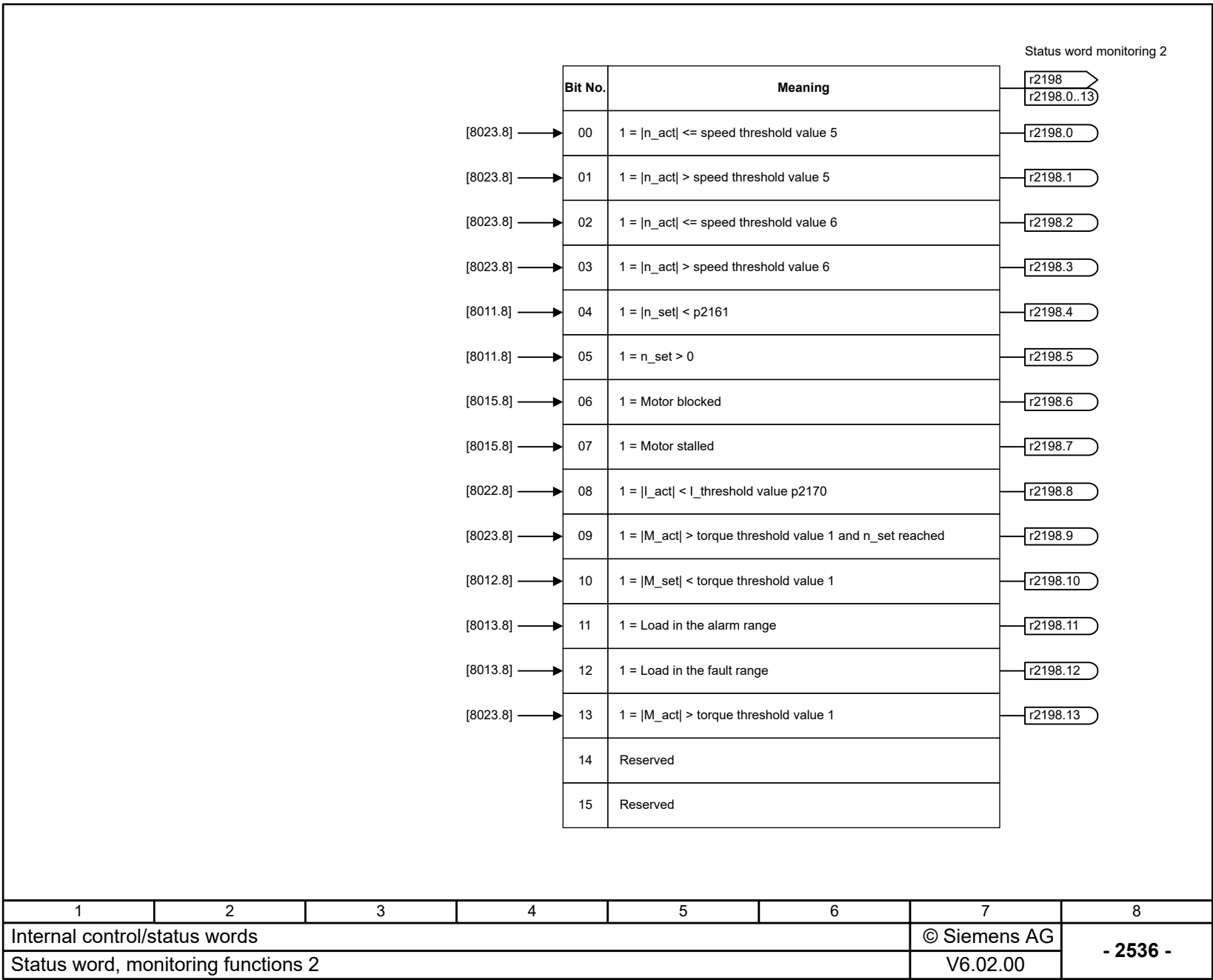


Figure 4-45 2536 - Status word monitoring functions 2

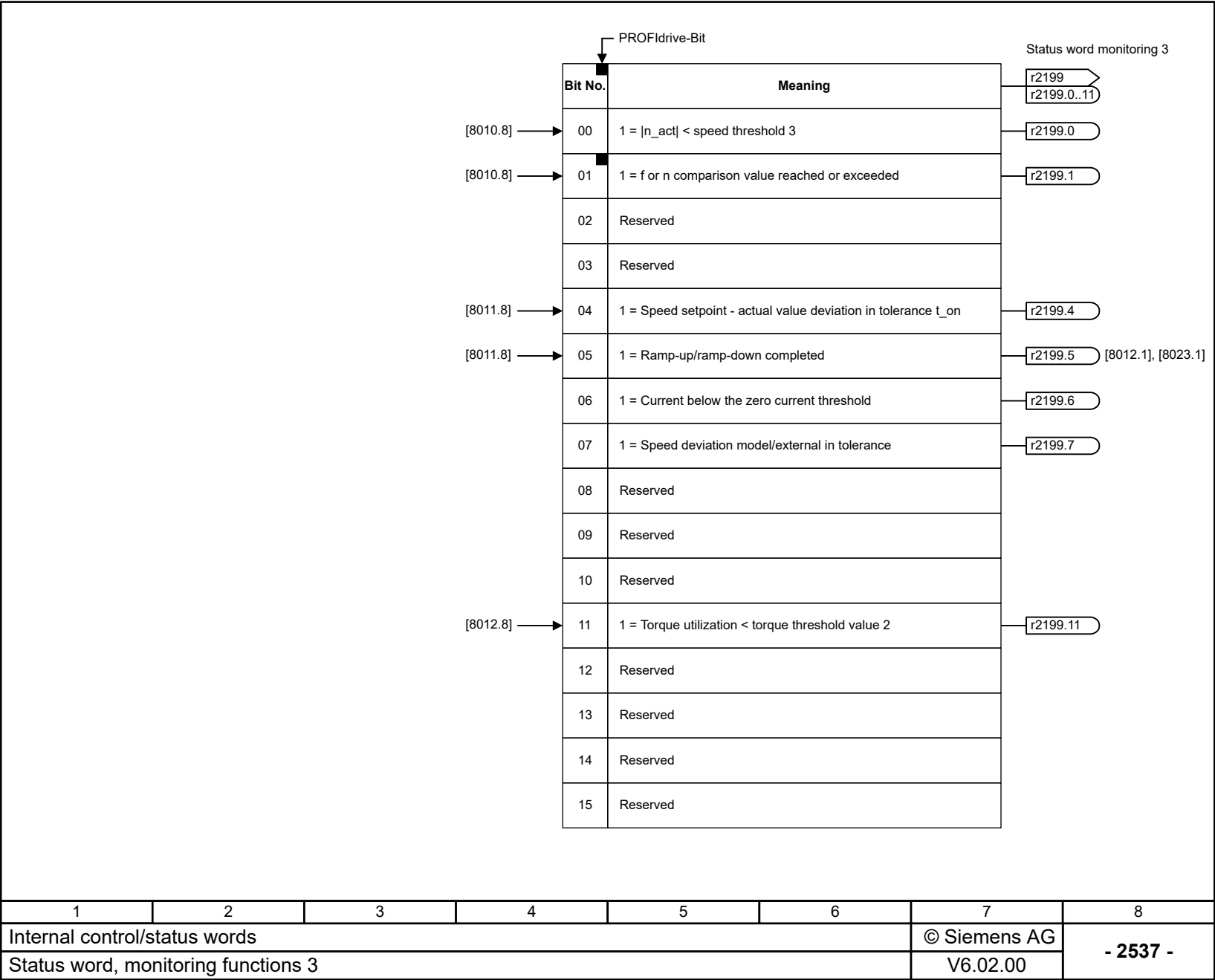
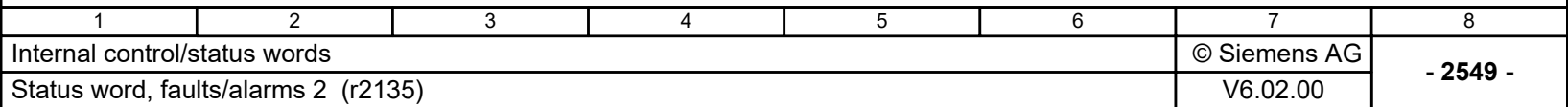


Figure 4-46 2537 - Status word monitoring functions 3

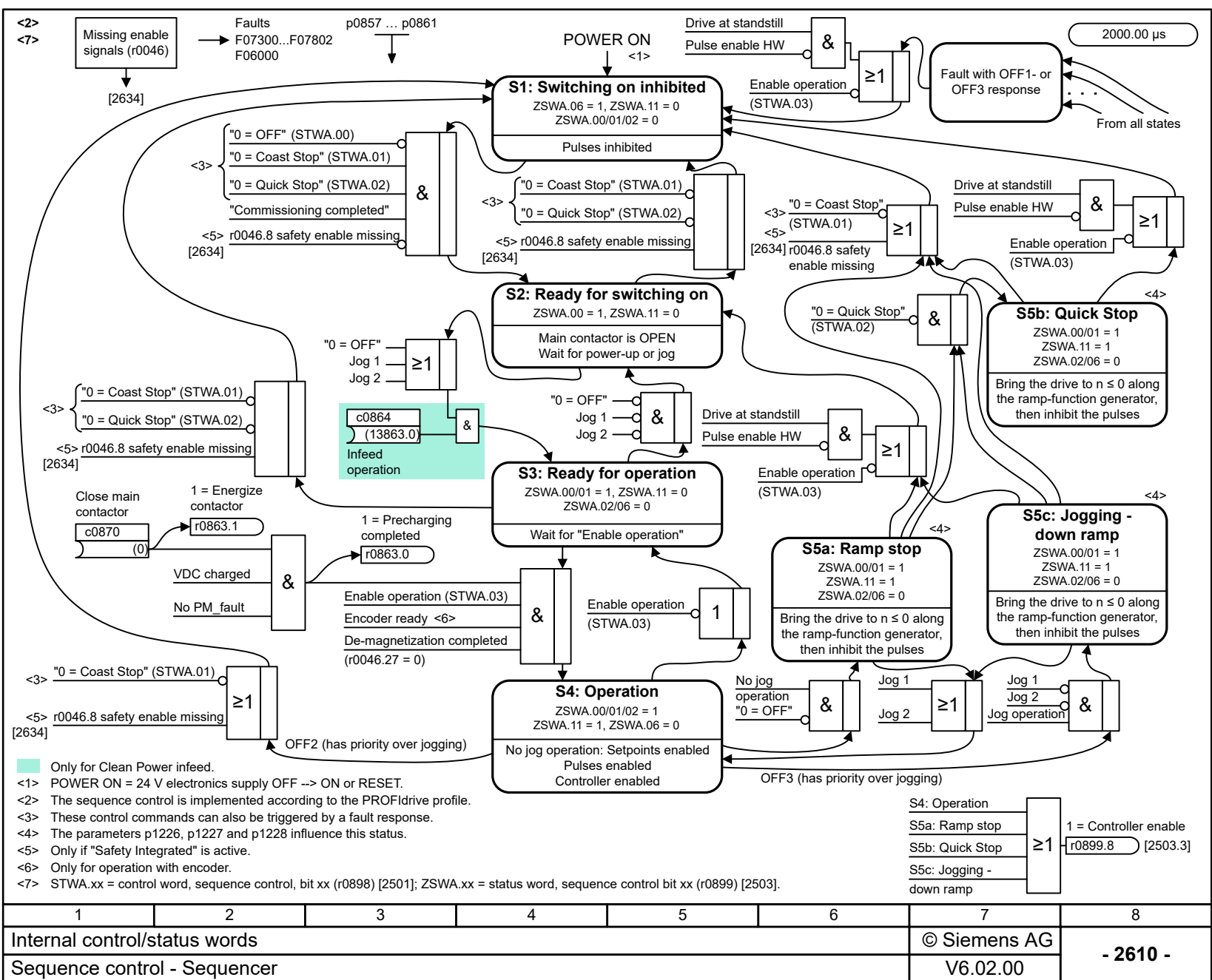
						Status word faults/alarms 1	
						r2139 r2139.0..15	
						r2139.0	
						r2139.1	
[8060.8]	→	03	1 = Fault present			r2139.3 [2510.2]	
[8070.7]	→	05	1 = Safety message present			r2139.5	
[8065.7]	→	07	1 = Alarm present			r2139.7 [2510.2]	
[8065.7]	→	11	1 = Alarm class bit 0			r2139.11	
[8065.7]	→	12	1 = Alarm class bit 1			r2139.12	
[8065.7]	→	13	1 = Maintenance required			r2139.13	
[8065.7]	→	14	1 = Maintenance urgently required			r2139.14	
[8060.8]	→	15	1 = Fault gone/can be acknowledged			r2139.15	

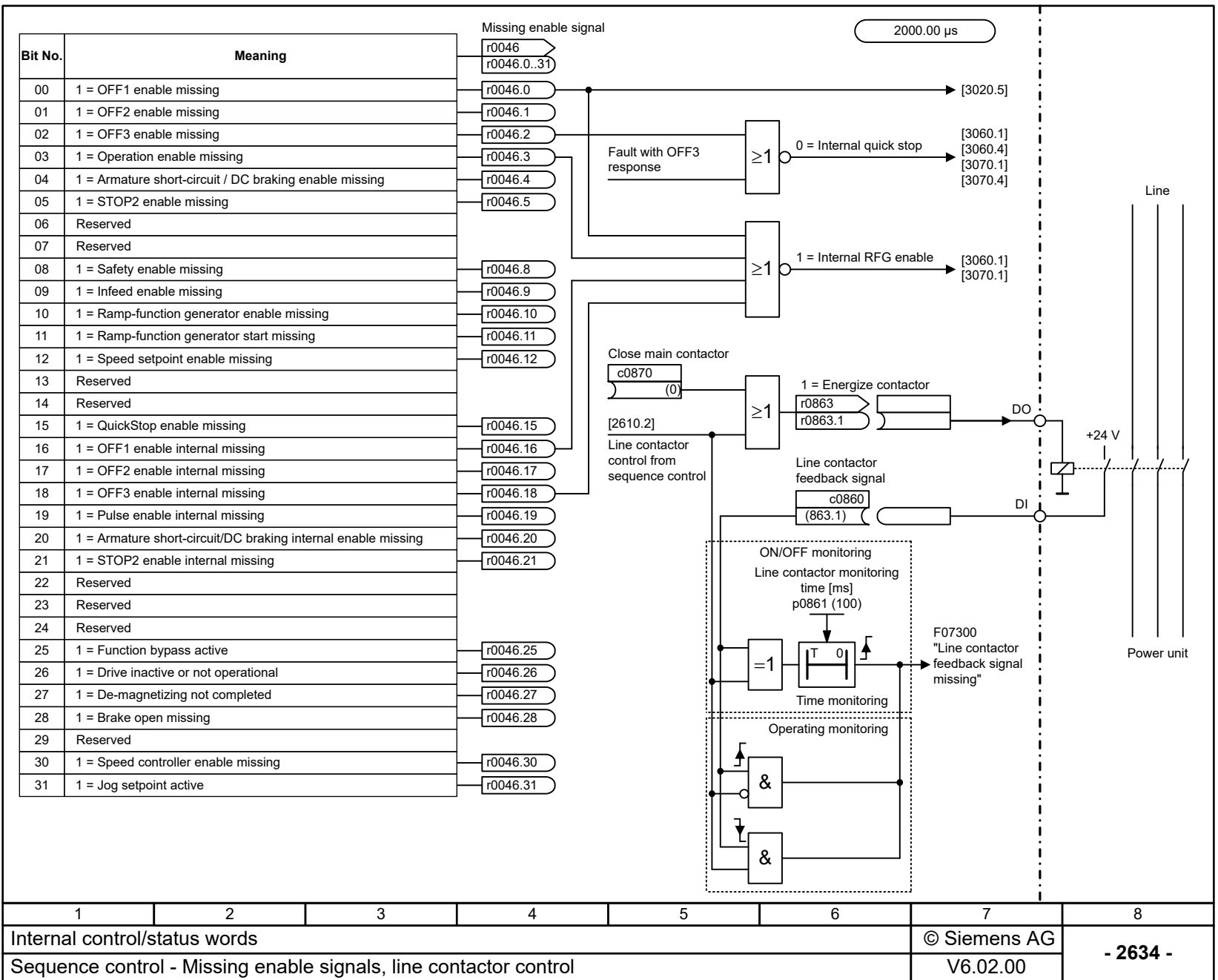
1	2	3	4	5	6	7	8
Internal control/status words						© Siemens AG	- 2548 -
Status word, faults/alarms 1 (r2139)						V6.02.00	

Figure 4-47 2548 - Status word faults/alarms 1



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List Manual, 08/2023, FW V6.2, A5E51781505B AA





4.6 Brake control

Overview

The following function diagrams describe the brake control function.

Function diagrams

2701 – Basic brake control (Page 767)

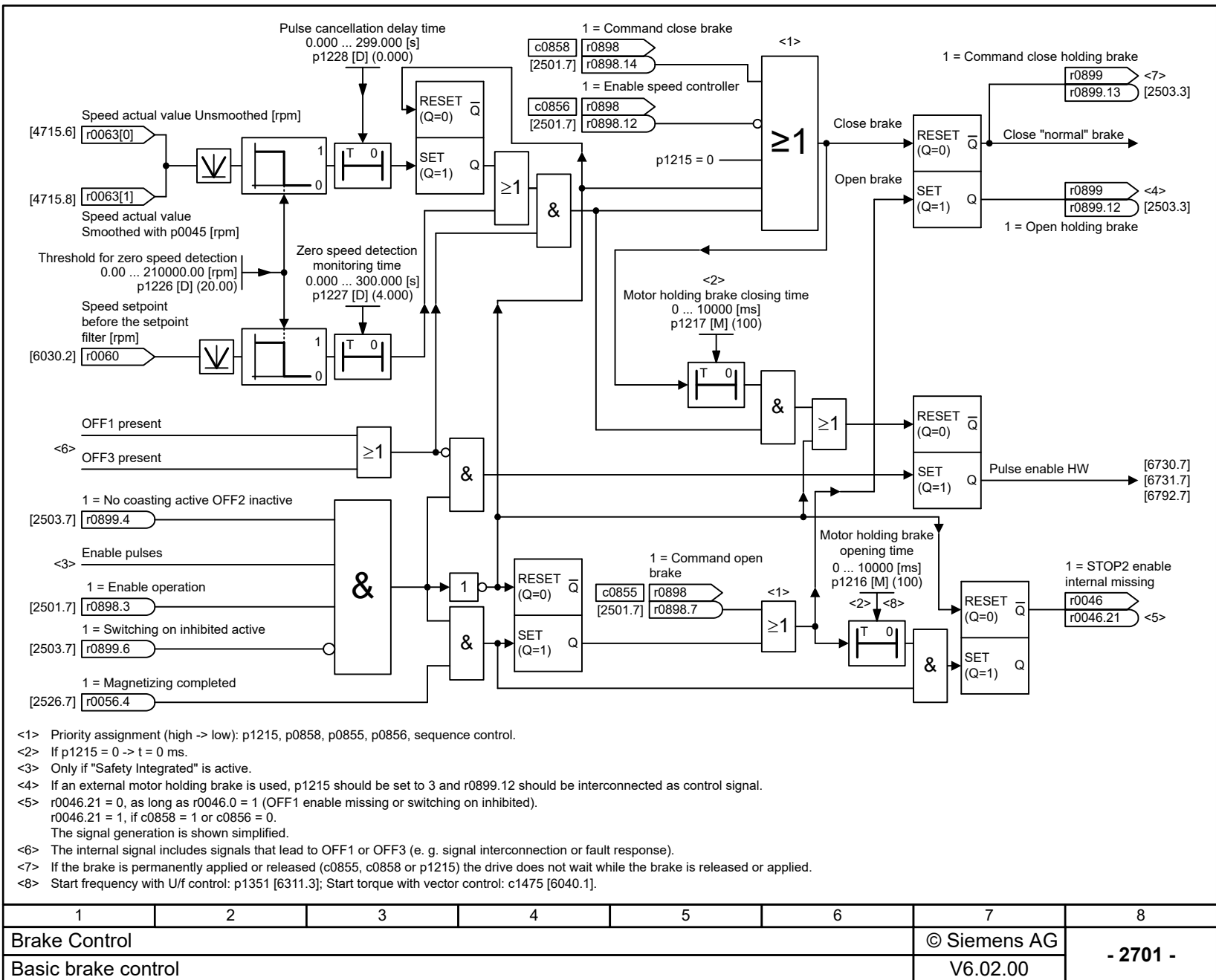


Figure 4-51 2701 - Basic brake control

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 769)

2853 – Failsafe digital output (F-DO 0) (Page 770)

2854 – Control signals safe motion monitoring function (Part 1) (Page 771)

2855 – Control signals safe motion monitoring function (Part 2) (Page 772)

2856 – Safe state selection (Page 773)

2915 – Standard telegrams (Page 774)

2917 – Manufacturer-specific telegrams (Page 775)

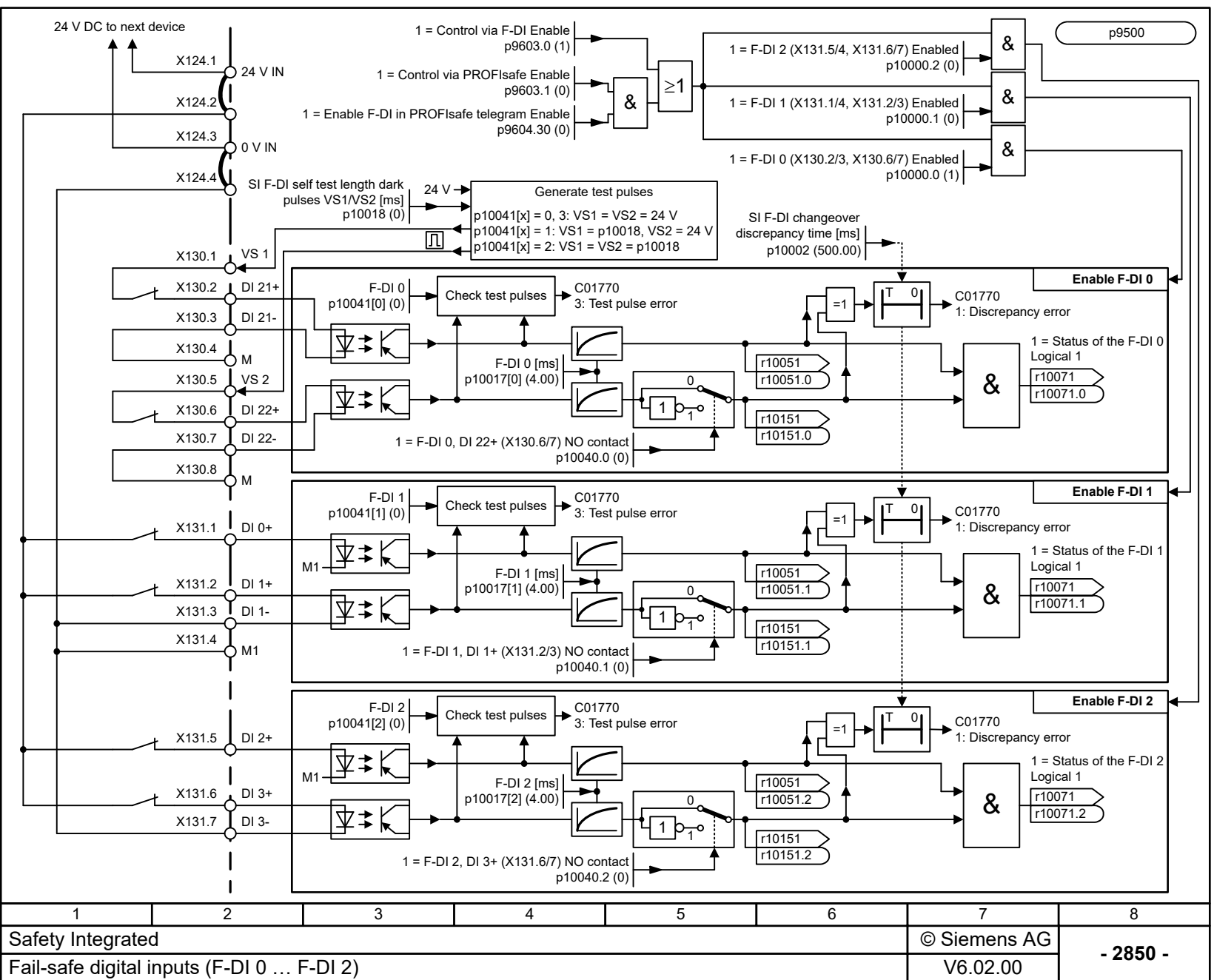


Figure 4-52 2850 - Fail-safe digital inputs (F-DI 0 ... F-DI 2)

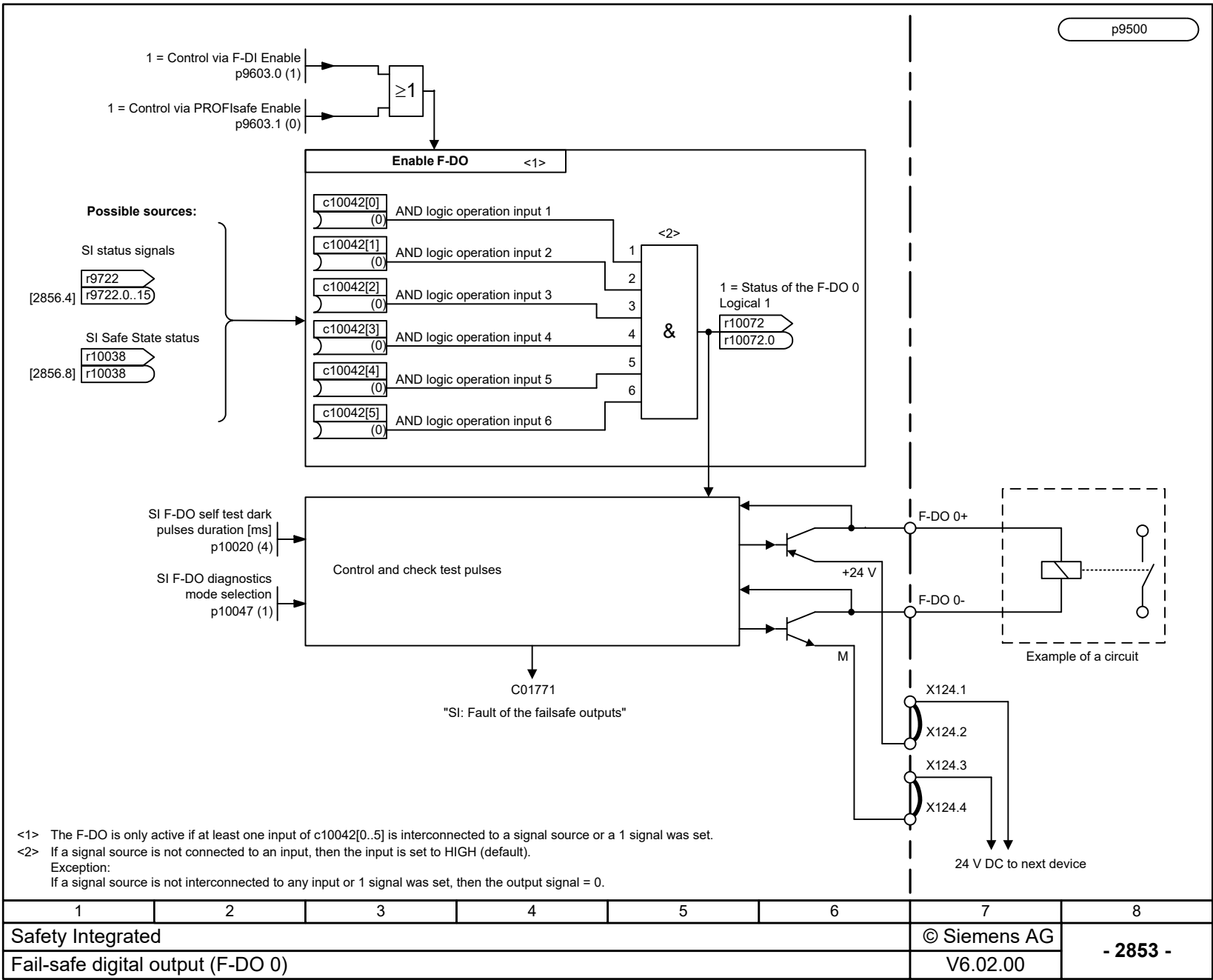
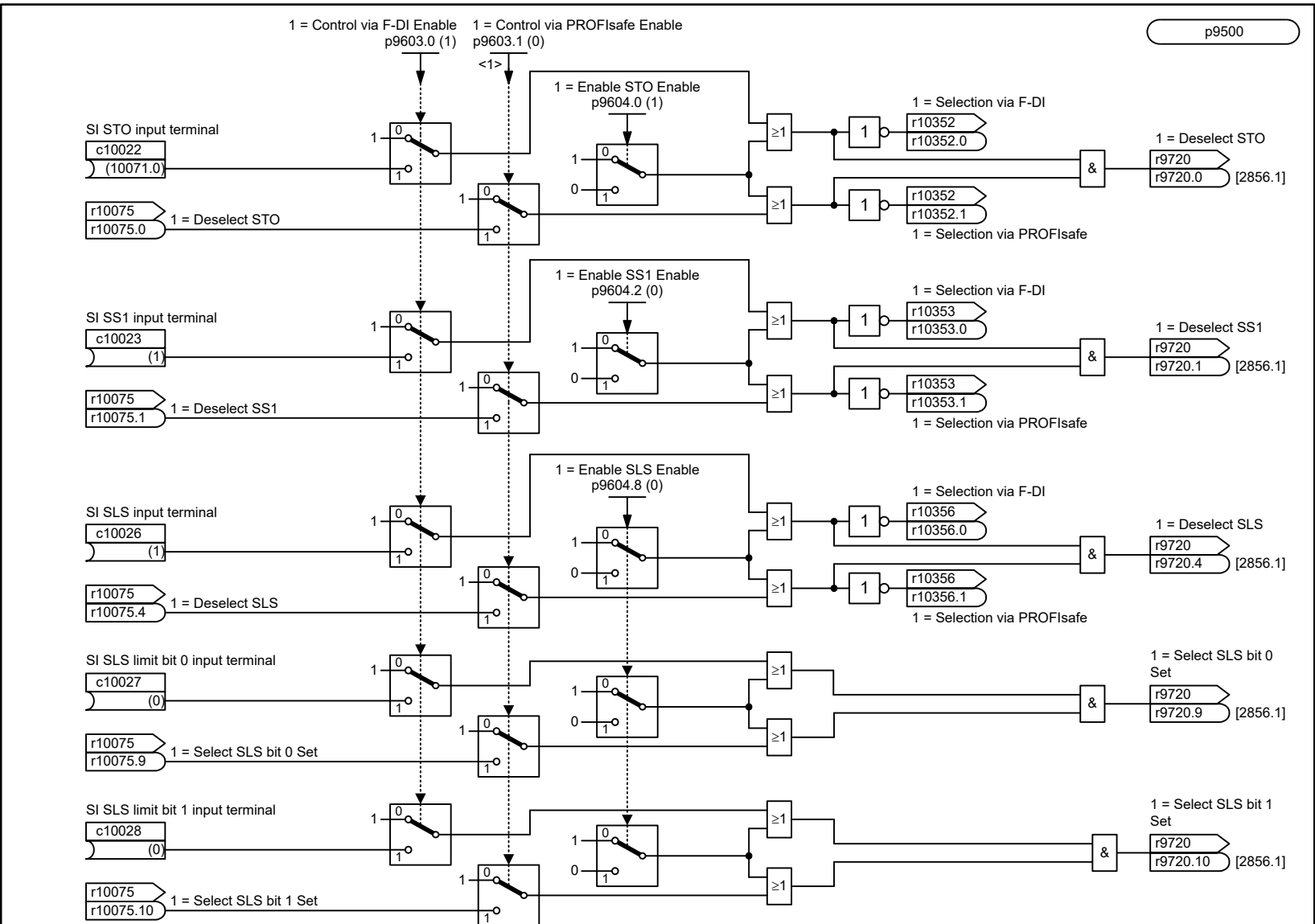


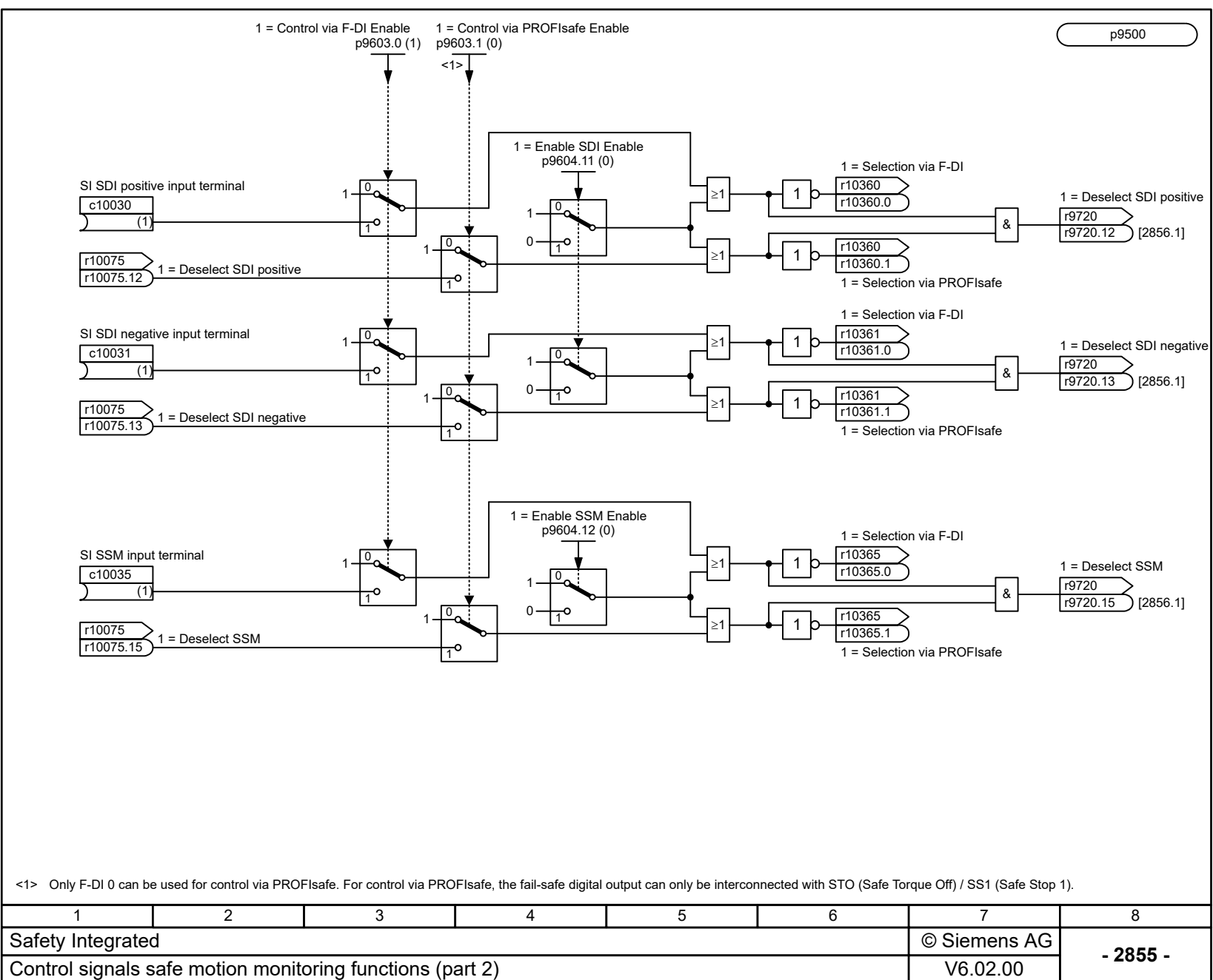
Figure 4-53 2853 - Fail-safe digital output (F-DO 0)

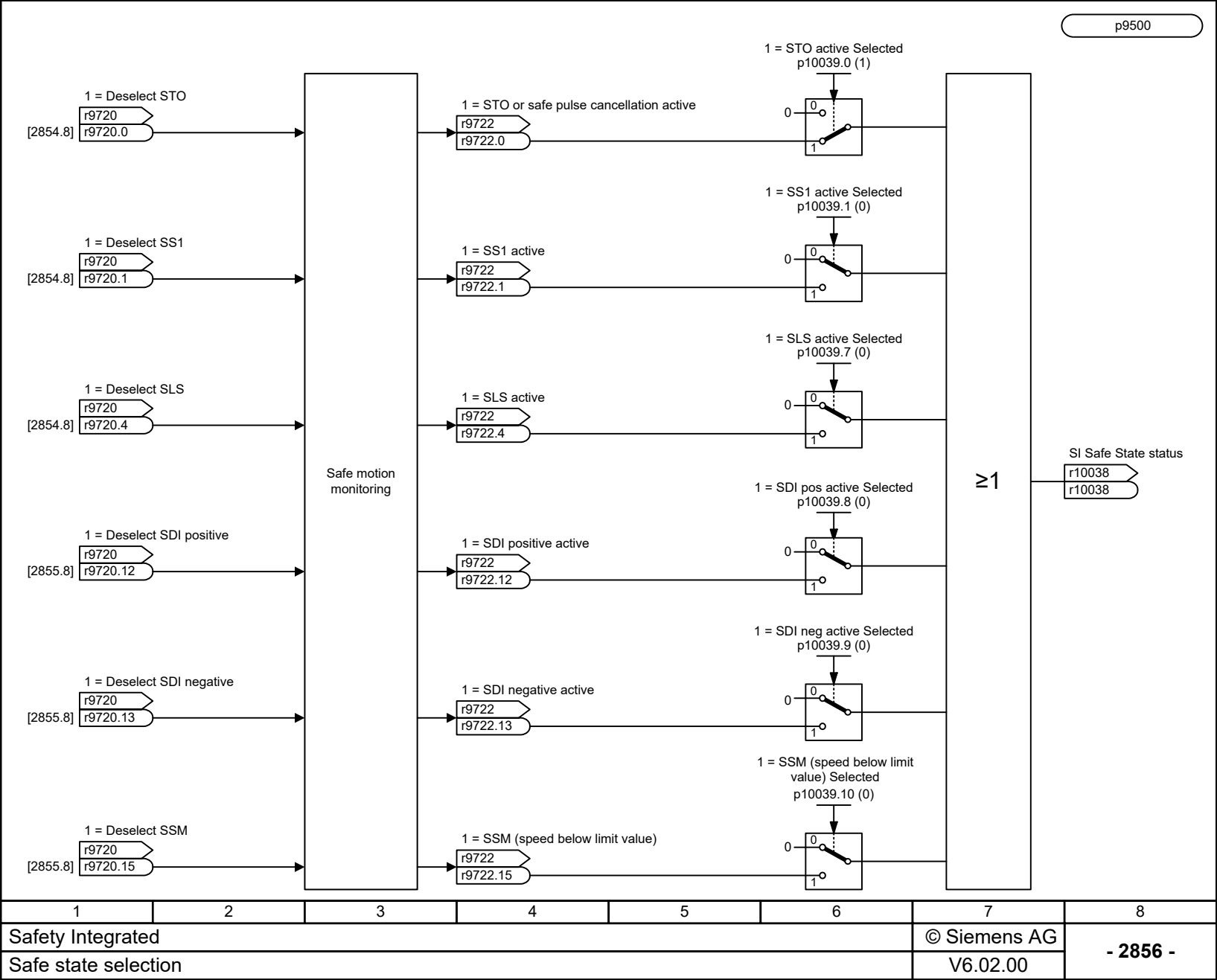


<1> Only F-DI 0 can be used for control via PROFIsafe. For control via PROFIsafe, the fail-safe digital output can only be interconnected with STO (Safe Torque Off) / SS1 (Safe Stop 1).

1	2	3	4	5	6	7	8
Safety Integrated						© Siemens AG	- 2854 -
Control signals safe motion monitoring functions (part 1)						V6.02.00	

Figure 4-54 2854 – Control signals safe motion monitoring function (part 1)





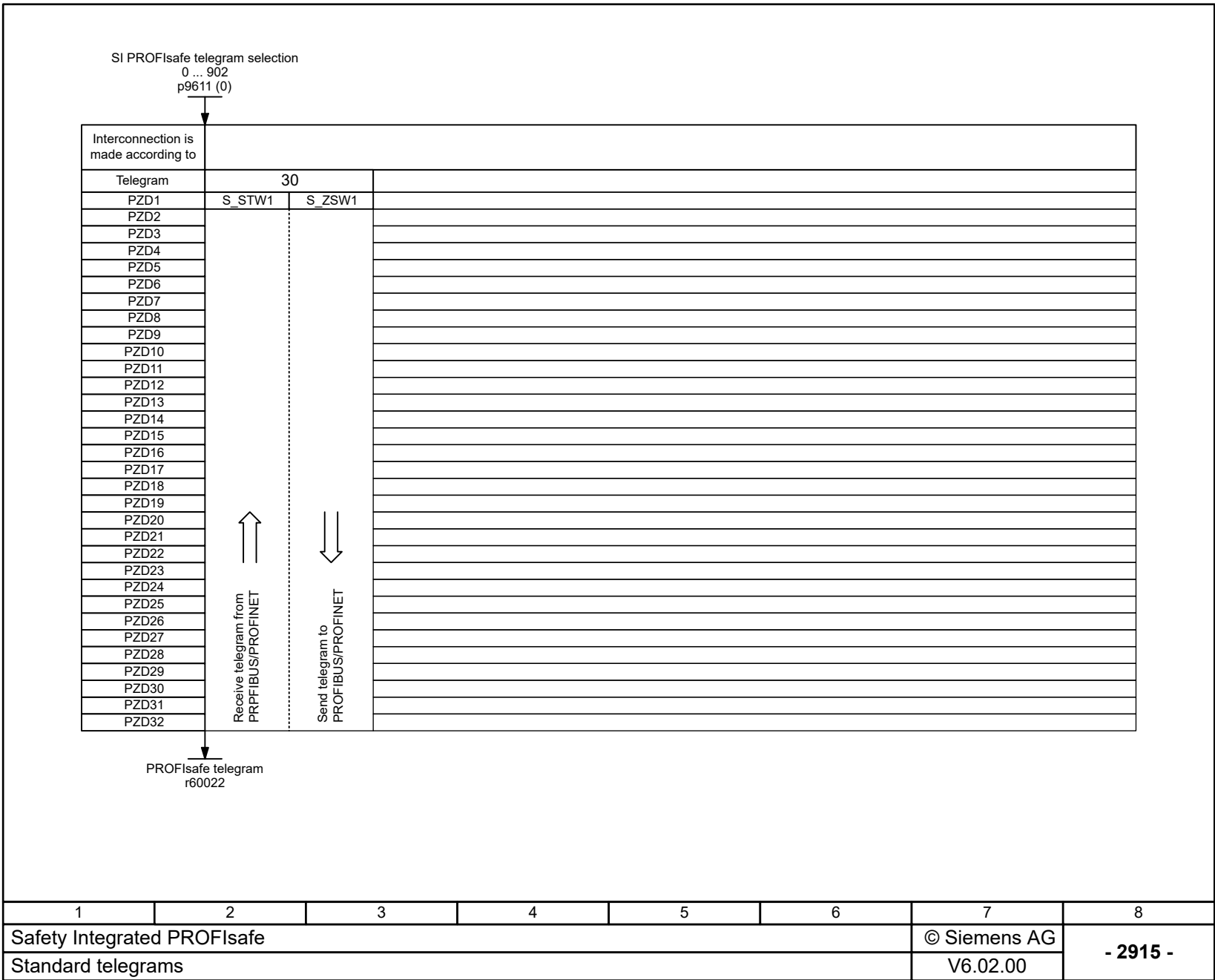


Figure 4-57 2915 - Standard telegrams

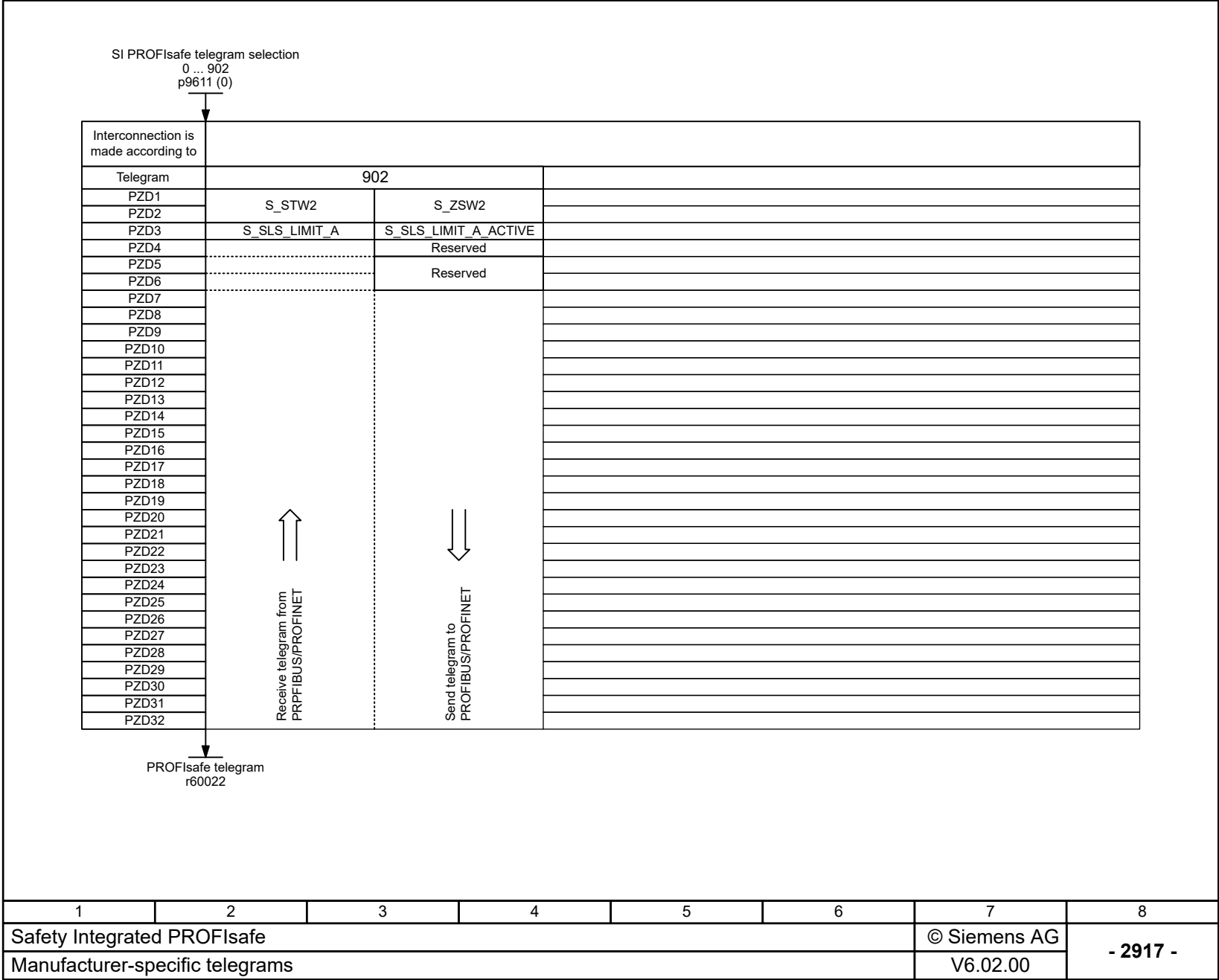


Figure 4-58 2917 - Manufacturer-specific telegrams

4.8 Setpoint channel

Overview

The following function diagrams describe the setpoint channel.

Function diagrams

- 3001 – Overview (Page 777)
- 3010 – Fixed speed setpoints, binary selection (Page 778)
- 3011 – Fixed speed setpoints, direct selection (Page 779)
- 3020 – Motorized potentiometer (Page 780)
- 3030 – Main/supplementary setpoint, setpoint scaling, jogging (Page 781)
- 3040 – Direction limitation and direction reversal (Page 782)
- 3050 – Skip edges (Page 783)
- 3051 – Speed limits (Page 784)
- 3060 – Basic ramp-function generator (Page 785)
- 3070 – Extended ramp-function generator (Page 786)
- 3080 – Ramp-function generator selection, status word, tracking (Page 787)

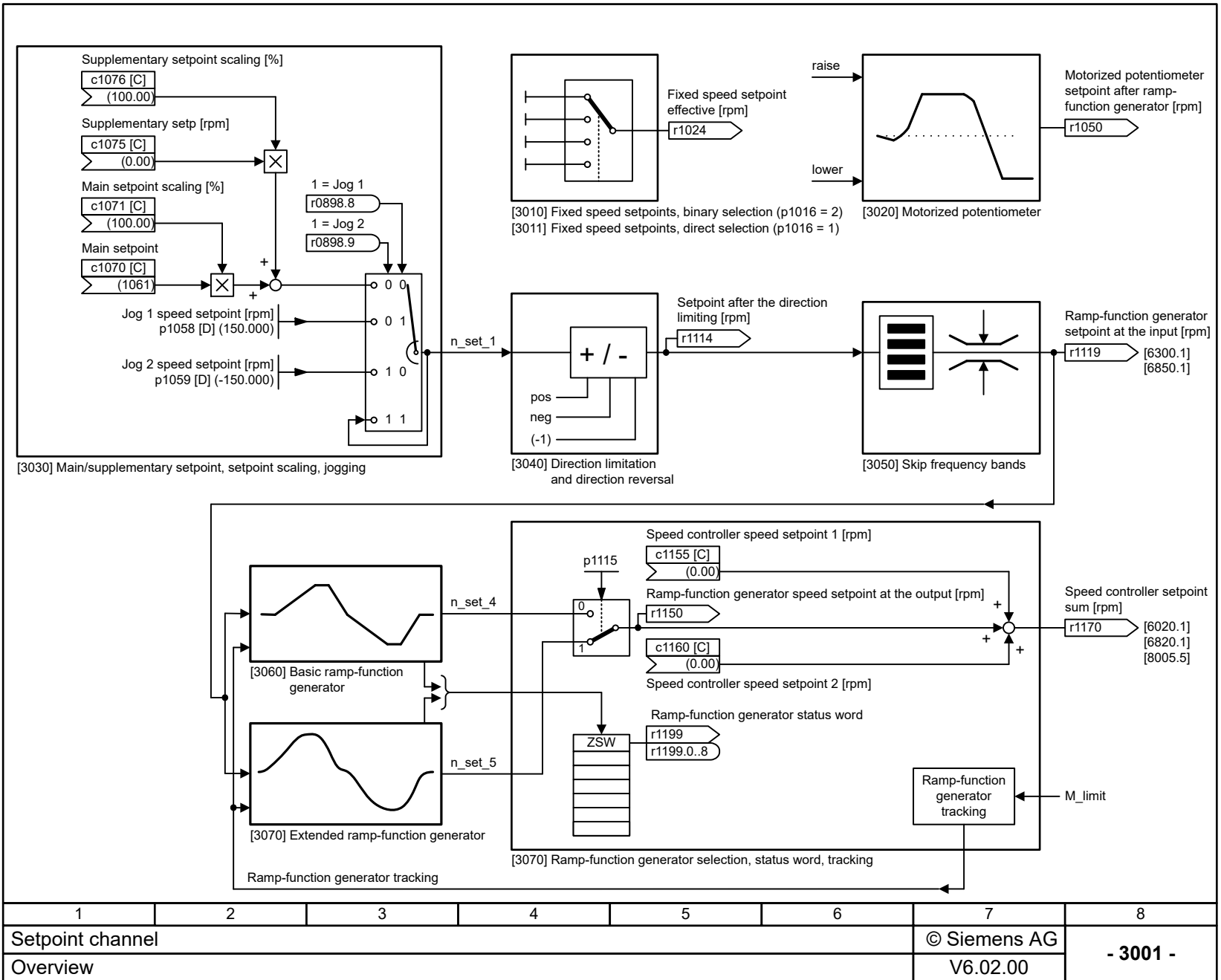
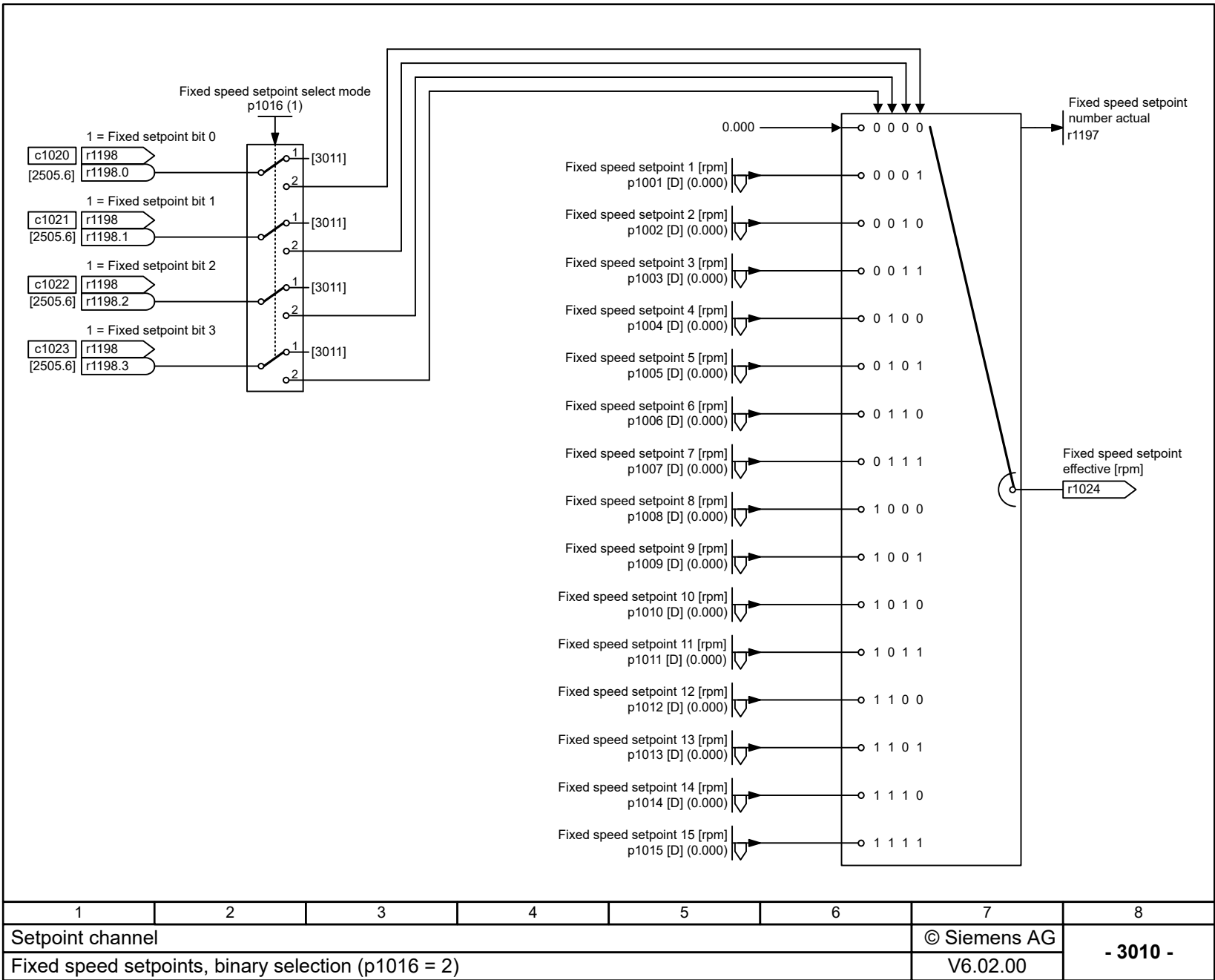


Figure 4-59 3001 – Overview



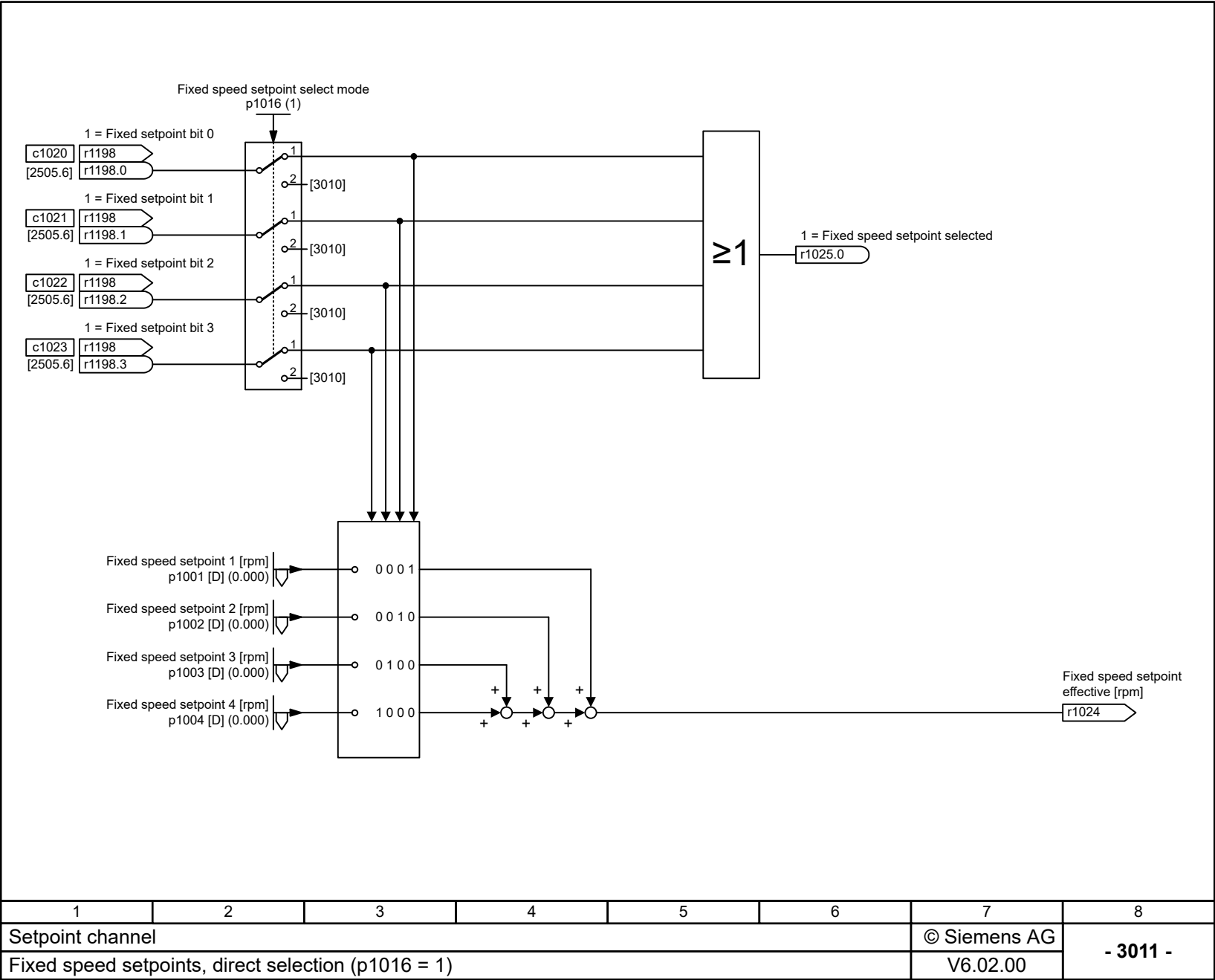
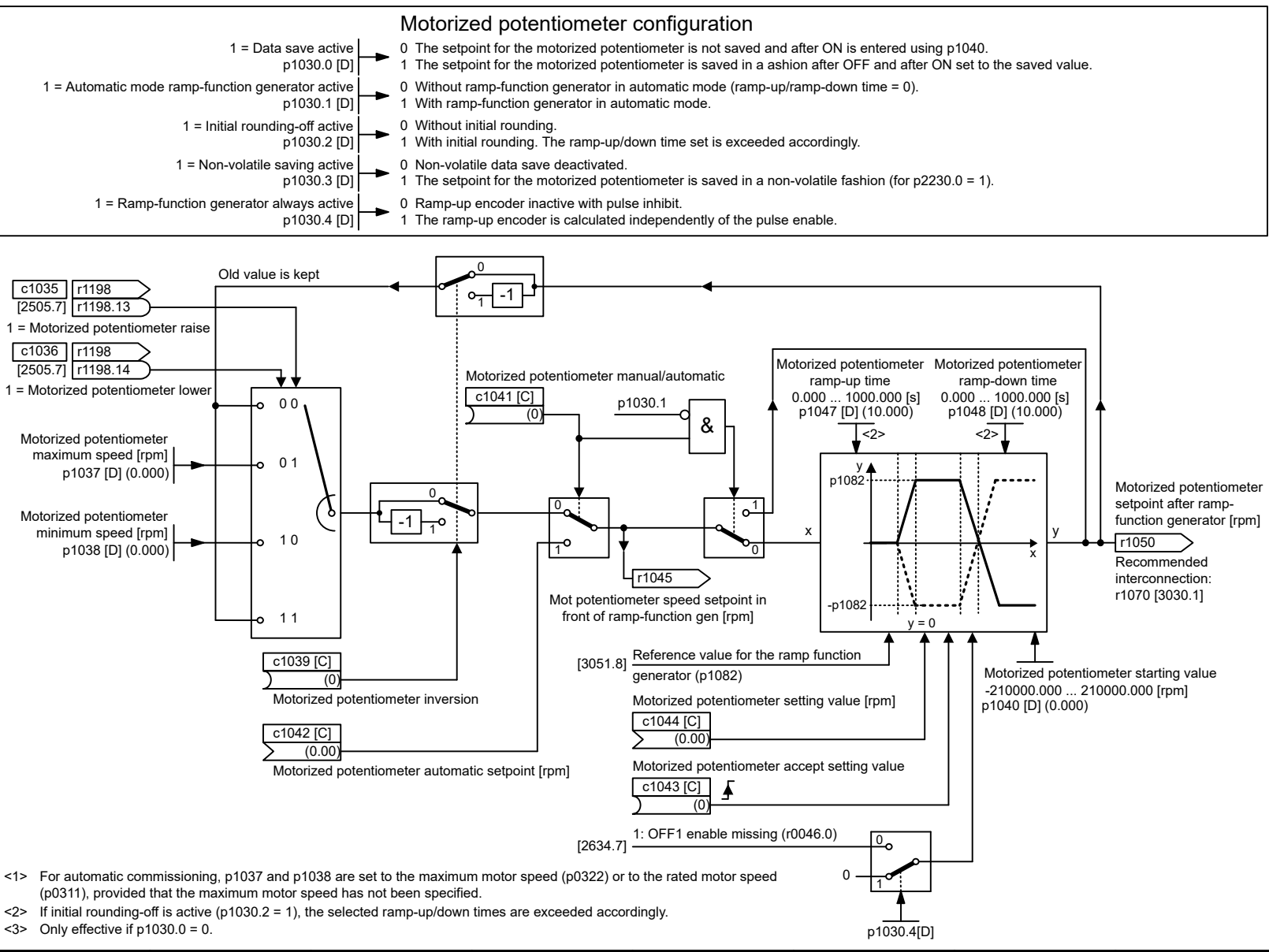
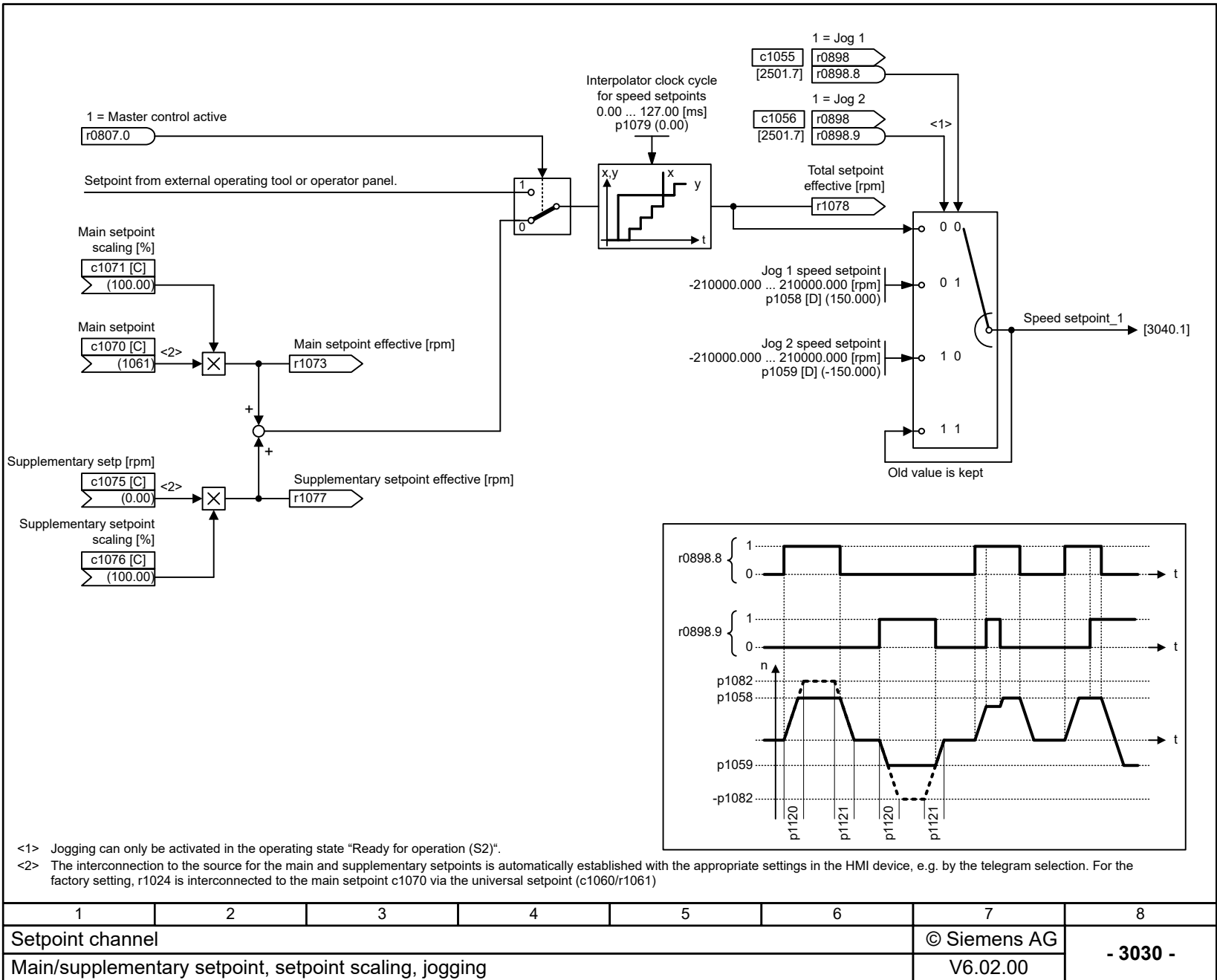


Figure 4-61 3011 - Fixed speed setpoints, direct selection

3020 - Motorized potentiometer



1	2	3	4	5	6	7	8
Setpoint channel						© Siemens AG	- 3020 -
Motorized potentiometer						V6.02.00	



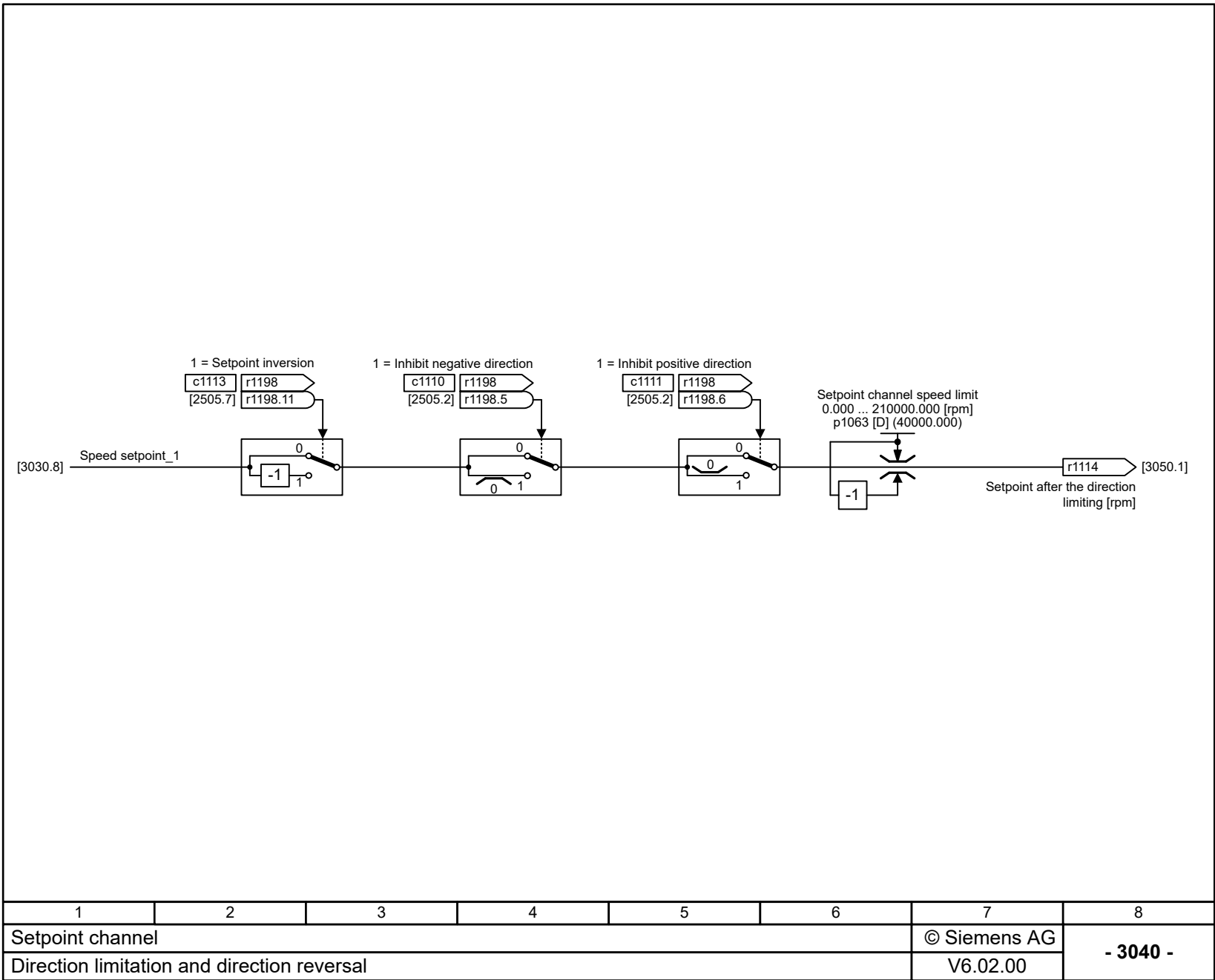
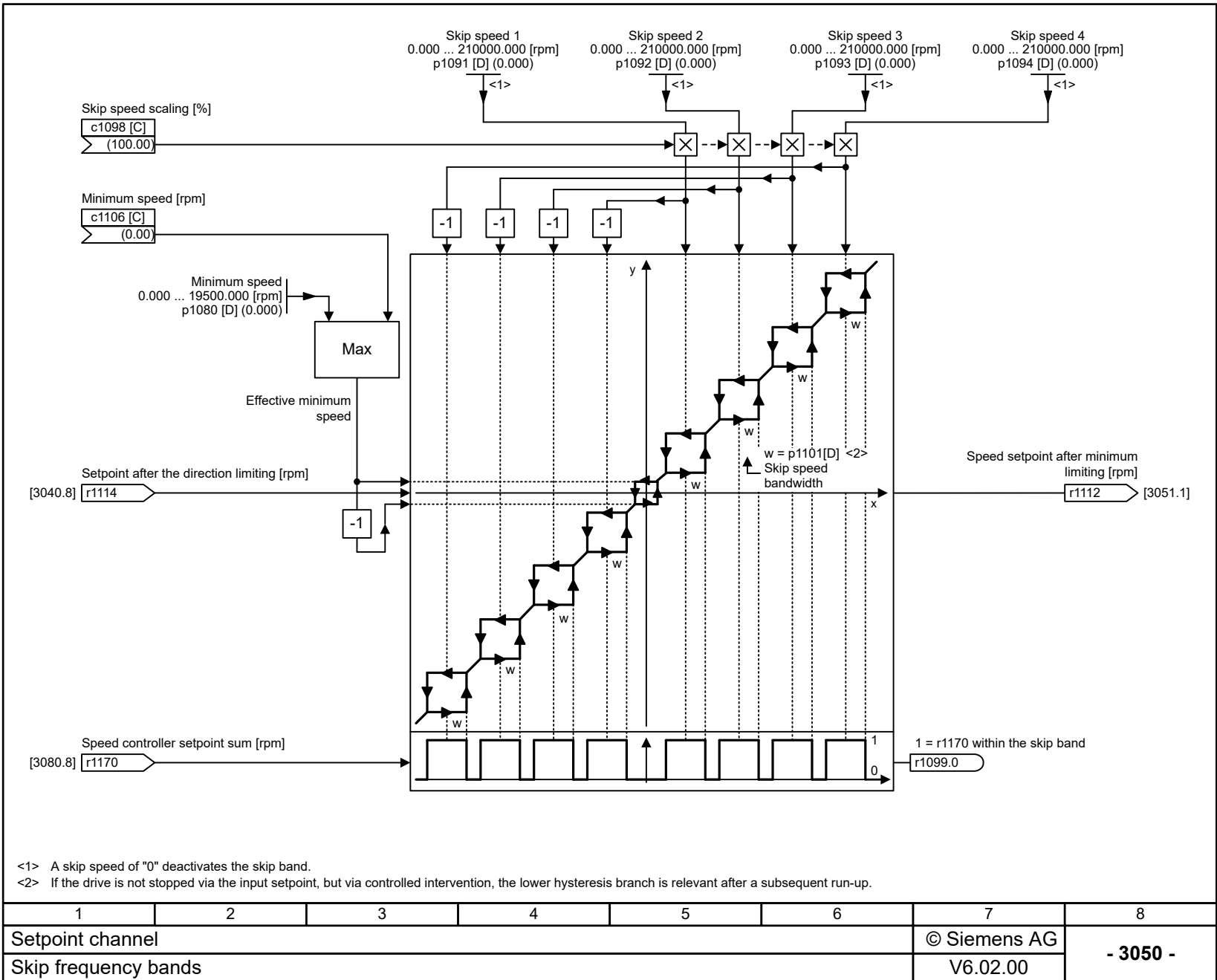


Figure 4-64 3040 - Direction limitation and direction reversal



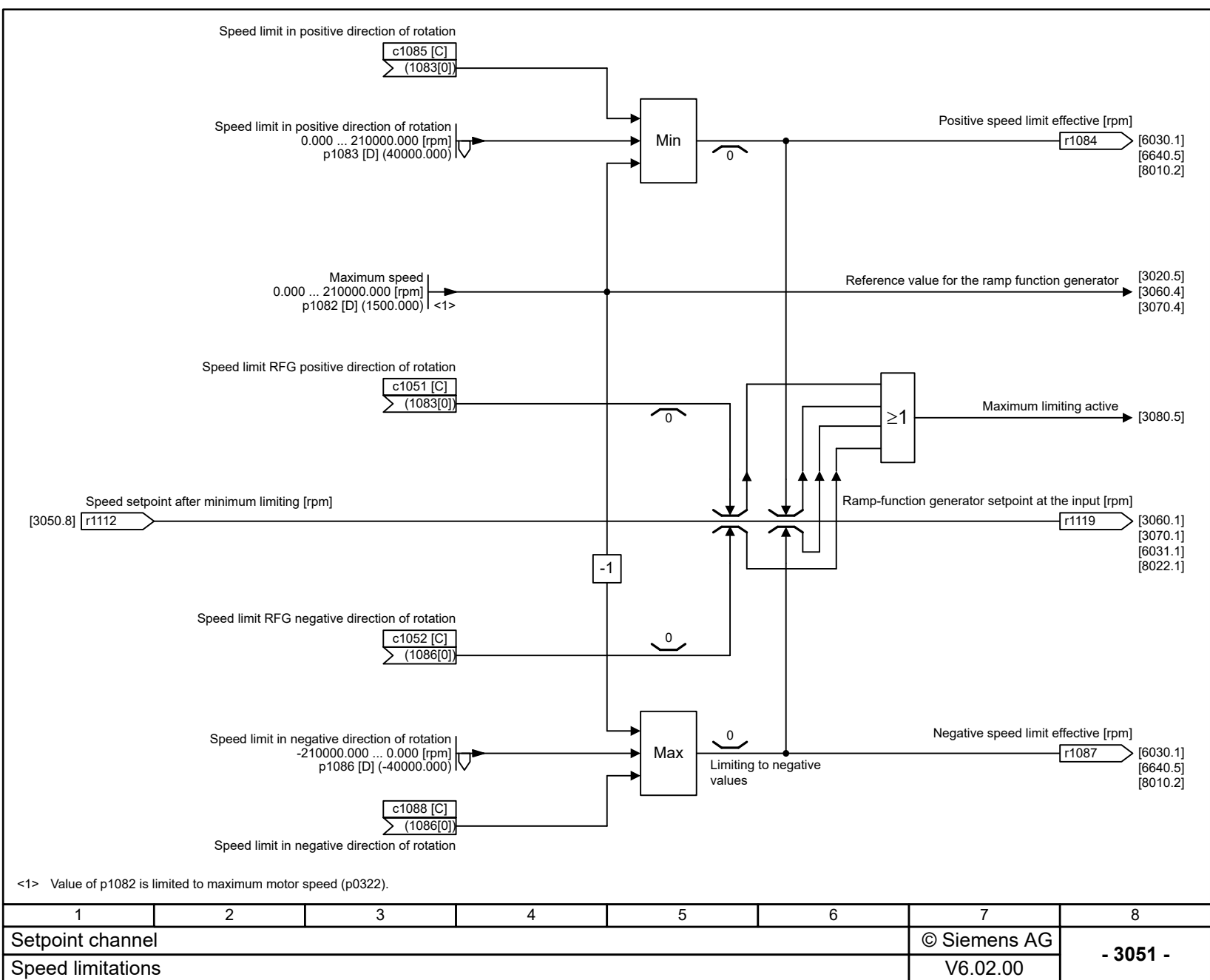
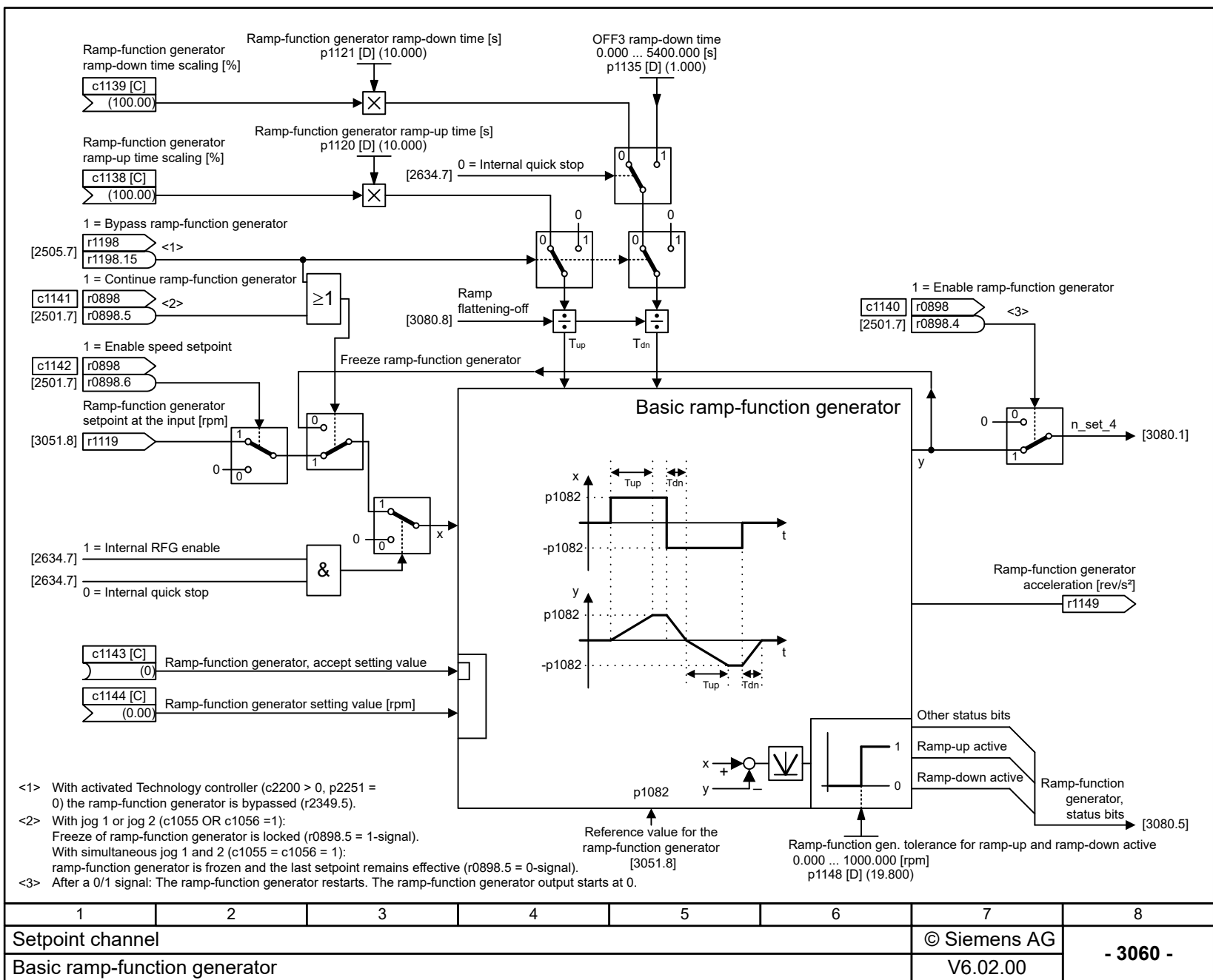
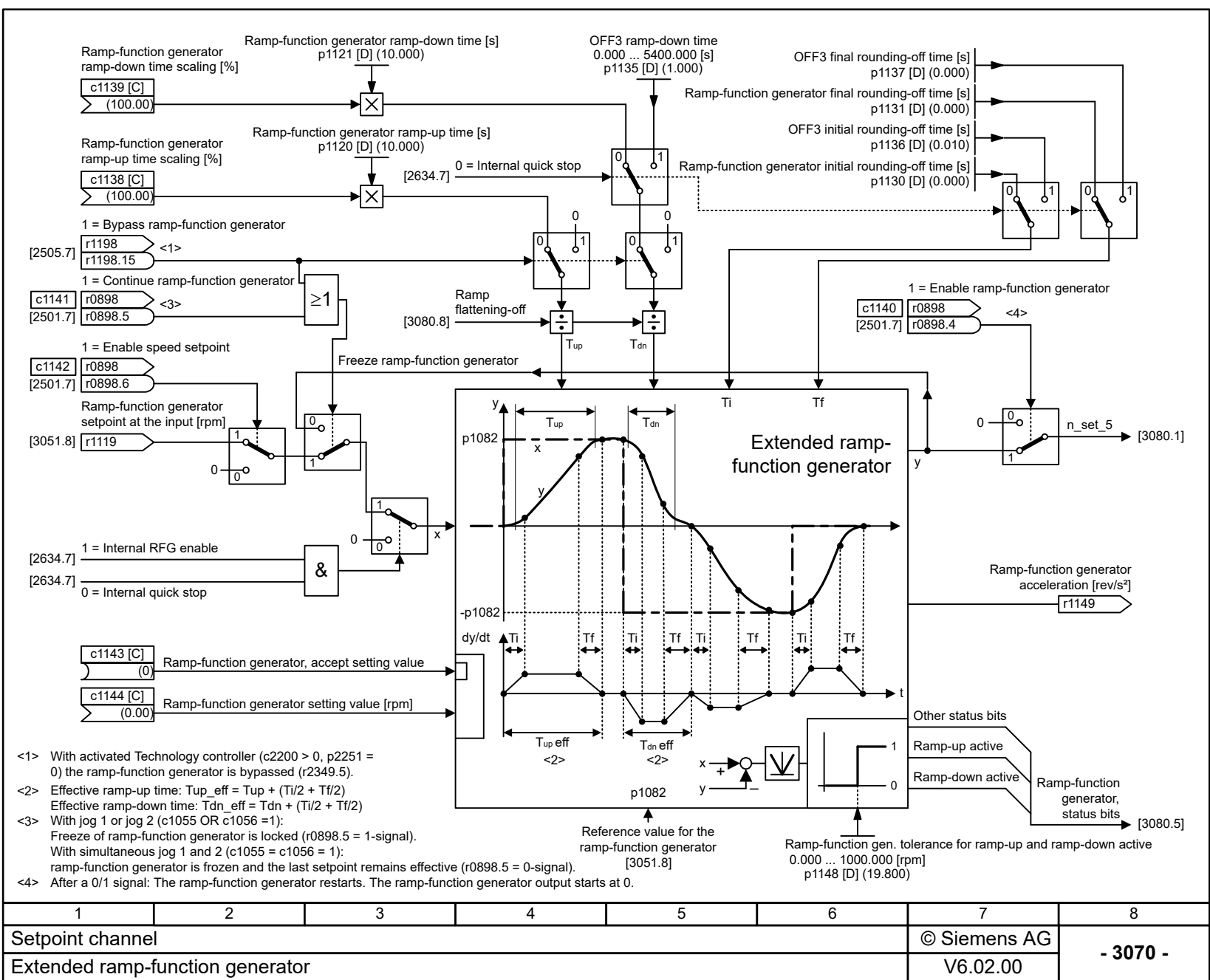


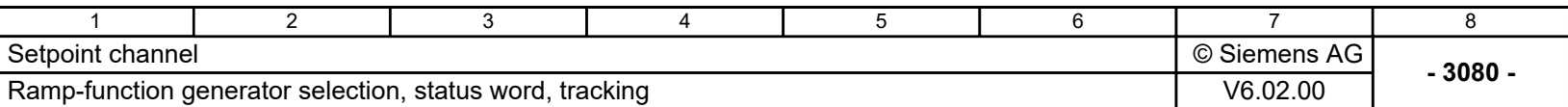
Figure 4-66 3051 - Speed limitations

3060 - Basic ramp-function generator





Function diagrams



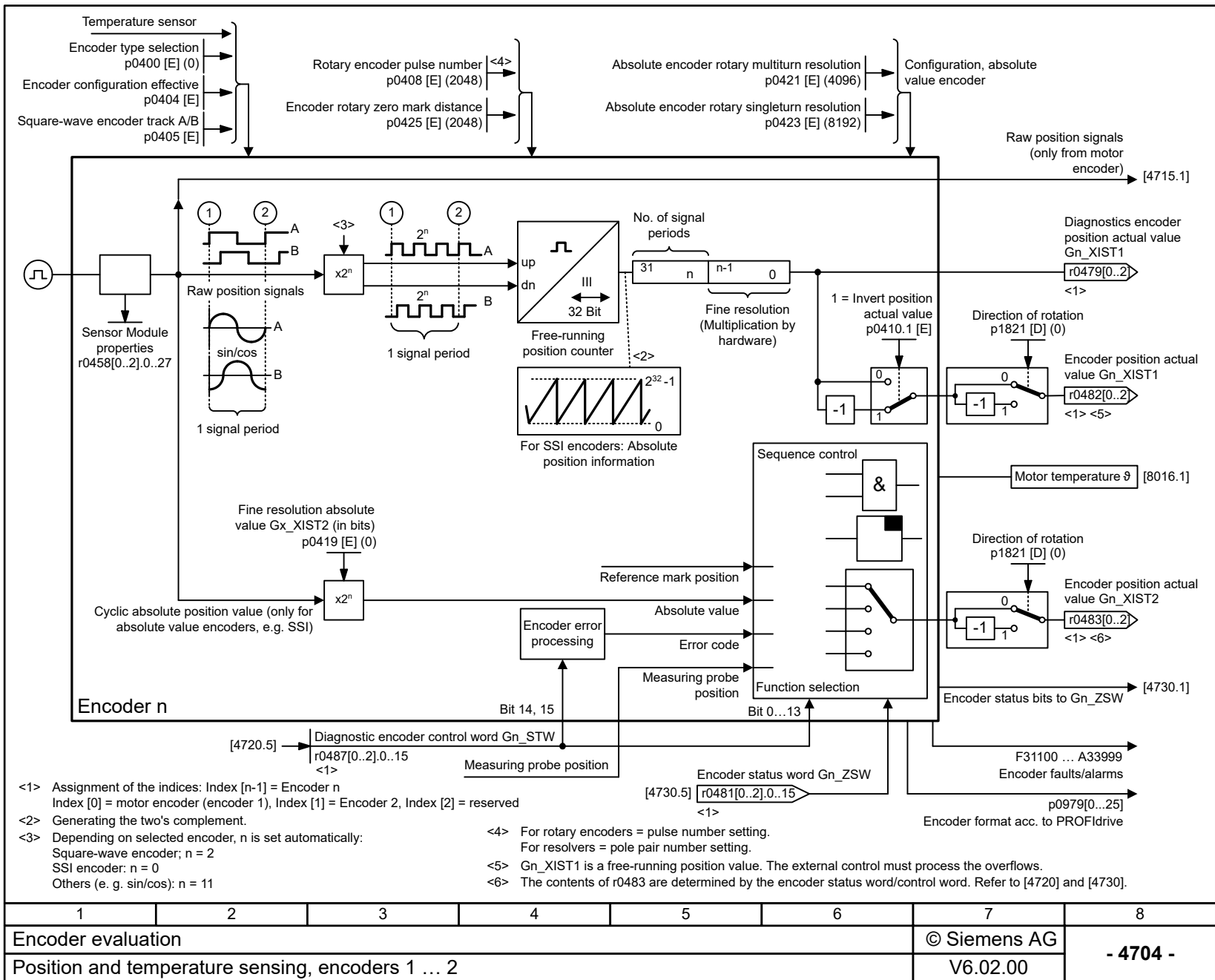
4.9 Encoder evaluation

Overview

The following function diagrams describe the encoder evaluation.

Function diagrams

- 4704 – Position and temperature sensing encoders 1 ... 2 (Page 789)
- 4715 – Speed actual value and pole pos. sensing, motor encoder (encoder 1) (Page 790)
- 4720 – Encoder interface, receive signals, encoders 1 ... 2 (Page 791)
- 4730 – Encoder interface, send signals, encoders 1 ... 2 (Page 792)
- 4750 – Absolute value for incremental encoder (Page 793)



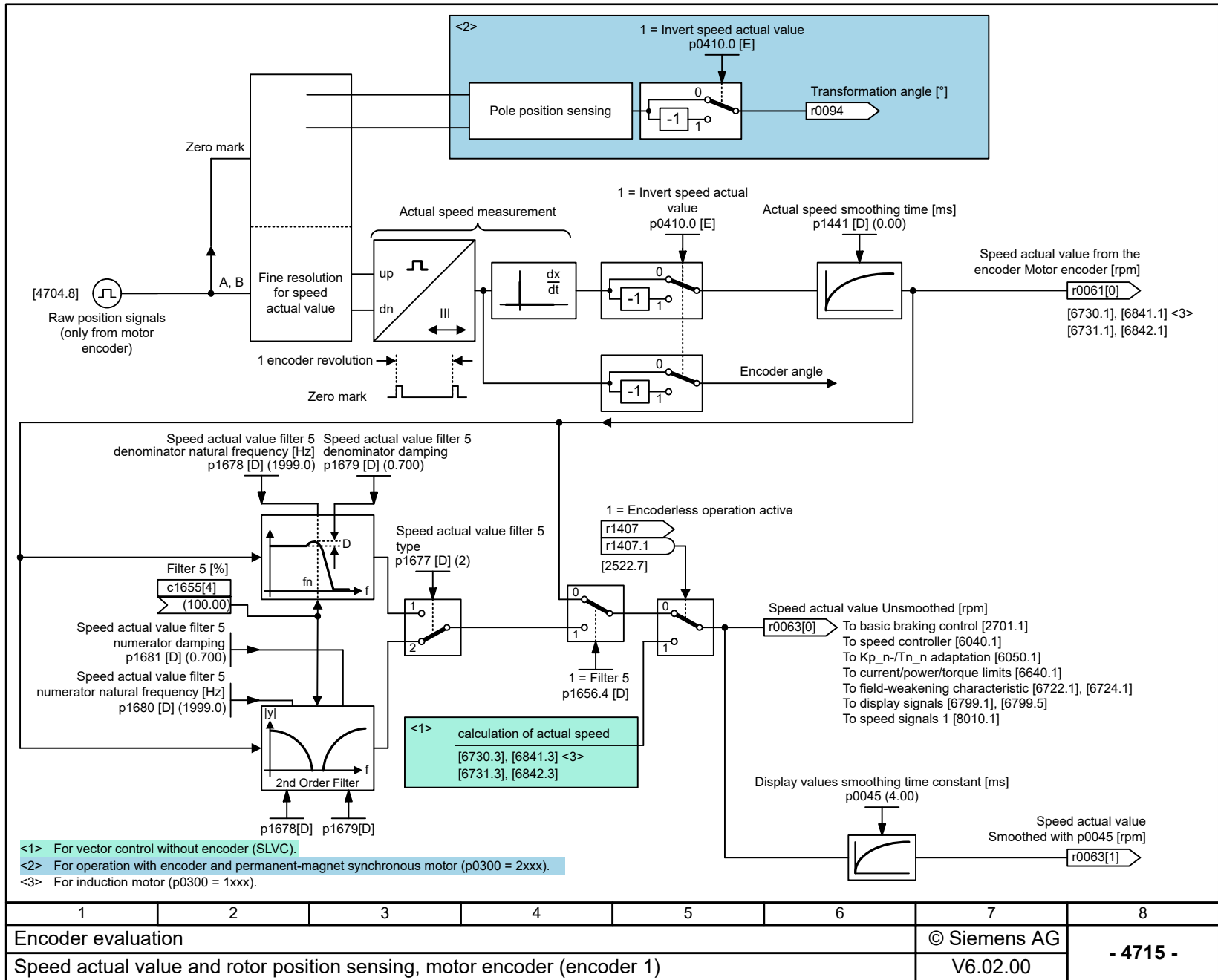


Figure 4-71 4715 – Speed actual value and pole pos. sensing, motor encoder (encoder 1)

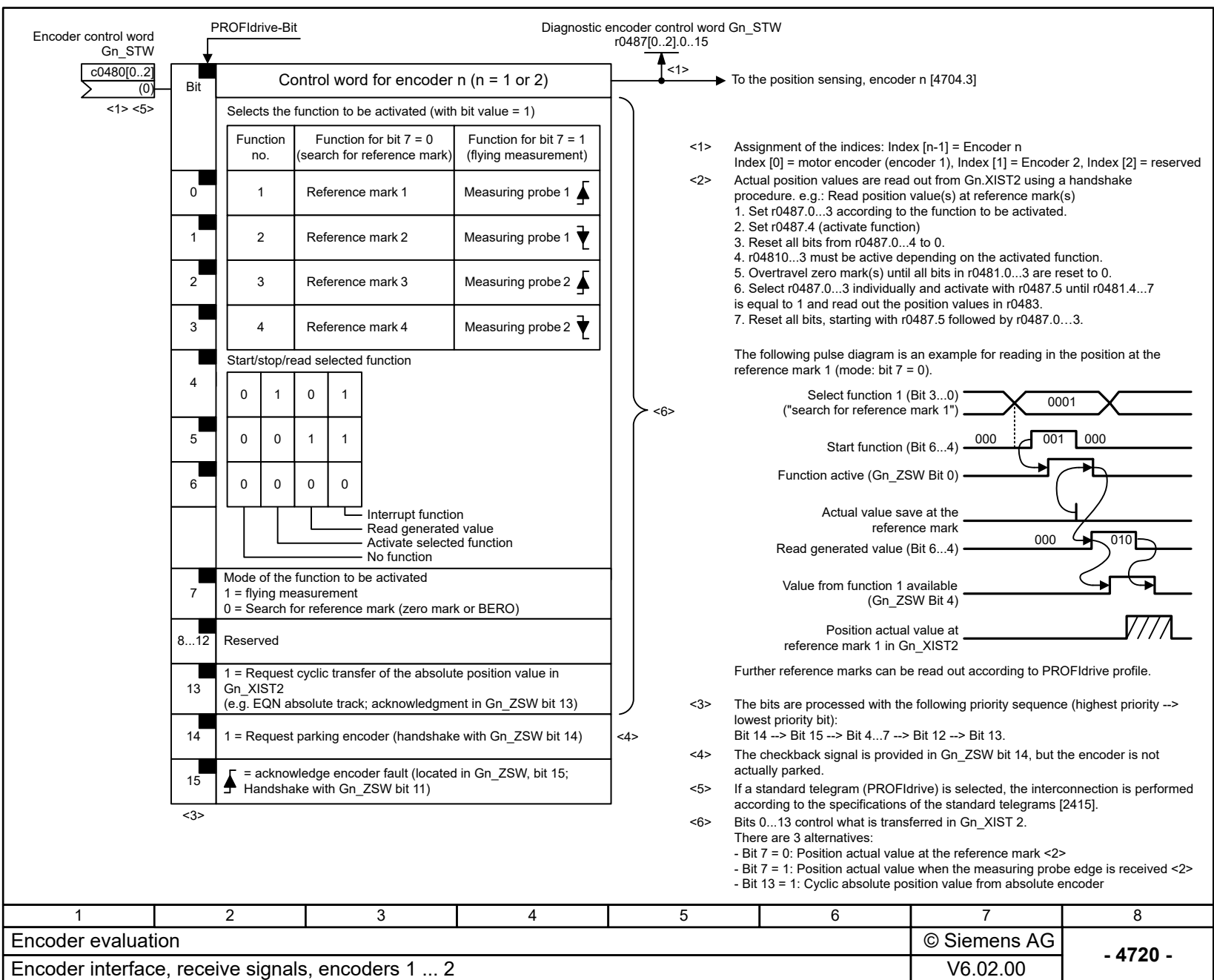
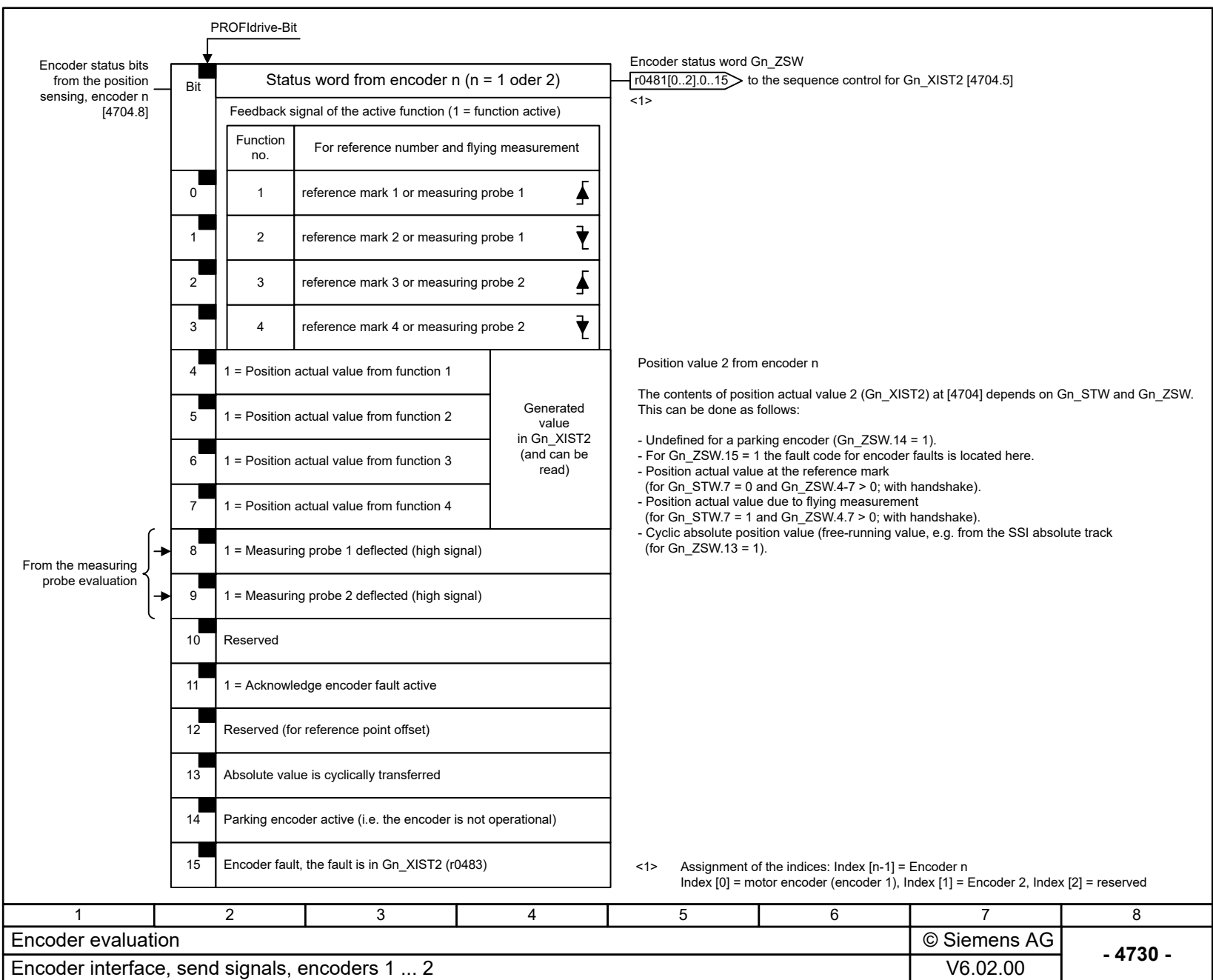
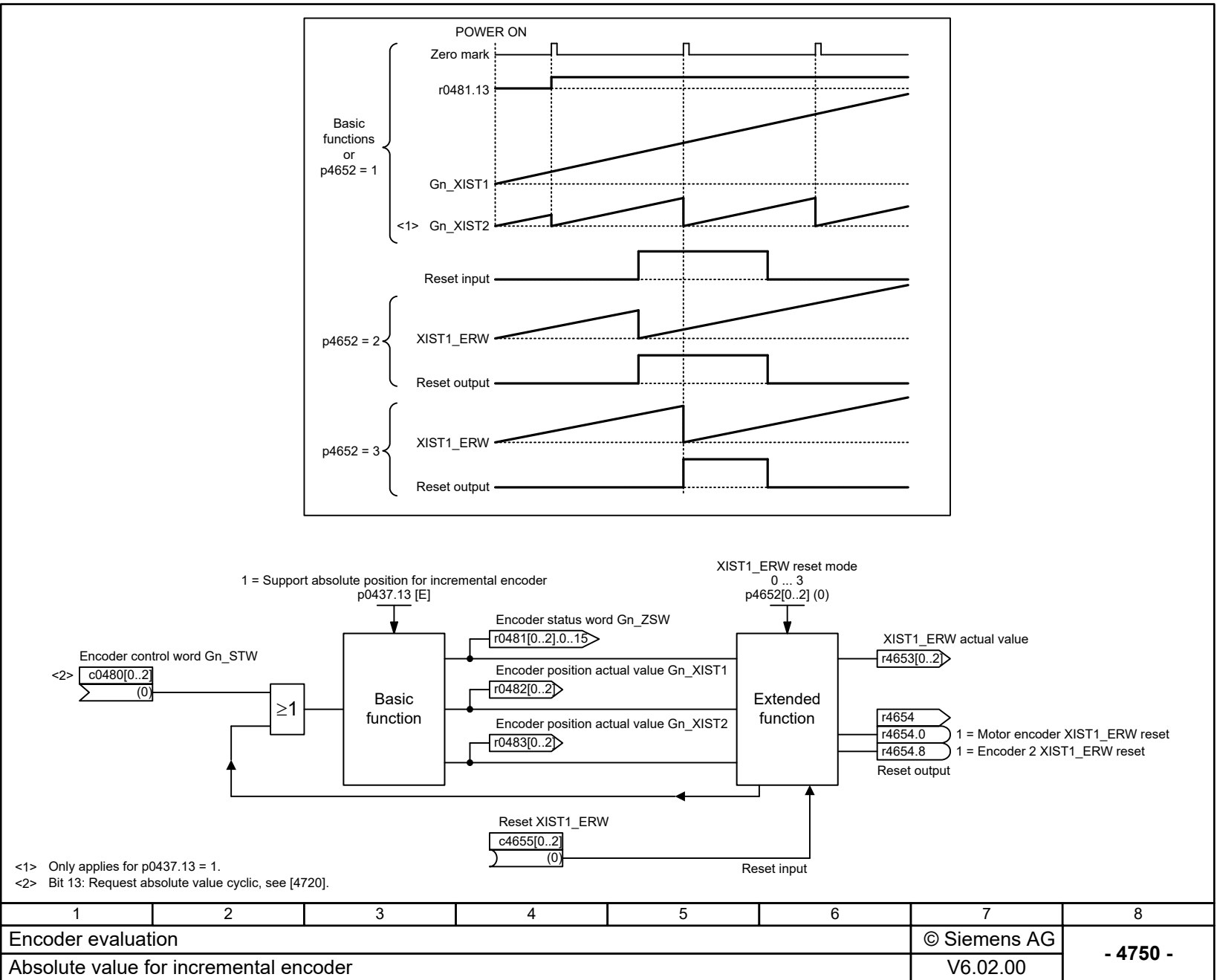


Figure 4-72 4720 – Encoder interface, receive signals, encoders 1 ... 2





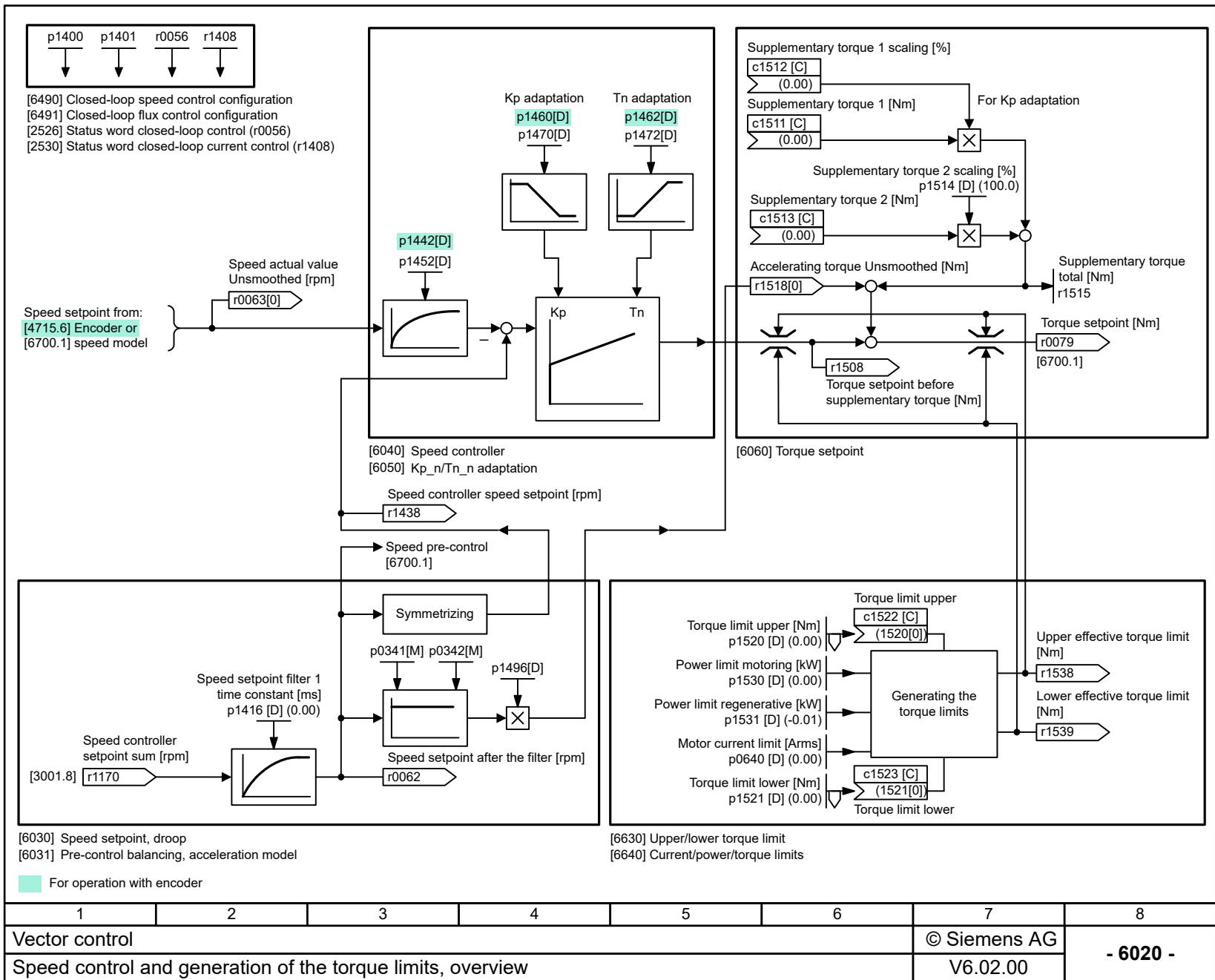
4.10 Vector control

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 795)
- 6030 – Speed setpoint, droop (Page 796)
- 6031 – Pre-control balancing, acceleration model (Page 797)
- 6035 – Moment of inertia estimator (Page 798)
- 6040 – Speed controller (Page 799)
- 6050 – K_p / T_n adaptation (Page 800)
- 6060 – Torque setpoint (Page 801)
- 6220 – V_{dc_max} controller and V_{dc_min} controller (VECTOR) (Page 802)
- 6490 – Speed control configuration (Page 803)
- 6491 – Flux control configuration (Page 804)
- 6630 – Upper/lower torque limit (Page 805)
- 6640 – Current/power/torque limits (Page 806)
- 6700 – Closed-loop current control, overview (Page 807)
- 6710 – Current setpoint filter (Page 808)
- 6714 – I_q and I_d controllers (Part 1) (Page 809)
- 6715 – I_q and I_d controllers (Part 2) (Page 810)
- 6721 – I_d setpoint (permanent magnet synchronous motor) (Page 811)
- 6722 – Field weakening characteristic, I_d setpoint (induction motor) (Page 812)
- 6723 – Field weakening controller, flux controller (induction motor) (Page 813)
- 6724 – Field weakening controller (permanent magnet synchronous motor) (Page 814)
- 6730 – Interface to power unit (induction motor) (Page 815)
- 6731 – Interface to the power unit (permanent magnet synchronous motor) (Page 816)
- 6790 – Flux setpoint (synchronous reluctance motor) (Page 817)
- 6791 – Field weakening controller, I_d setpoint (synchronous reluctance motor) (Page 818)
- 6792 – Interface to the power unit (synchronous reluctance motor) (Page 819)
- 6799 – Display signals (Page 820)



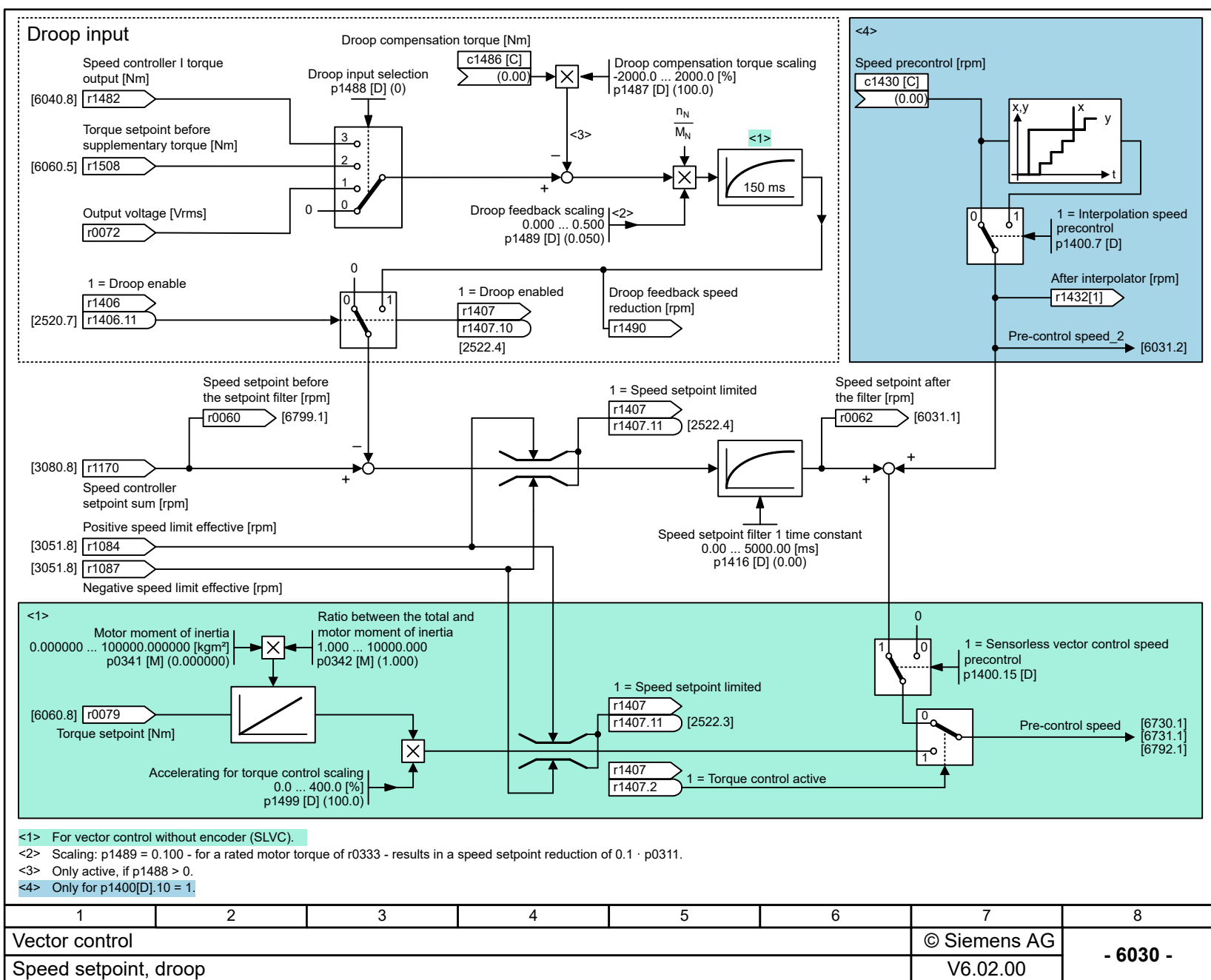


Figure 4-76 6030 - Speed setpoint, droop

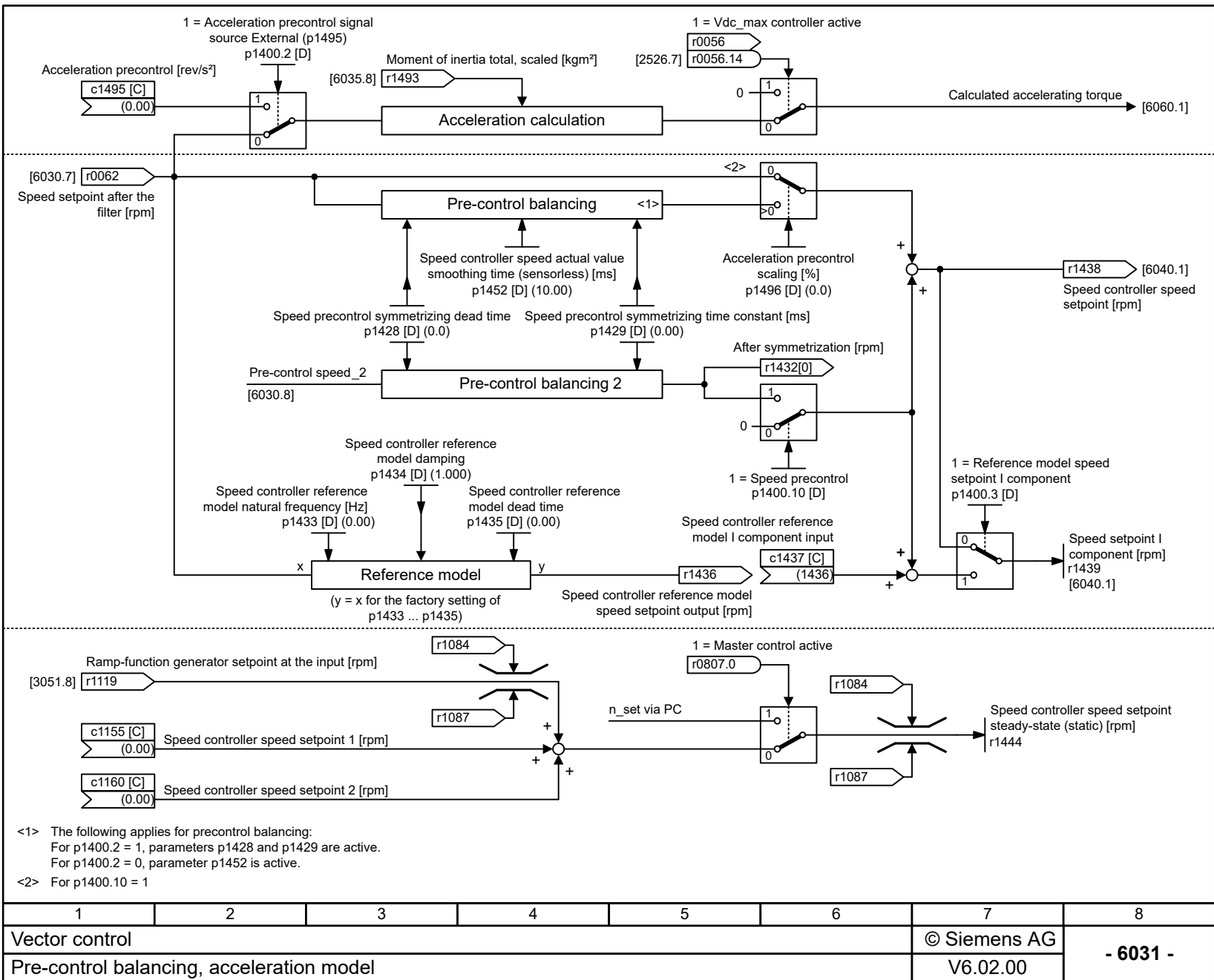


Figure 4-77 6031 - Precontrol balancing, acceleration model

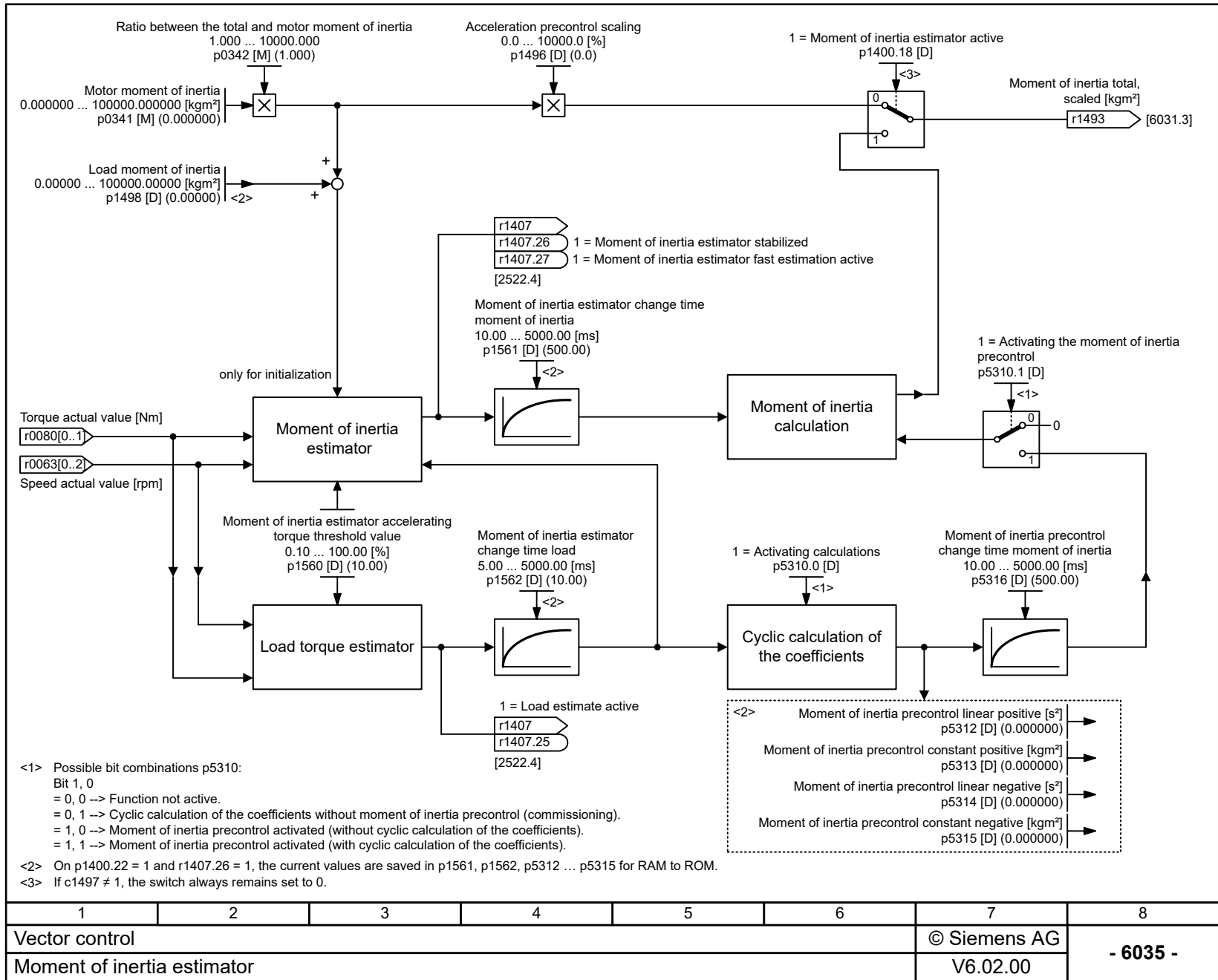
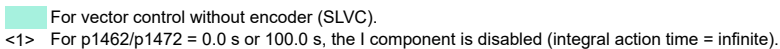


Figure 4-78 6035 – Moment of inertia estimator

6040 - Speed controller



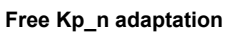
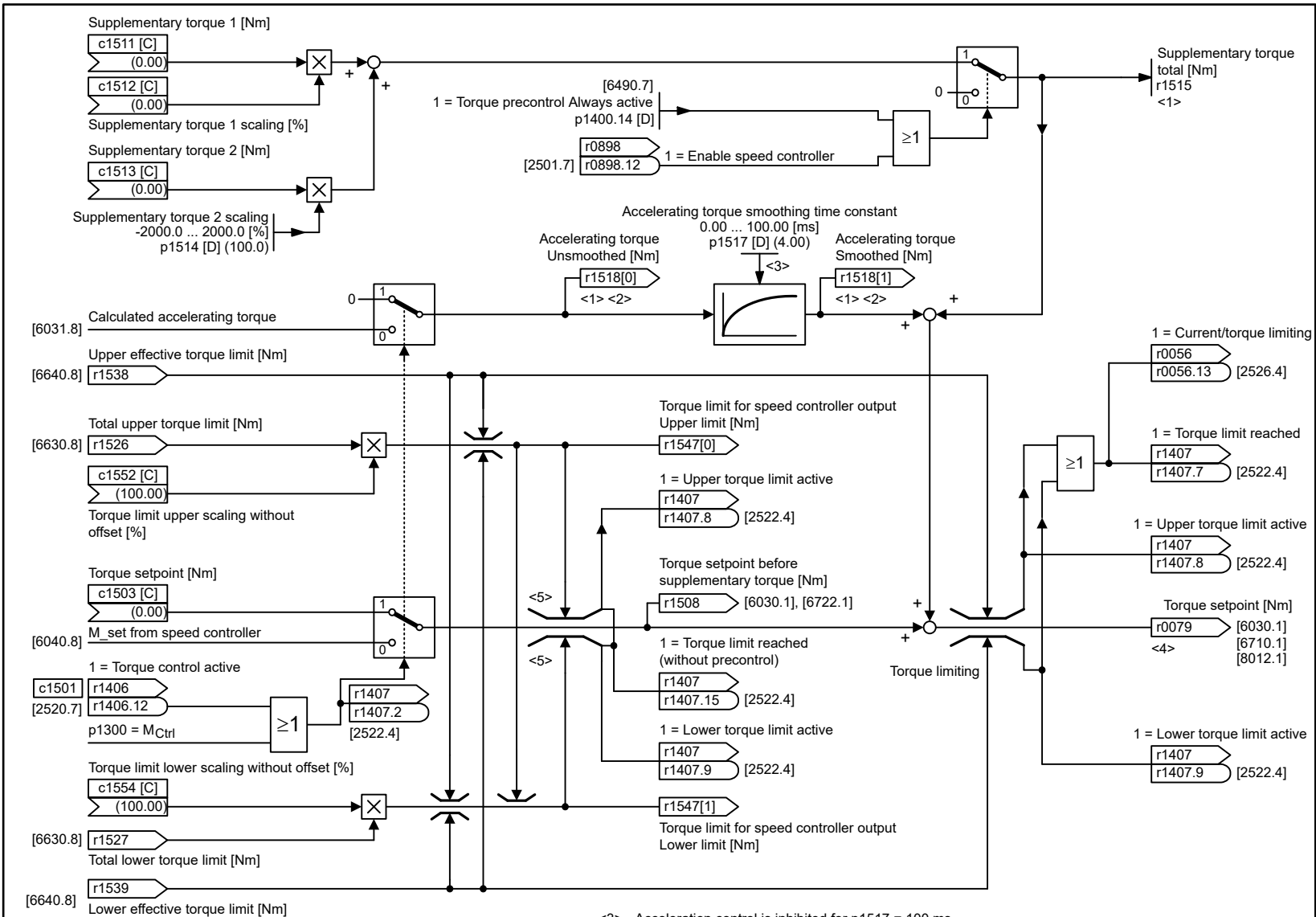


Figure 4-80 6050 -Kp_n-/Tn_n adaptation



<1> The signal is only effective after magnetization has been completed (r0056.4 = 1).
<2> No pre-control if the Vdc controller is active [6220.8].

<3> Acceleration control is inhibited for p1517 = 100 ms.
<4> M_set is also influenced by the speed limit controller.
<5> The following applies for c1551 = 0: The fixed torque limits are used (upper: r1538, lower: r1539).

1	2	3	4	5	6	7	8
Vector control						© Siemens AG	- 6060 -
Torque setpoint						V6.02.00	

Figure 4-81 6060 - Torque setpoint

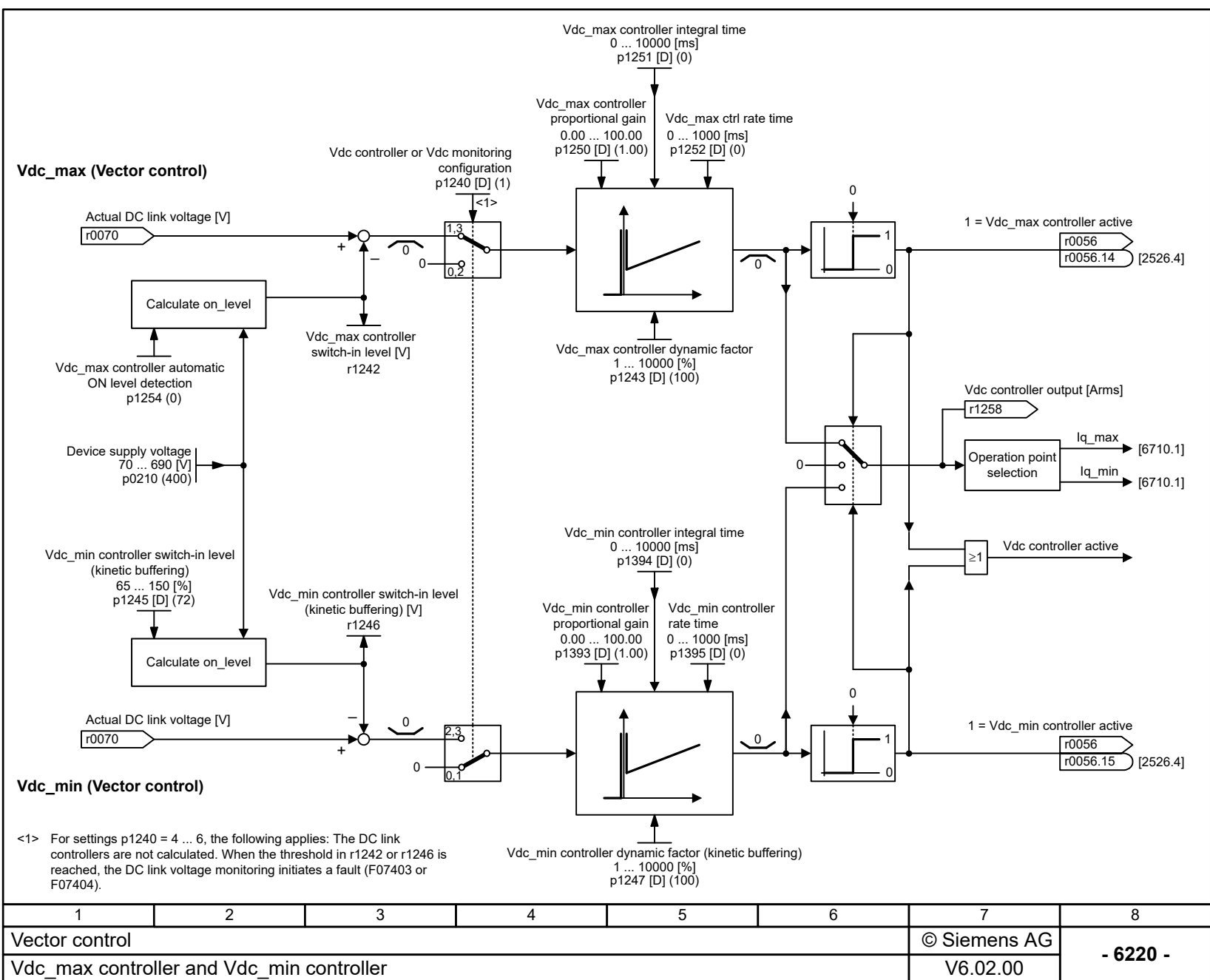


Figure 4-82 6220 - Vdc_max controller and Vdc_min controller (VECTOR)

Speed control configuration p1400 [D]							
Speed control configuration p1400 [D]		Bit No.	Meaning				
		00	1 = Automatic Kp/Tn adaptation active			→ [6040.2], [6824.5]	
		01	1 = Sensorless vector control freeze I comp			→ [6040.6], [6824.6]	
		02	1 = Acceleration precontrol signal source External (p1495)			→ [6822.4]	
		03	1 = Reference model speed setpoint I component			→ [6031.7]	
		...	Reserved				
		05	1 = Kp/Tn adaptation active			→ [6040.2], [6824.5]	
		06	1 = Free Tn adaptation active			→ [6050.7]	
		07	1 = Interpolation speed precontrol			→ [6030.7], [6822.3]	
		...	Reserved				
		10	1 = Speed precontrol			→ [6031.6], [6822.1]	
		...	Reserved				
		14	1 = Torque precontrol Always active			→ [6060.4], [6826.4]	
		15	1 = Sensorless vector control speed precontrol			→ [6030.7], [6822.7]	
		16	1 = I component for limiting Enable			→	
		...	Reserved				
		18	1 = Moment of inertia estimator active			→ [6035.6], [6822.7]	
		...	Reserved				
		20	1 = Acceleration model			→ [6822.6]	
		...	Reserved				
		22	1 = Obtain moment of inertia estimator value for pulse inhibit			→ [6035.1]	
		23	1 = Acceleration model (with speed encoder)			→ [6822.6]	
		24	1 = Moment of inertia estimator fast estimation active			→	
		25	1 = Accelerating torque instantaneous in the I/f mode			→	
		...	Reserved				
		27	0 = Load gearbox, take into account torque limit			→	
		...	Reserved				
		30	1 = Diagnostic mode SDC/DDC			→	
		31	1 = Standard Drive Control			→	
1	2	3	4	5	6	7	8
Vector control						© Siemens AG	- 6490 -
Speed control configuration						V6.02.00	

Figure 4-83 6490 - Speed control configuration

Flux control configuration p1401 [D]																																																								
<table><thead><tr><th>Bit No.</th><th>Meaning</th><th></th></tr></thead><tbody><tr><td>00</td><td>1 = Flux setpoint soft starting active</td><td>→ [6722.5], [6837.5]</td></tr><tr><td>01</td><td>1 = Flux setpoint differentiation active</td><td>→ [6723.6], [6838.5]</td></tr><tr><td>02</td><td>1 = Flux build-up control active</td><td>→ [6722.5], [6723.5], [6837.4]</td></tr><tr><td>03</td><td>1 = Flux characteristic load-dependent</td><td>→ [6790.5], [6834.5]</td></tr><tr><td>...</td><td>Reserved</td><td></td></tr><tr><td>06</td><td>1 = Quick magnetizing</td><td>→ [6722.5], [6837.5], [6850.6]</td></tr><tr><td>07</td><td>1 = Precontrol speed limitation</td><td>→ [6640.6]</td></tr><tr><td>08</td><td>1 = Speed limiting controller With M_limits</td><td>→</td></tr><tr><td>09</td><td>1 = Dynamic load-dependent flux boost</td><td>→ [6790.3], [6834.3]</td></tr><tr><td>10</td><td>1 = Flux boost low speed</td><td>→ [6790.3], [6834.3]</td></tr><tr><td>...</td><td>Reserved</td><td></td></tr><tr><td>13</td><td>1 = Precontrol characteristic (PESM)</td><td>→</td></tr><tr><td>14</td><td>1 = Efficiency optimization active</td><td>→ [6722.4], [6837.4]</td></tr><tr><td>...</td><td>Reserved</td><td></td></tr><tr><td>30</td><td>1 = Speed-dependent flux (parabolic characteristic)</td><td>→ [6851.7]</td></tr></tbody></table>								Bit No.	Meaning		00	1 = Flux setpoint soft starting active	→ [6722.5], [6837.5]	01	1 = Flux setpoint differentiation active	→ [6723.6], [6838.5]	02	1 = Flux build-up control active	→ [6722.5], [6723.5], [6837.4]	03	1 = Flux characteristic load-dependent	→ [6790.5], [6834.5]	...	Reserved		06	1 = Quick magnetizing	→ [6722.5], [6837.5], [6850.6]	07	1 = Precontrol speed limitation	→ [6640.6]	08	1 = Speed limiting controller With M_limits	→	09	1 = Dynamic load-dependent flux boost	→ [6790.3], [6834.3]	10	1 = Flux boost low speed	→ [6790.3], [6834.3]	...	Reserved		13	1 = Precontrol characteristic (PESM)	→	14	1 = Efficiency optimization active	→ [6722.4], [6837.4]	...	Reserved		30	1 = Speed-dependent flux (parabolic characteristic)	→ [6851.7]	
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...	Reserved																																																							
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1	2	3	4	5	6	7	8																																																	
Vector control						© Siemens AG		- 6491 -																																																
Flux control configuration						V6.02.00																																																		

Figure 4-84 6491 - Flux control configuration

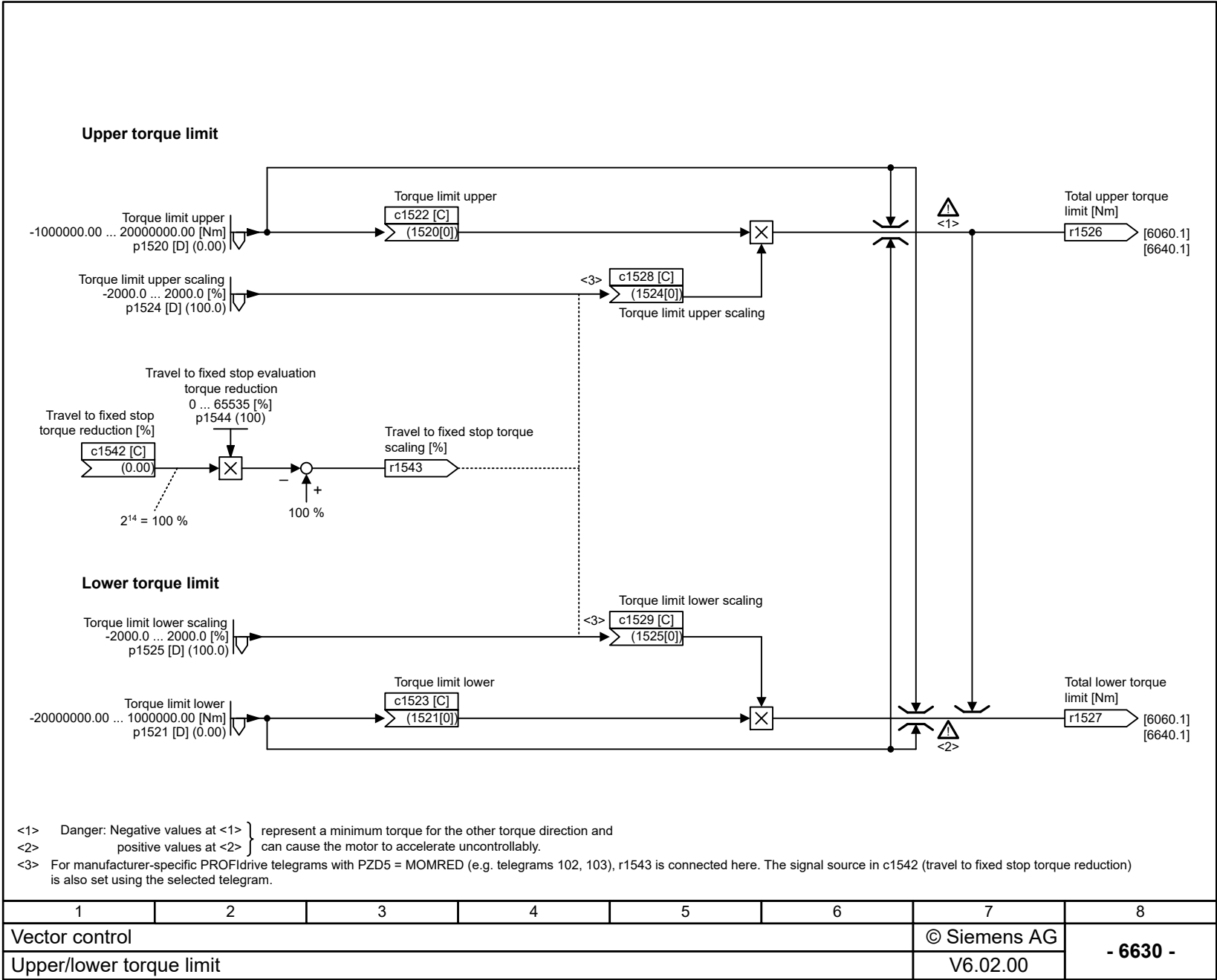
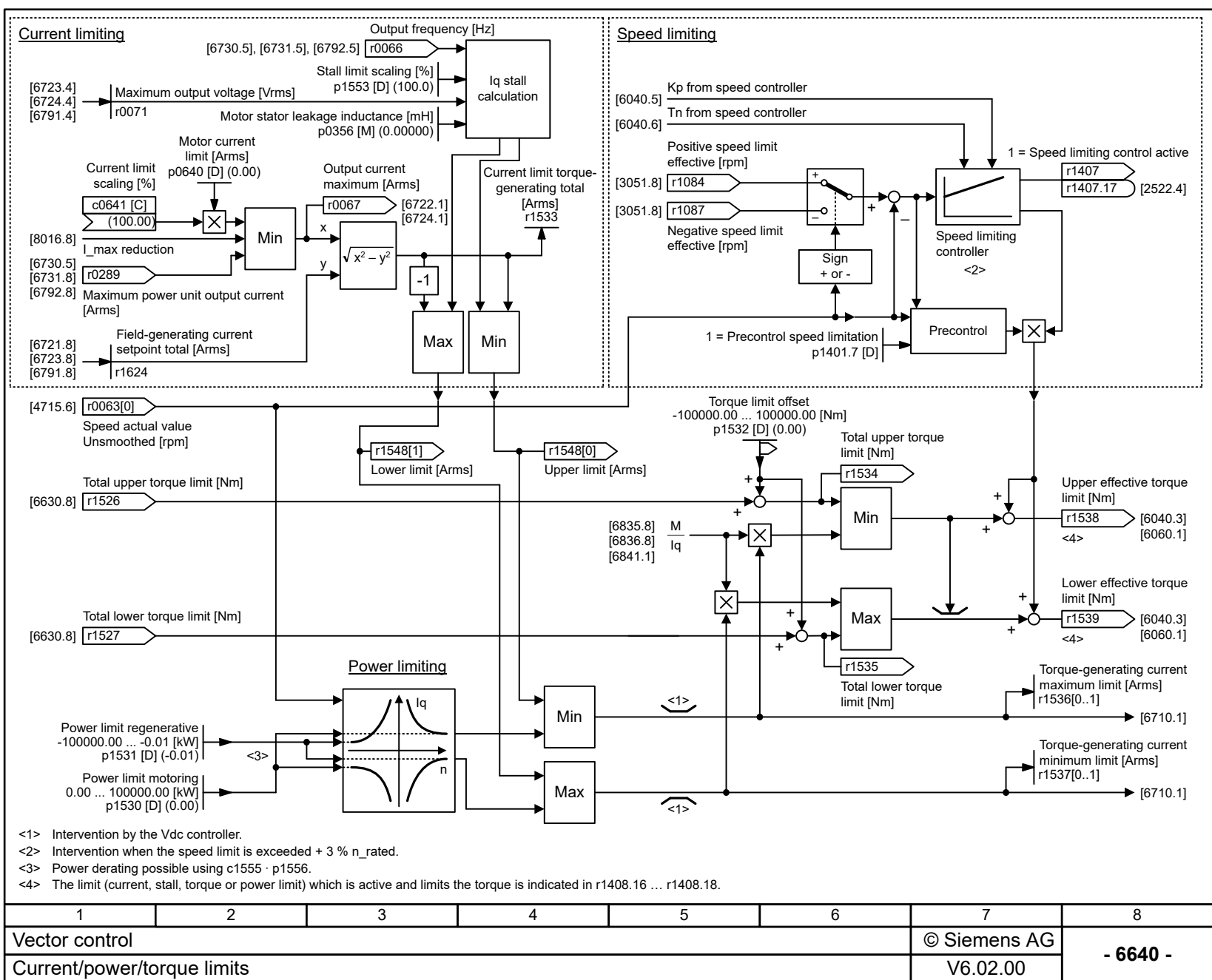
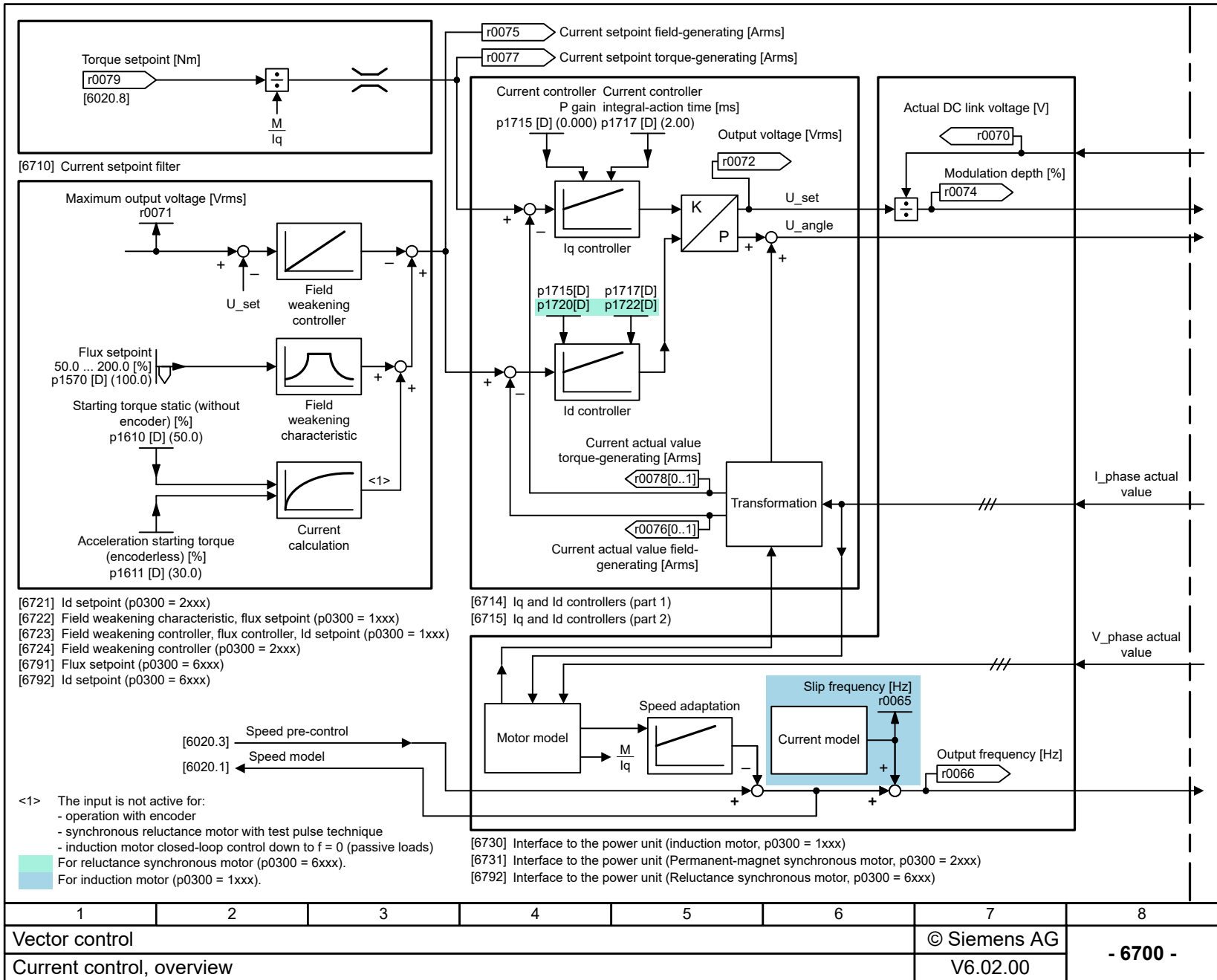


Figure 4-85 6630 - Upper/lower torque limit





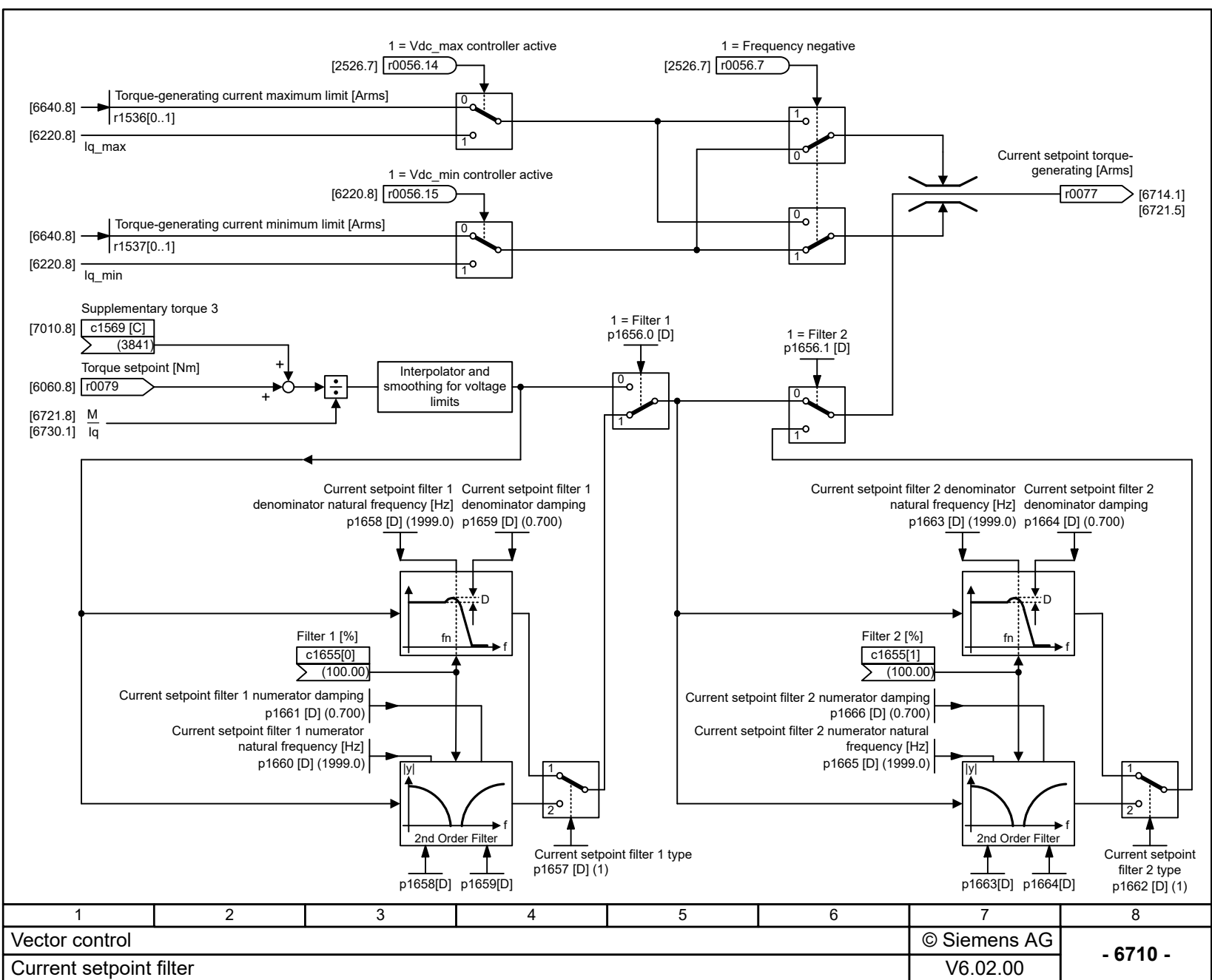
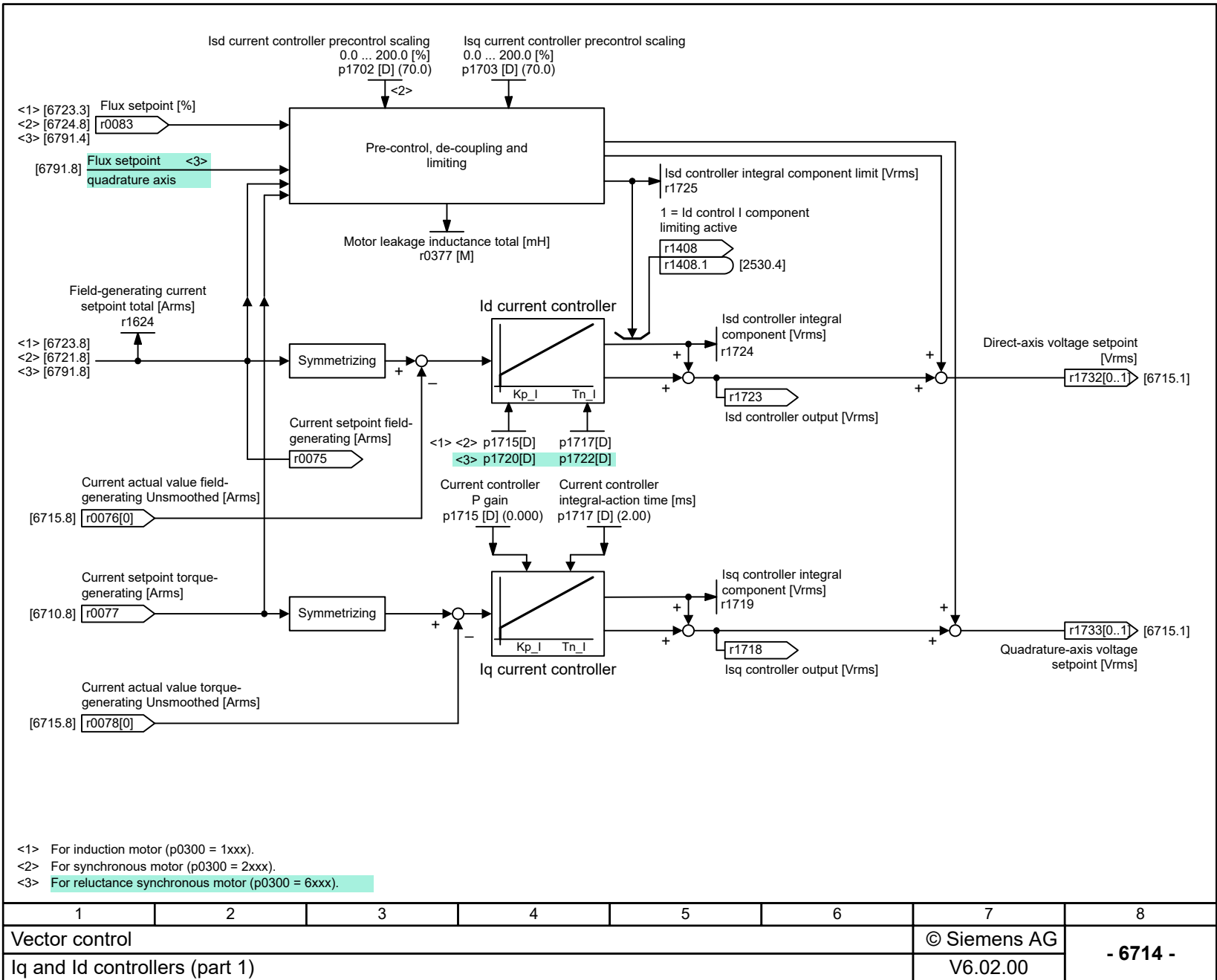


Figure 4-88 6710 - Current setpoint filter



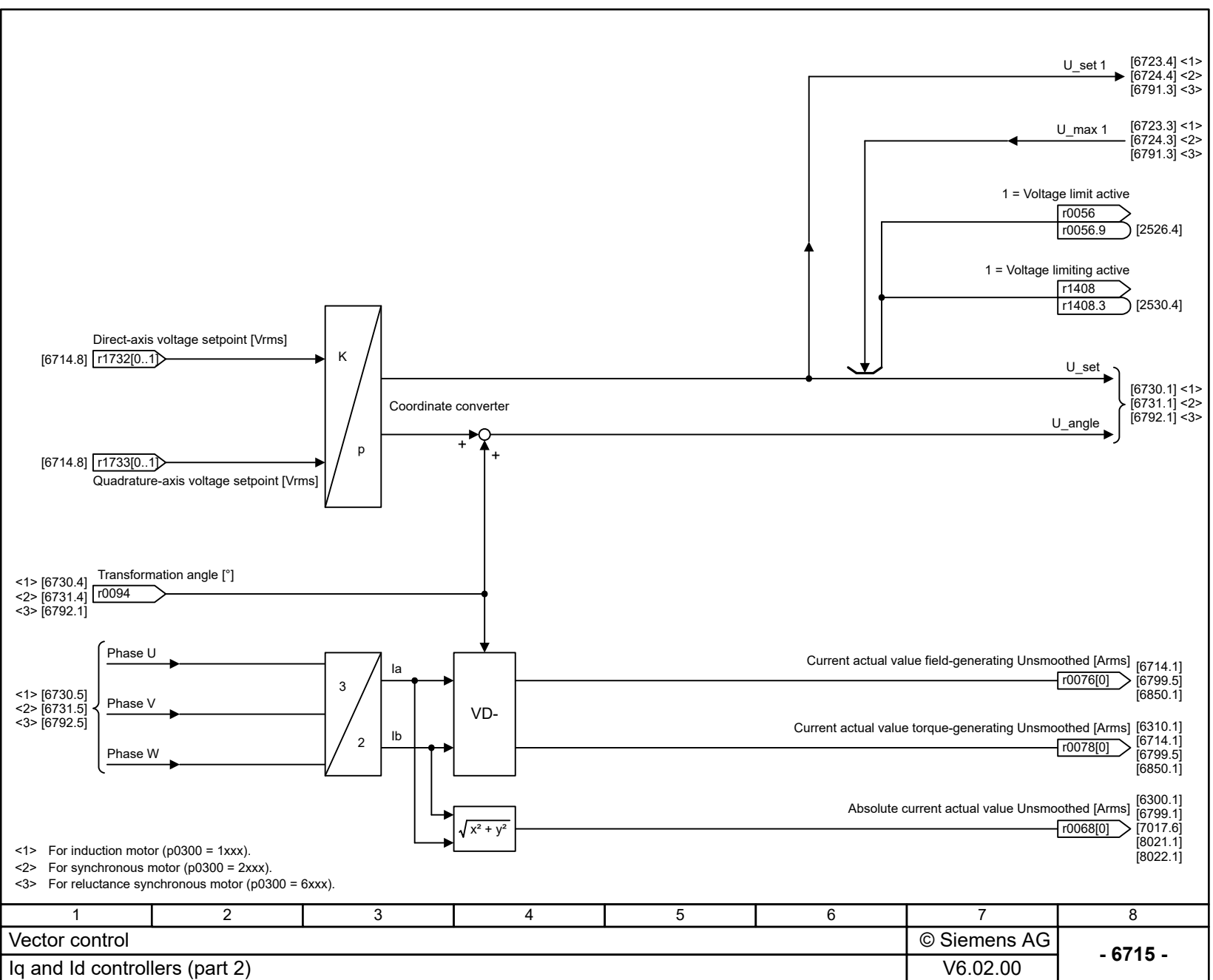
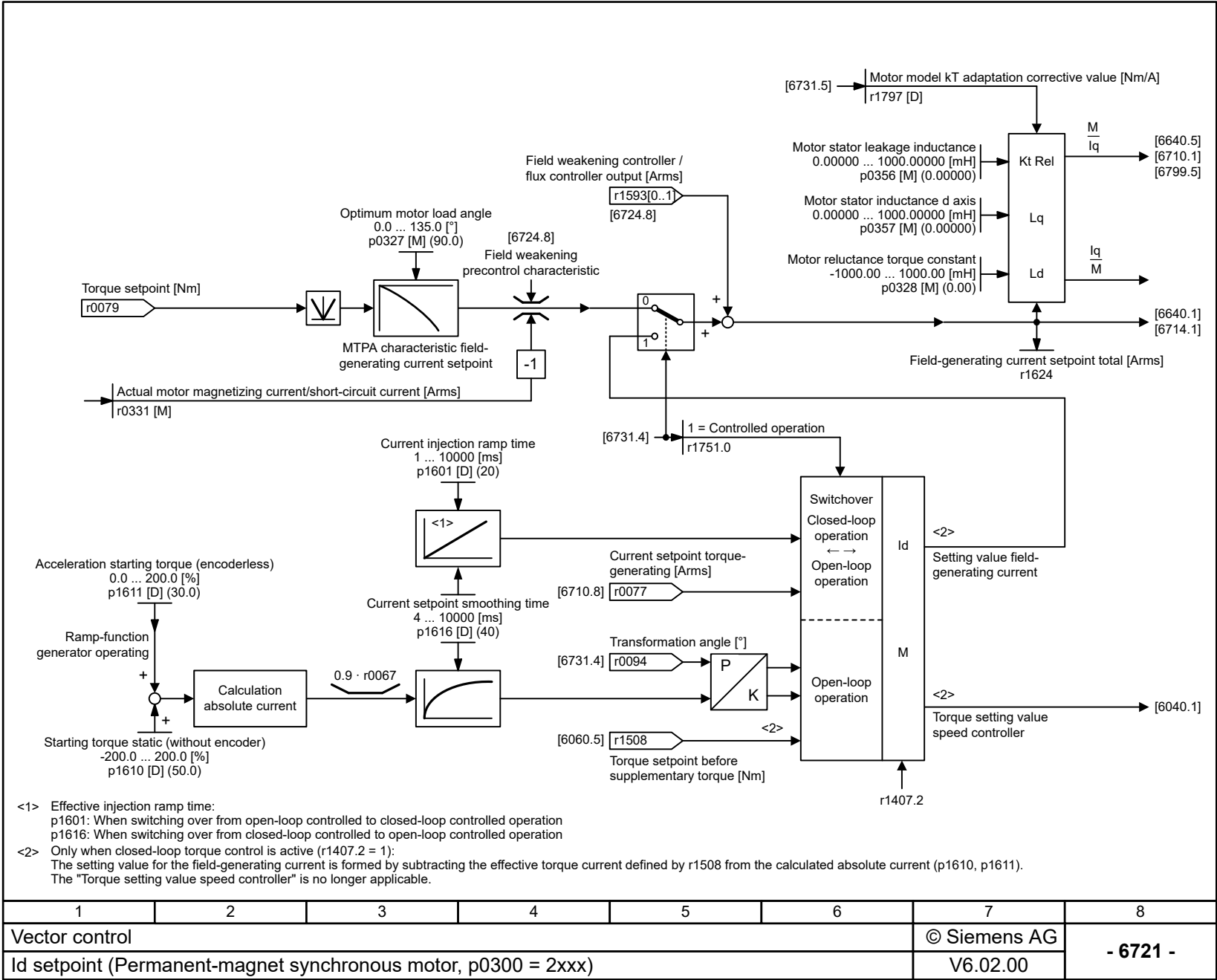


Figure 4-90 6715 - Iq and Id controllers (Part 2)



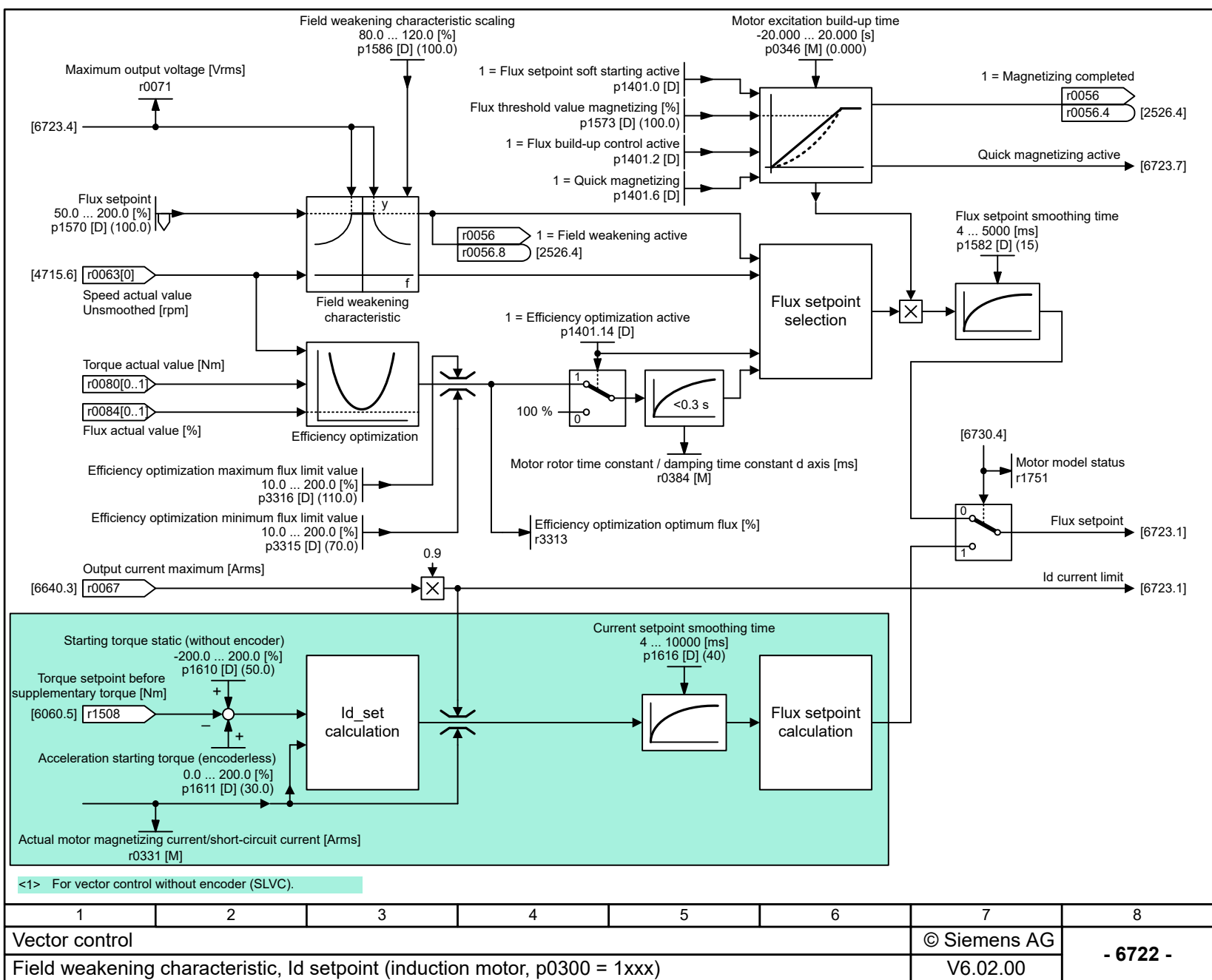
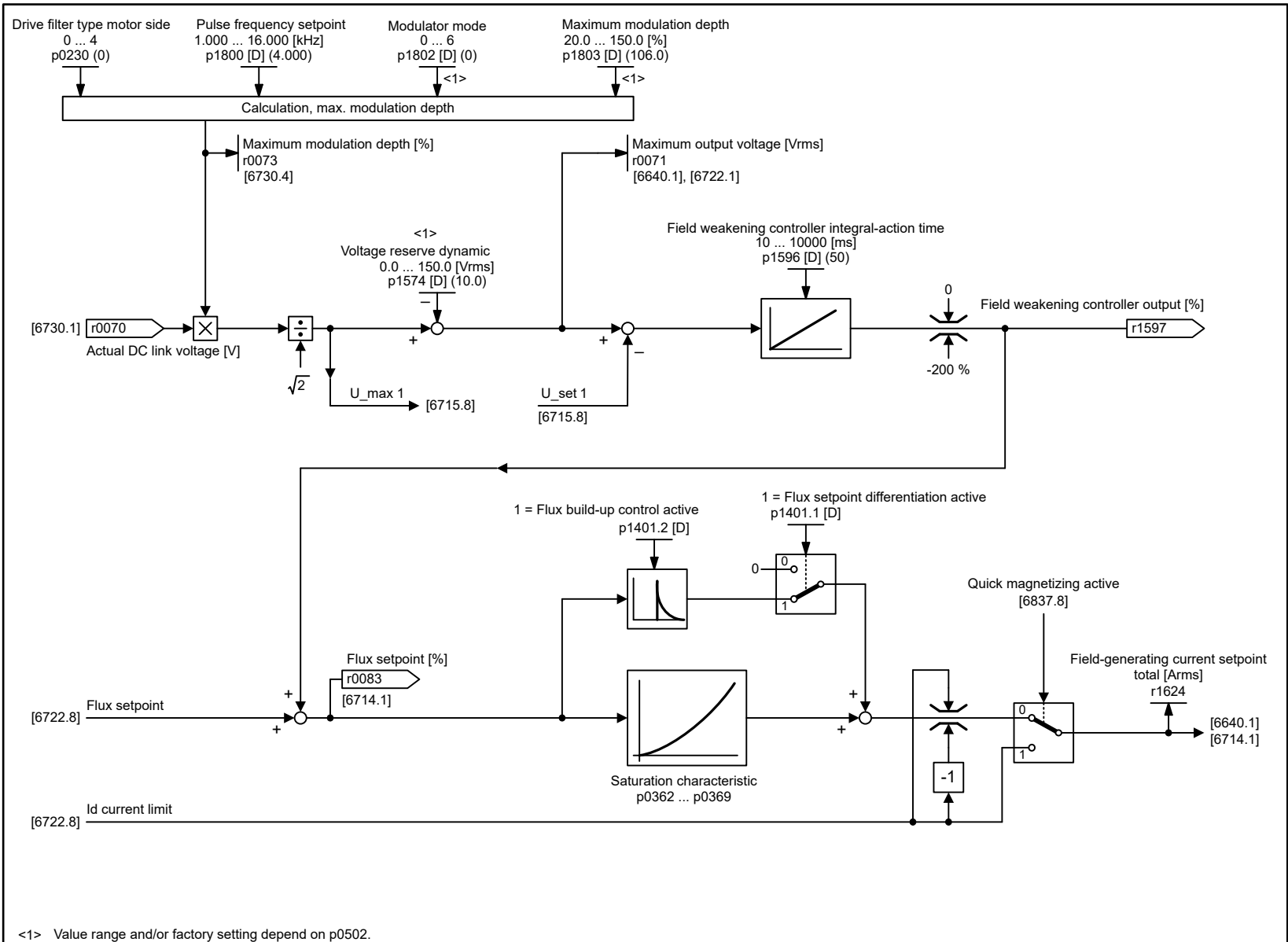
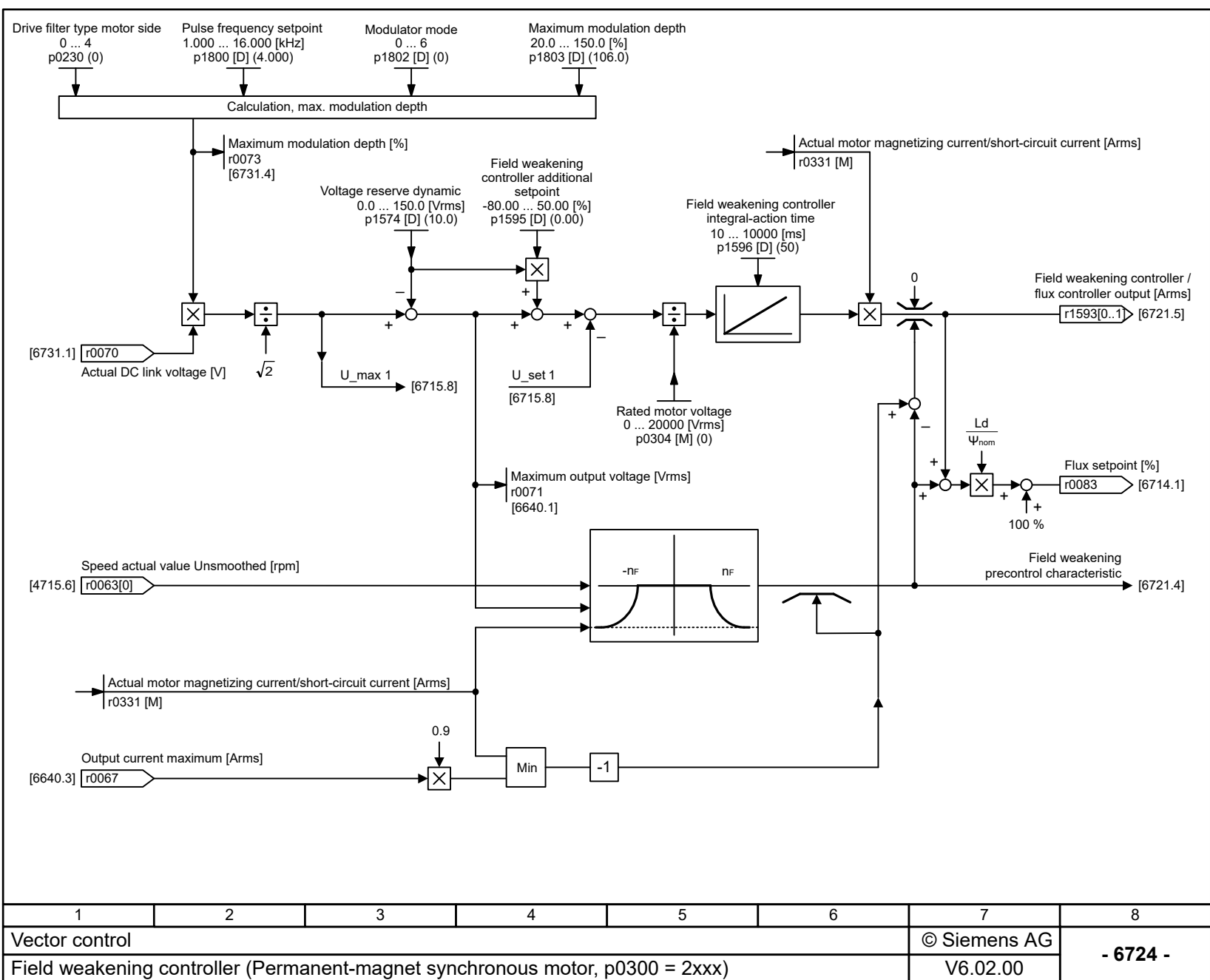
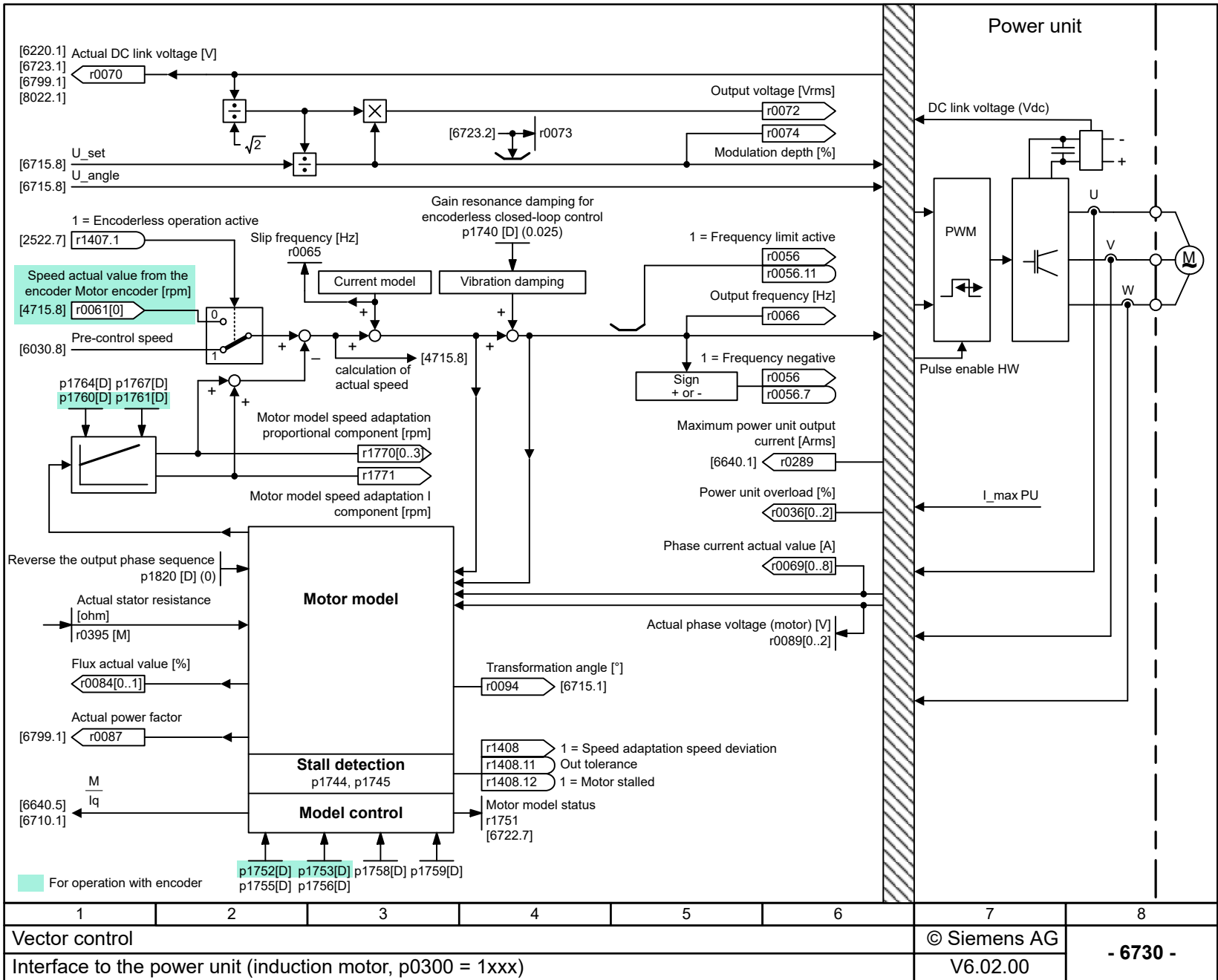


Figure 4-92 6722 - Field weakening characteristic, Id setpoint (induction motor)



1	2	3	4	5	6	7	8
Vector control						© Siemens AG	- 6723 -
Field weakening controller, flux controller, Id setpoint (induction motor, p0300 = 1xxx)						V6.02.00	





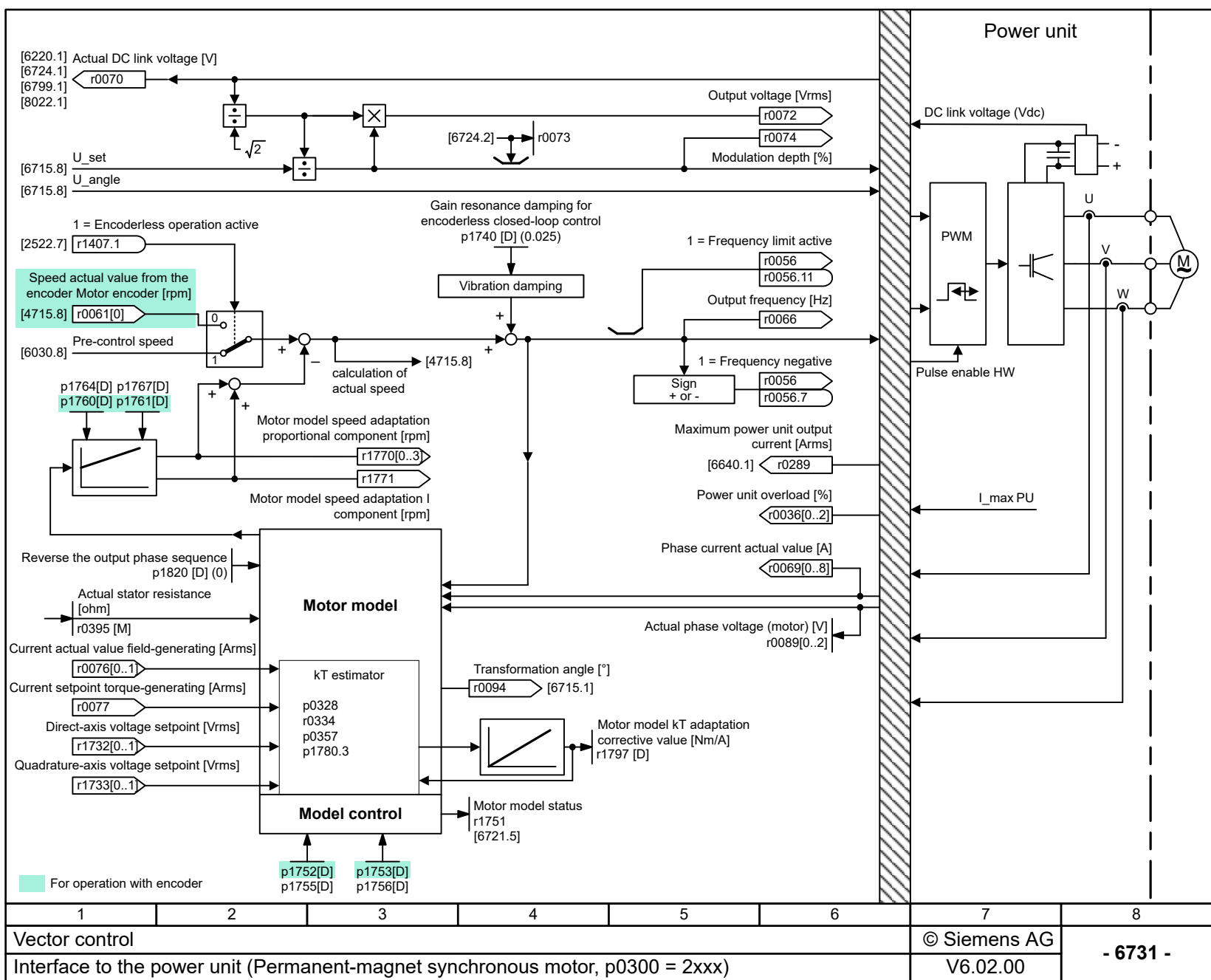


Figure 4-96 6731 - Interface to the power unit (permanent-magnet synchronous motor)

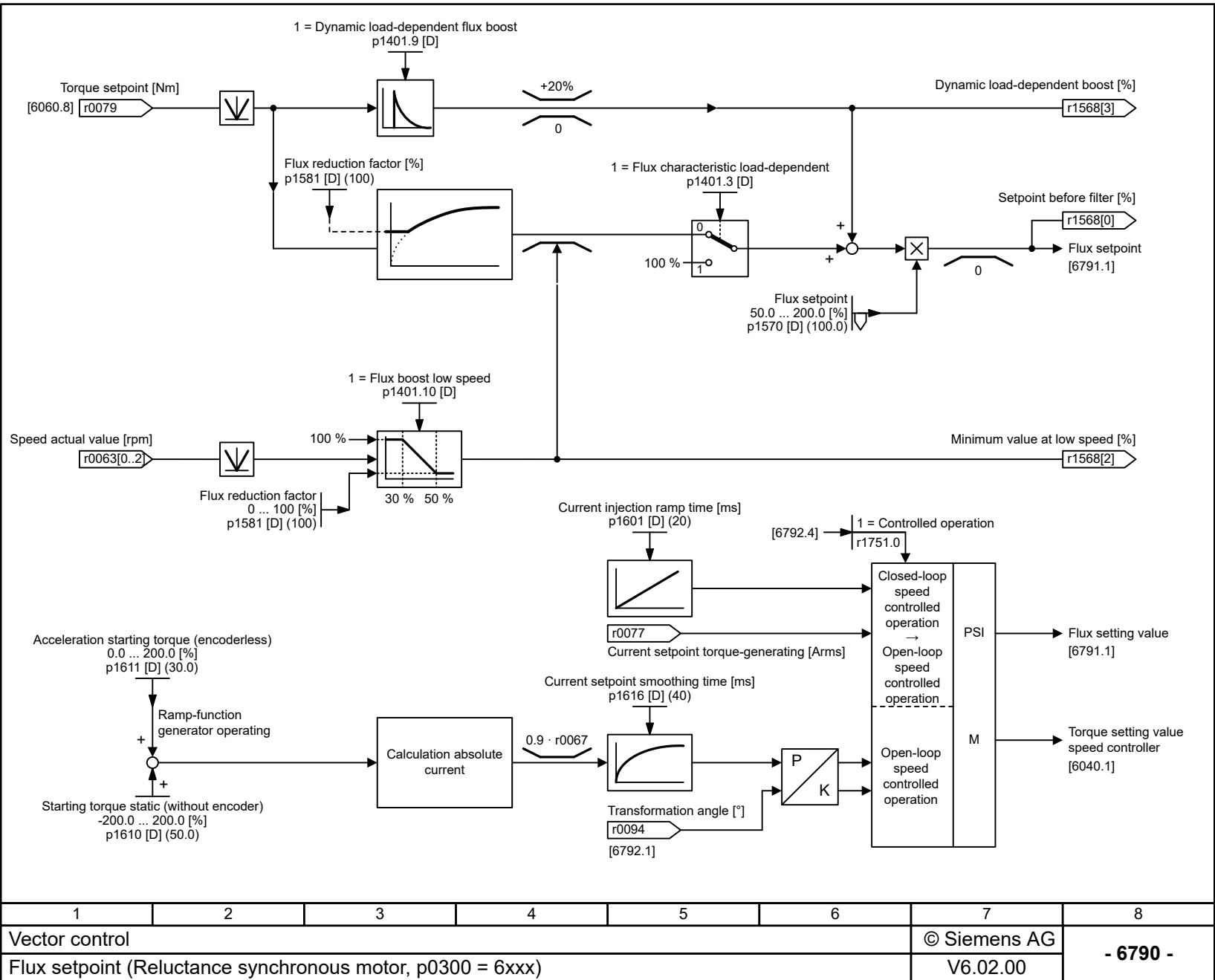
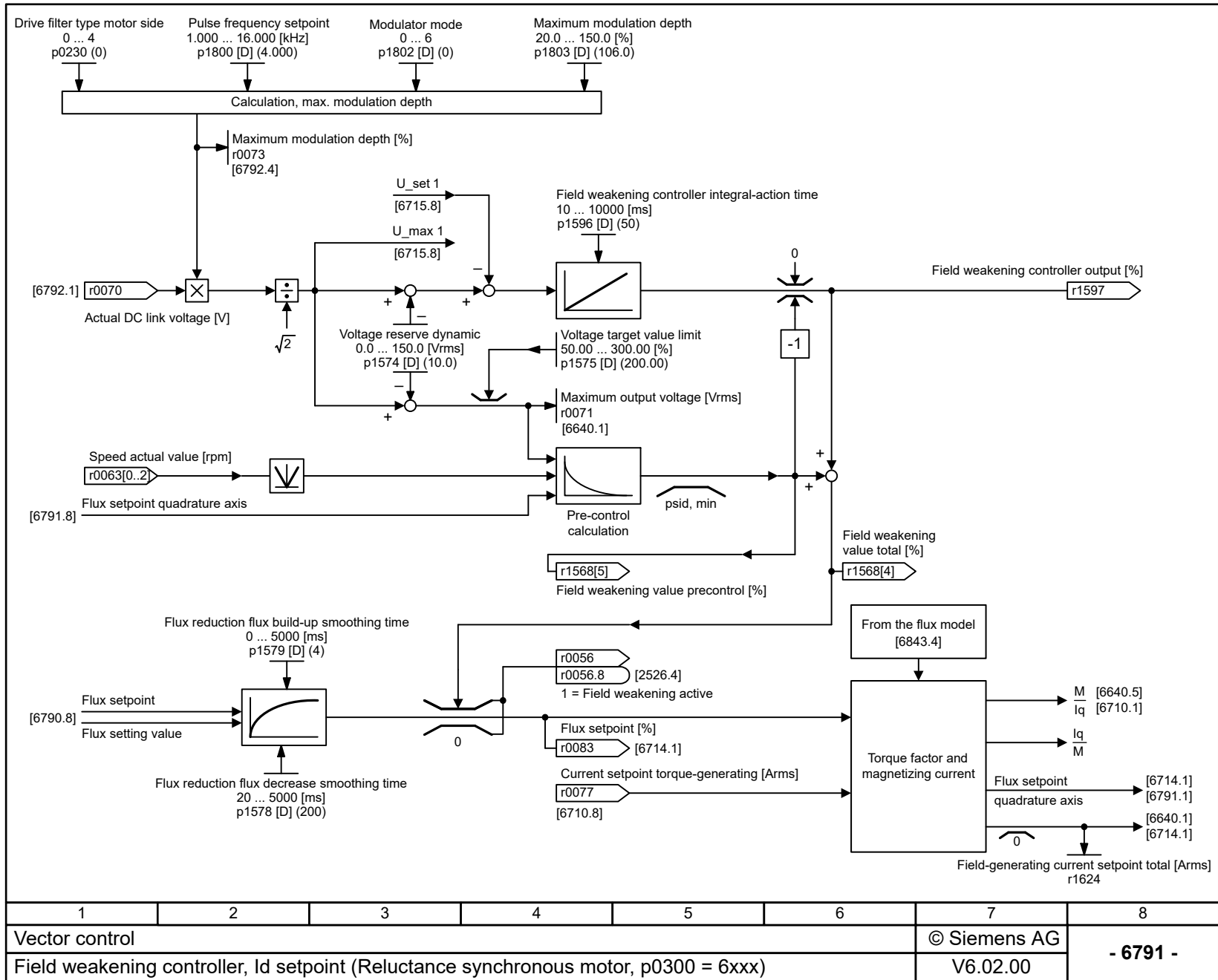
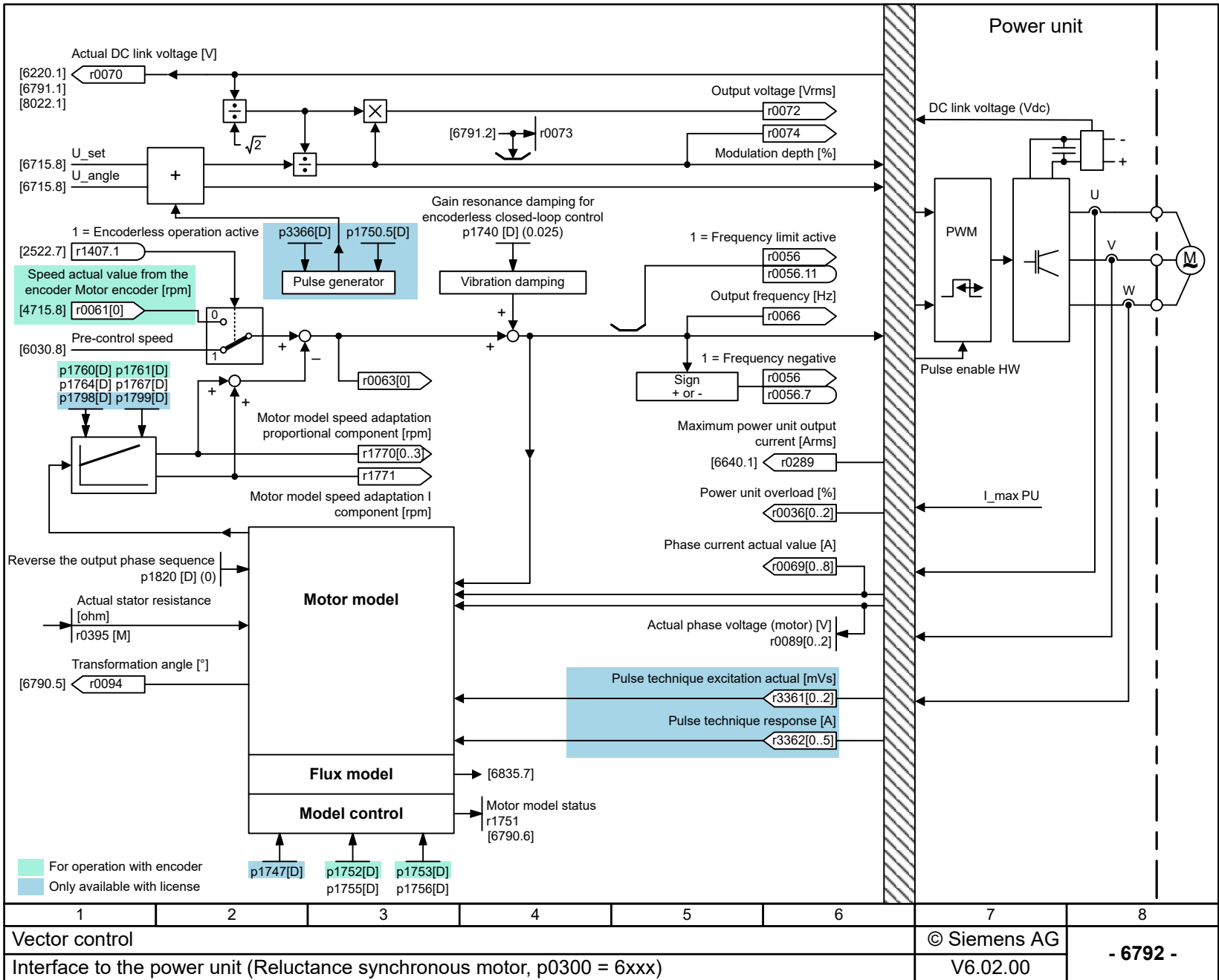


Figure 4-97 6790 - Flux setpoint (synchronous reluctance motor)





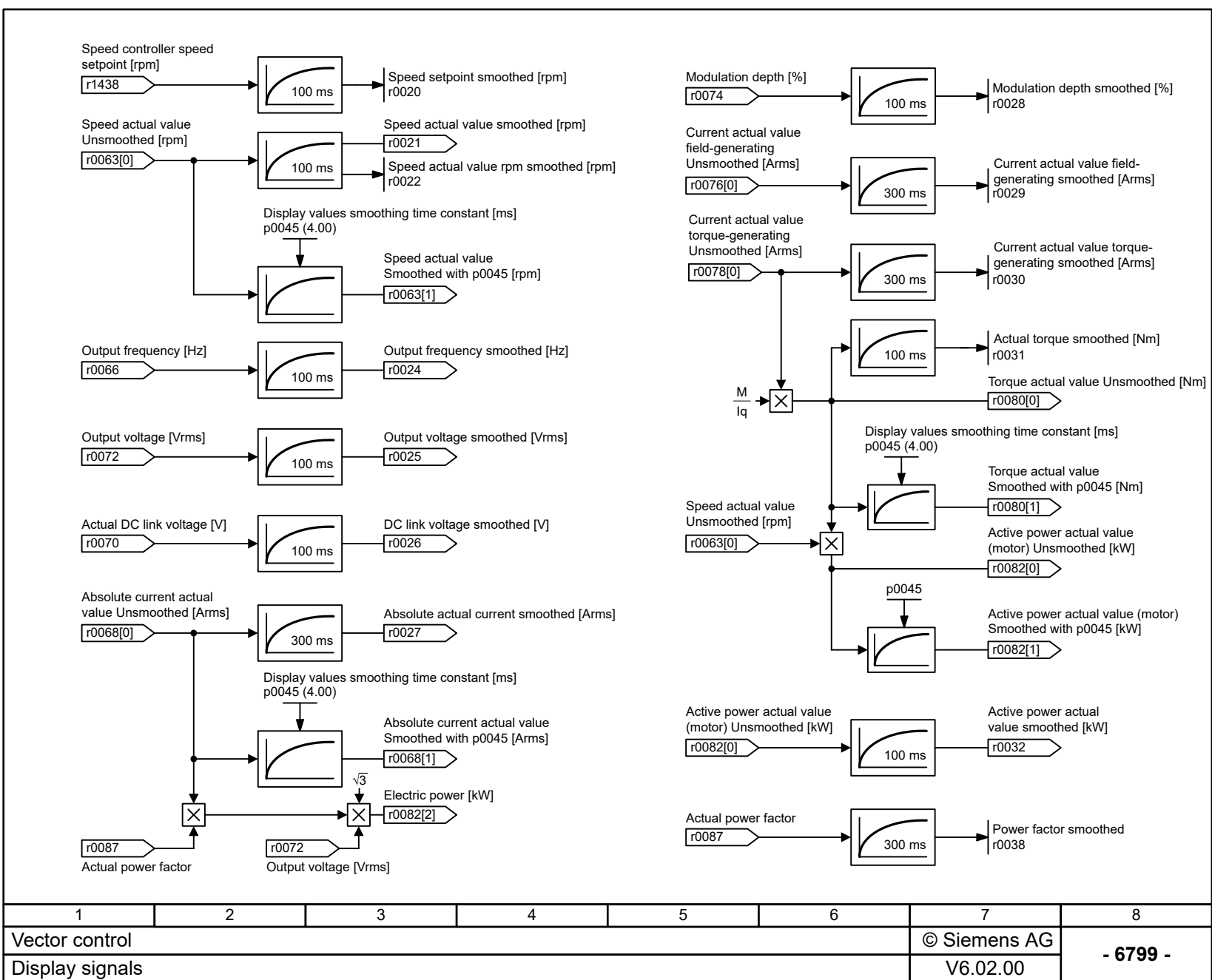


Figure 4-100 6799 - Display signals

4.11 U/f control

Overview

The following function diagrams describe the U/f control function.

Function diagrams

6300 – U/f control, overview (Page 822)

6301 – Voltage boost (Page 823)

6302 – U/f characteristic (Page 824)

6310 – Resonance damping (Page 825)

6311 – Slip compensation (U/f) (Page 826)

6320 – Vdc_max controller and Vdc_min controller (U/f) (Page 827)

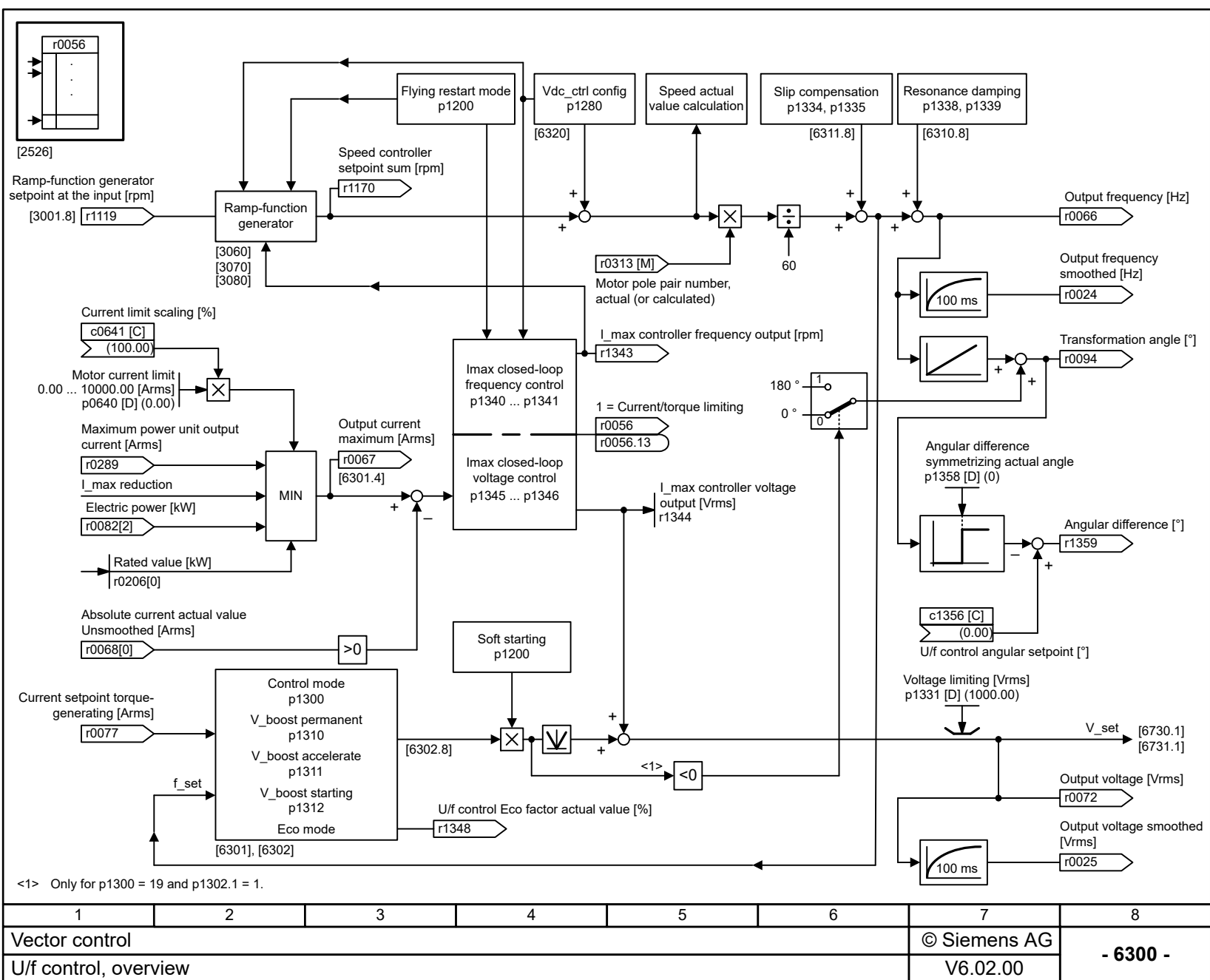
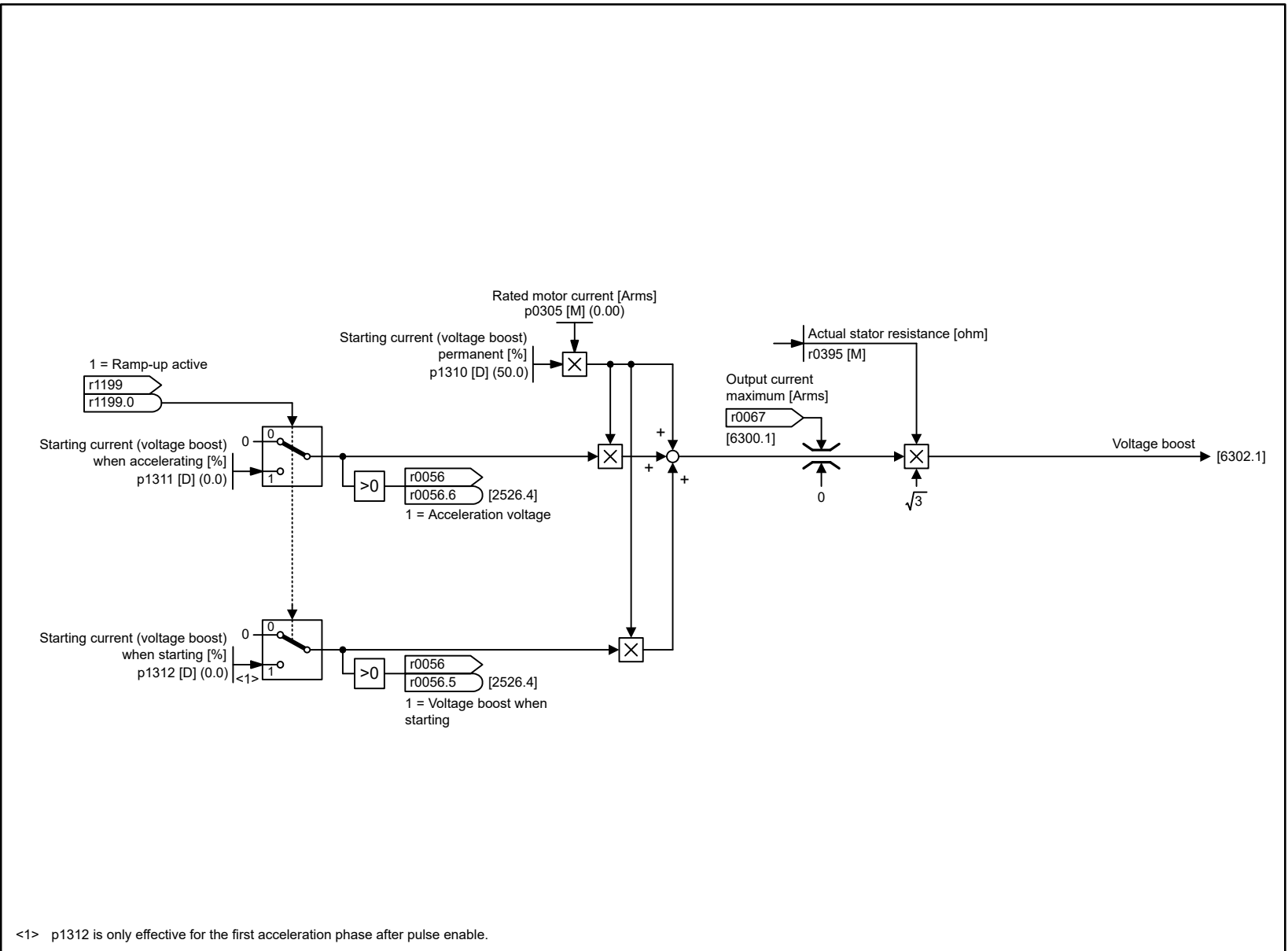


Figure 4-101 6300 – U/f control, overview



1	2	3	4	5	6	7	8
Vector control						© Siemens AG	- 6301 -
U/f control, voltage boost						V6.02.00	

Figure 4-102 6301 - Voltage boost

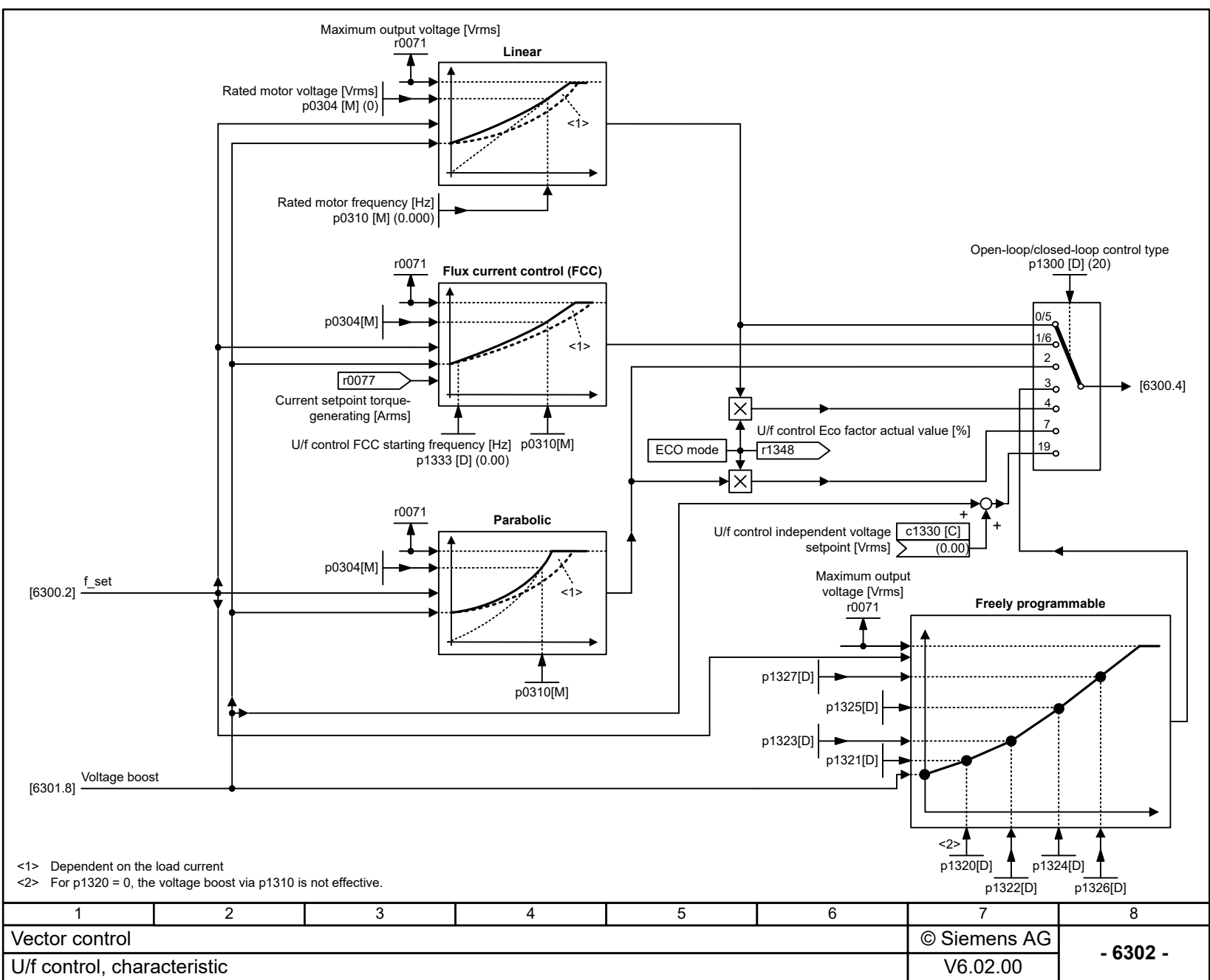


Figure 4-103 6302 - U/f characteristic

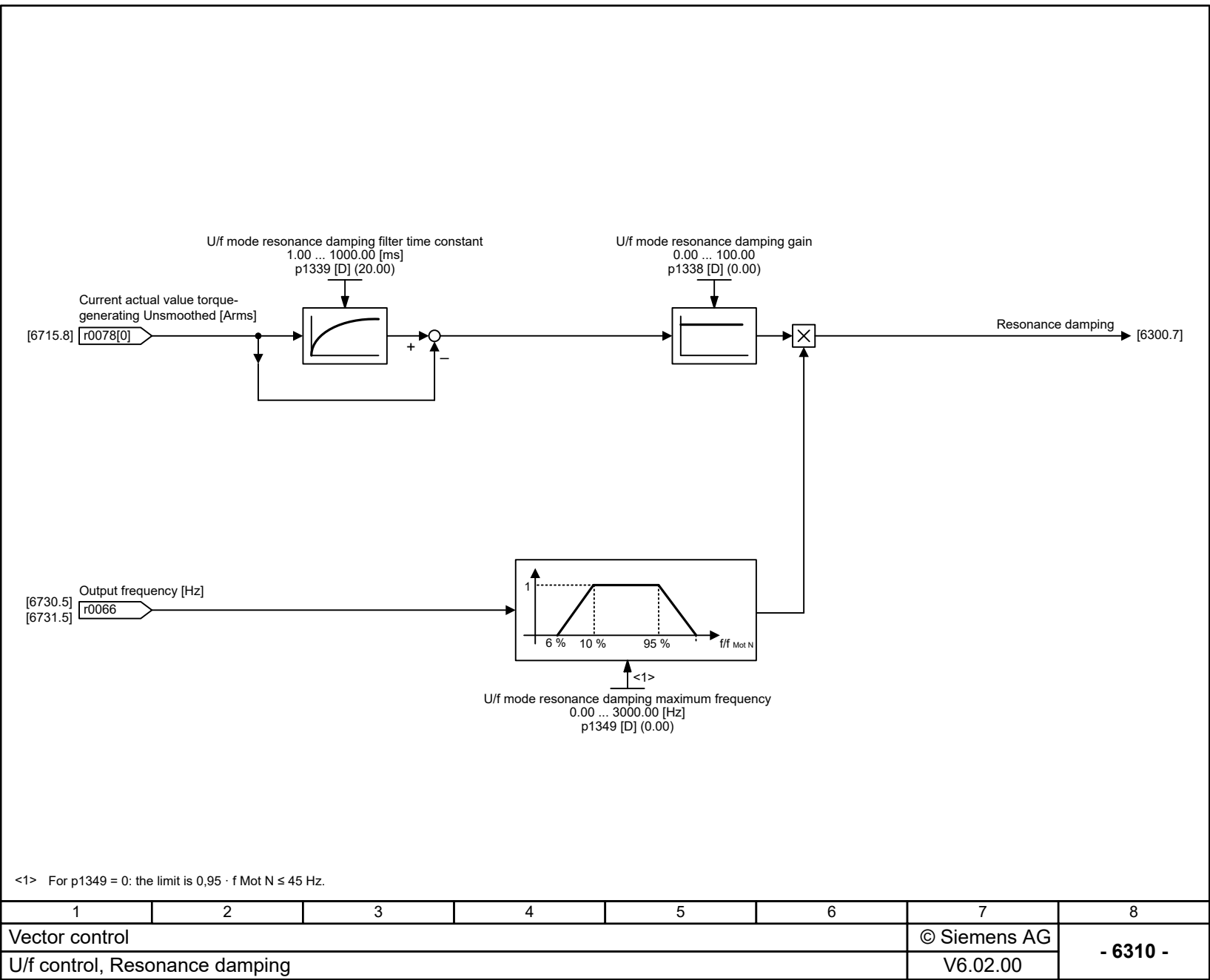
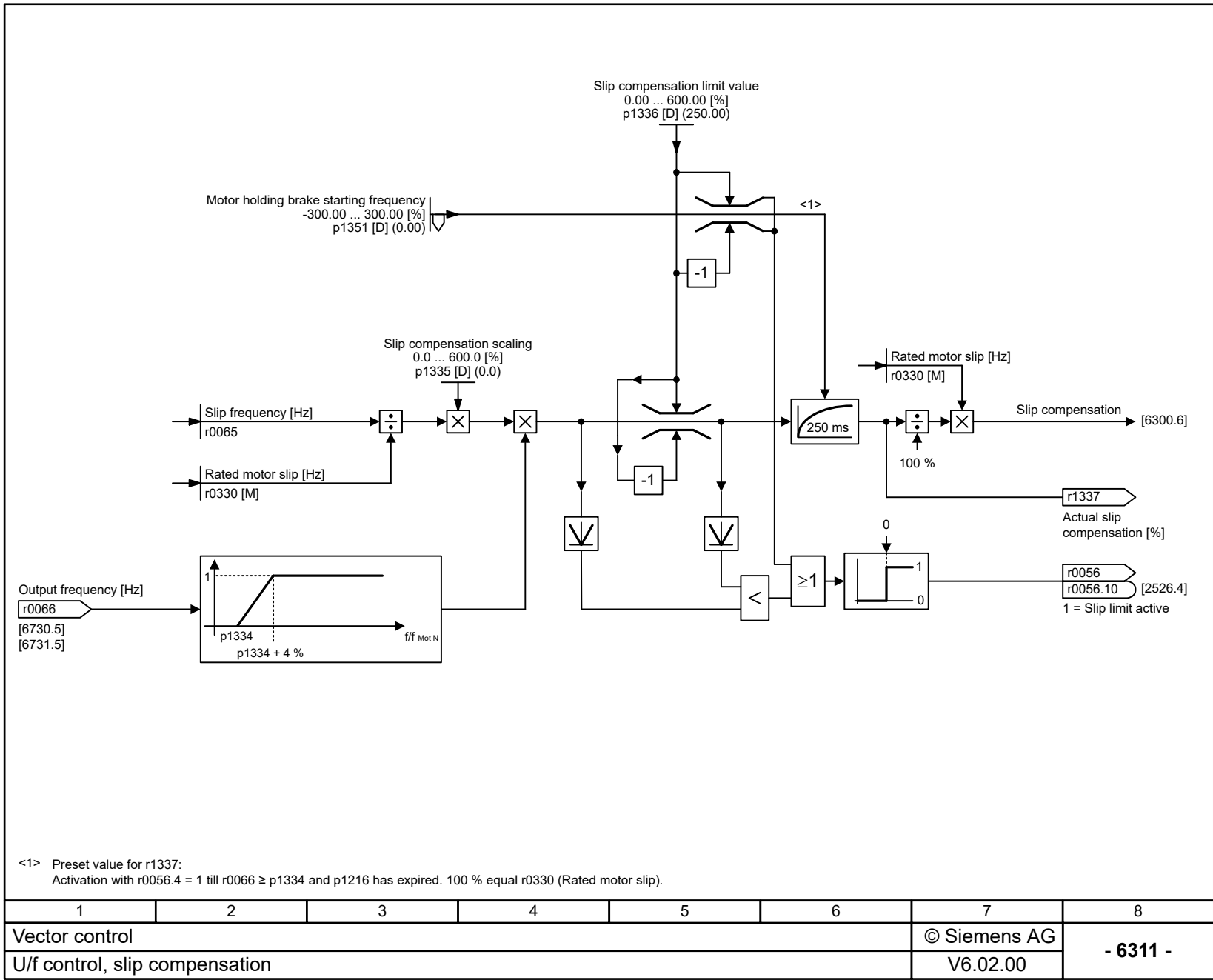


Figure 4-104 6310 - Resonance damping



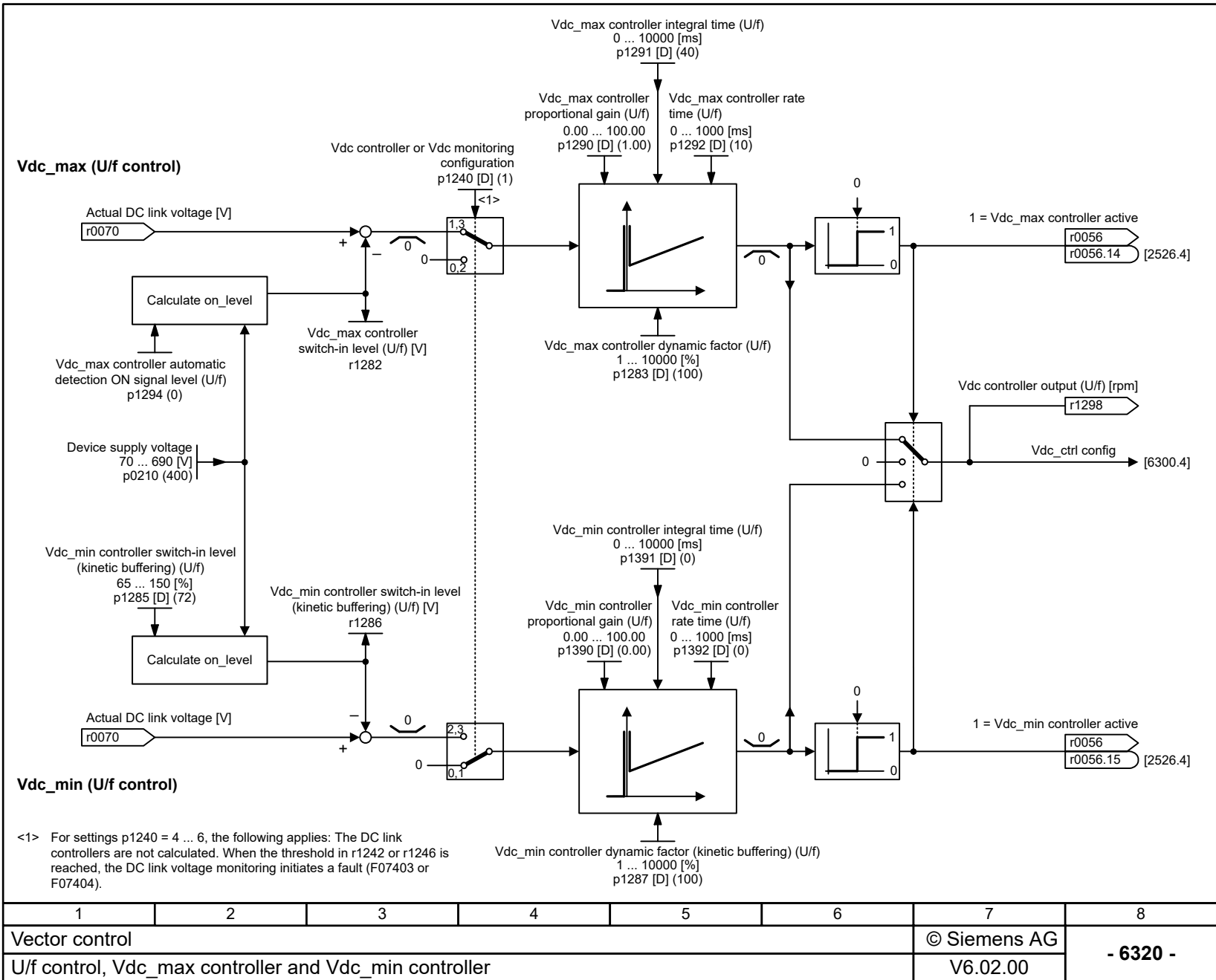


Figure 4-106 6320 - Vdc_max controller and Vdc_min controller (U/f)

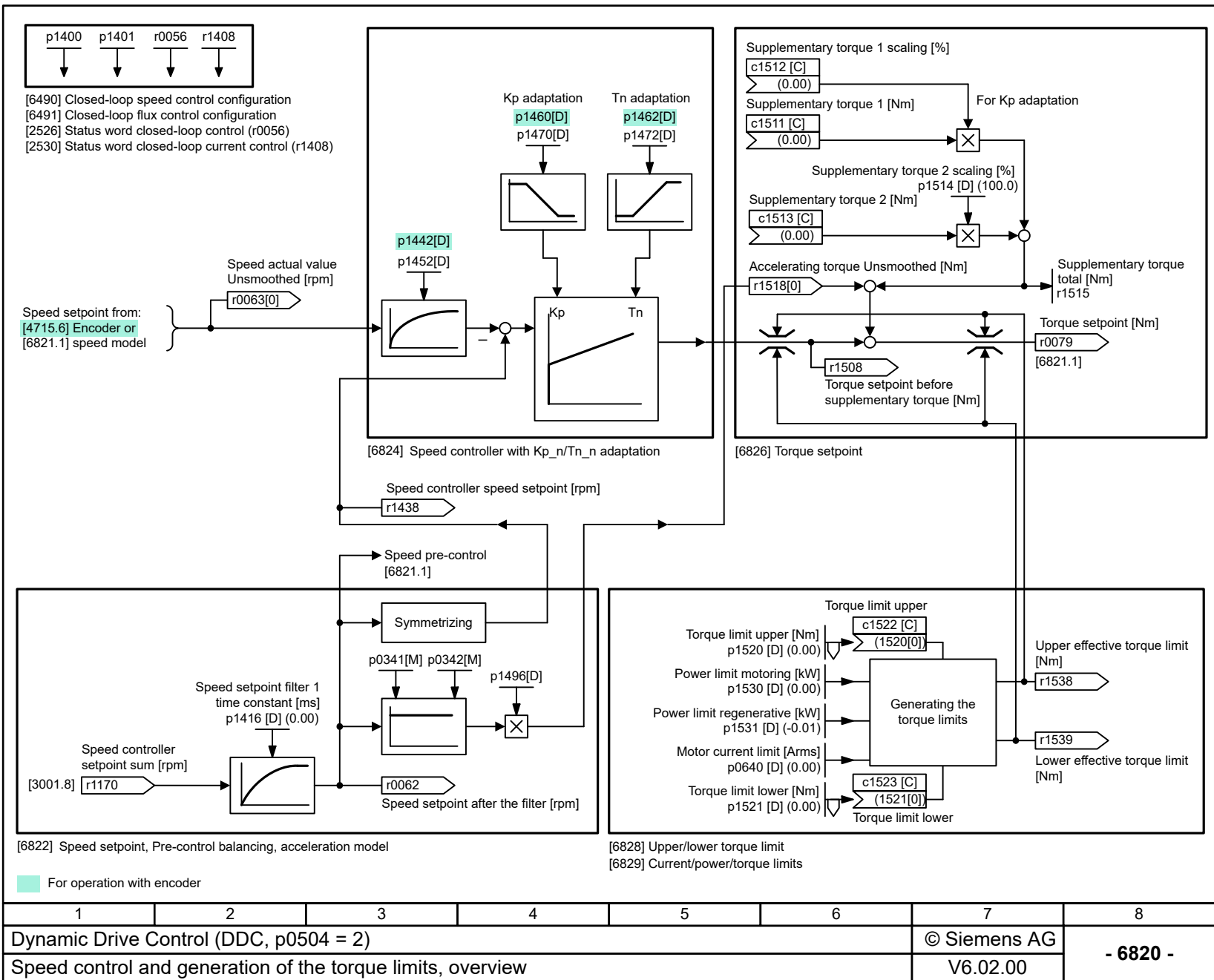
4.12 Dynamic Drive Control

Overview

The following function diagrams describe the Dynamic Drive Control function.

Function diagrams

- 6820 – Speed control and generation of the torque limits, overview (Page 829)
- 6821 – Current control, overview (Page 830)
- 6822 – Speed setpoint, pre-control balancing, acceleration model (Page 831)
- 6824 – Speed controller with K_{p_n}/T_{n_n} adaptation (Page 832)
- 6826 – Torque setpoint (Page 833)
- 6828 – Upper/lower torque limit (Page 834)
- 6829 – Current/power/torque limits (Page 835)
- 6832 – Current setpoint filter (Page 836)
- 6833 – I_q and I_d controllers (Page 837)
- 6834 – Flux setpoint (synchronous reluctance motor) (Page 838)
- 6835 – Field weakening controller, I_d setpoint (synchronous-reluctance motor) (Page 839)
- 6836 – I_d setpoint (permanent magnet synchronous motor) (Page 840)
- 6837 – Field weakening characteristic, flux setpoint (induction motor) (Page 841)
- 6838 – Field weakening controller, flux controller (induction motor) (Page 842)
- 6839 – Field weakening controller (permanent-magnet synchronous motor) (Page 843)
- 6841 – Interface to power unit (induction motor) (Page 844)
- 6842 – Interface to the power unit (permanent magnet synchronous motor) (Page 845)
- 6843 – Interface to the power unit (synchronous reluctance motor) (Page 846)



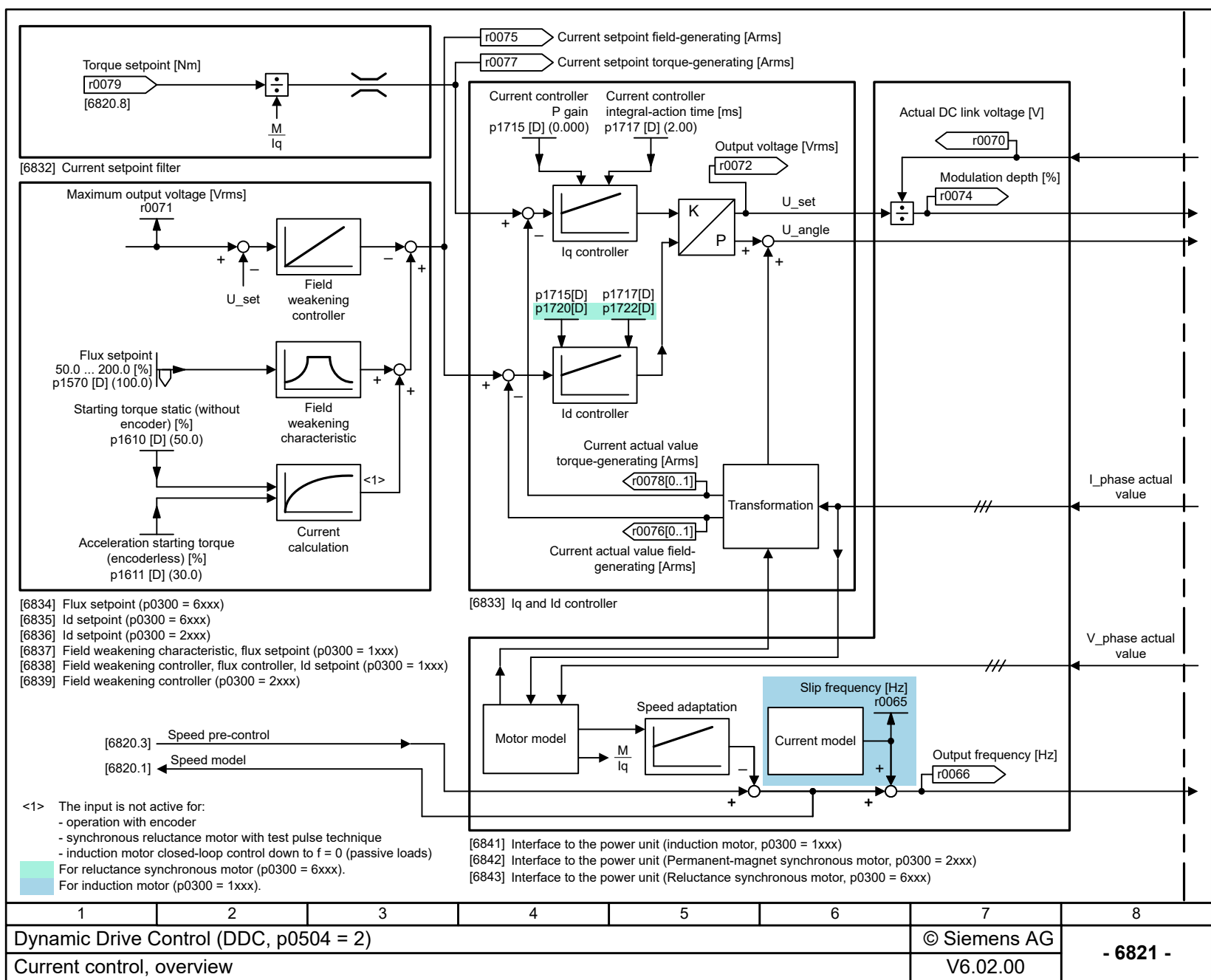


Figure 4-108 6821 - Current control, overview

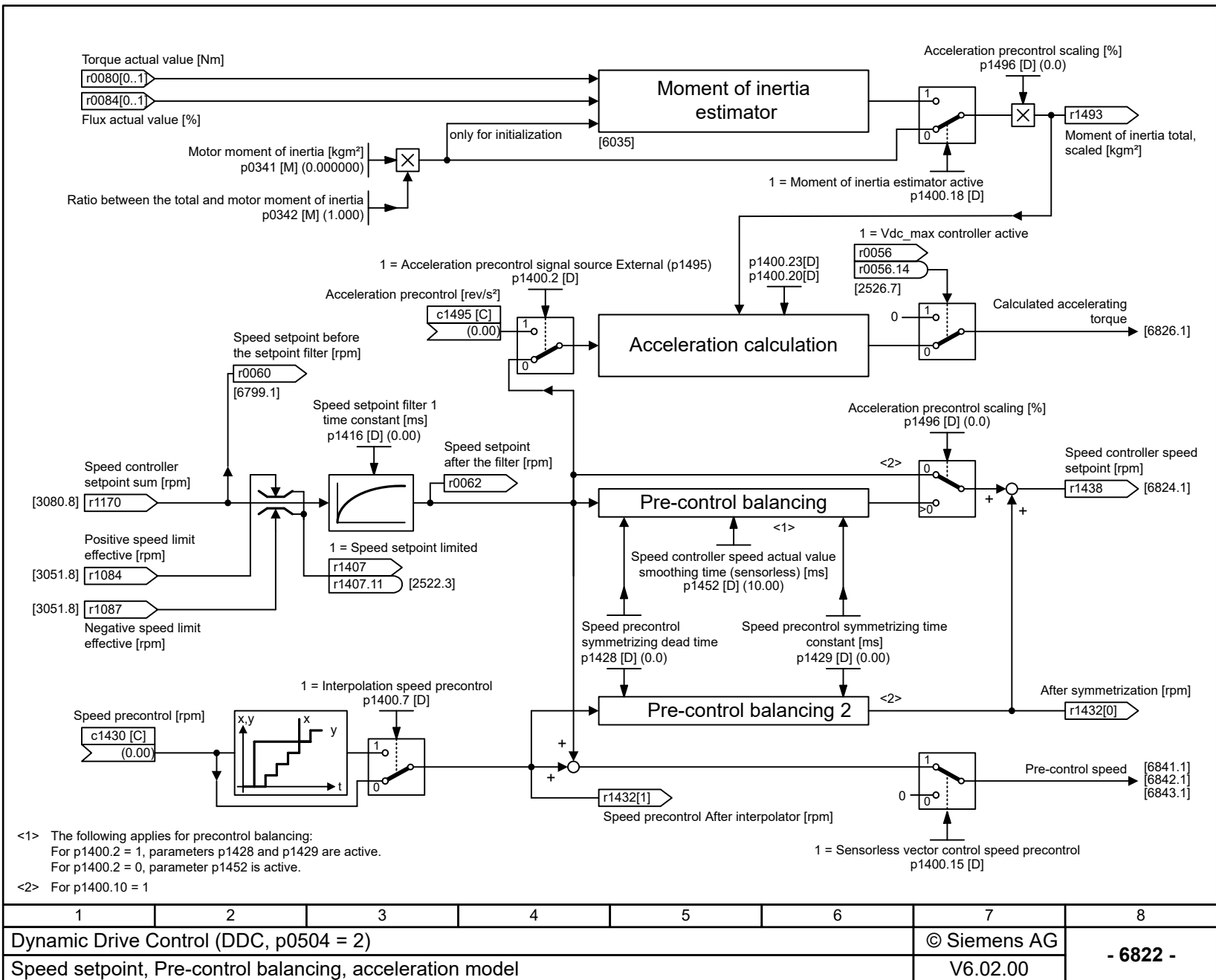
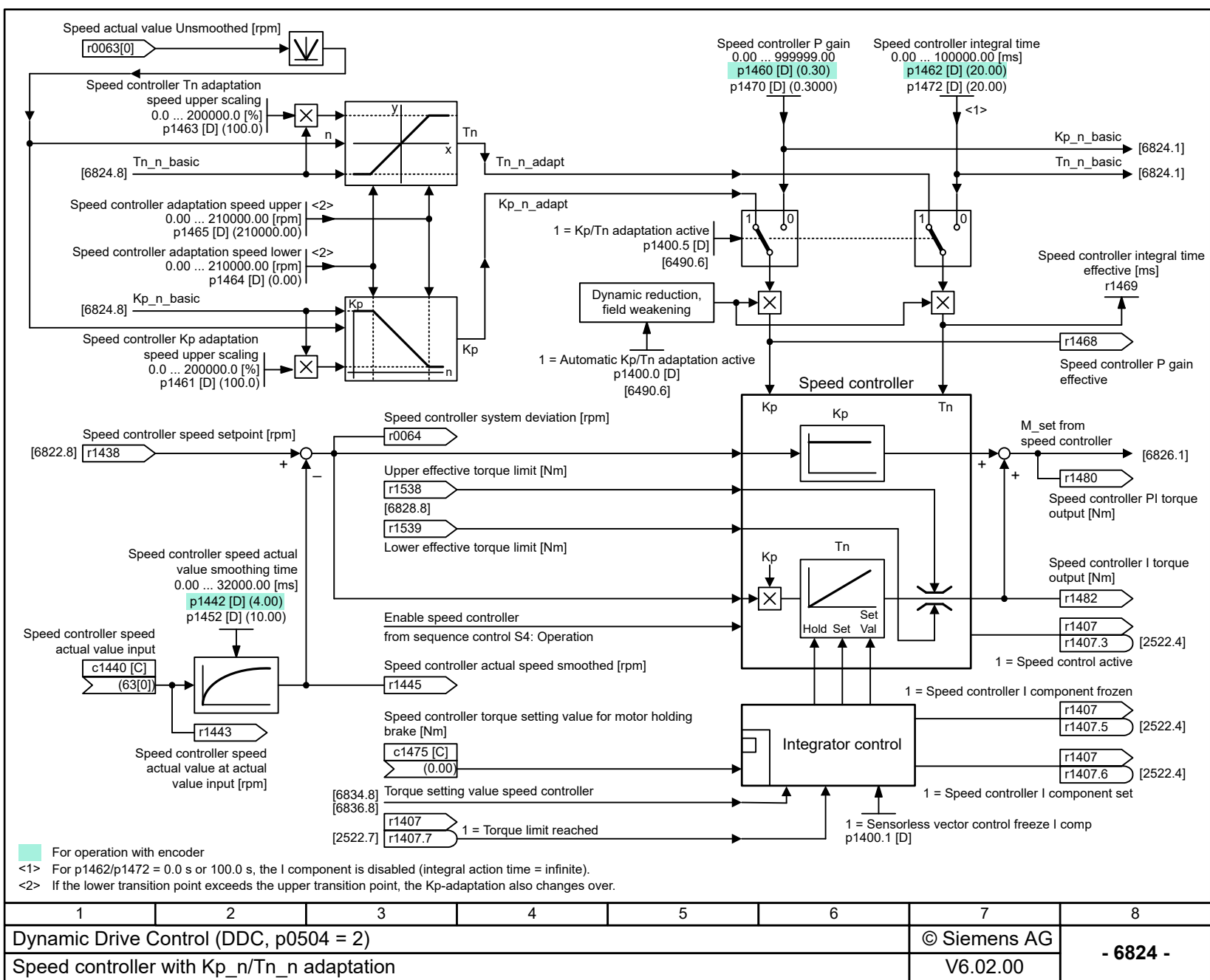
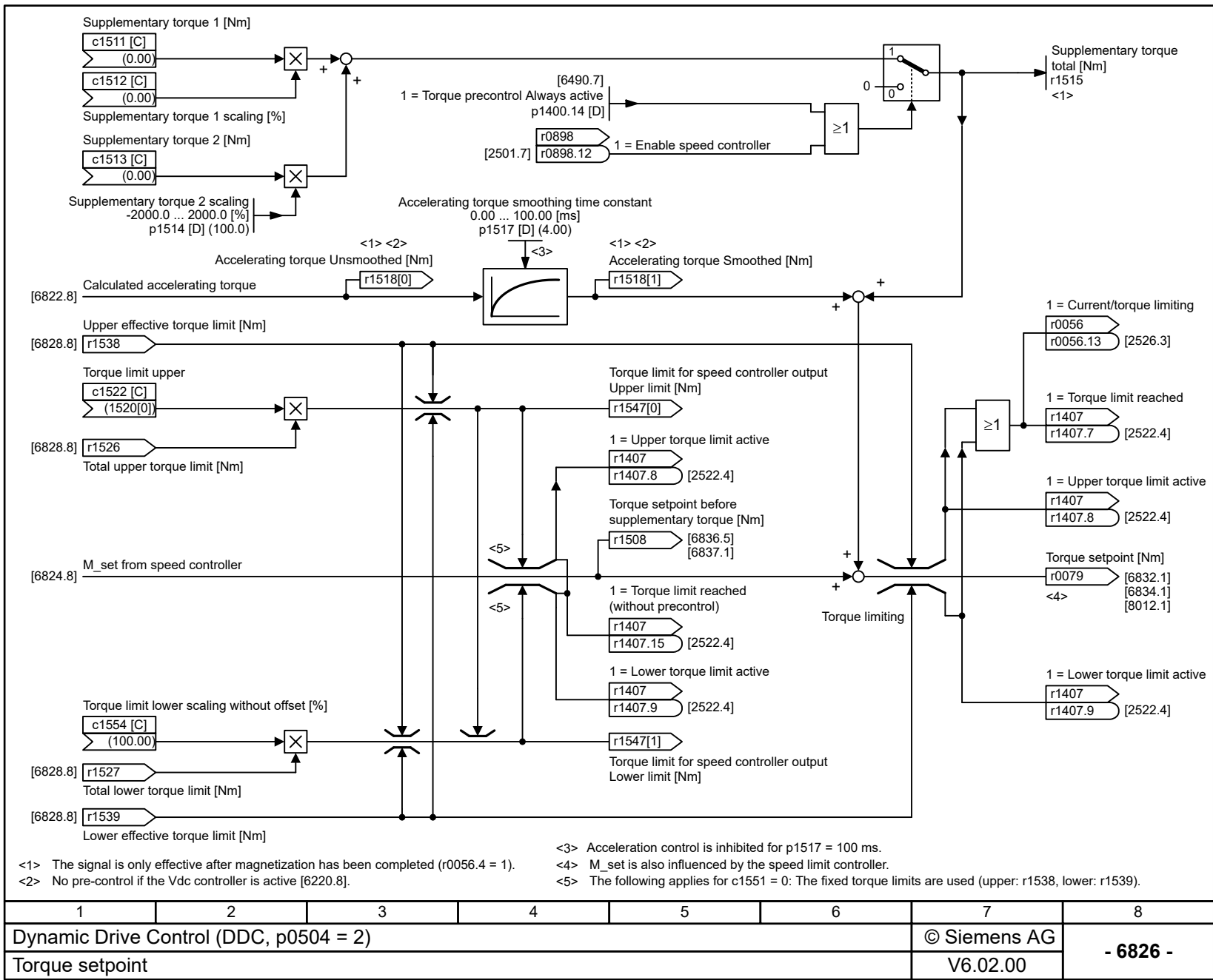


Figure 4-109 6822 - Speed setpoint, pre-control balancing, acceleration model





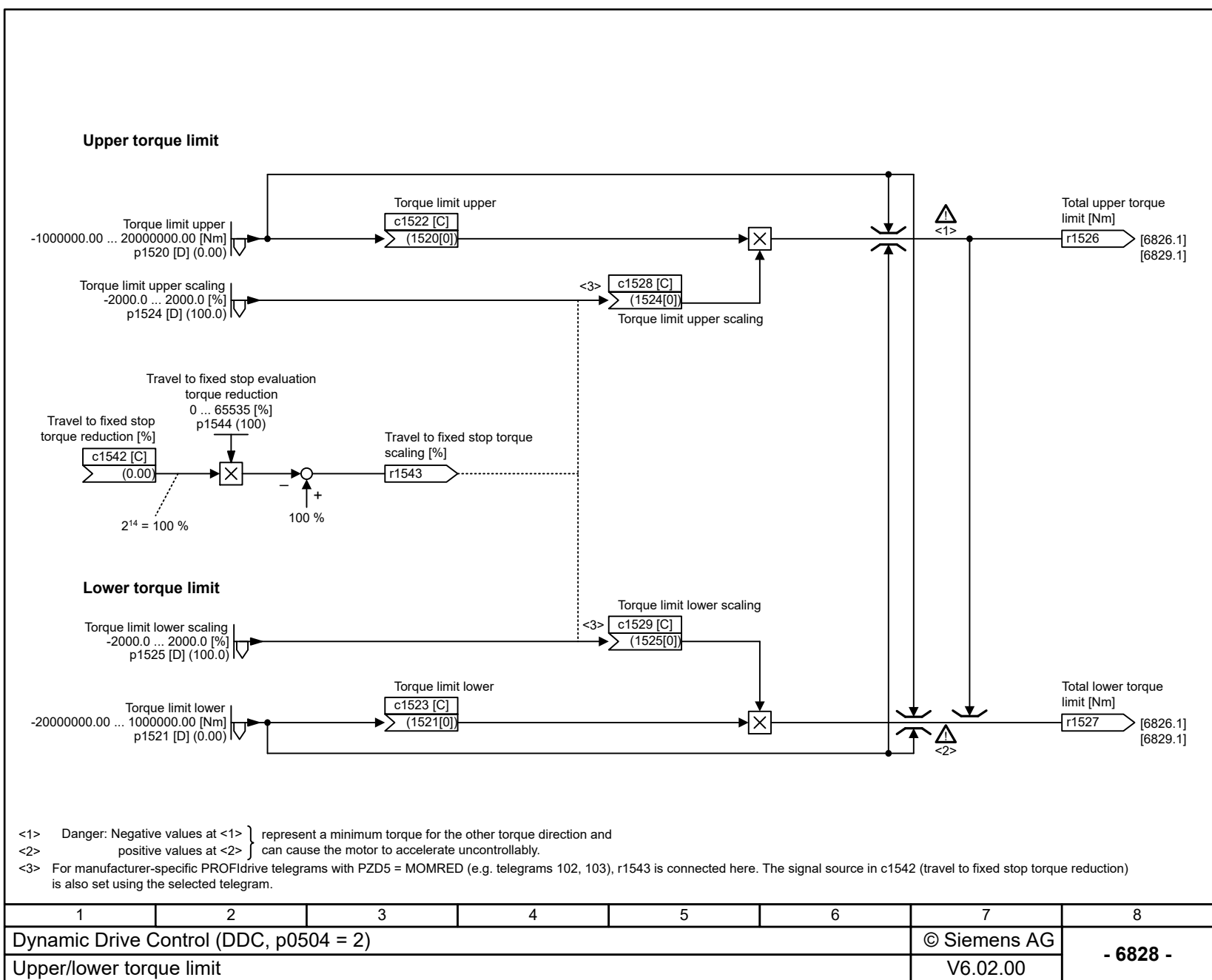


Figure 4-112 6828 - Upper/lower torque limit

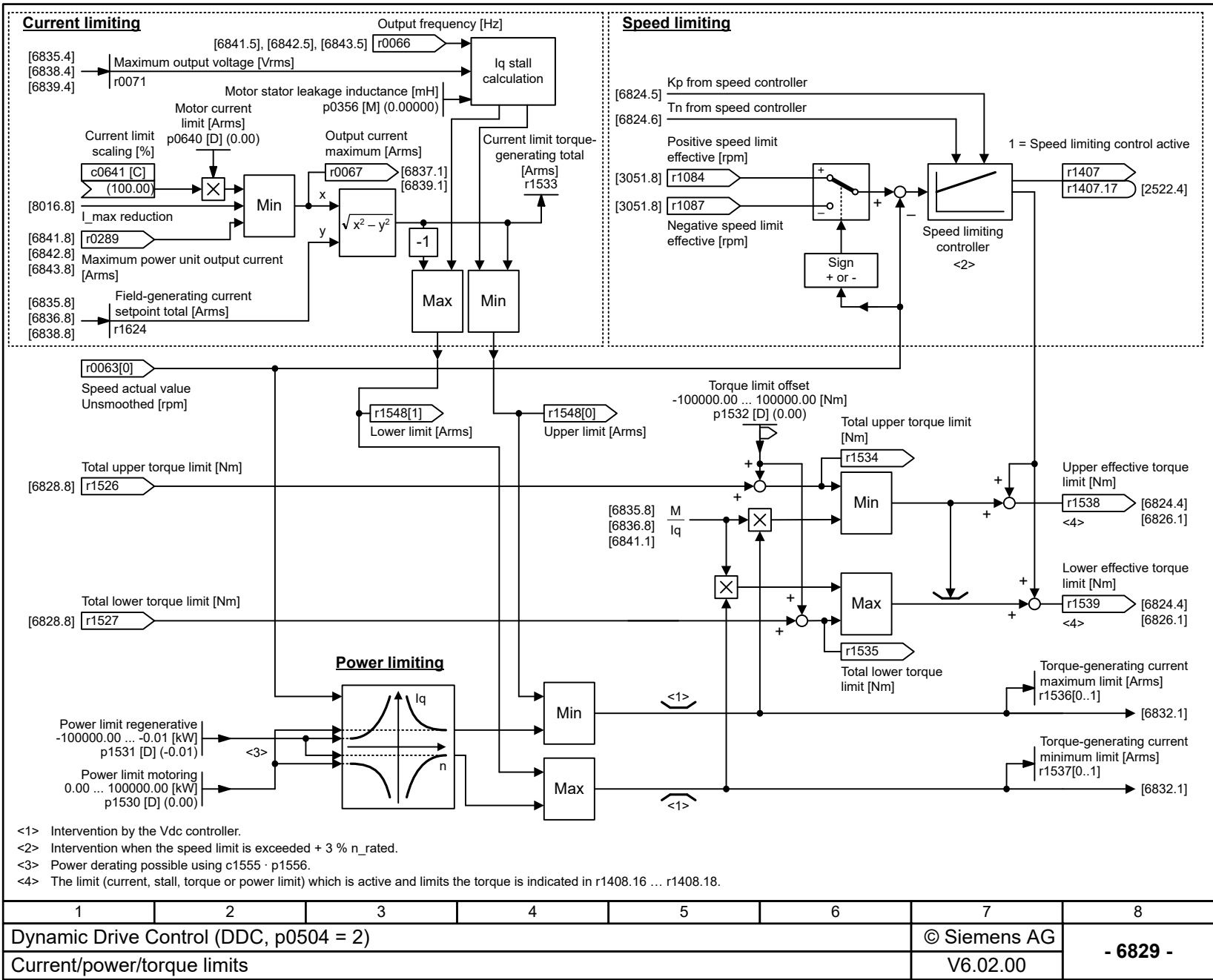
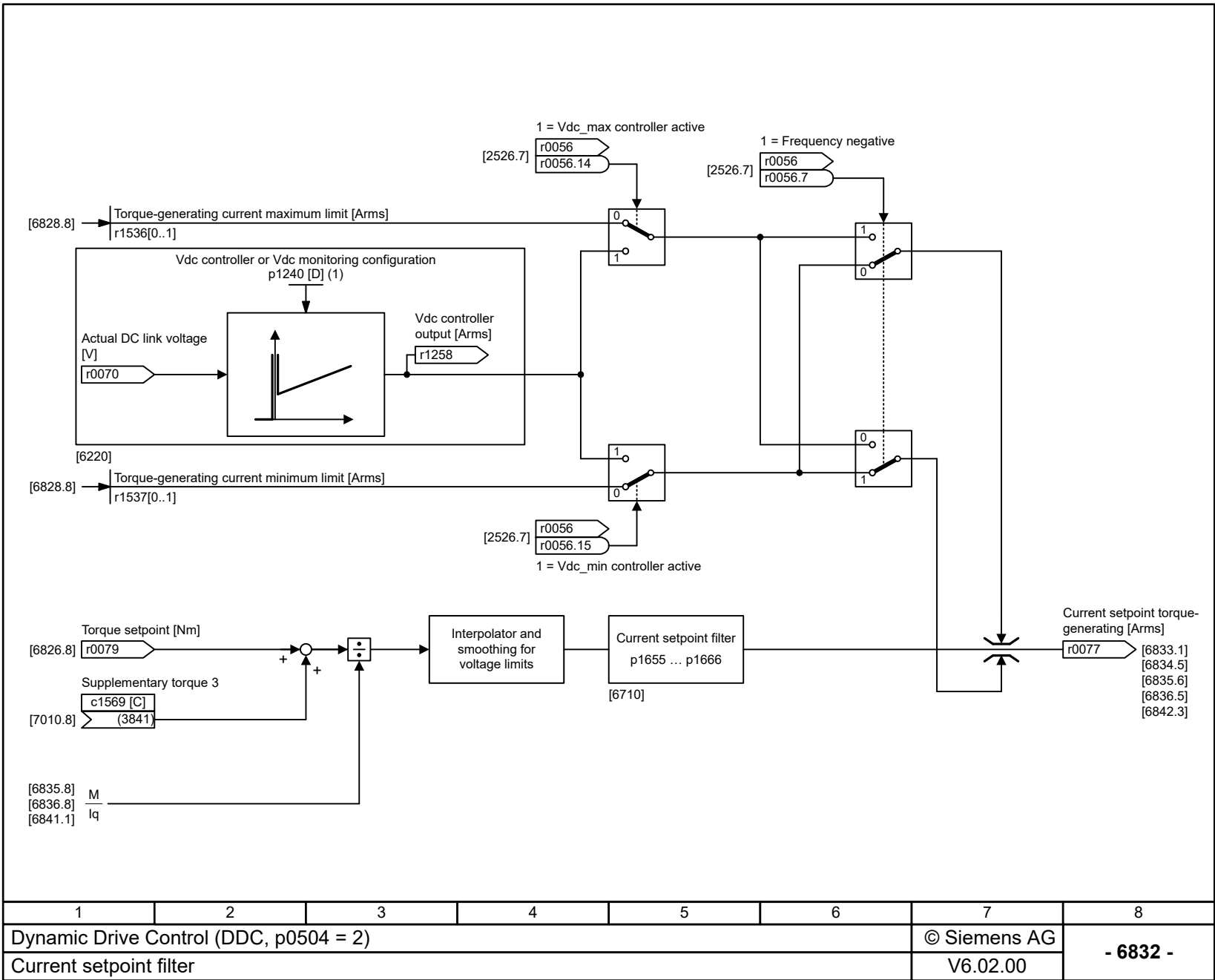
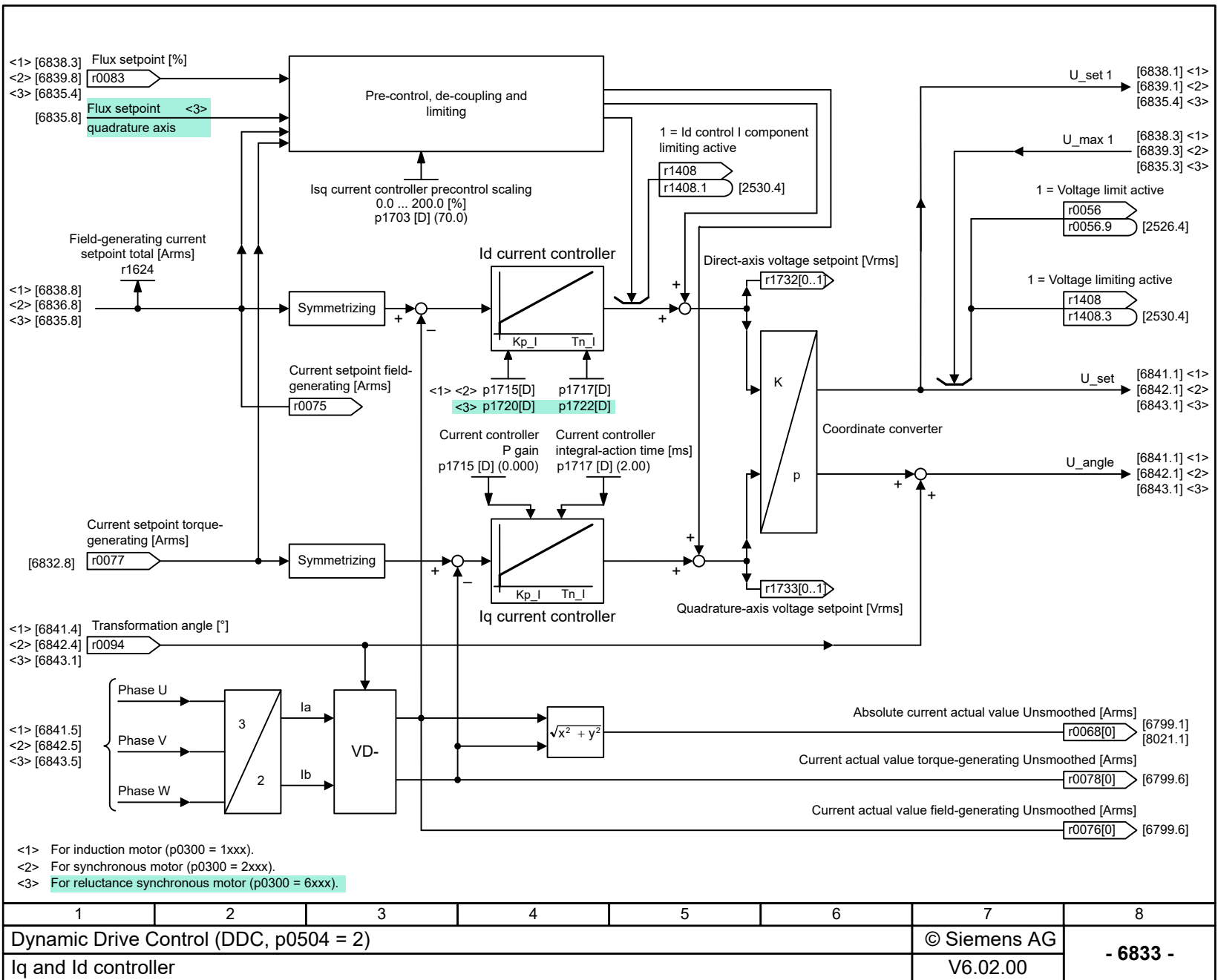


Figure 4-113 6829 - Current/power/torque limits





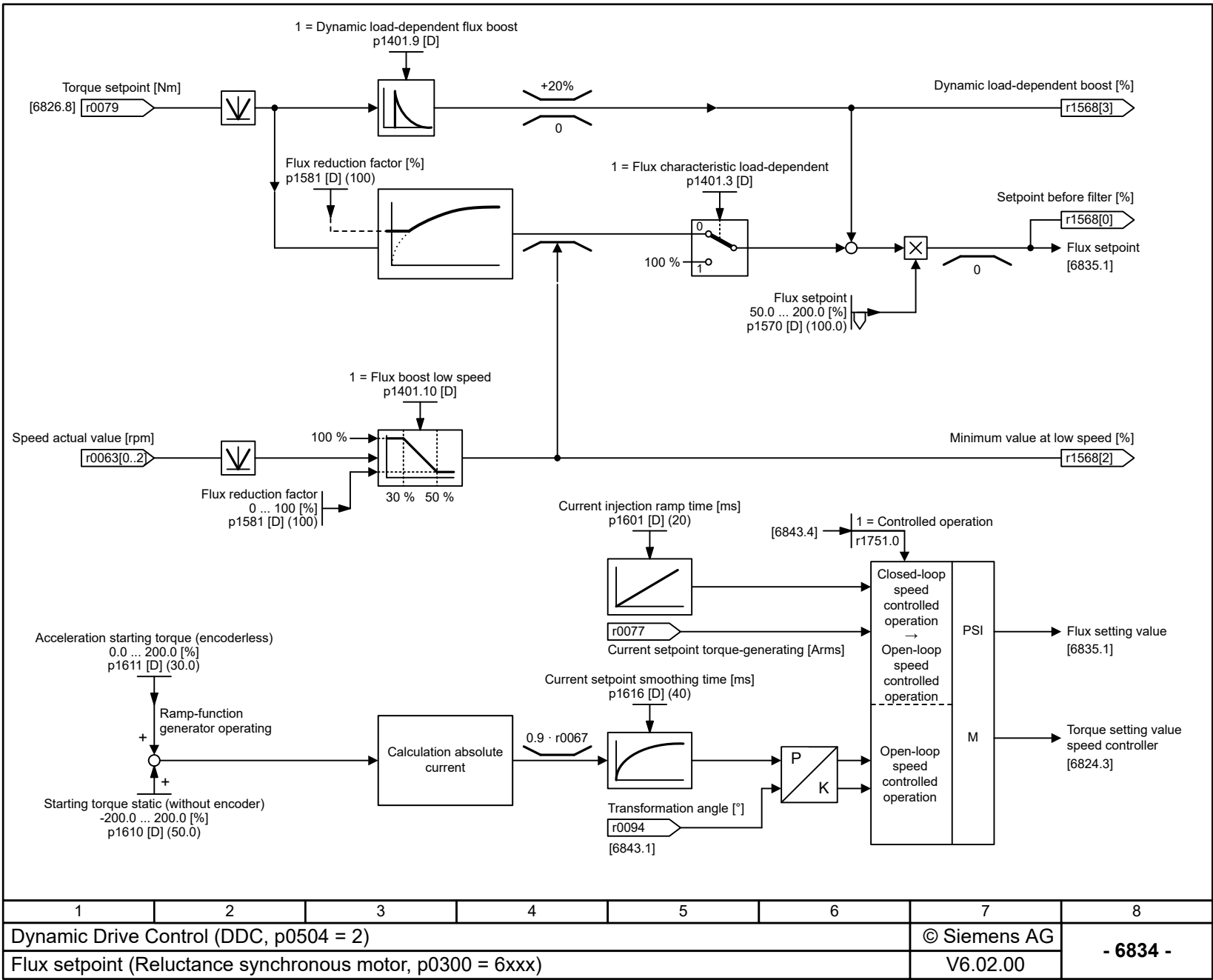
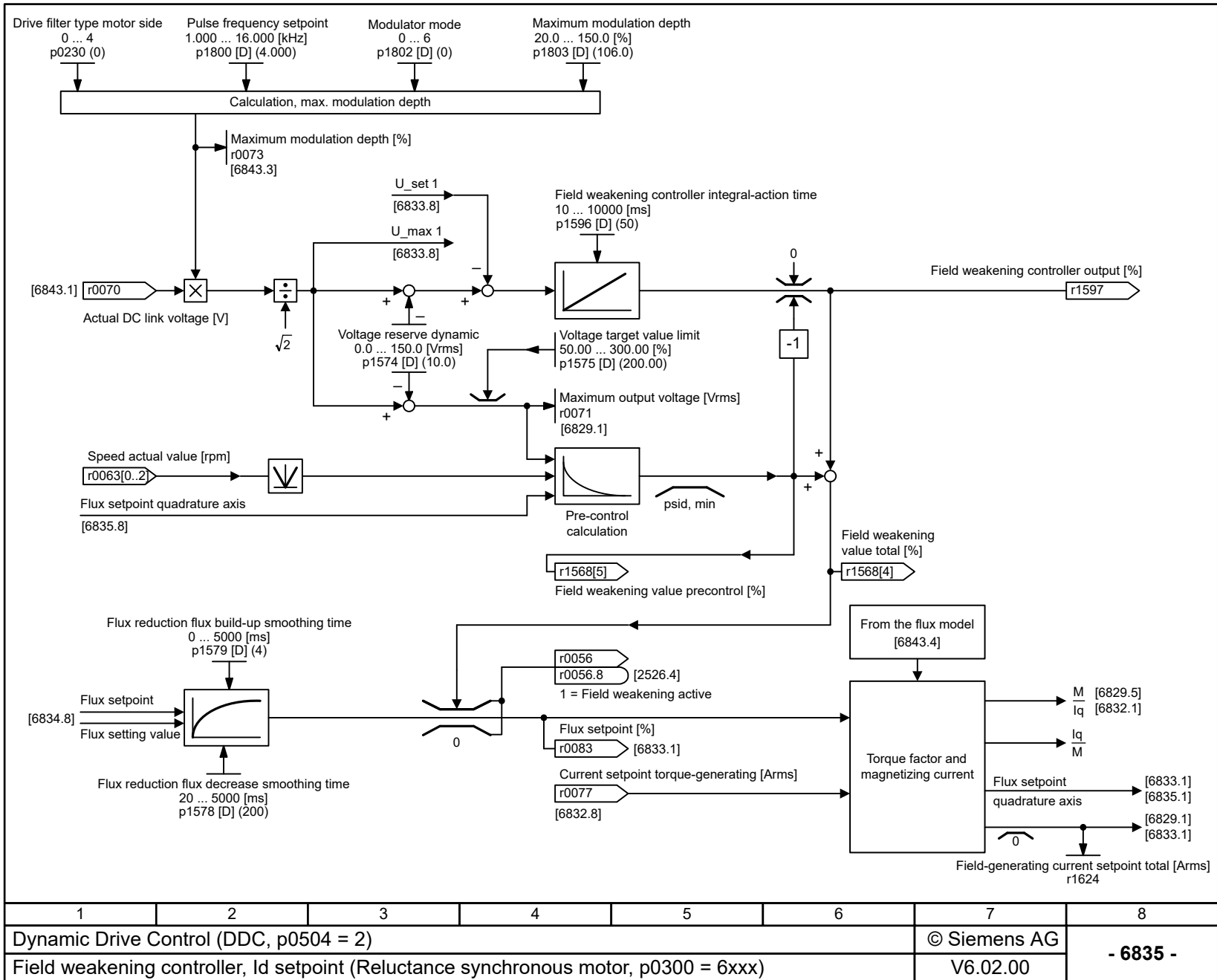
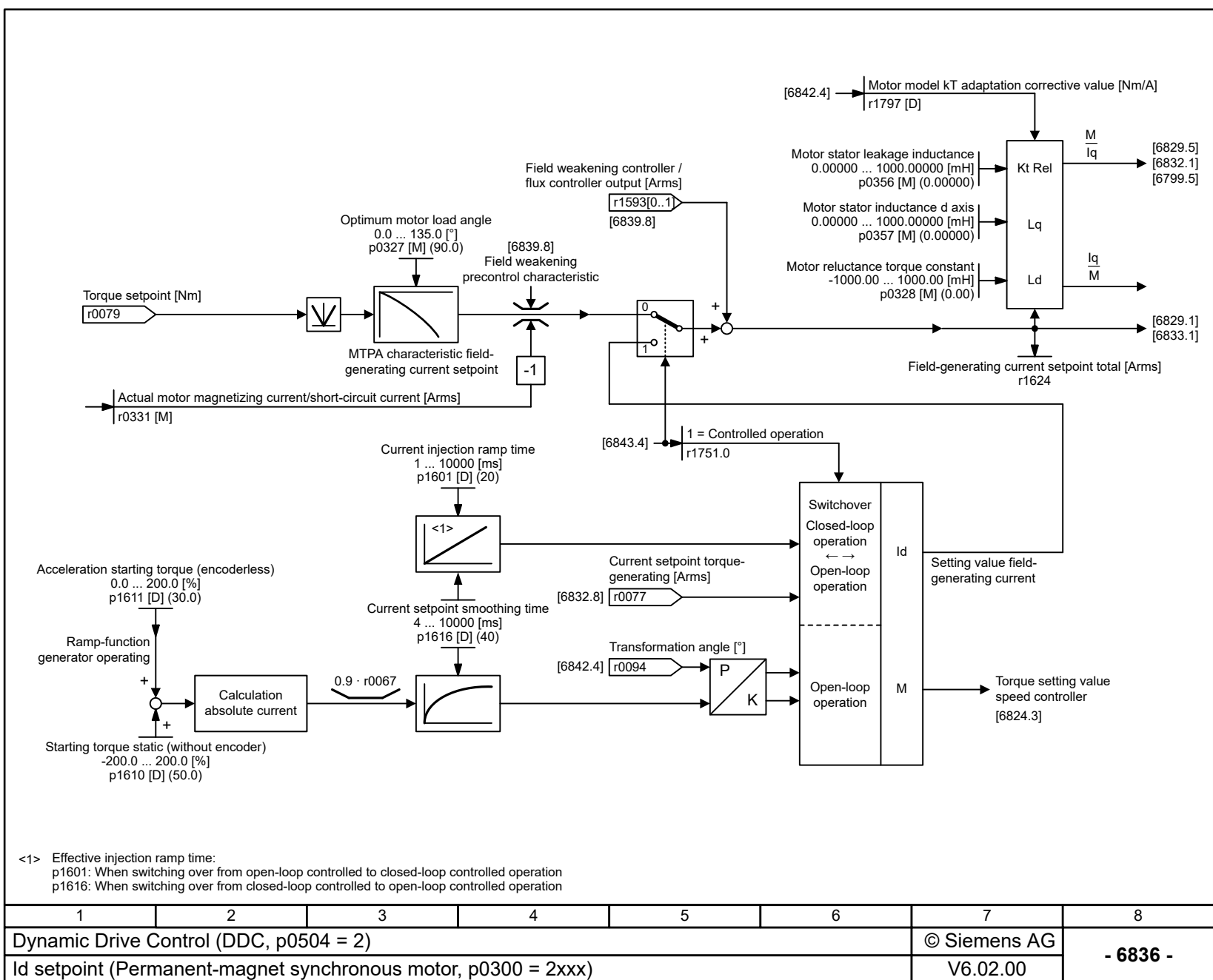


Figure 4-116 6834 - Flux setpoint (synchronous reluctance motor)





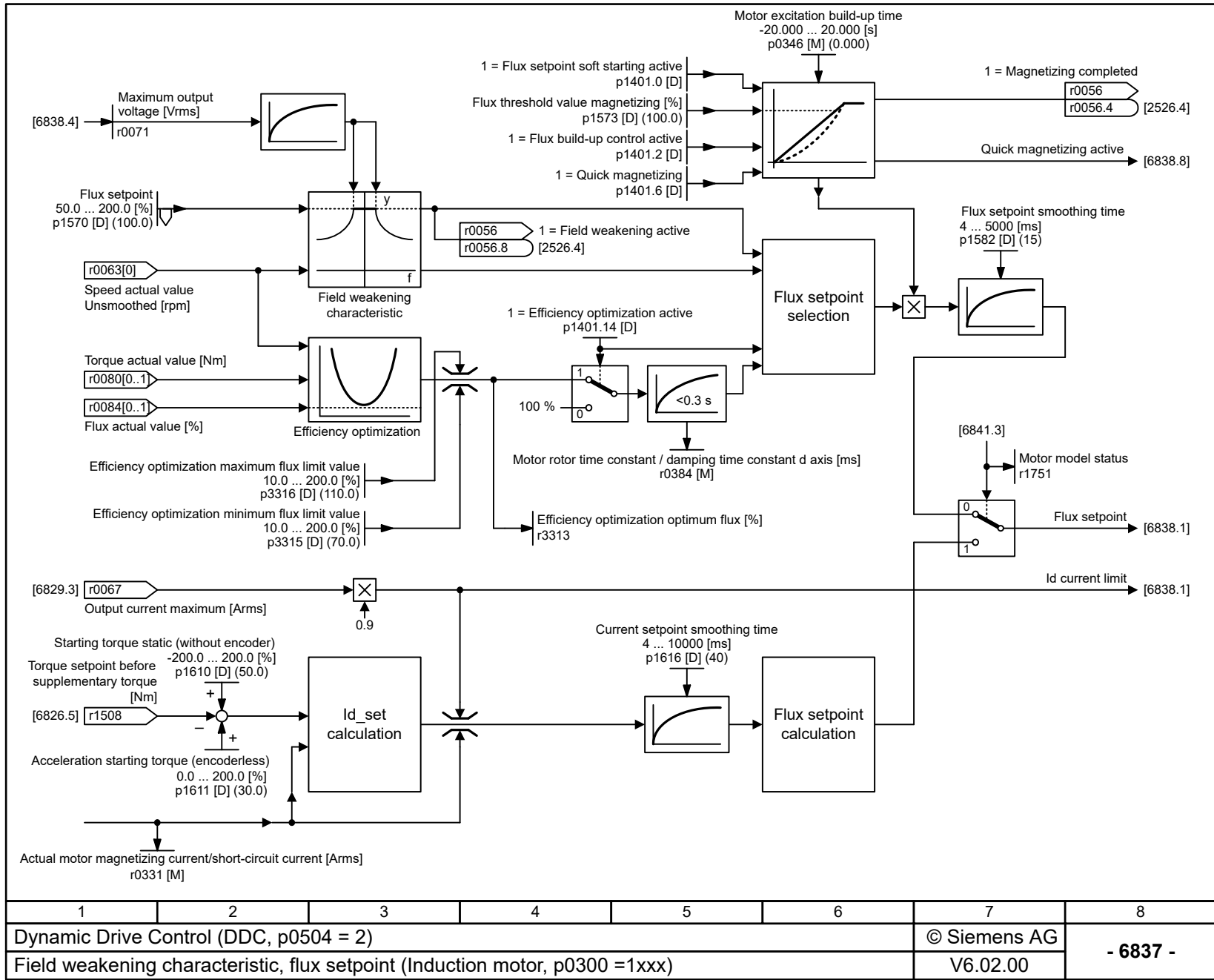
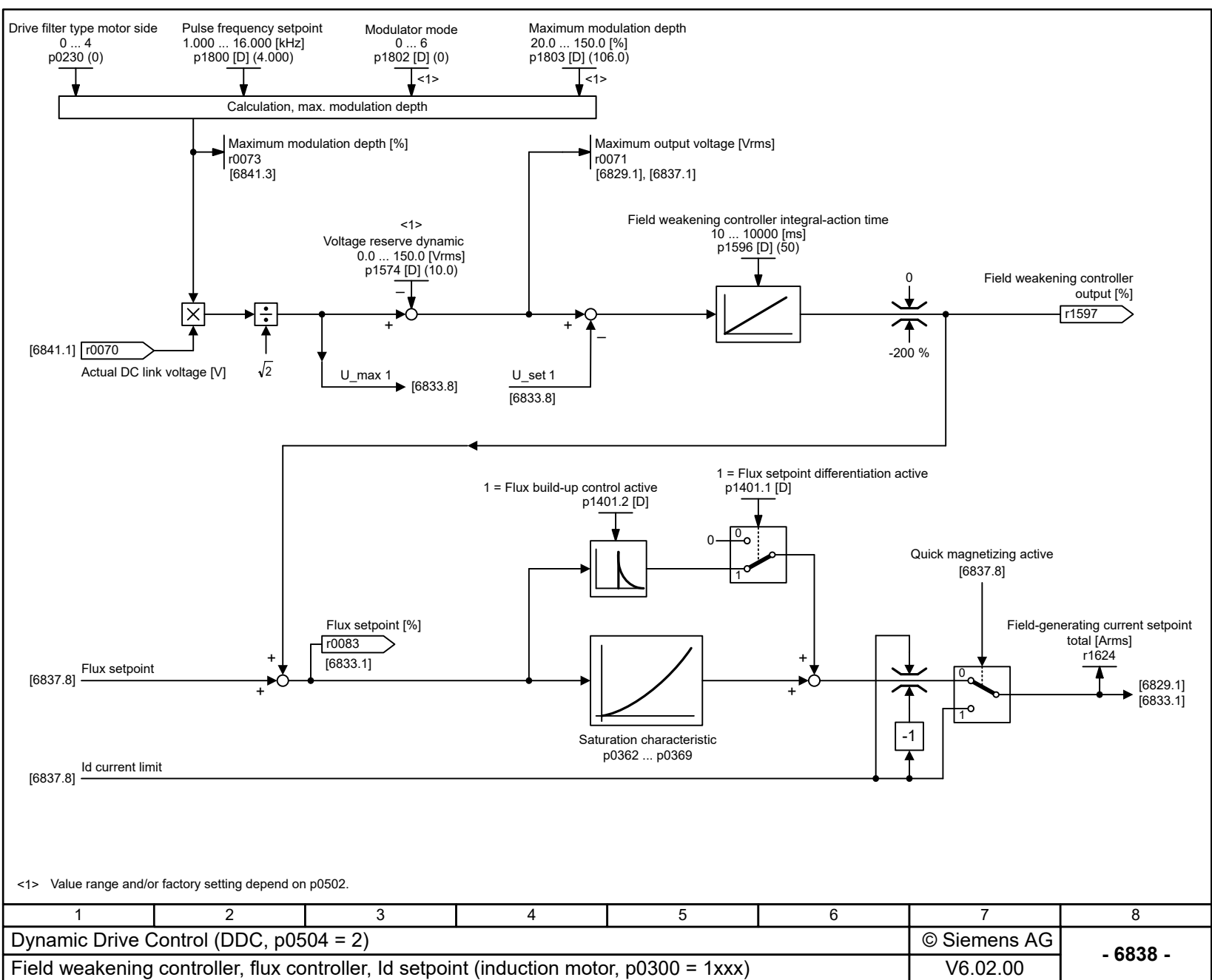
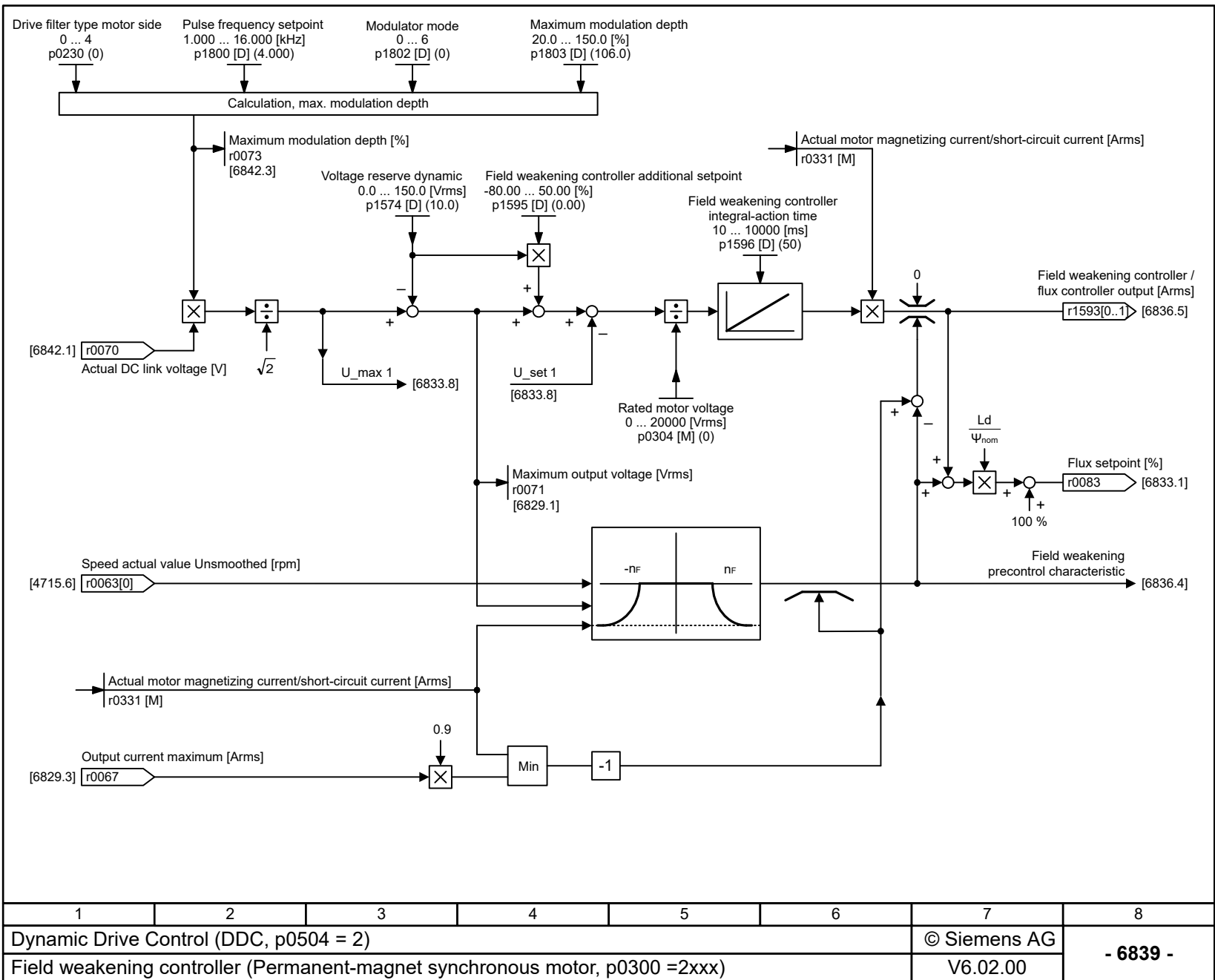
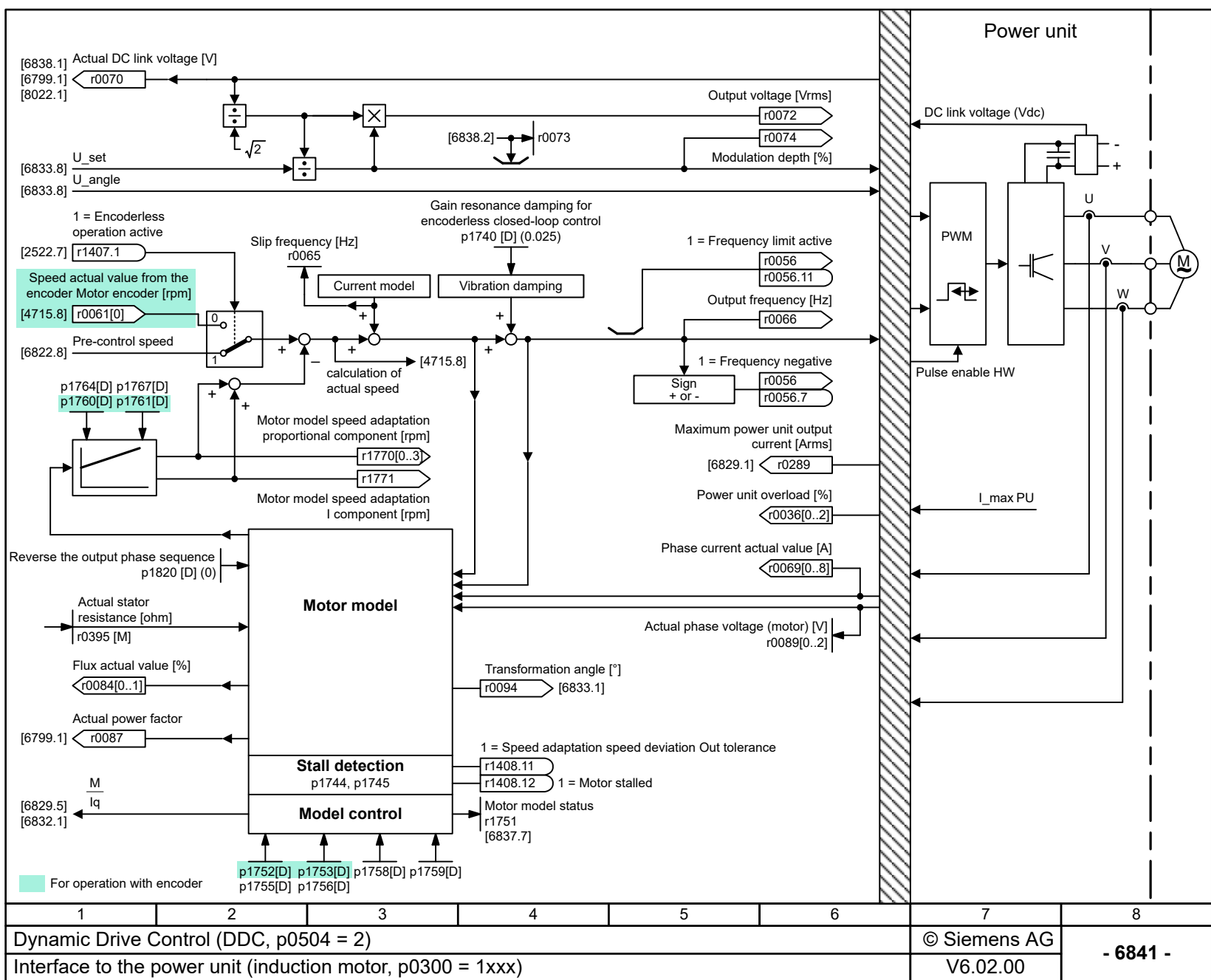
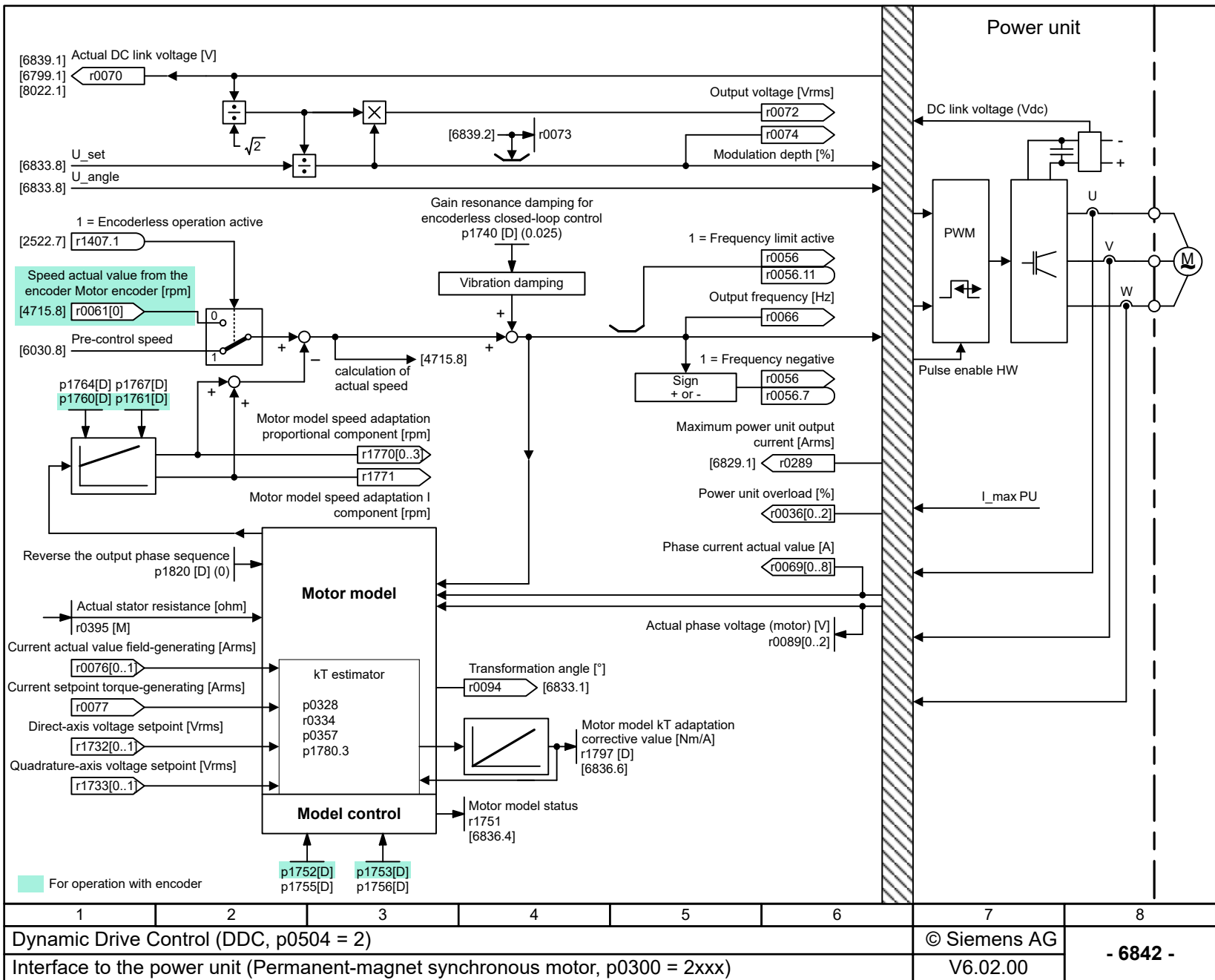


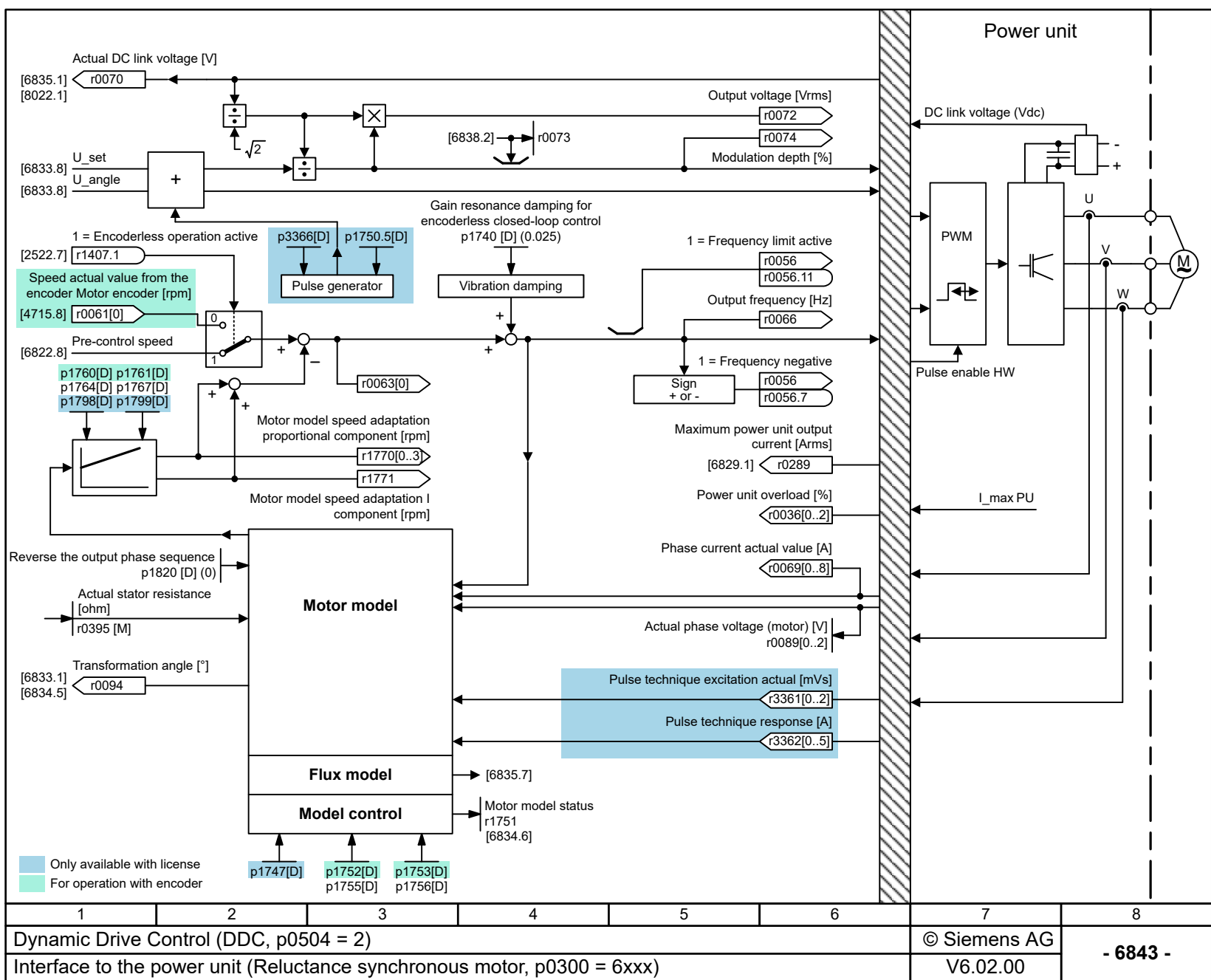
Figure 4-119 6837 – Field weakening characteristic, flux setpoint (induction motor)











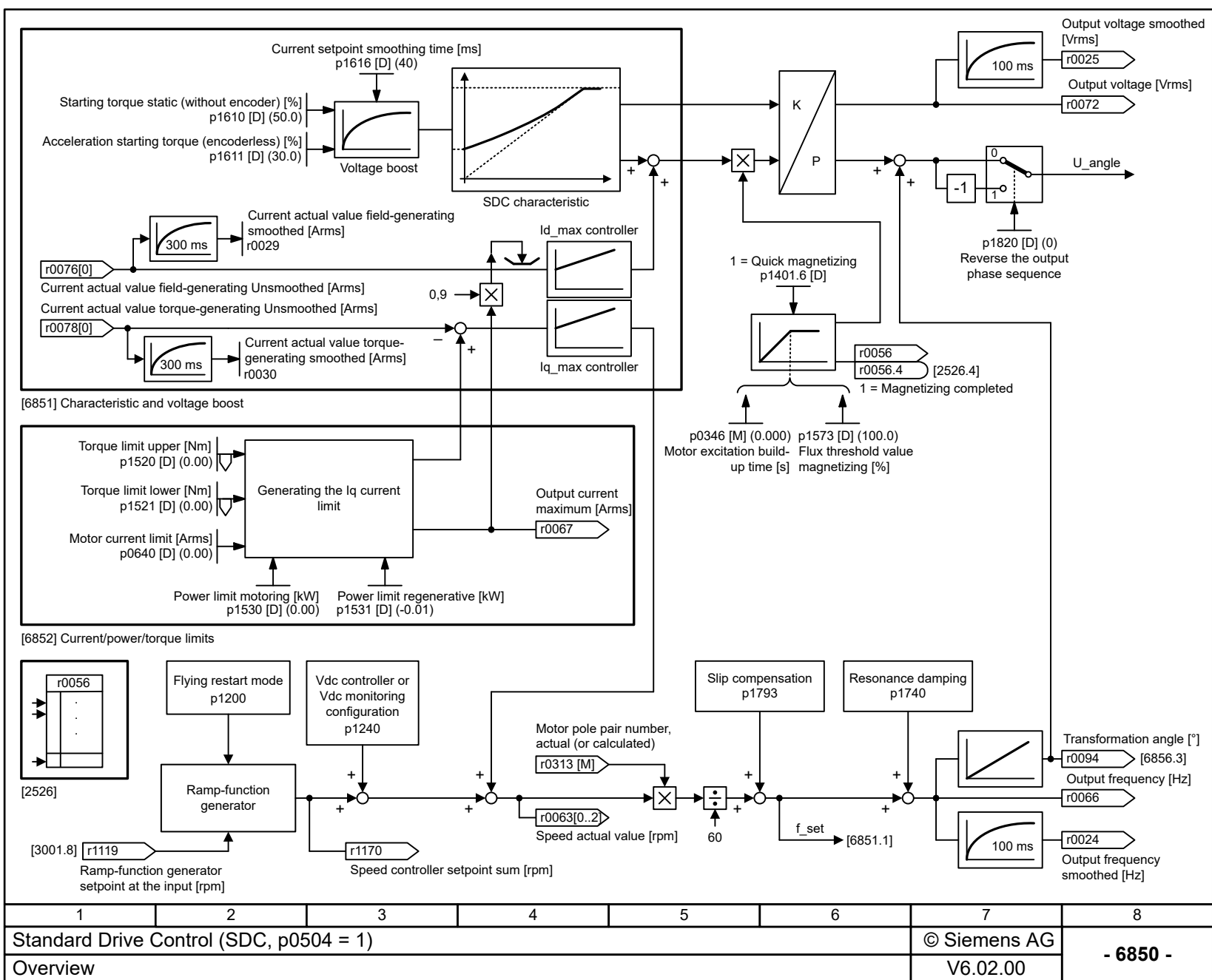
4.13 Standard Drive Control

Overview

The following function diagrams describe the Standard Drive Control function.

Function diagrams

- 6850 – Overview (Page 848)
- 6851 – U/f characteristic and voltage boost (Page 849)
- 6852 – Current/power/torque limits (Page 850)
- 6856 – Interface to power unit (induction motor) (Page 851)



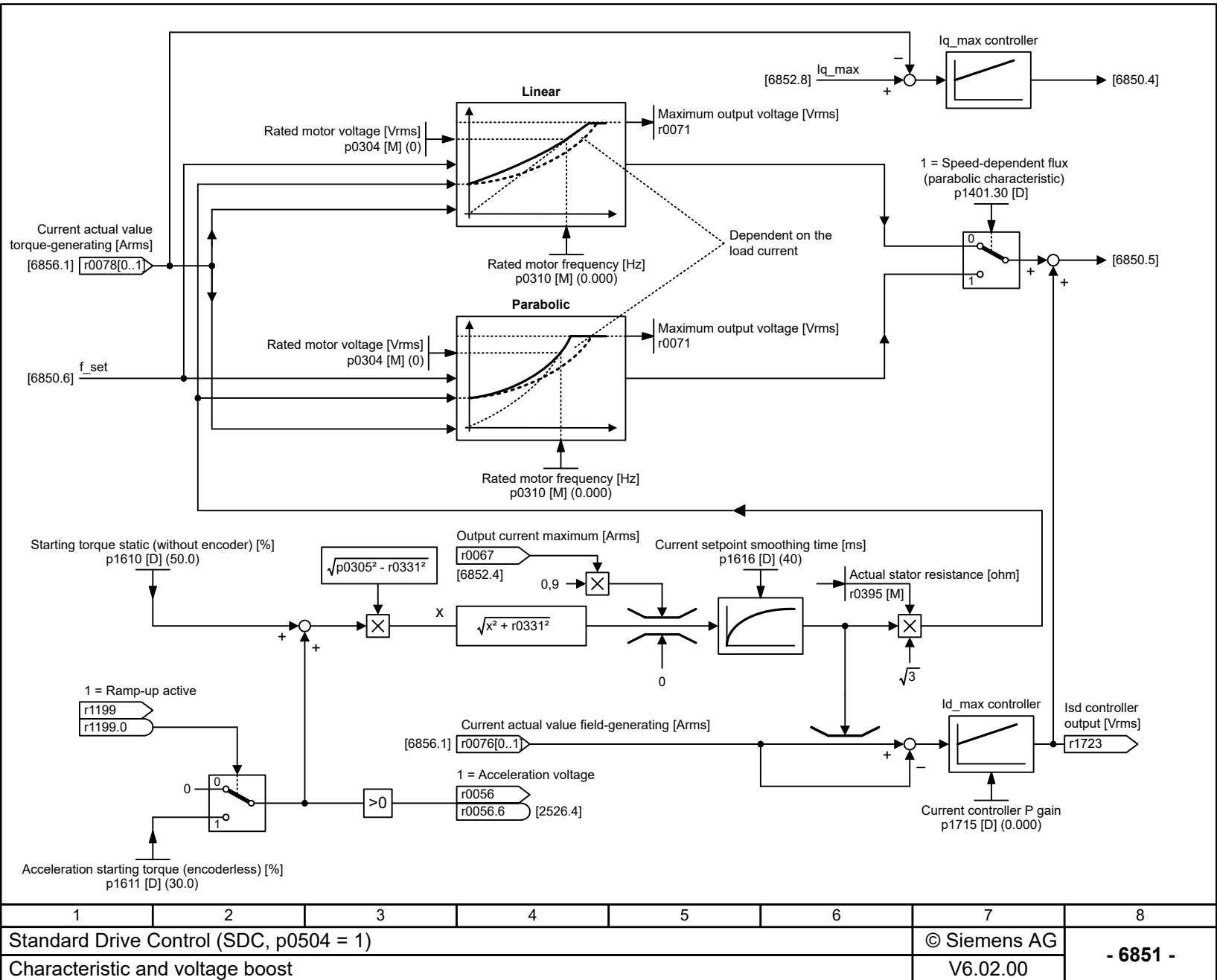
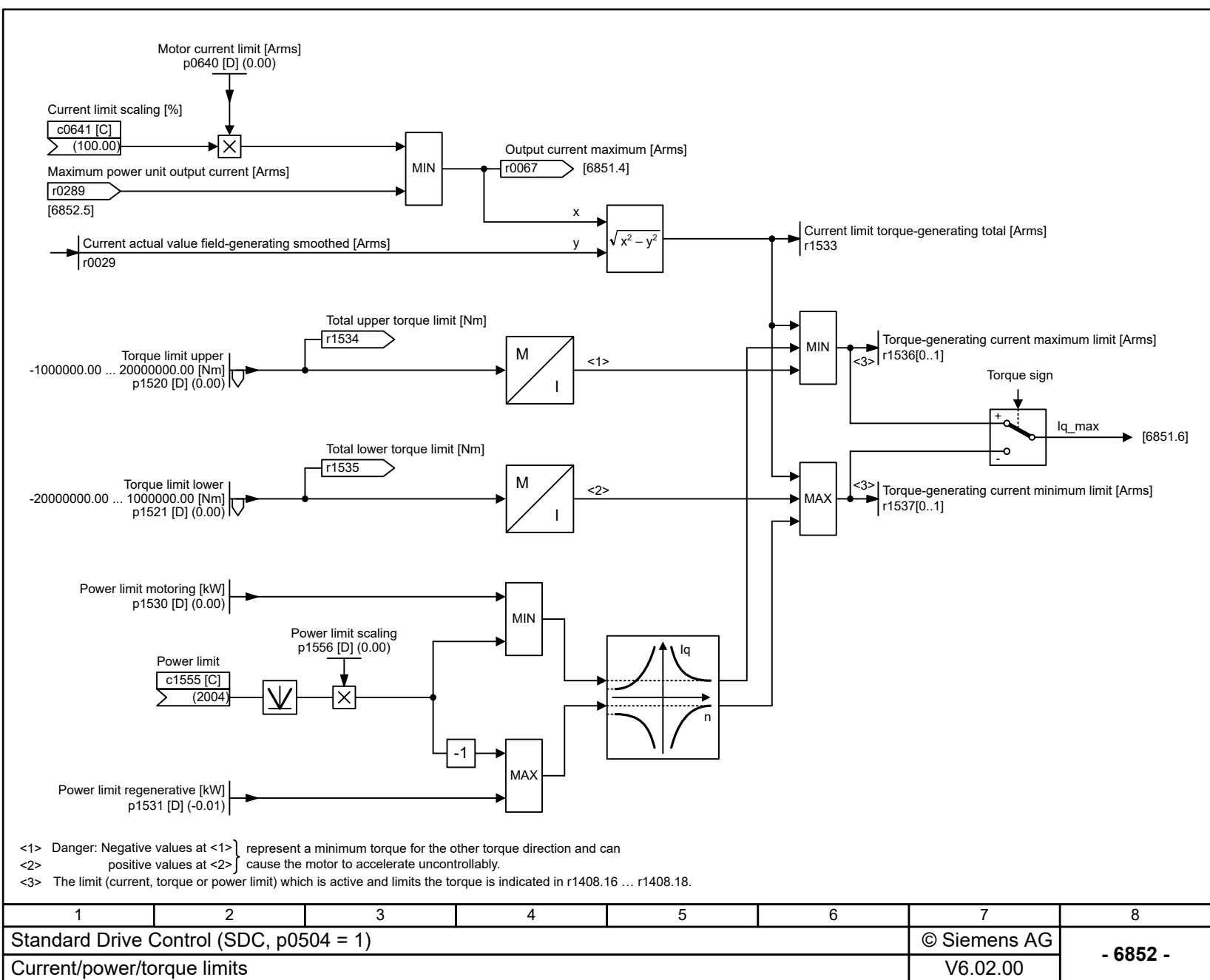


Figure 4-126 6851 - Characteristic and voltage boost



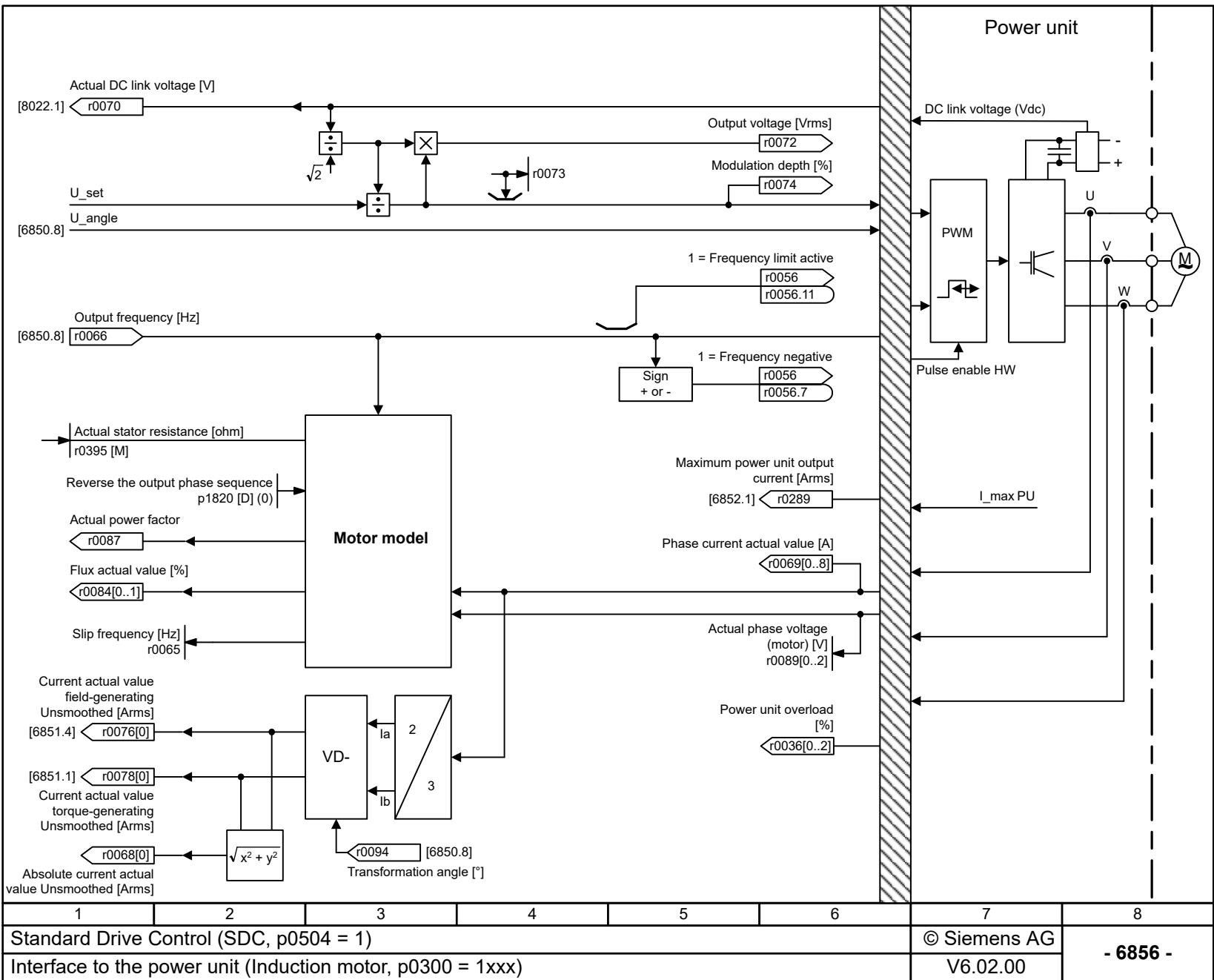


Figure 4-128 6856 - Interface to power unit (Induction motor)

4.14 Technology functions

Overview

The following function diagrams describe the technology functions.

Function diagrams

7010 – Friction characteristic (Page 853)

7014 – External armature short-circuit (EASC) (Page 854)

7016 – Internal armature short-circuit (IASC) (Page 855)

7017 – DC braking (Page 856)

7035 – Bypass (Page 857)

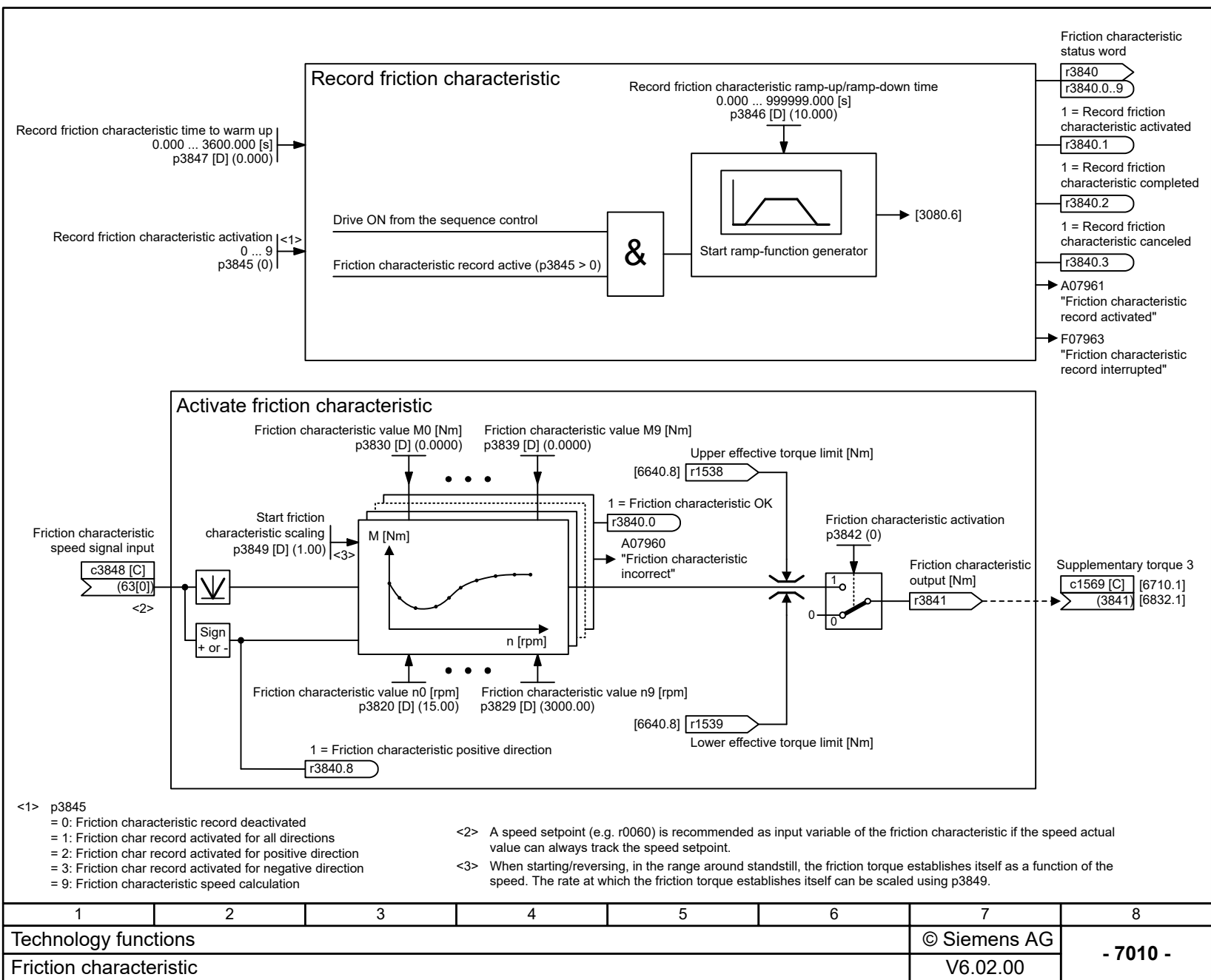
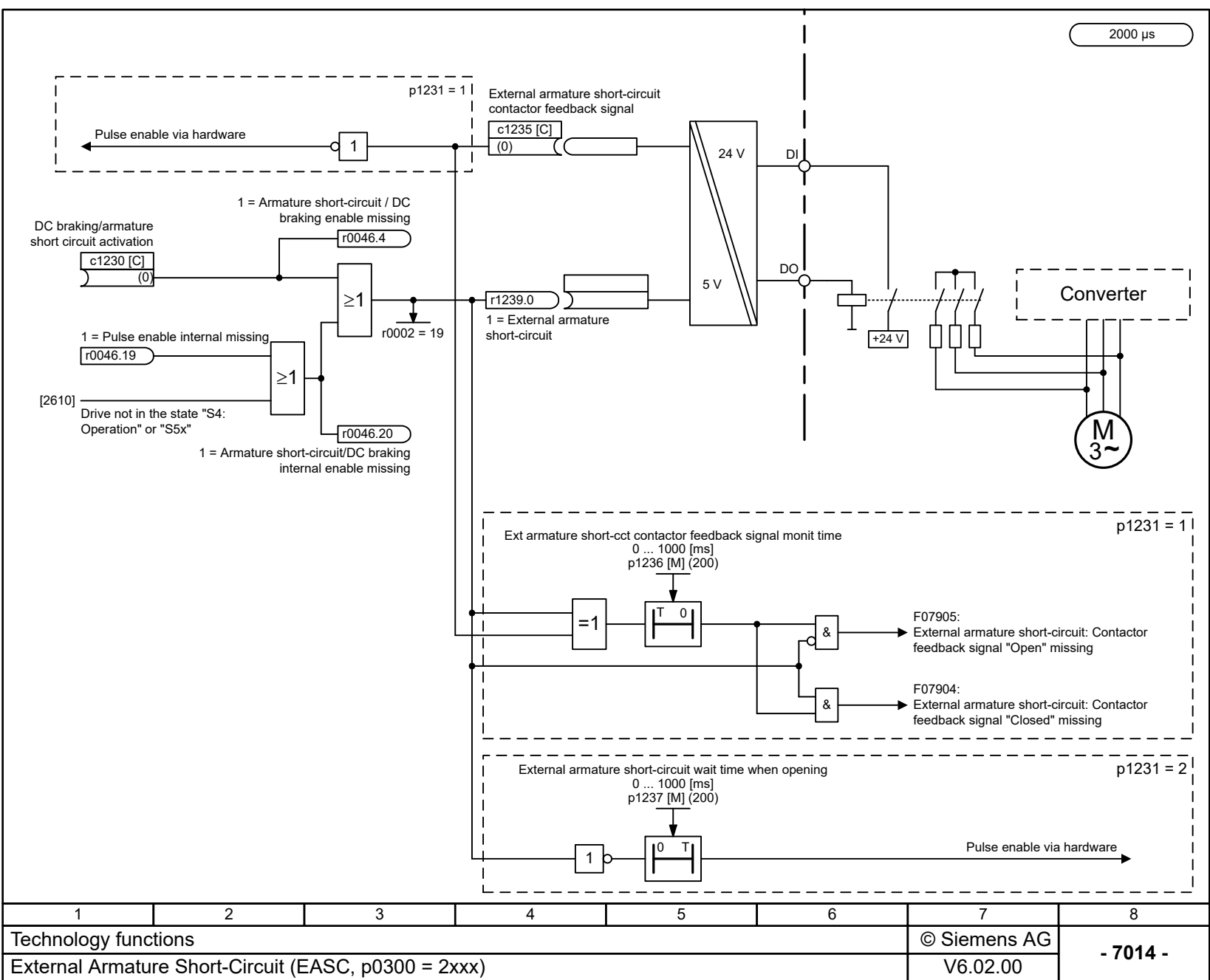


Figure 4-129 7010 - Friction characteristic



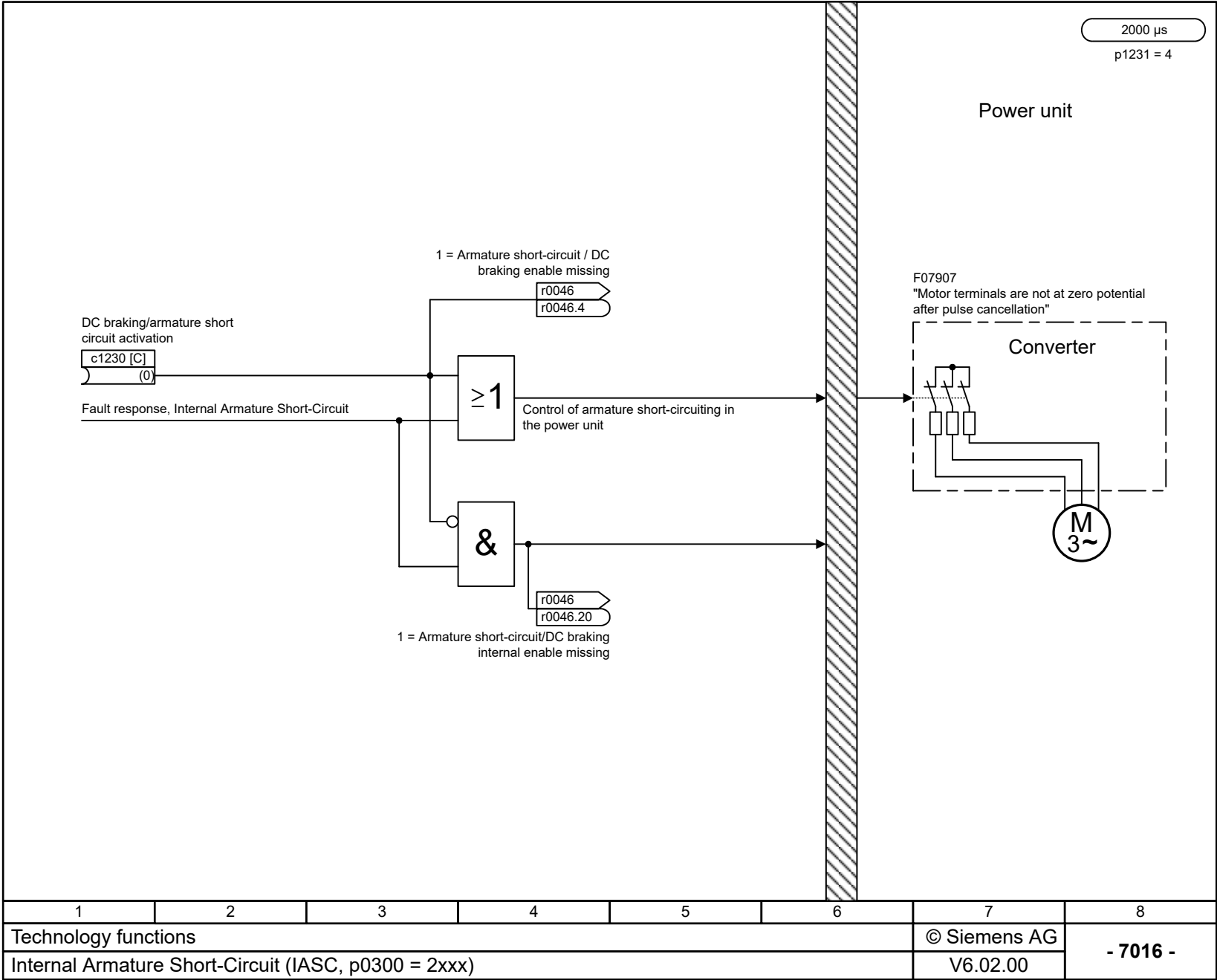


Figure 4-131 7016 – Internal armature short-circuit (IASC)

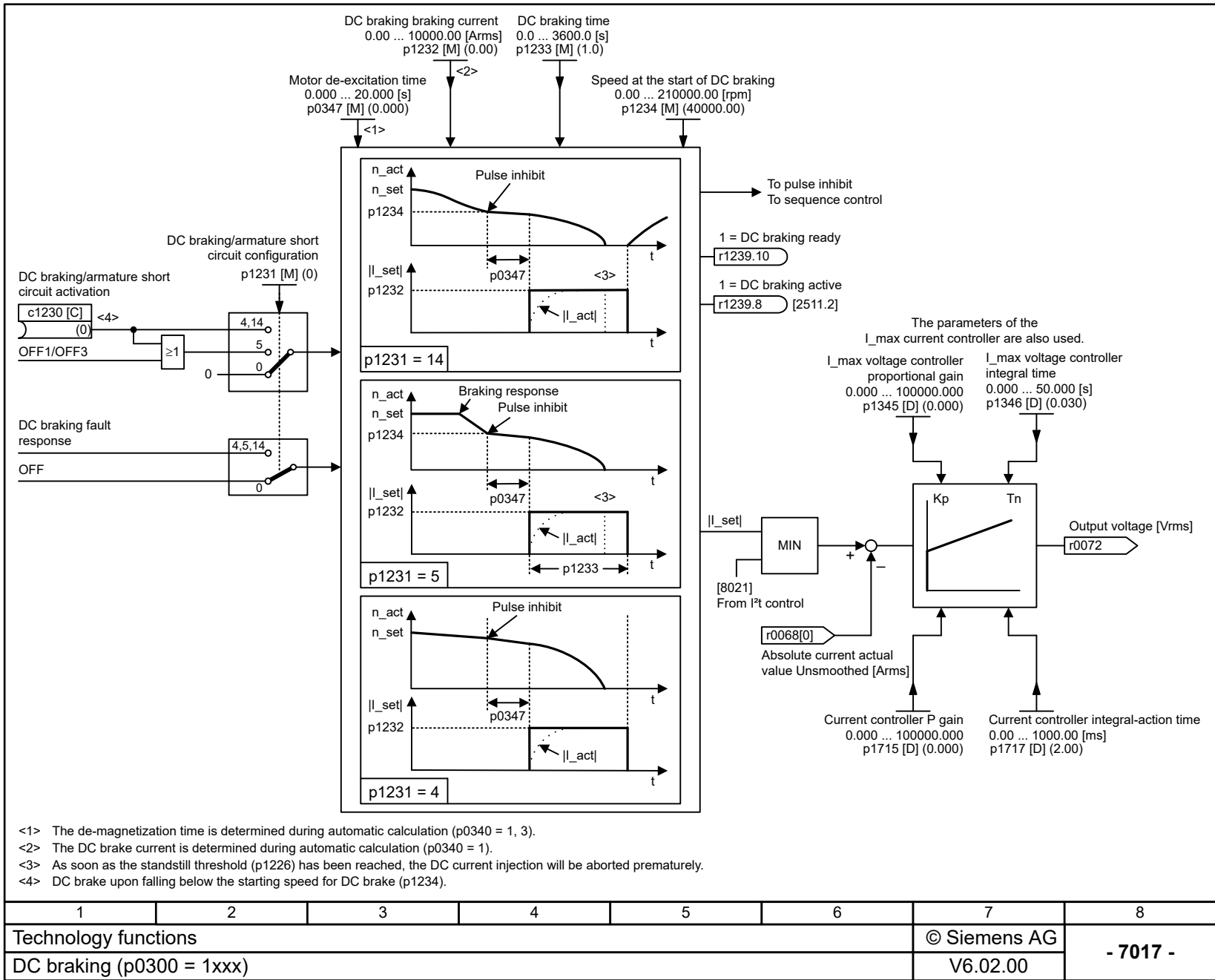
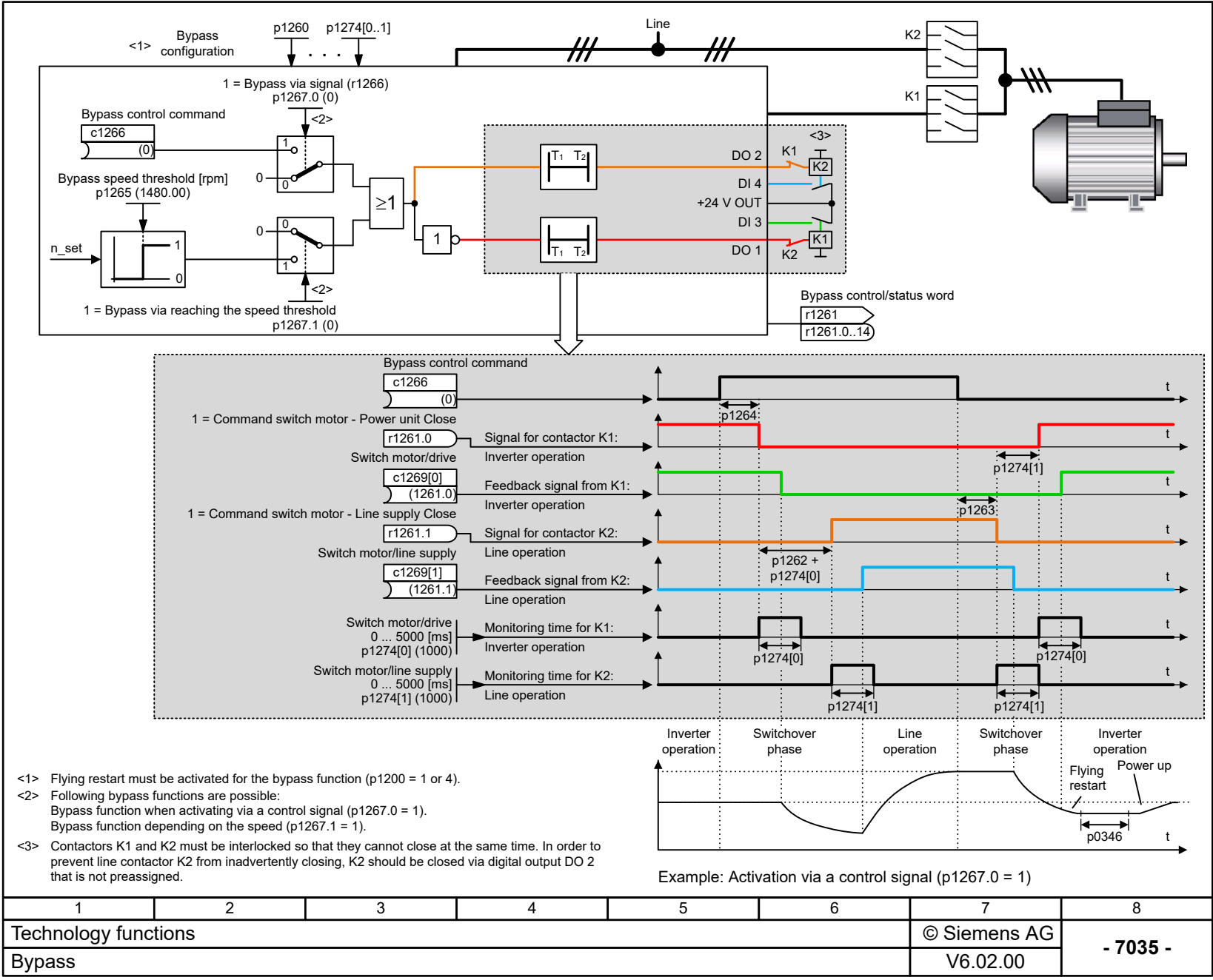


Figure 4-133 7035 - Bypass



- <1> Flying restart must be activated for the bypass function (p1200 = 1 or 4).
- <2> Following bypass functions are possible:
Bypass function when activating via a control signal (p1267.0 = 1).
Bypass function depending on the speed (p1267.1 = 1).
- <3> Contactors K1 and K2 must be interlocked so that they cannot close at the same time. In order to prevent line contactor K2 from inadvertently closing, K2 should be closed via digital output DO 2 that is not preassigned.

1	2	3	4	5	6	7	8
Technology functions						© Siemens AG	- 7035 -
Bypass						V6.02.00	

4.15 Technology controller

Overview

The following function diagrams describe the technology controller.

Function diagrams

7950 – Fixed values, binary selection (Page 859)

7951 – Fixed values, direct selection (Page 860)

7954 – Motorized potentiometer (Page 861)

7957 – Closed-loop control, vector (Part 1) (Page 862)

7958 – Closed-loop control, vector (Part 2) (Page 863)

7959 – Kp/Tn adaptation (Page 864)

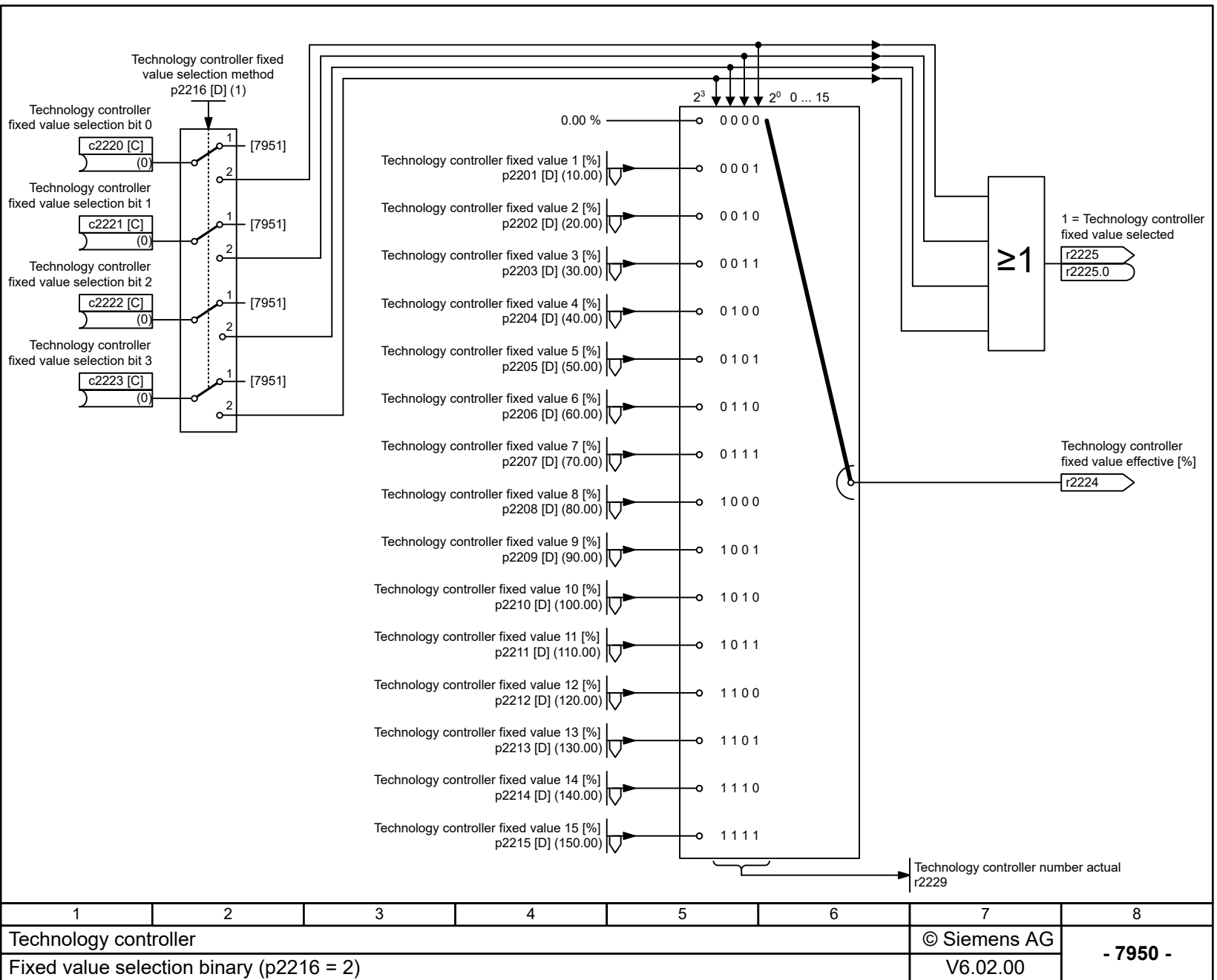
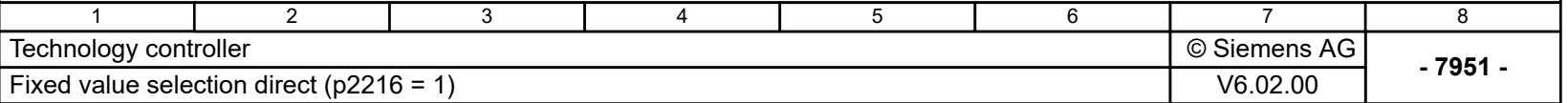


Figure 4-134 7950 - Fixed values, binary selection



7951 - Fixed values, direct selection

Technology controller motorized potentiometer configuration

1 = Data save active
p2230.0 [D]

1 = Initial rounding-off active
p2230.2 [D]

1 = Non-volatile data save active for p2230.0 = 1
p2230.3 [D]

1 = Ramp-function generator always active
p2230.4 [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.

0 Without initial rounding.

1 With initial rounding. The ramp-up/down time set is exceeded accordingly.

0 Non-volatile data save deactivated.

1 The setpoint for the motorized potentiometer is saved in a non-volatile fashion (for p2230.0 = 1).

0 Ramp-up encoder inactive with pulse inhibit.

1 The ramp-up encoder is calculated independently of the pulse enable.

Old value is kept

Technology controller motorized potentiometer raise setpoint
c2235 [C]
(0)

Technology controller motorized potentiometer lower setpoint
c2236 [C]
(0)

Technology controller motorized potentiometer maximum value [%]
p2237 [D] (100.00)

Technology controller motorized potentiometer minimum value [%]
p2238 [D] (-100.00)

Technology controller mot. potentiometer setpoint before RFG [%]
r2245

1 = OFF1 enable missing
r0046
r0046.0

Technology controller motorized potentiometer ramp-up time
0.0 ... 1000.0 [s]
p2247 [D] (10.0)

Technology controller motorized potentiometer ramp-down time
0.0 ... 1000.0 [s]
p2248 [D] (10.0)

Technology controller motorized potentiometer setpoint memory [%]
r2231

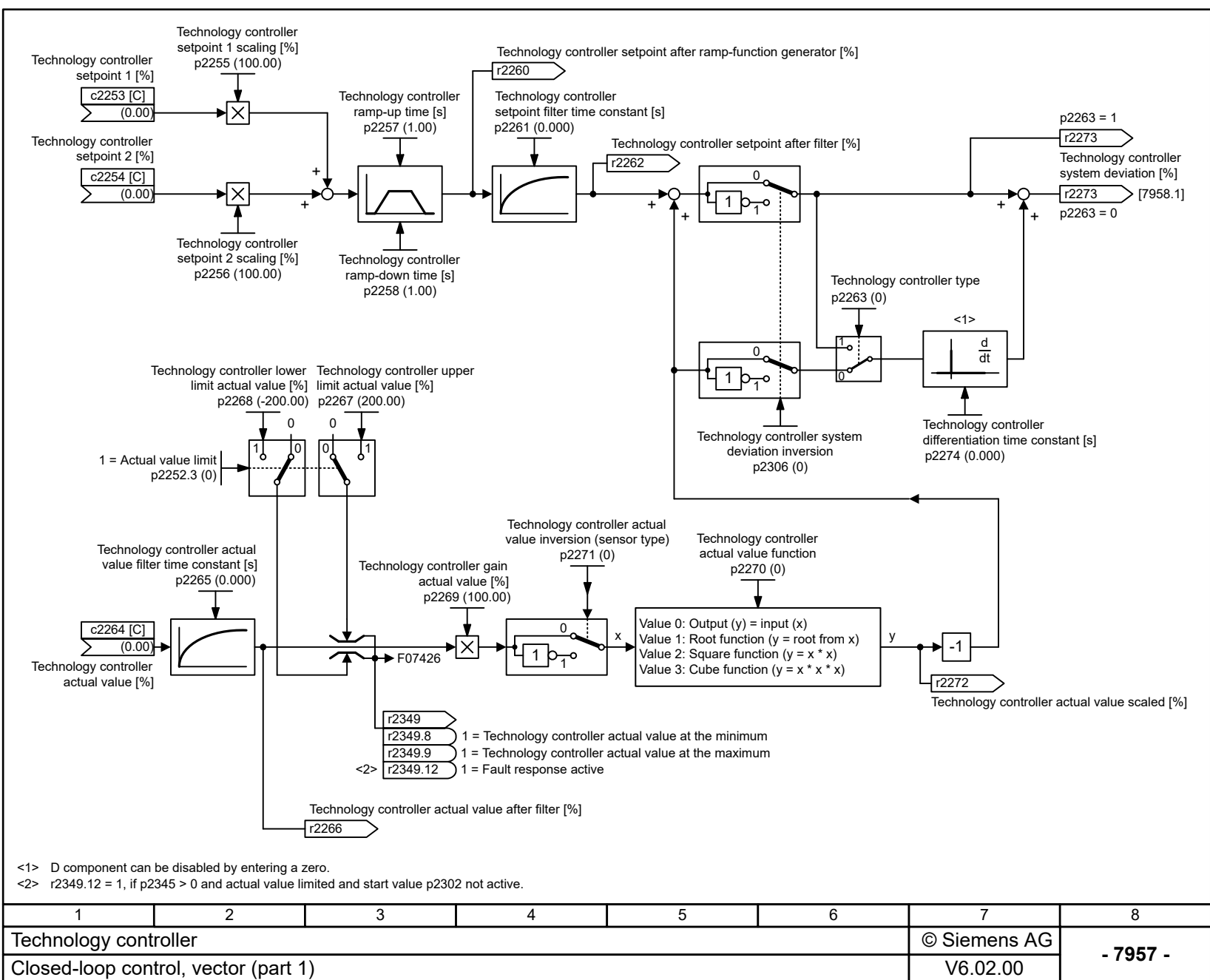
Technology controller motorized potentiometer starting value
-200.00 ... 200.00 [%]
p2240 [D] (0.00)

Technology controller motorized potentiometer setpoint after RFG [%]
r2250

<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 AG	- 7954 -
Motorized potentiometer						V6.02.00	



Hold technology controller integrator
 c2286 [C] (56.13) <2>

Hold techn. controller I component for n_skip threshold value [%]
 p2339 (2.00)

Technology controller system deviation [%]
 r2273 [7957.8]

1 = Operation enabled
 r0052, r0052.2

Technology controller enable
 c2200 [C] (0)

1 = Technology controller deactivated
 r2349, r2349.0 [2513.2]

Technology controller maximum limiting
 c2297 [C] (1084)

Technology controller limit offset [%]
 c2299 [C] (0.00) <3>

Technology controller minimum limiting
 c2298 [C] (2292)

Technology controller output scaling
 c2296 [C] (2295)

Ramp-function generator speed setpoint at the output [rpm]
 r1150

Technology controller last speed setpoint (smoothed) [%]
 r2344

Technology controller fixed value 15
 p2215 [D] (150.00)

Technology controller fault response
 p2345 (0)

1 = Technology controller limiting enable
 r2349, r2349.13

1 = Technology controller limited
 r2349, r2349.1

1 = Technology controller output at the minimum
 r2349.10

1 = Technology controller output at the maximum
 r2349.11

Technology controller output signal starting value [%]
 p2302 (0.00)

Technology controller output signal [%]
 r2294

1 = Fault response active
 r2349.12 <1>

Technology controller fault response
 p2345 (0)

Parameters:
 Kp [7959.8], Tn [7959.8], p2291 (100.00), p2292 (0.00), p2293 (1.00), p2295 (100.00)

Comments:
 <1> r2349.12 = 1, if p2345 > 0 and actual value limited and start value p2302 not active.
 <2> I component stop, only when r2273 and r2294 in same direction.
 <3> Recommendation for p2251 = 1: c2299 connected to r1150.
 <4> p2251 = 0: I component is stopped, when r2294 is below the minimum speed or within a suppression bandwidth.
 <5> Signal = 0 --> factor = 0, when setpoint from external operating tool or operator panel.
 <6> The start value p2302 is only used in mode p2251 = 0. After enable of technology controller the start value is present as long as the RFG output reaches this value.

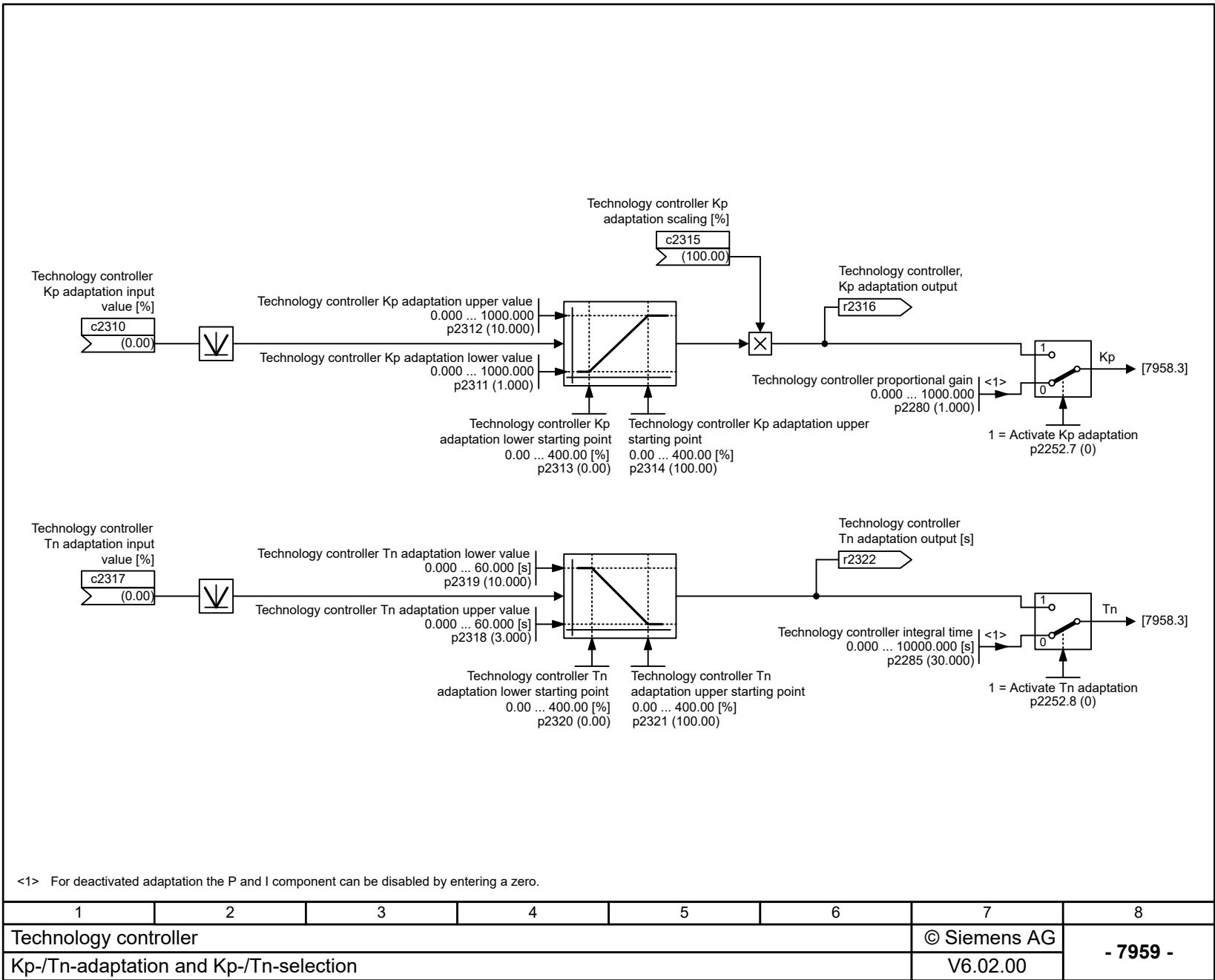


Figure 4-139 7959 – Kp/Tn adaptation and Kp/Tn selection

4.16 Signals and monitoring functions

Overview

The following function diagrams describe the signals and monitoring functions.

Function diagrams

- 8005 – Overview (Page 866)
- 8010 – Speed messages (Part 1) (Page 867)
- 8011 – Speed messages (Part 2) (Page 868)
- 8012 – Torque messages (Page 869)
- 8013 – Load monitoring (Part 1) (Page 870)
- 8014 – Load monitoring (Part 2) (Page 871)
- 8015 – Blocking and stall monitoring (Page 872)
- 8016 – Thermal monitoring motor (Page 873)
- 8017 – Motor temperature model 1 (I2t) (Page 874)
- 8018 – Motor temperature model 2 (Page 875)
- 8019 – Motor temperature model 3 (Page 876)
- 8020 – ZSW motor temperature (Page 877)
- 8021 – Thermal monitoring power unit (Page 878)
- 8022 – Monitoring functions (Part 1) (Page 879)
- 8023 – Monitoring functions (Part 2) (Page 880)
- 8024 – Variable messages 1, 2, 3 (Page 881)

4.16 Signals and monitoring functions

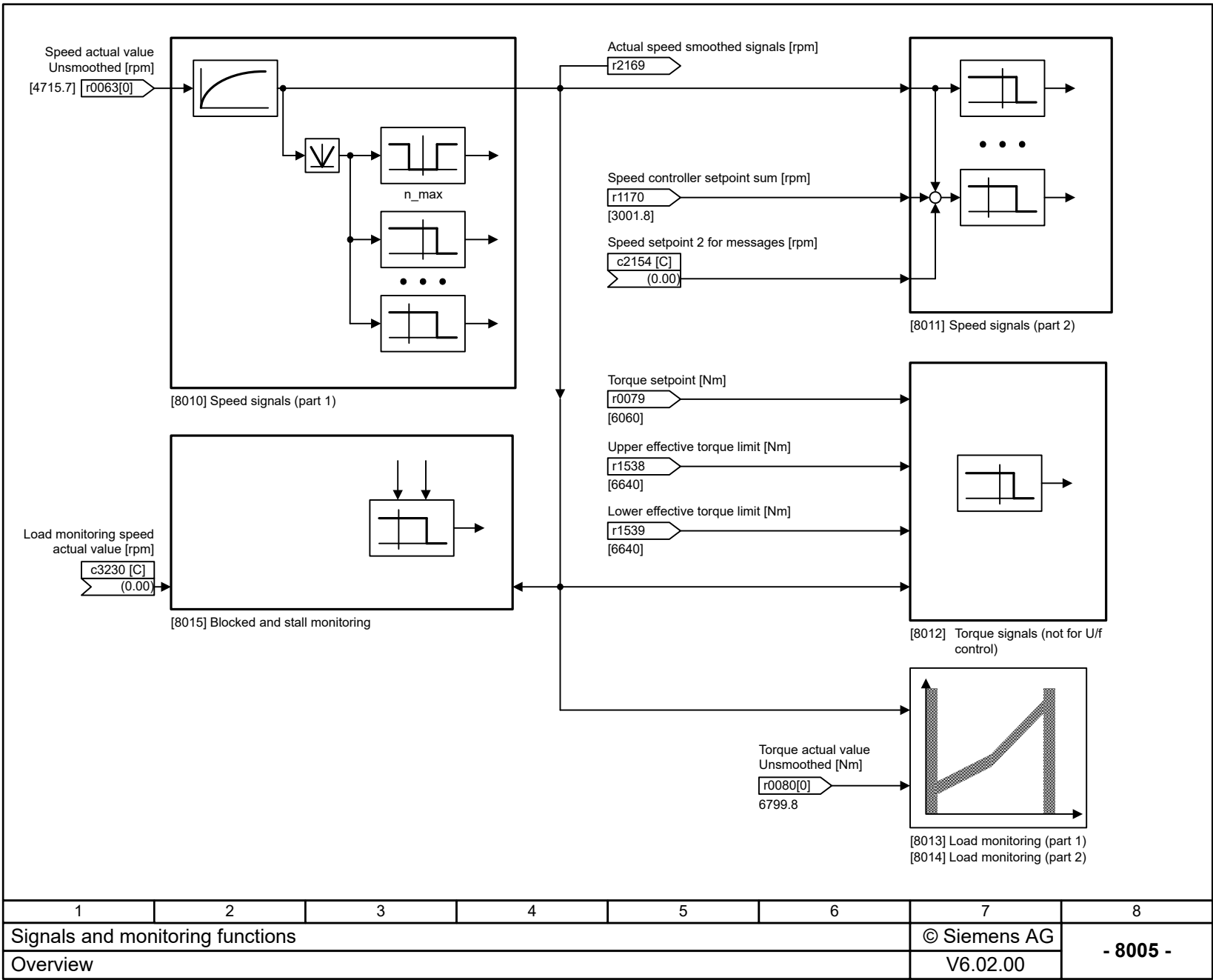


Figure 4-140 8005 – Overview

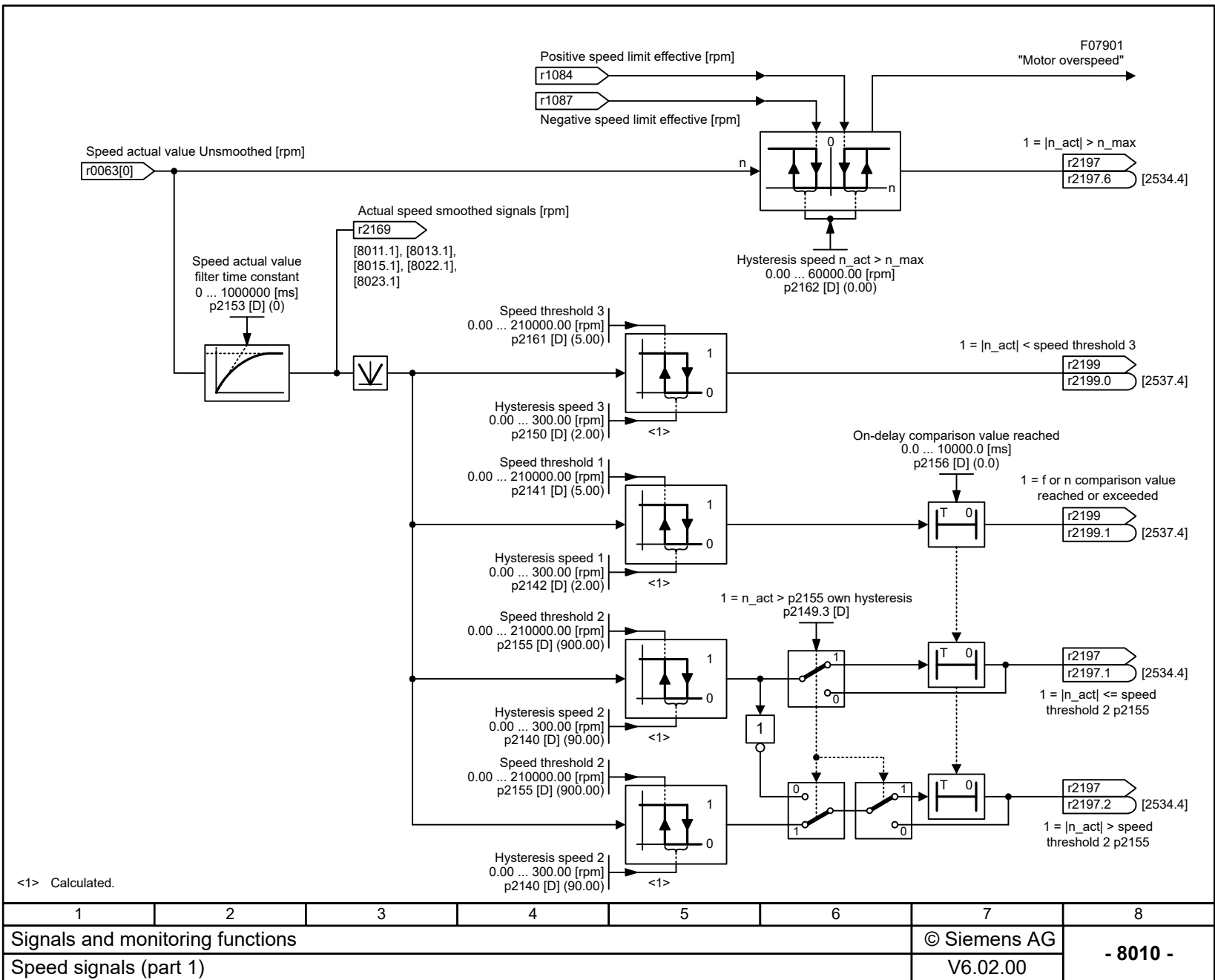


Figure 4-141 8010 – Speed messages (part 1)

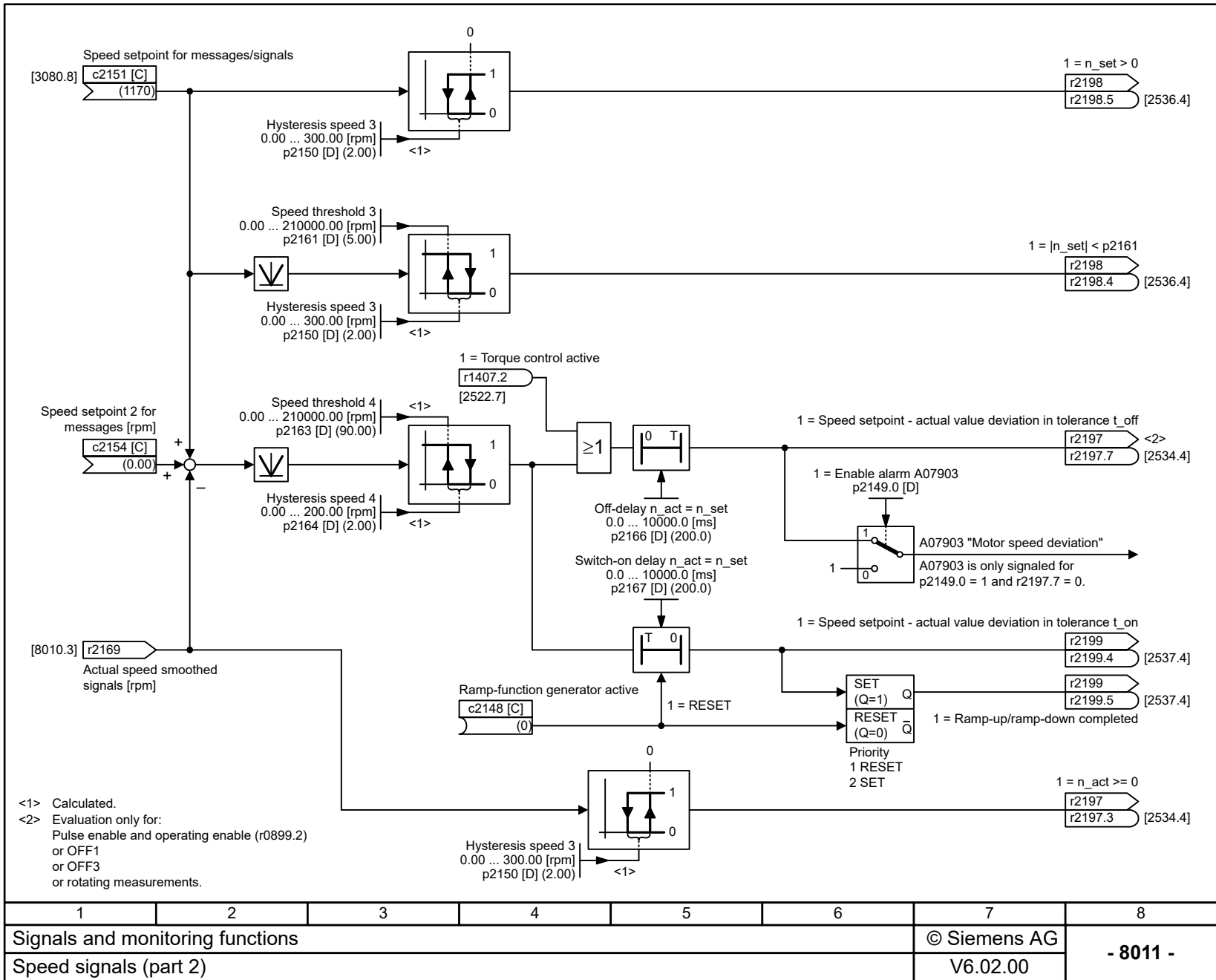
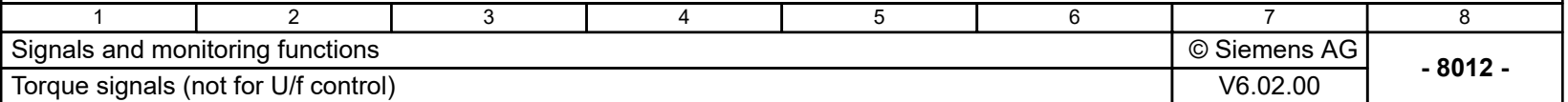


Figure 4-142 8011 – Speed messages (part 2)



8012 - Torque messages

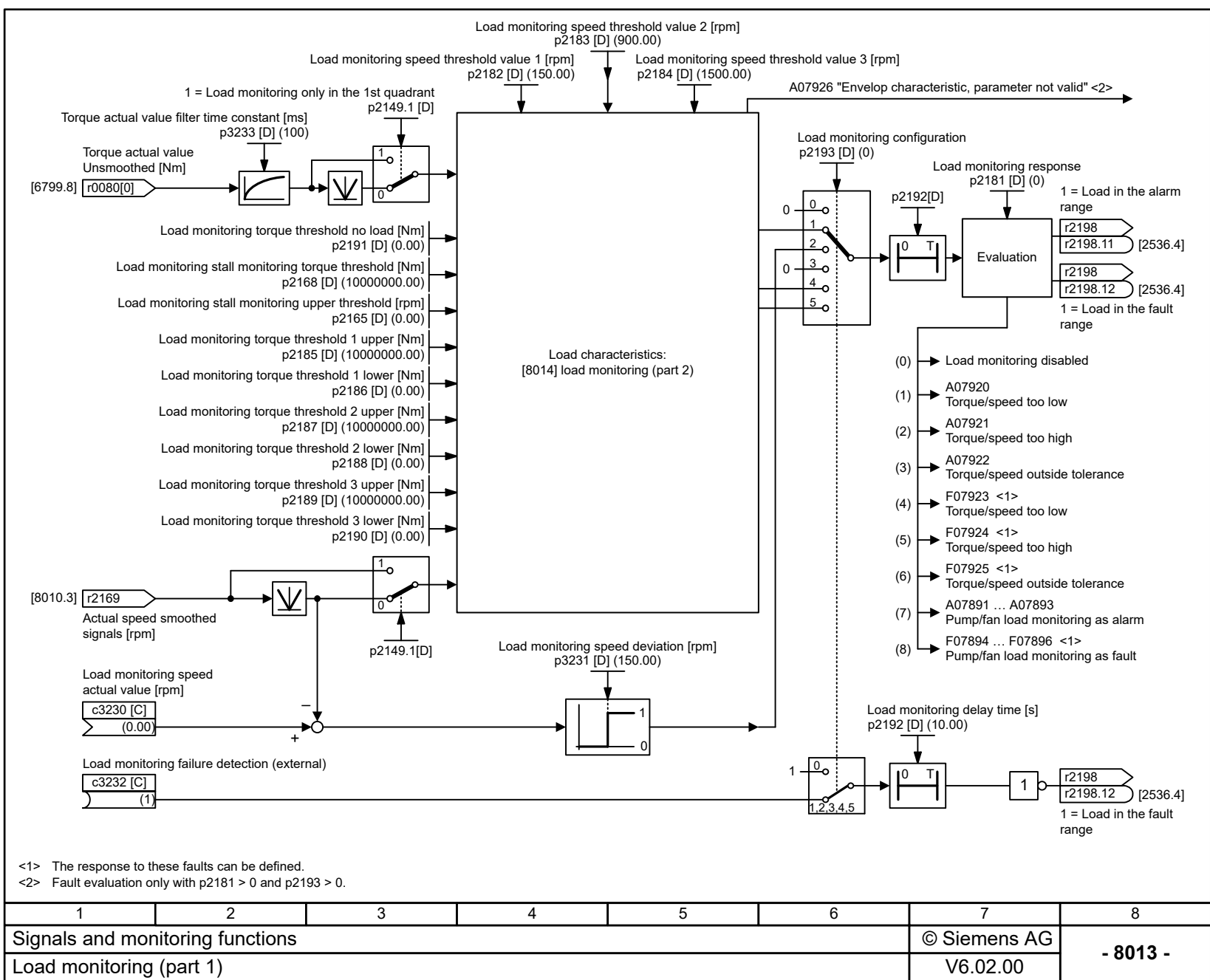
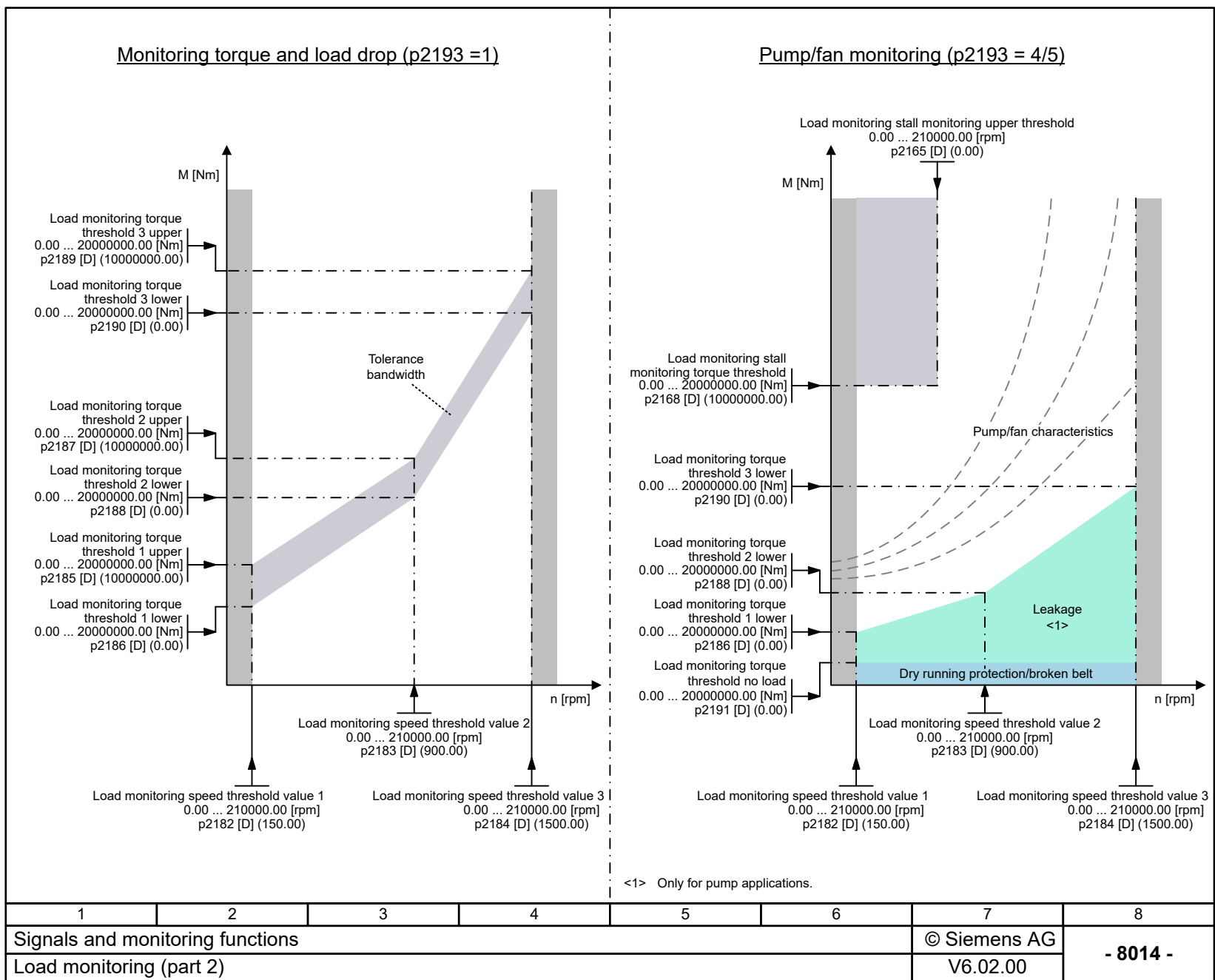


Figure 4-145 8014 - Load monitoring (Part 2)



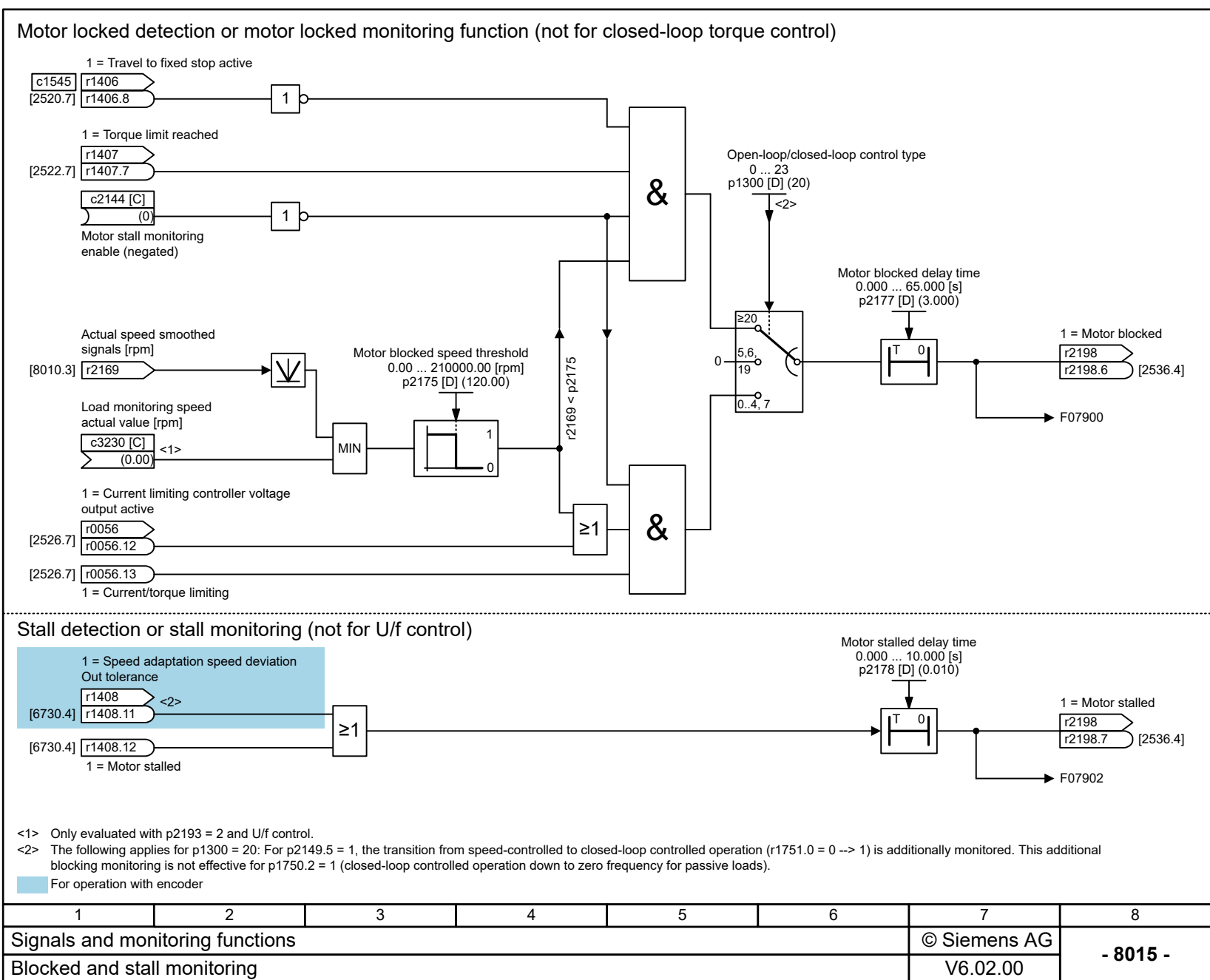
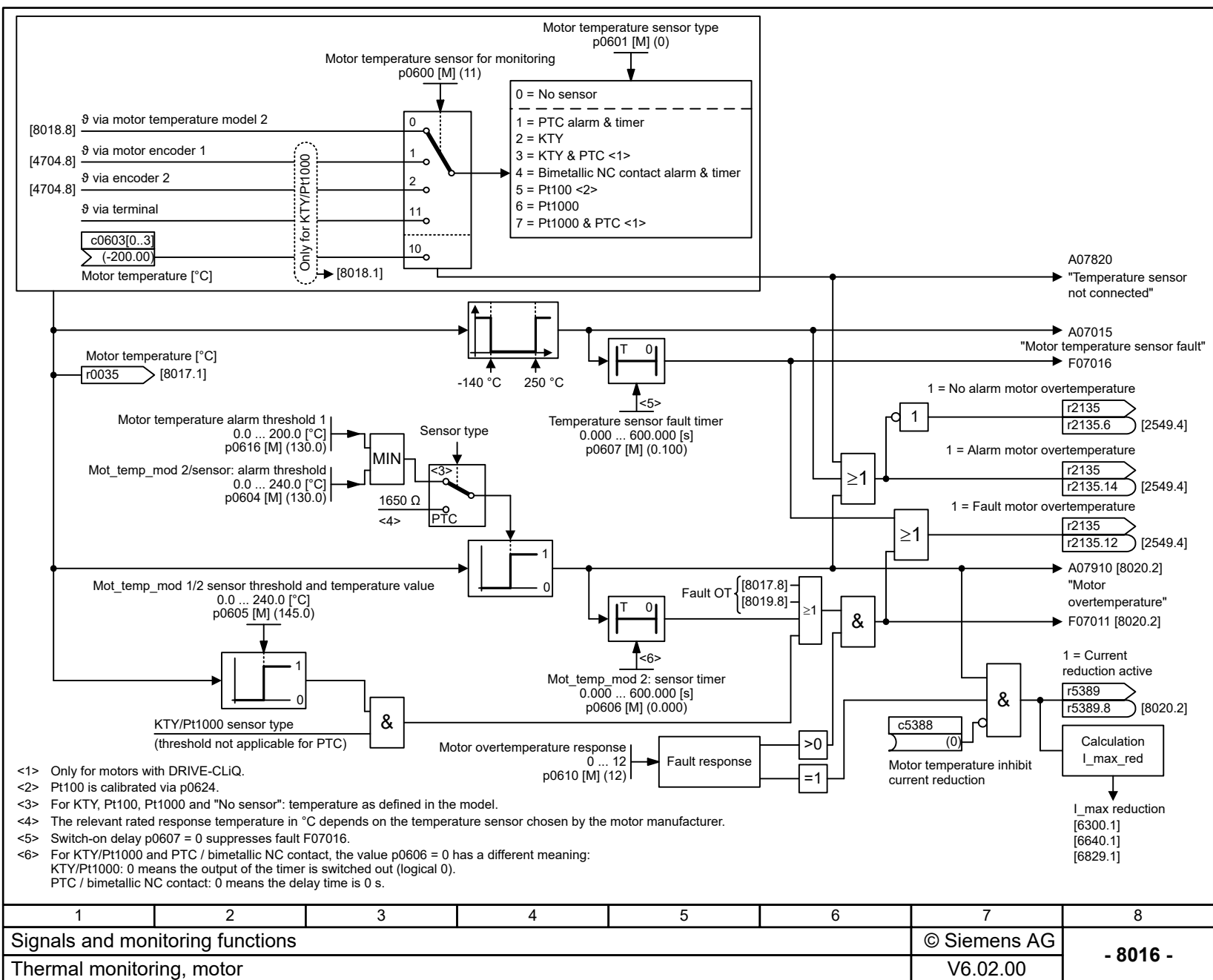


Figure 4-146 8015 - Blocking and tilt monitoring



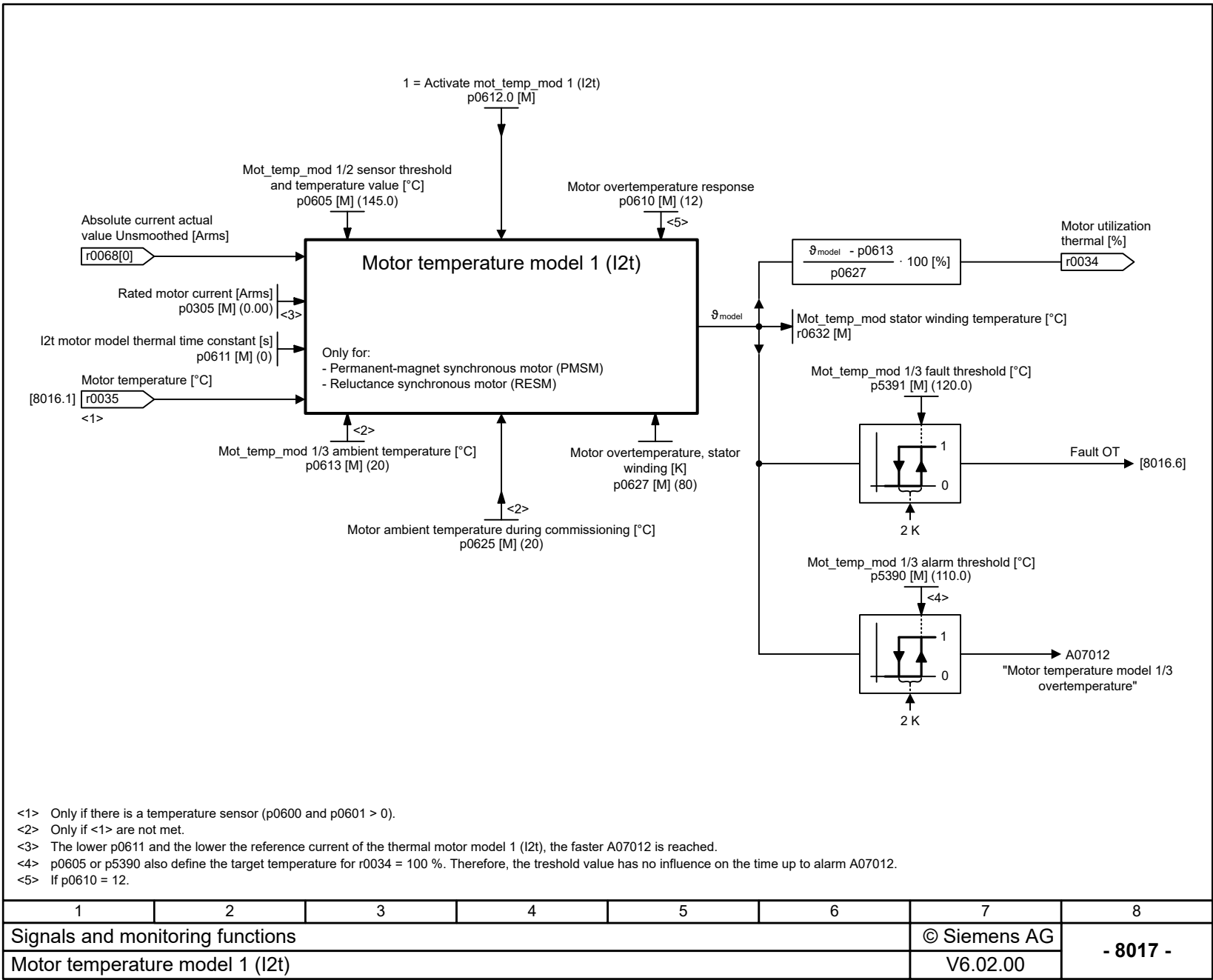


Figure 4-148 8017 - Motor temperature model 1 (I2t)

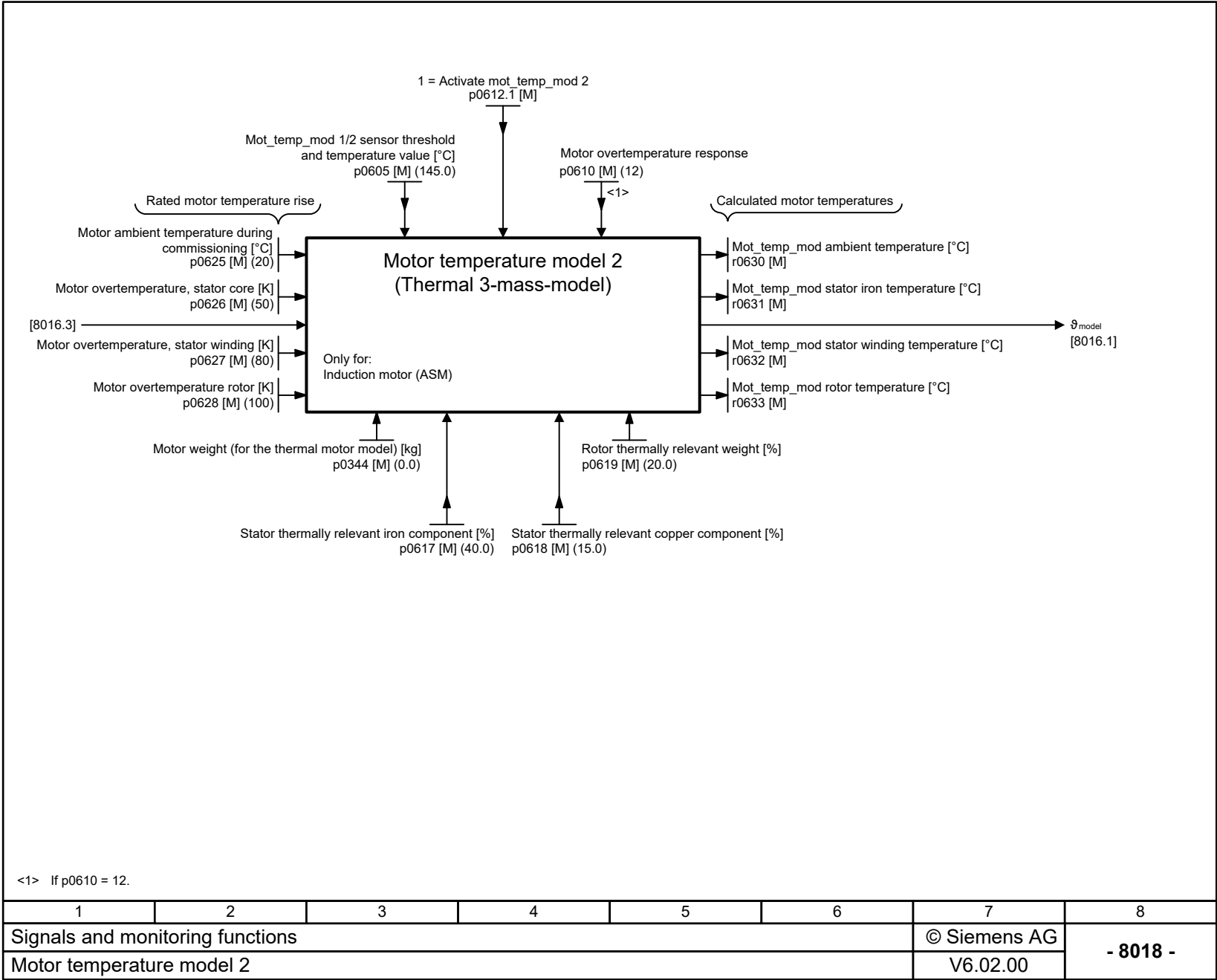


Figure 4-149 8018 - Motor temperature model 2

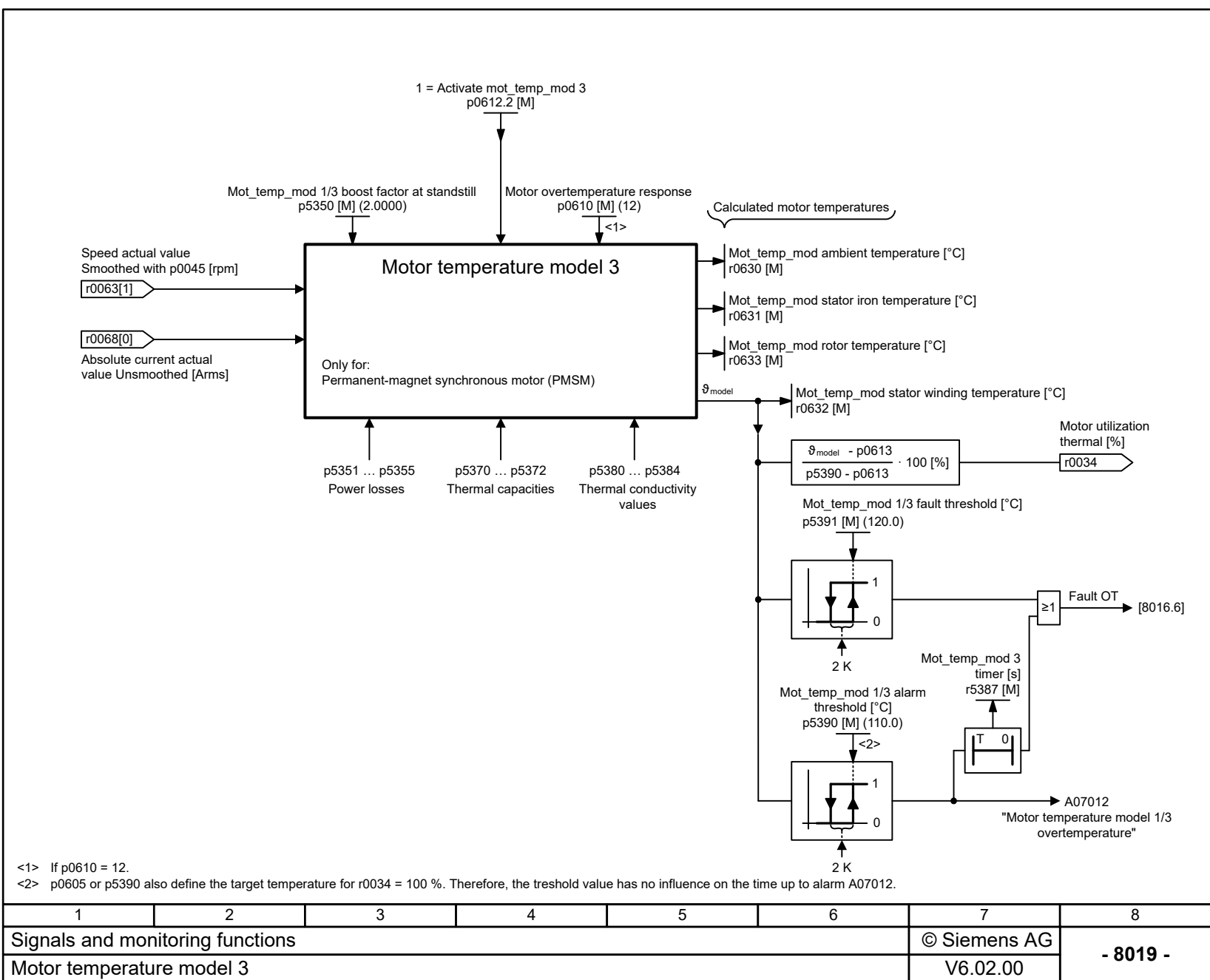


Figure 4-150 8019 – Motor temperature model 3



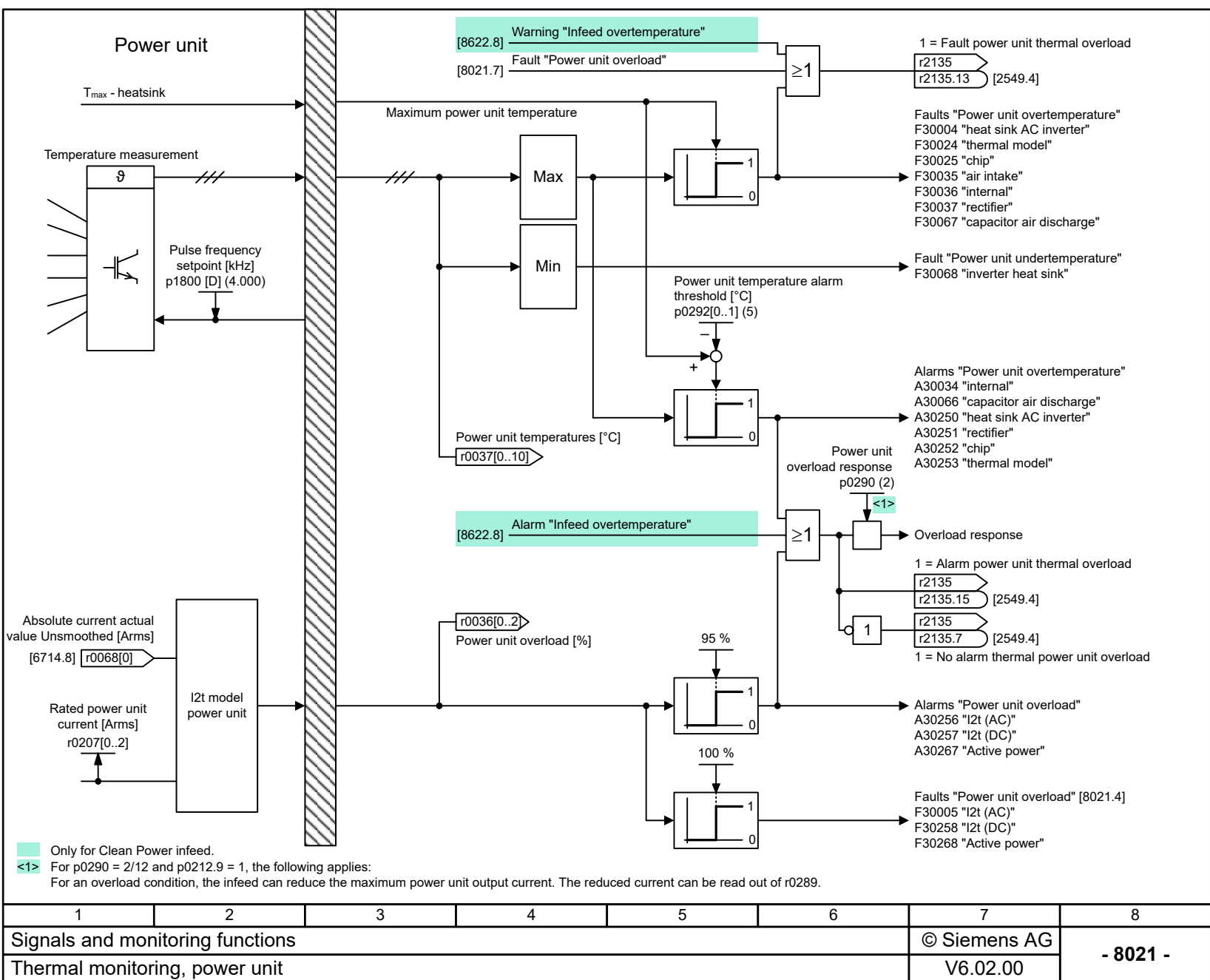
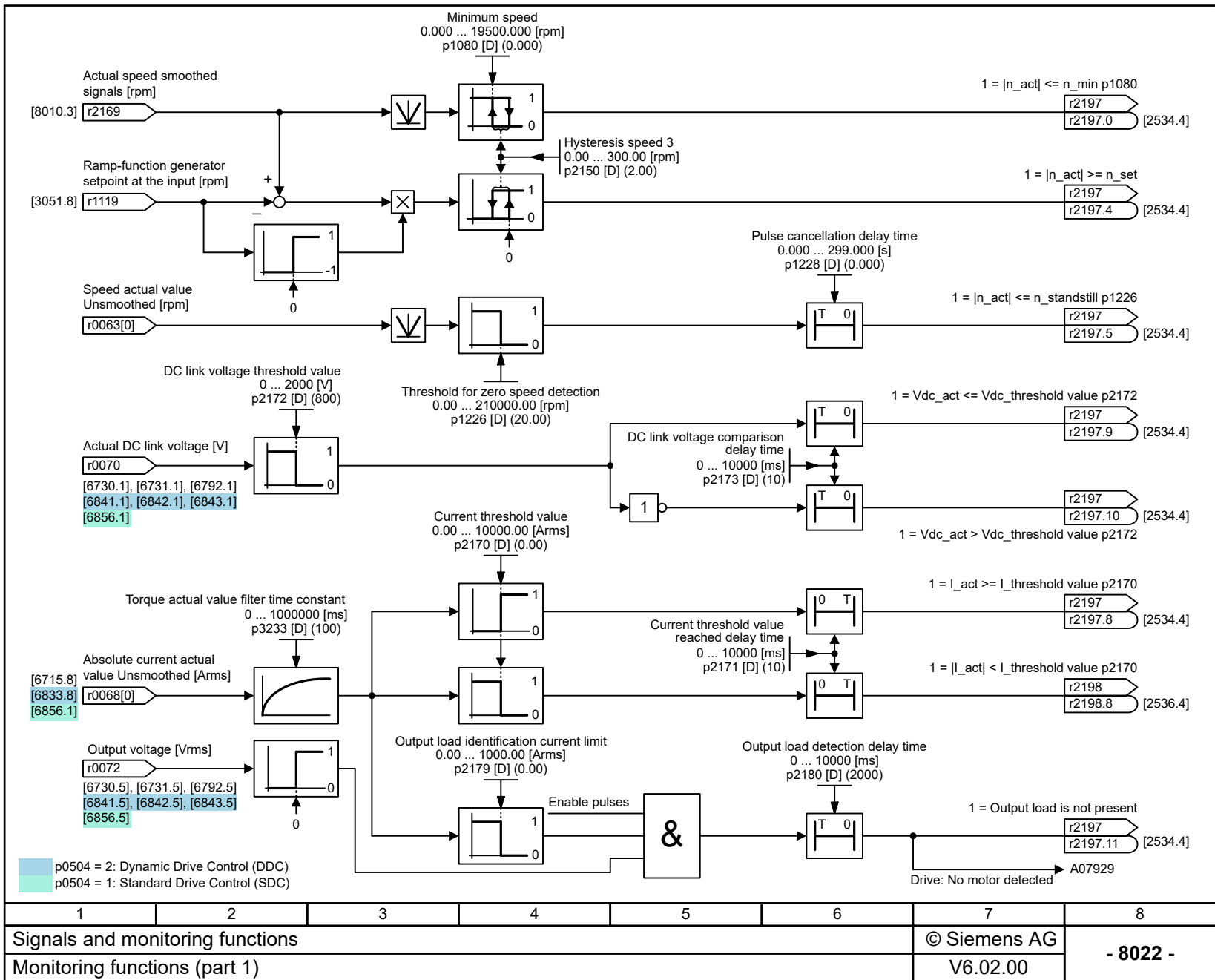
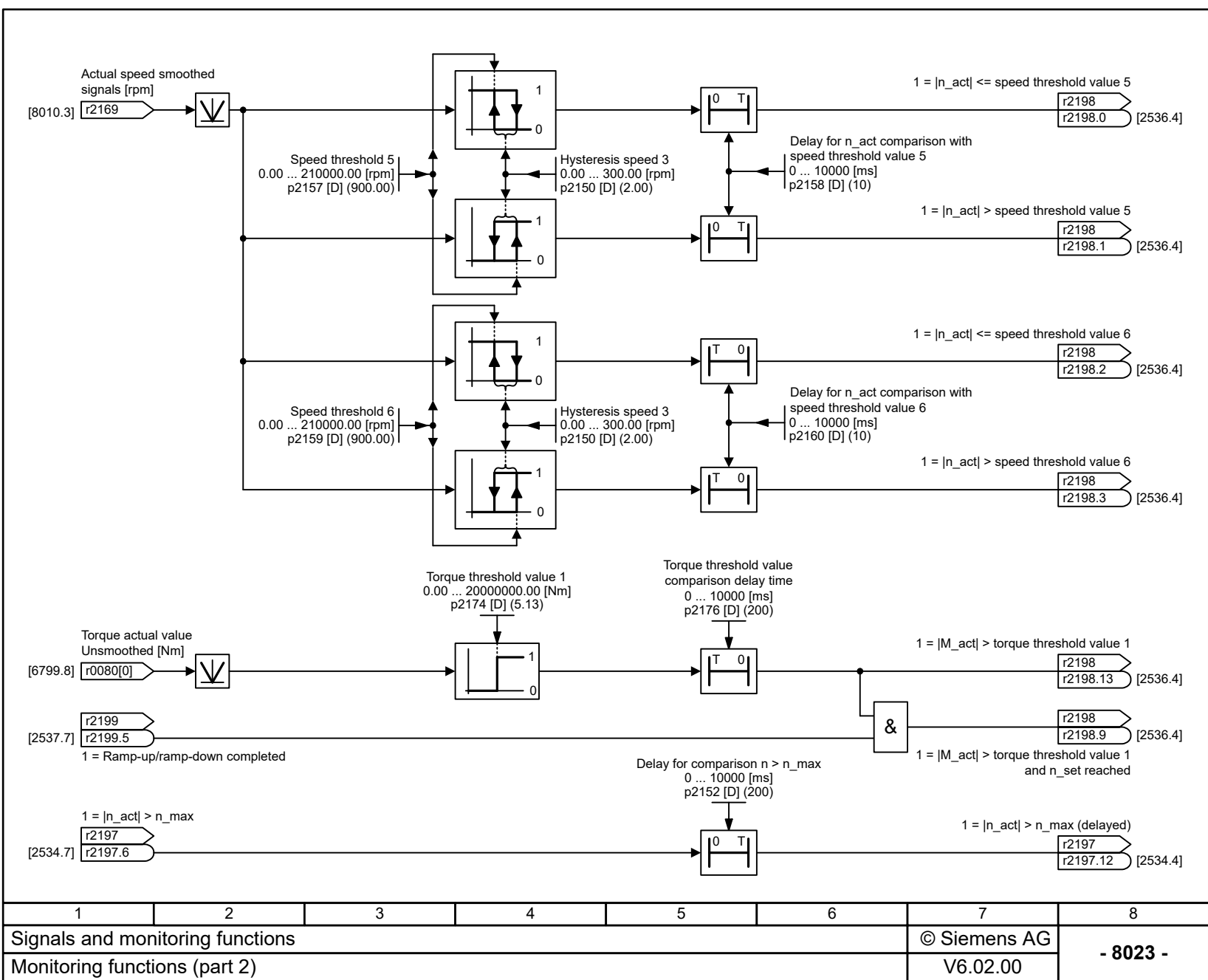


Figure 4-152 8021 - Thermal monitoring power unit



4.16 Signals and monitoring functions



1	2	3	4	5	6	7	8
Signals and monitoring functions						© Siemens AG	- 8023 -
Monitoring functions (part 2)						V6.02.00	

Figure 4-154 8023 – Monitoring functions (part 2)

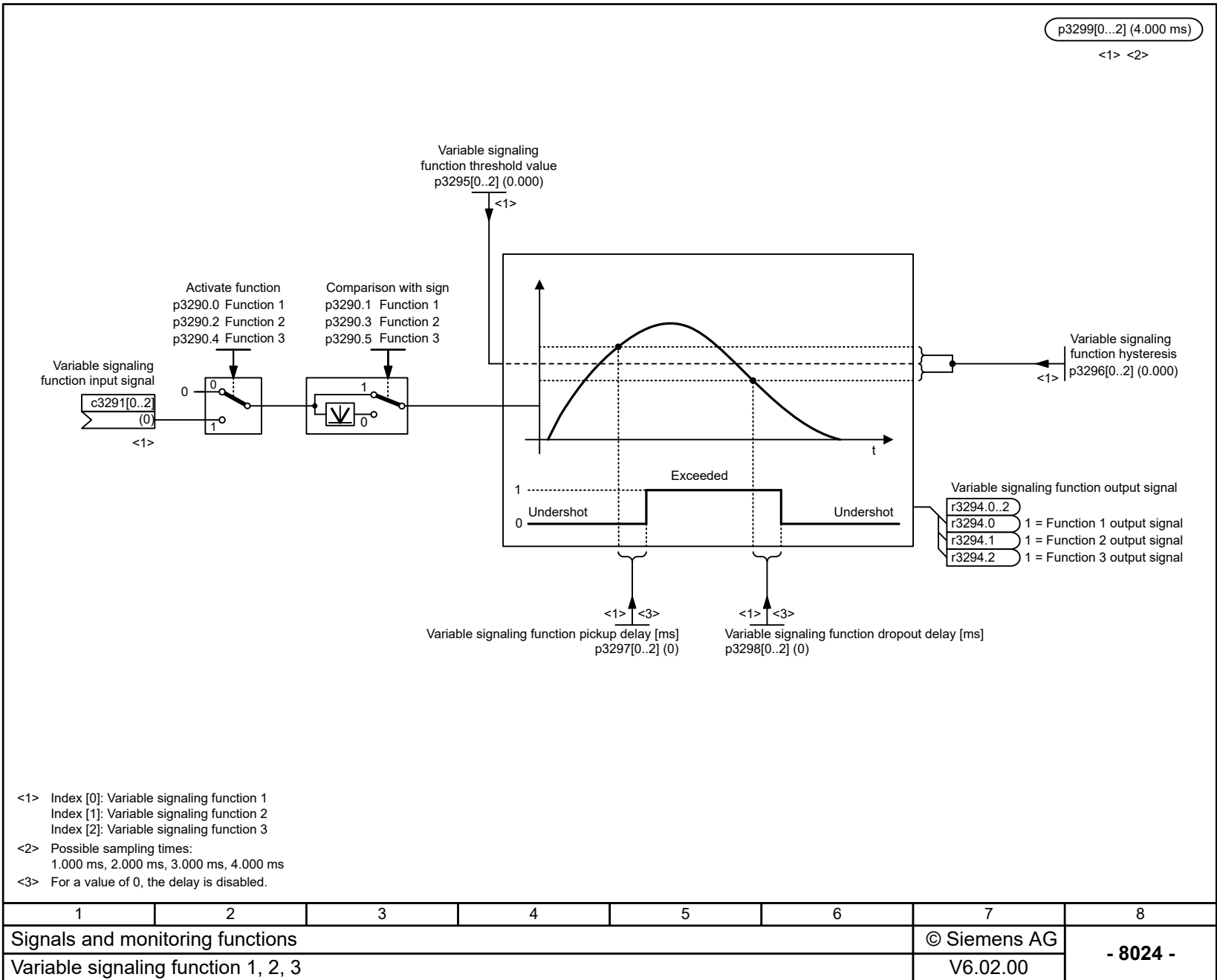


Figure 4-155 8024 - Variable messages 1, 2, 3

4.17 Diagnostics

Overview

The following function diagrams describe the diagnostics.

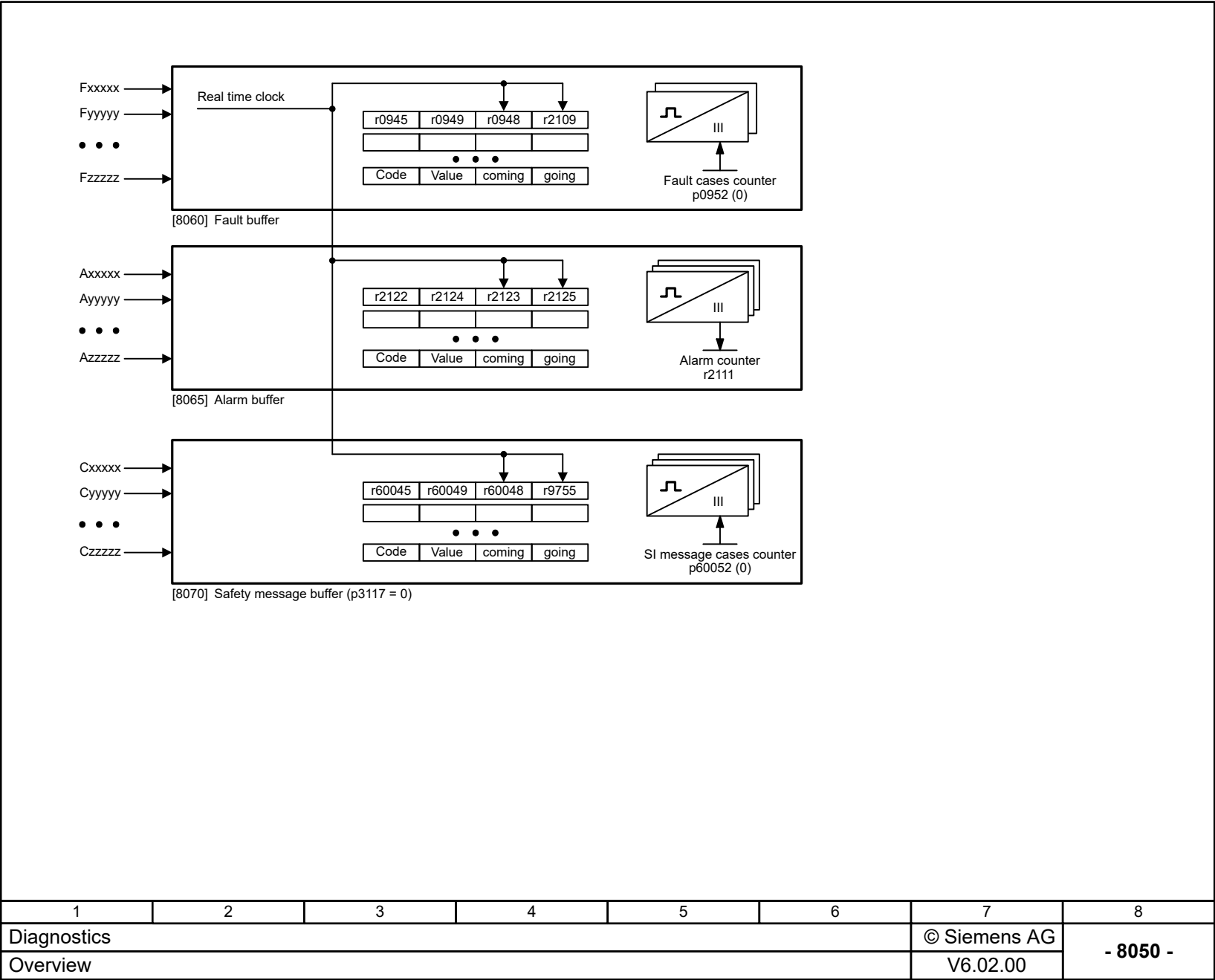
Function diagrams

8050 – Overview (Page 883)

8060 – Fault buffer (Page 884)

8065 – Alarm buffer (Page 885)

8070 – Safety buffer (Page 886)



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List Manual, 08/2023, FW V6.2, A5E51781 505B AA

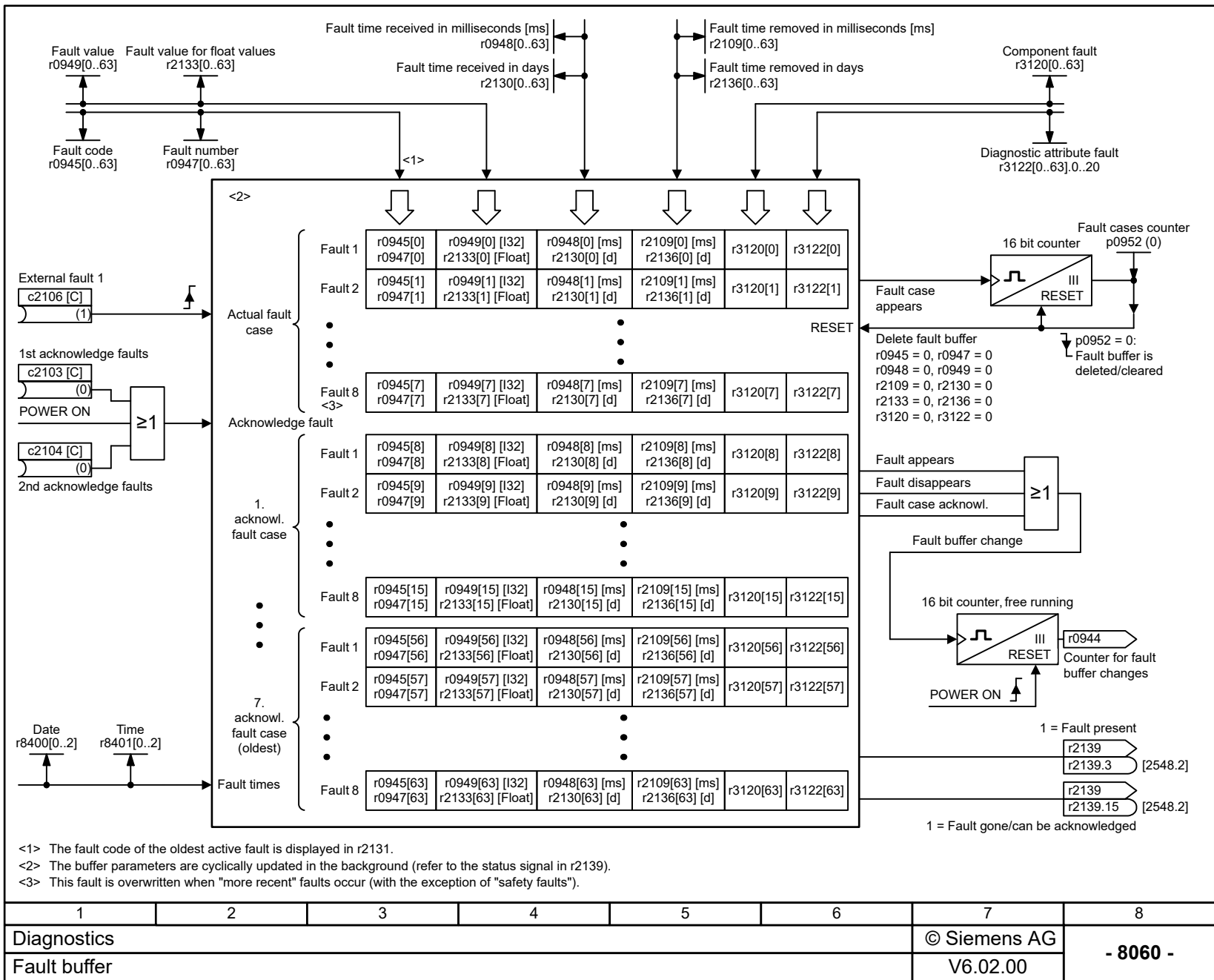
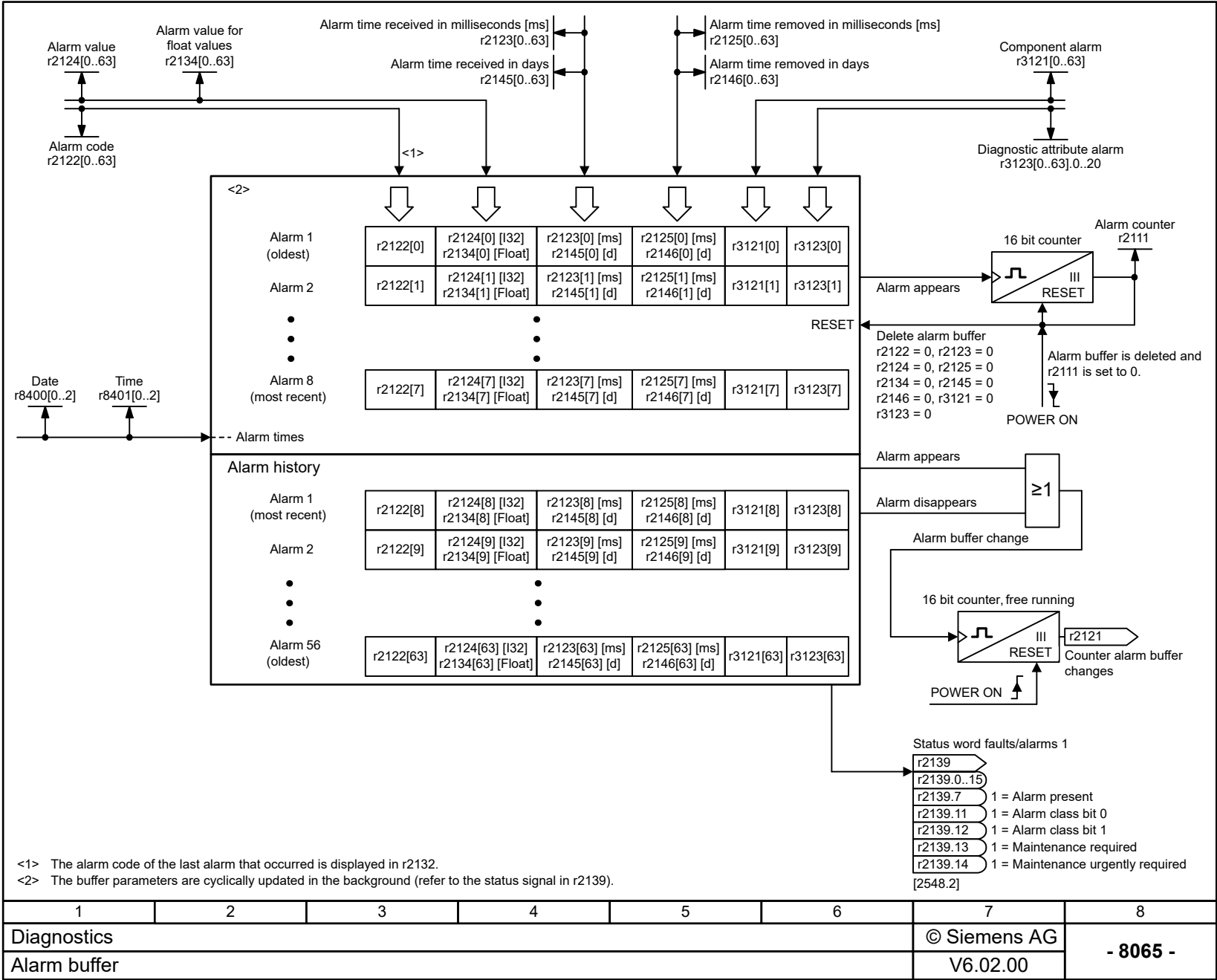
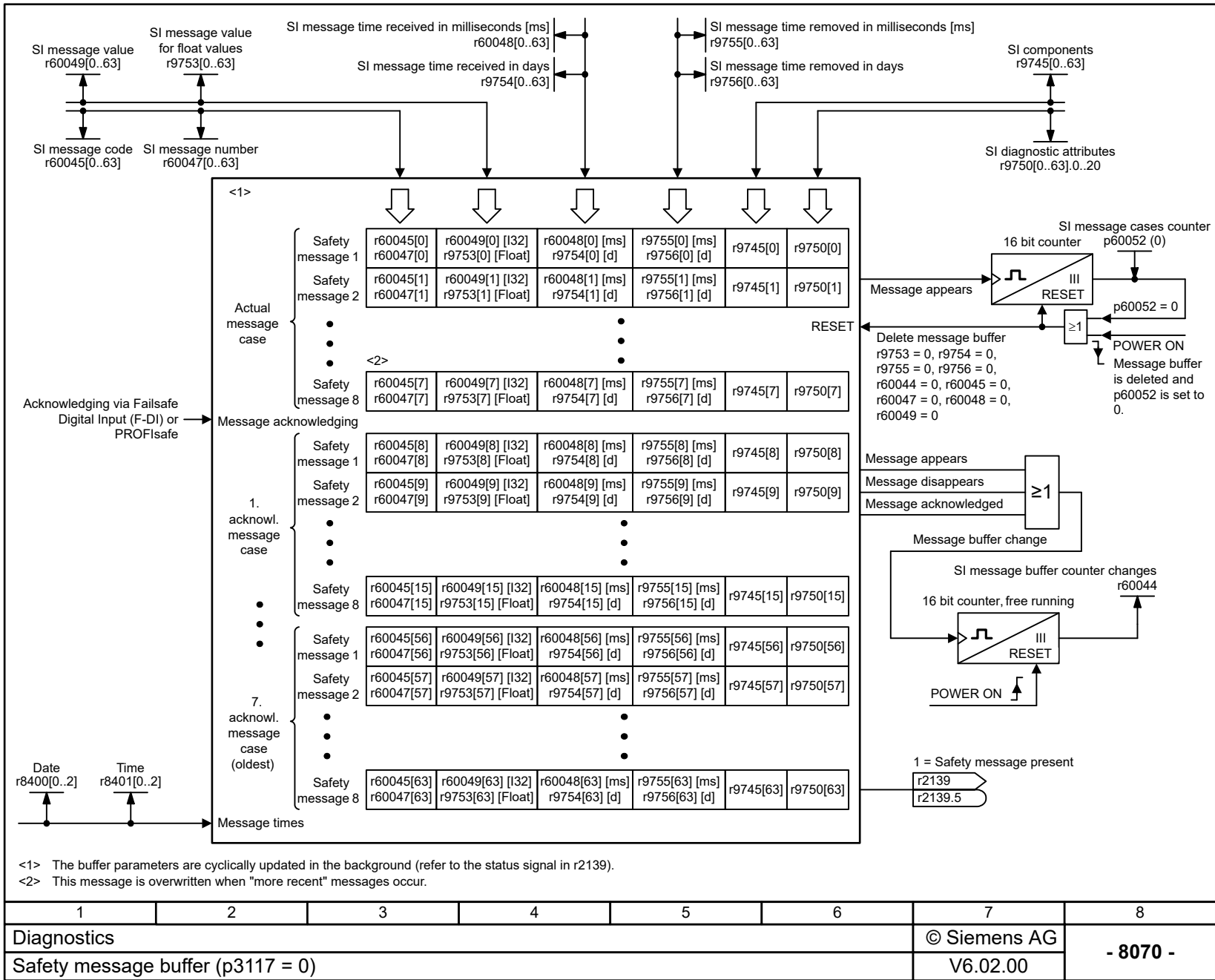


Figure 4-158 8065 - Alarm buffer





1	2	3	4	5	6	7	8
Diagnostics						© Siemens AG	- 8070 -
Safety message buffer (p3117 = 0)						V6.02.00	

4.18 Data sets

Overview

The following function diagrams describe the data sets.

Function diagrams

8560 – Command Data Sets (CDS) (Page 888)

8565 – Drive Data Sets (DDS) (Page 889)

8570 – Encoder Data Sets (EDS) (Page 890)

8575 – Motor Data Sets (MDS) (Page 891)

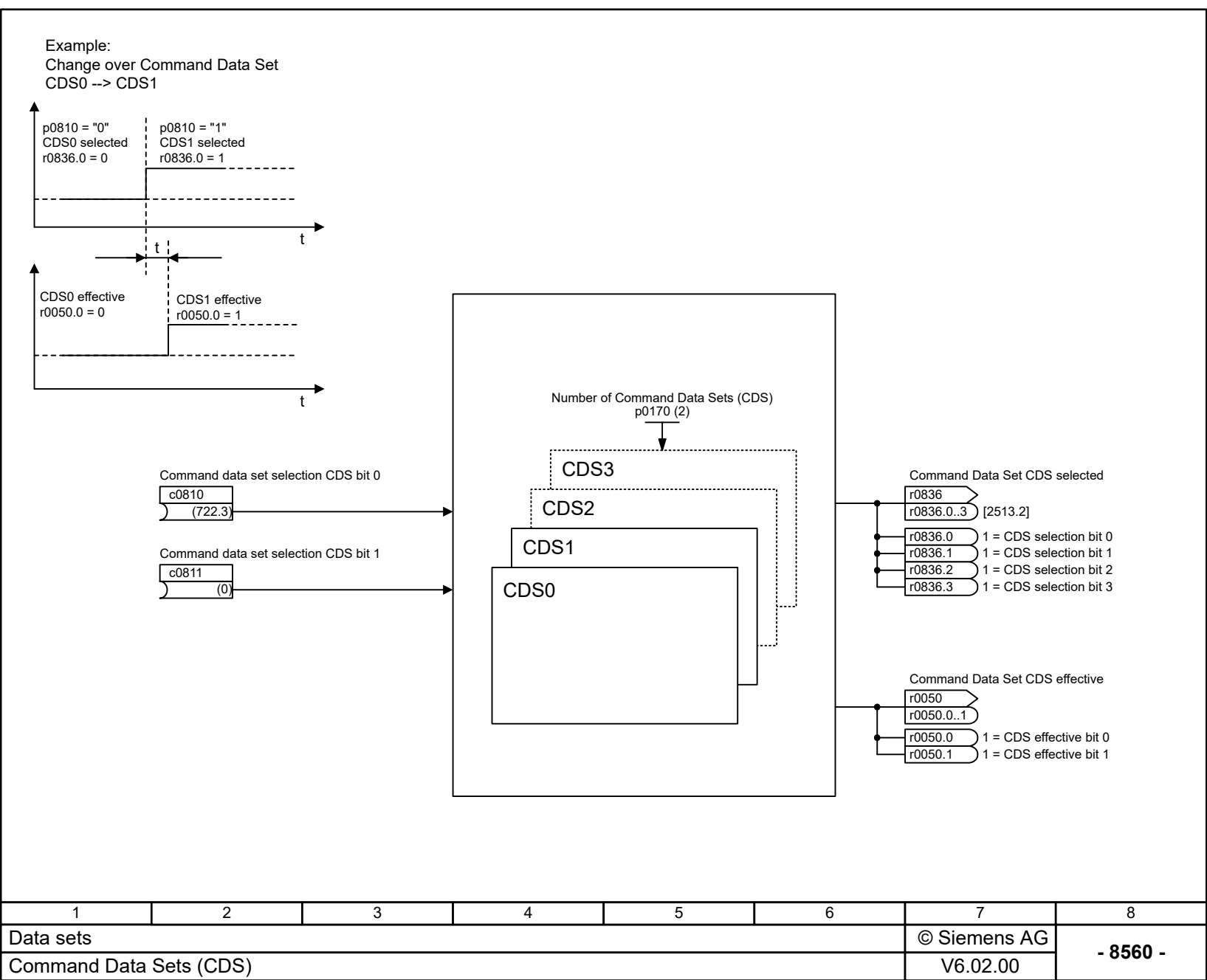


Figure 4-160 8560 - Command Data Sets (CDS)

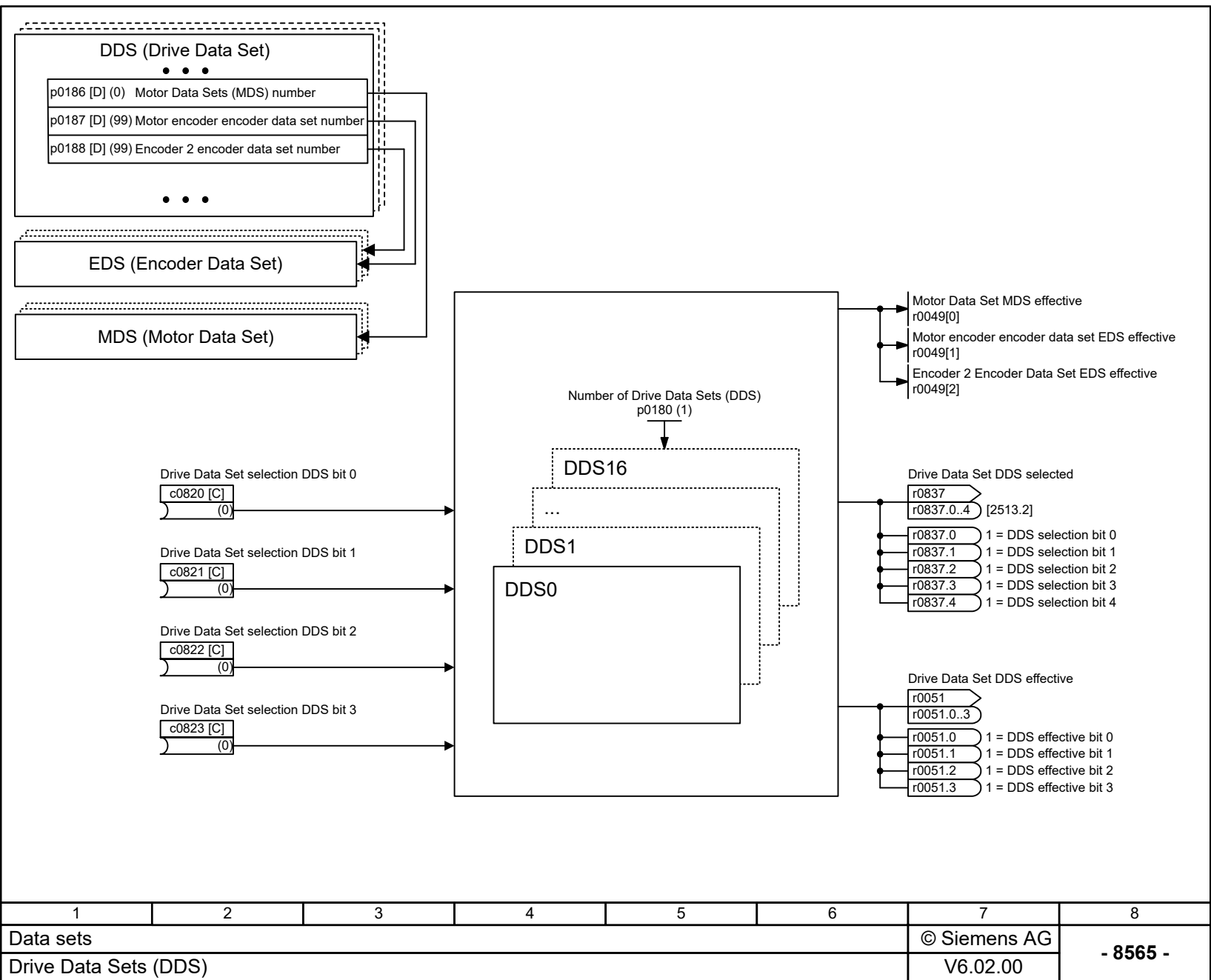


Figure 4-161 8565 - Drive Data Sets (DDS)

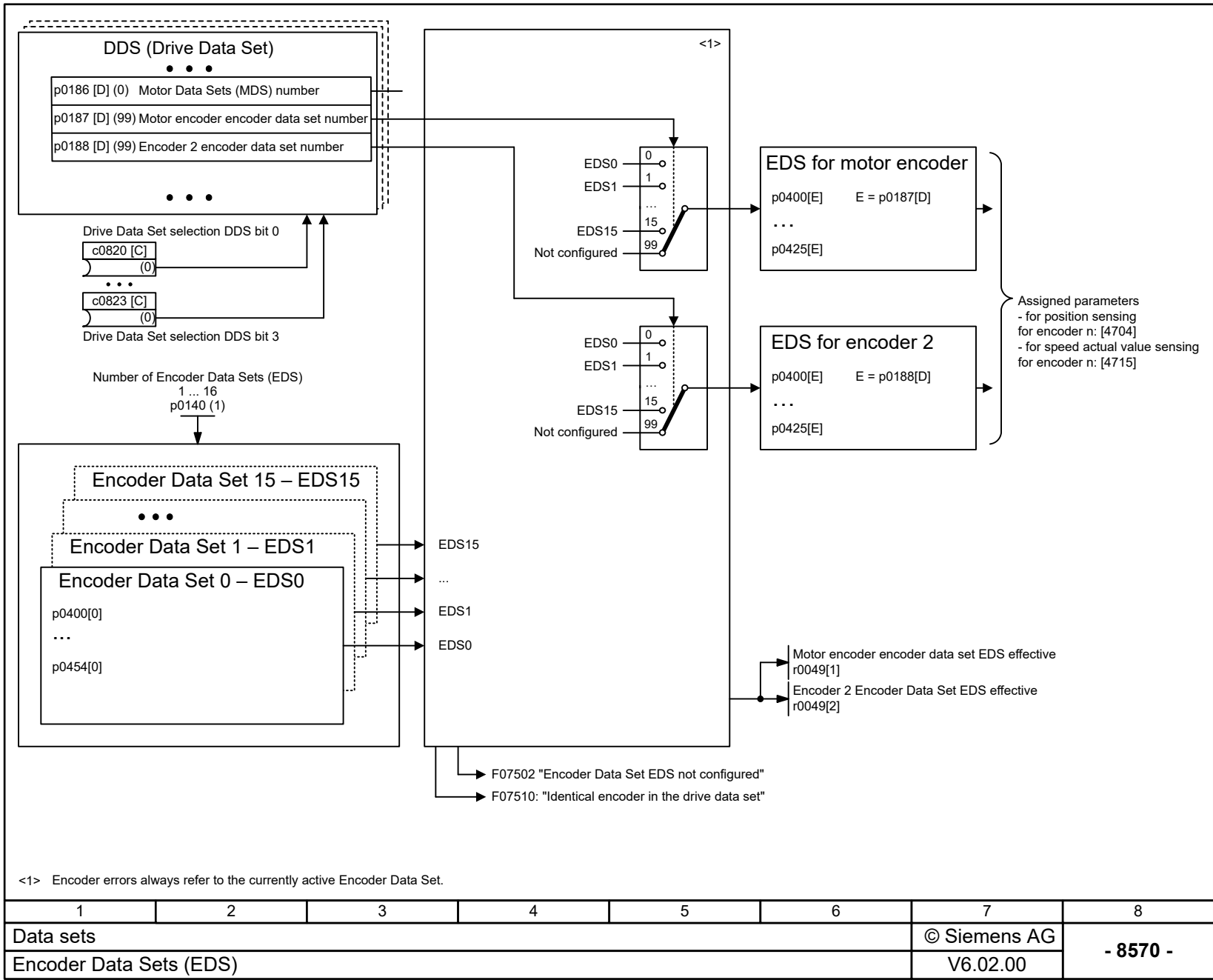


Figure 4-162 8570 - Encoder Data Sets (EDS)

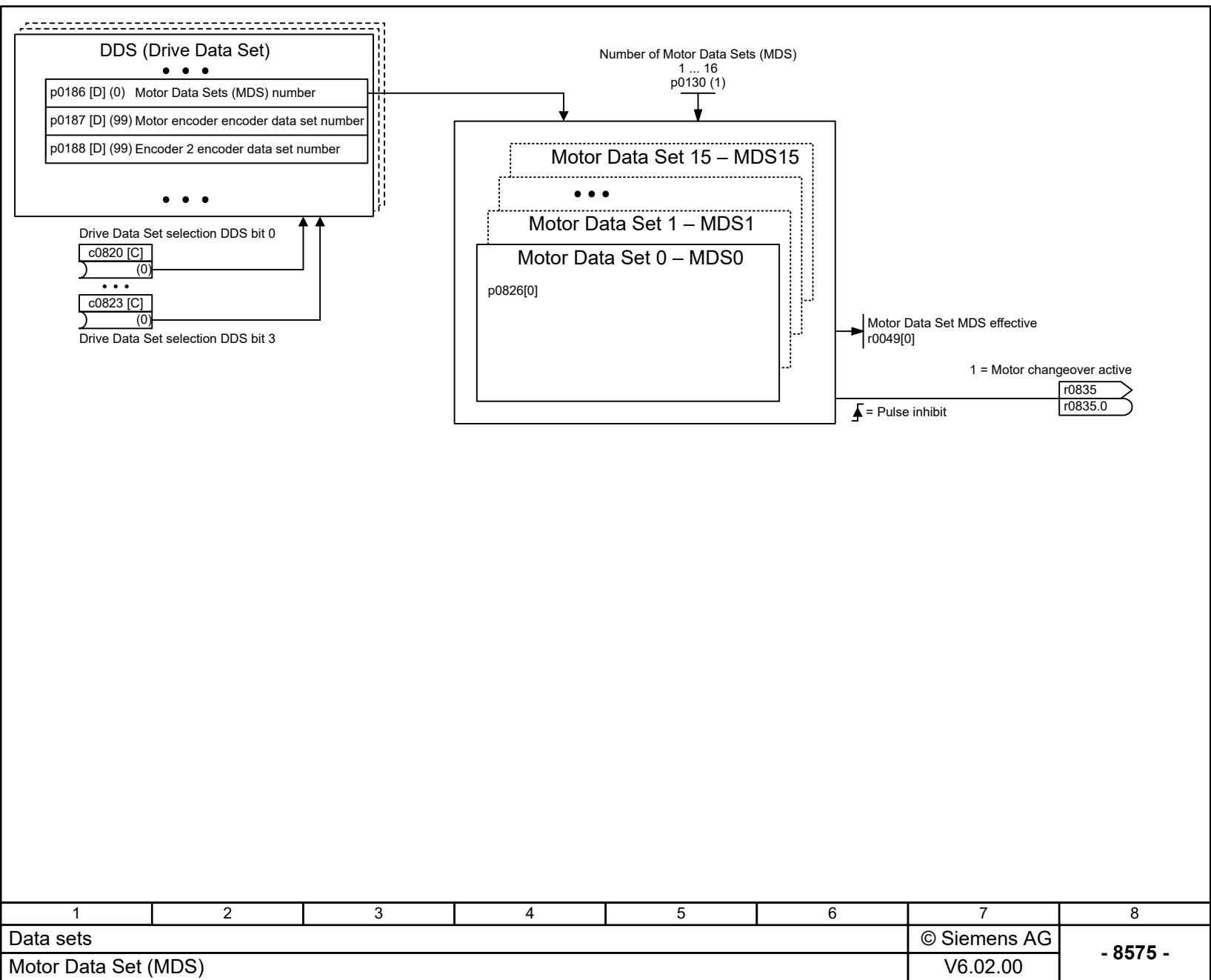


Figure 4-163 8575 - Motor Data Sets (MDS)

4.19 Clean Power infeed

Overview

The following function diagrams describe the Clean Power infeed.

Function diagrams

- 8601 – Overview (Page 893)
- 8605 – Control word sequence control infeed (Page 894)
- 8606 – Status word sequence control infeed (Page 895)
- 8608 – Status word infeed (Page 896)
- 8610 – Sequencer (Page 897)
- 8612 – Missing enables, line contactor control (Page 898)
- 8615 – Controller modulation depth reserve/DC link voltage (Page 899)
- 8617 – Current precontrol/current controller/gating unit (Page 900)
- 8619 – Interface to the power unit, control signals, actual values (Page 901)
- 8620 – Line voltage monitoring (Page 902)
- 8621 – Monitoring line frequency, DC link voltage and precharging (Page 903)
- 8622 – Thermal monitoring power unit infeed (Page 904)

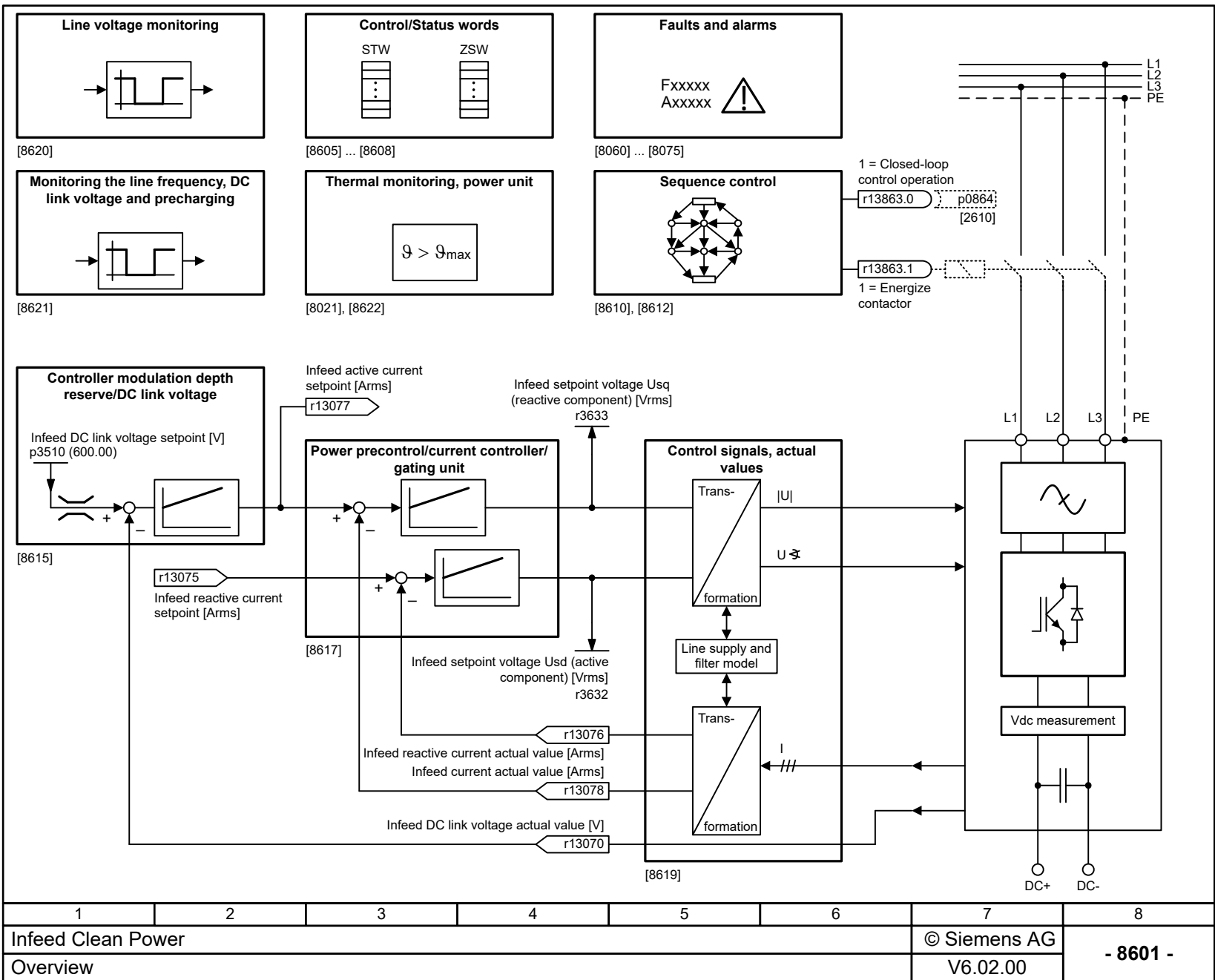
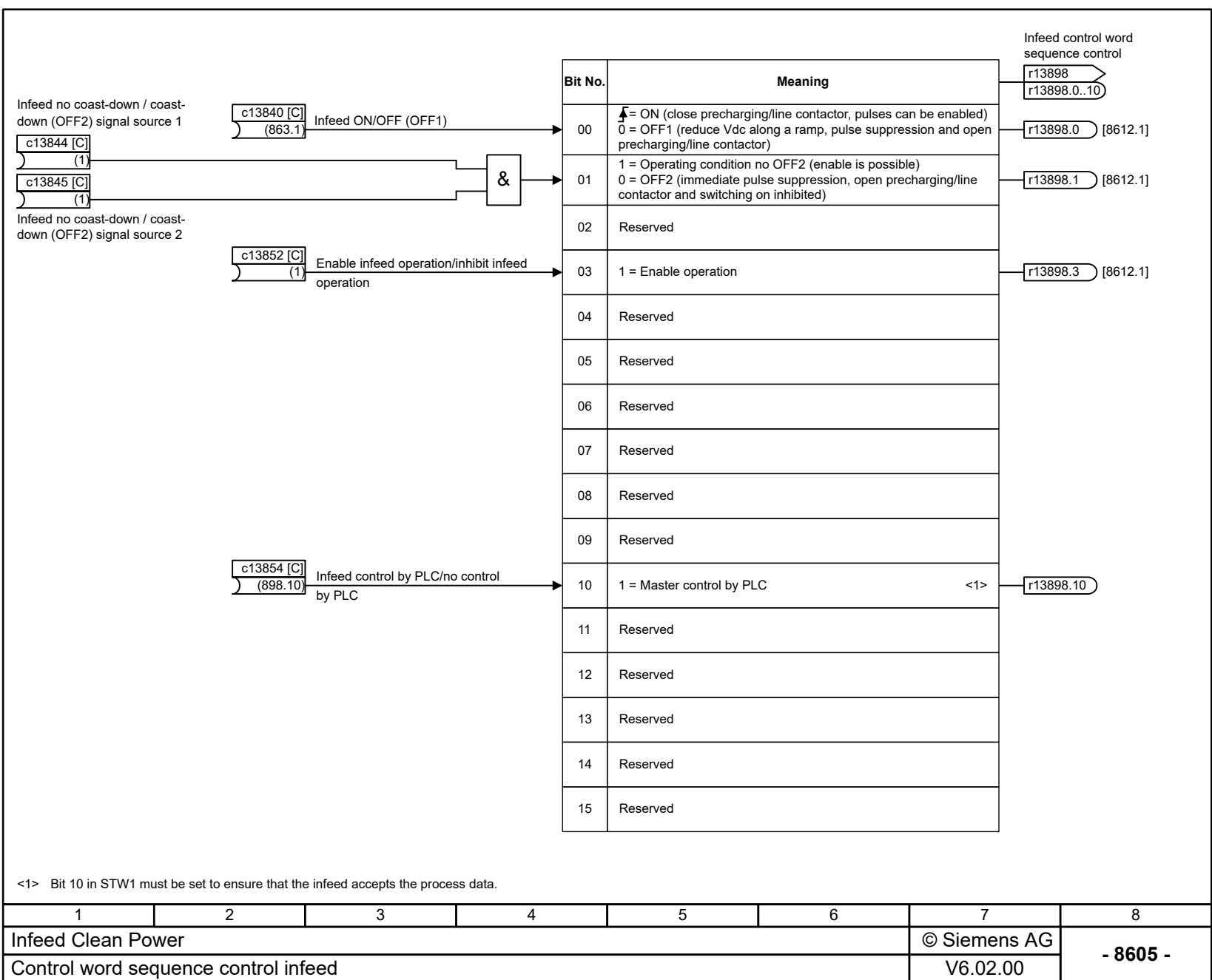


Figure 4-164 8601 – Overview



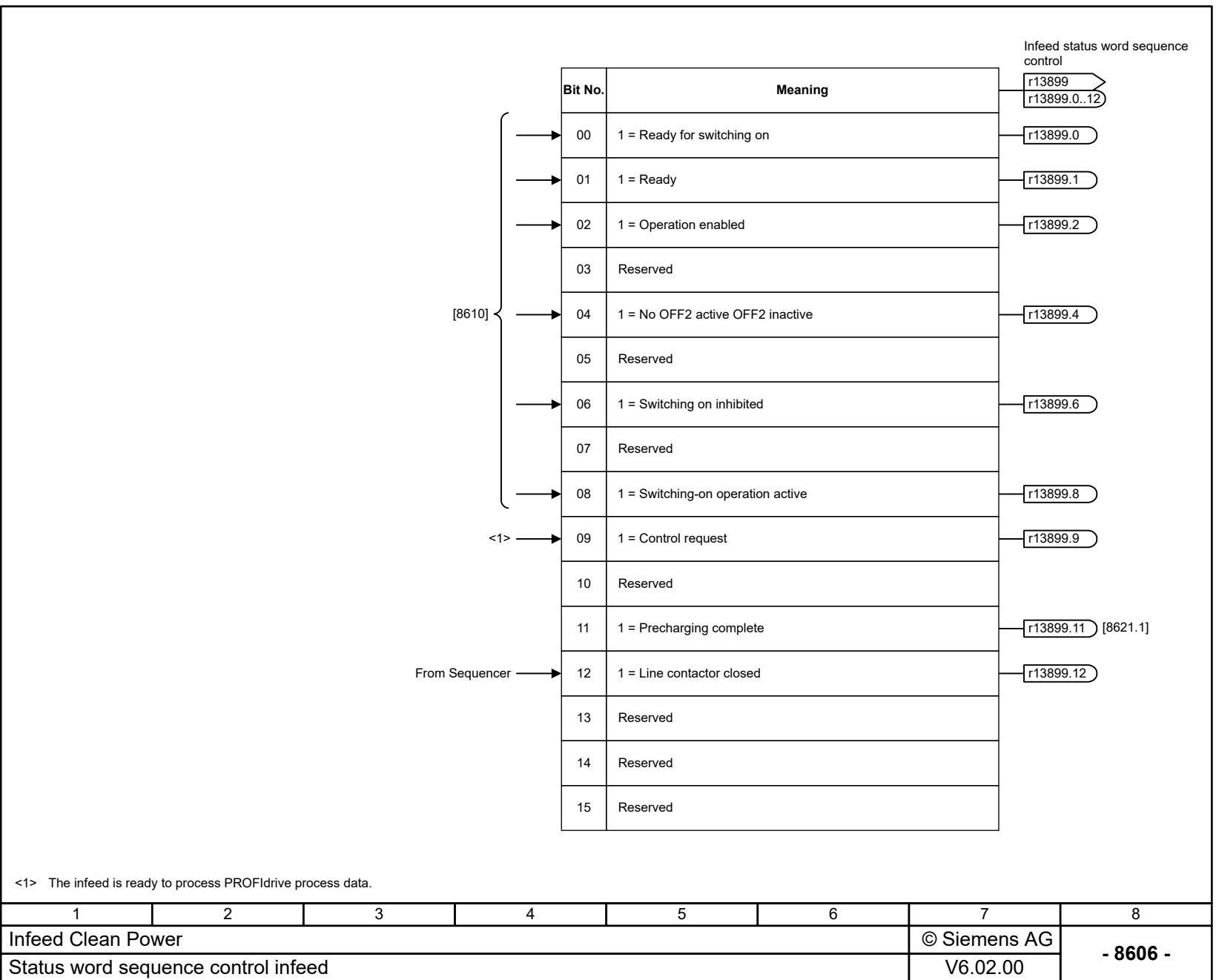


Figure 4-166 8606 – Status word sequence control infeed

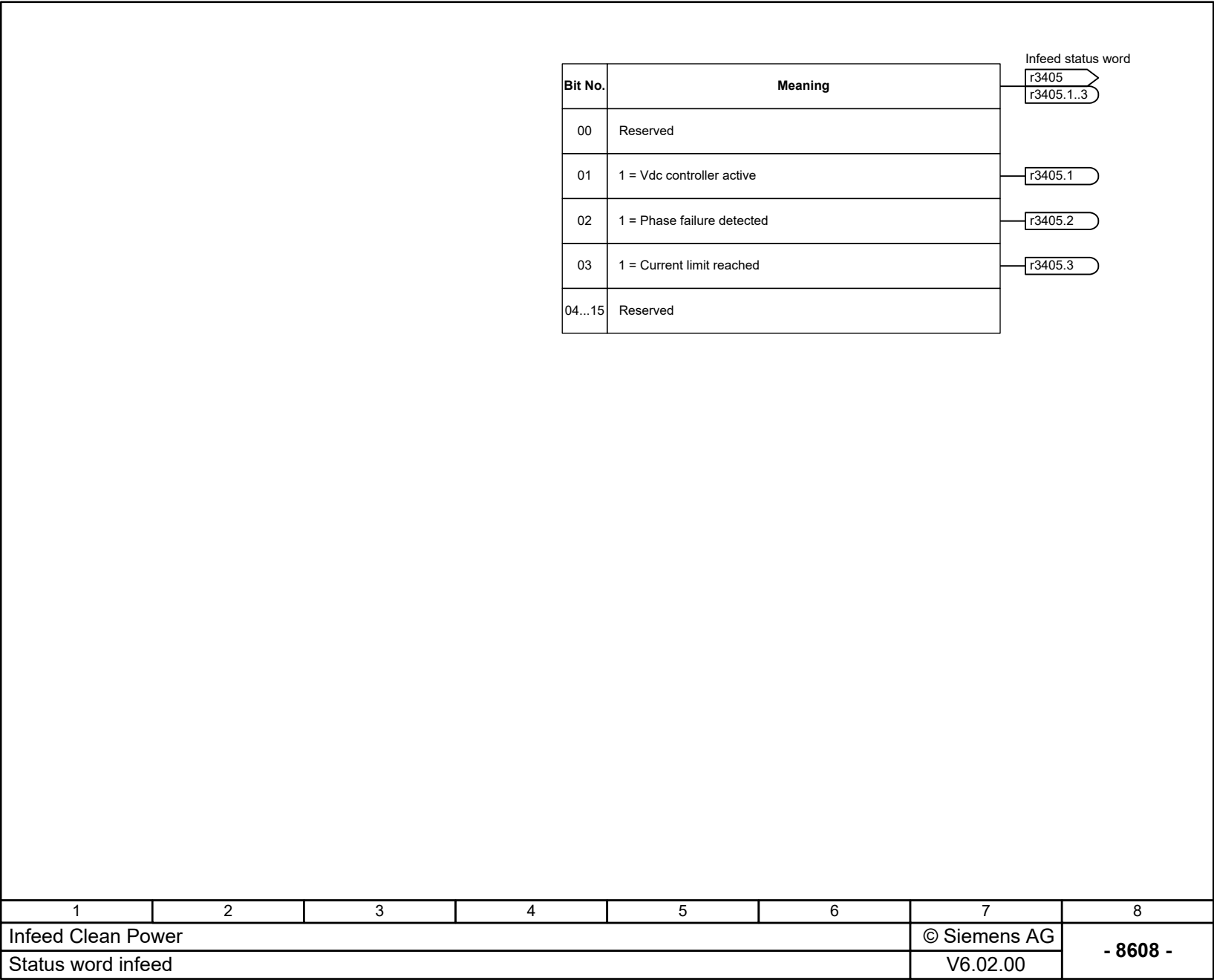
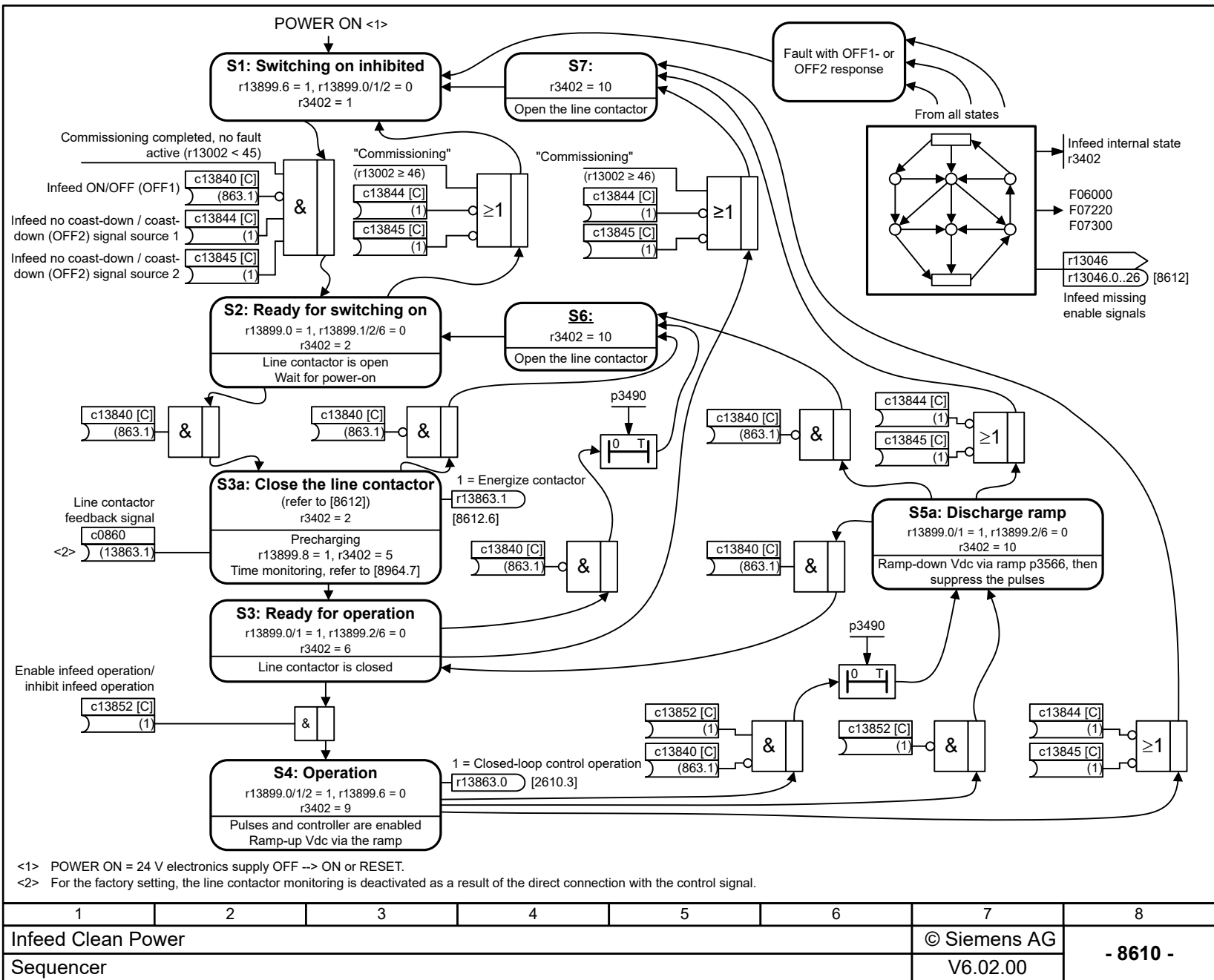
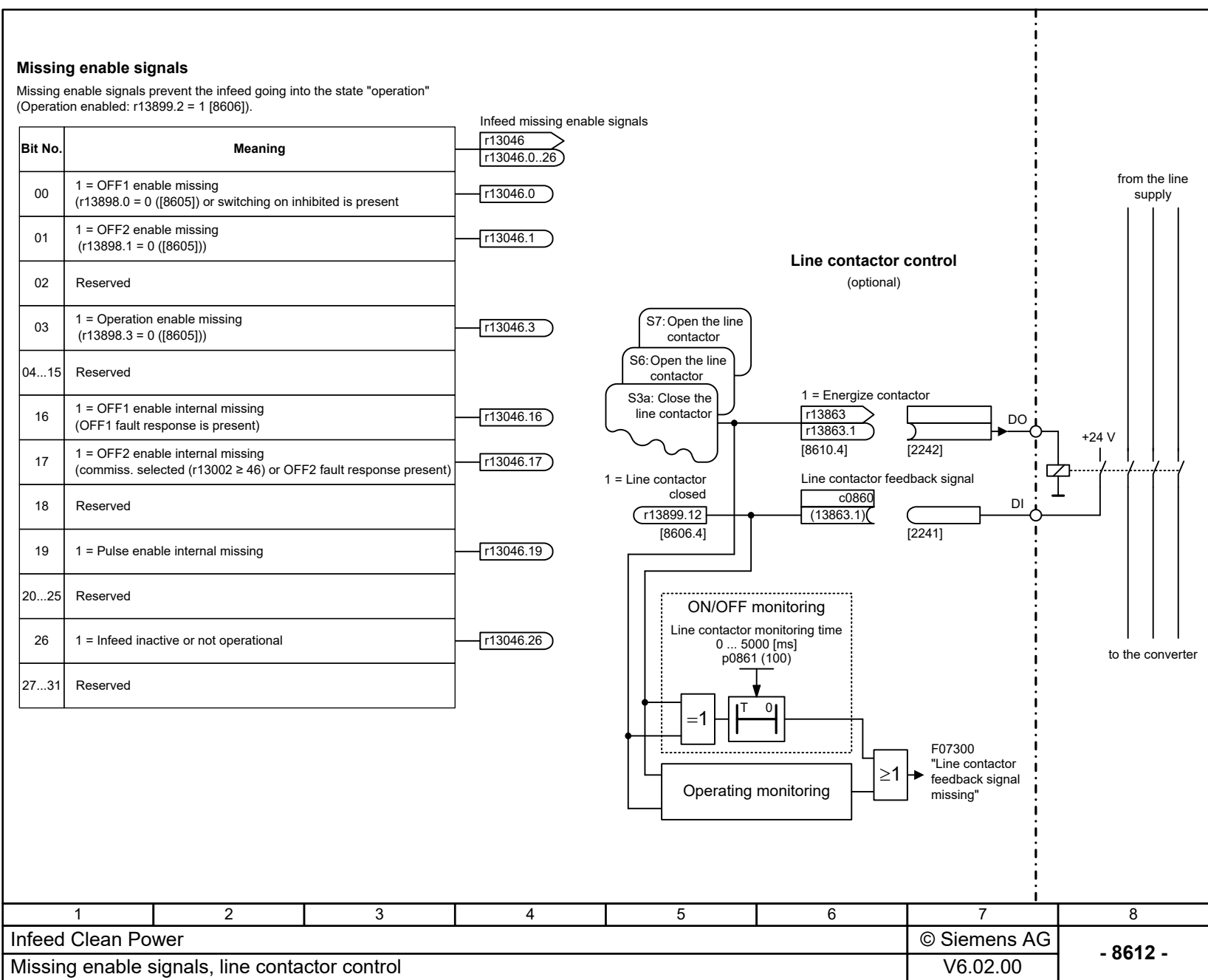


Figure 4-167 8608 – Status word infeed

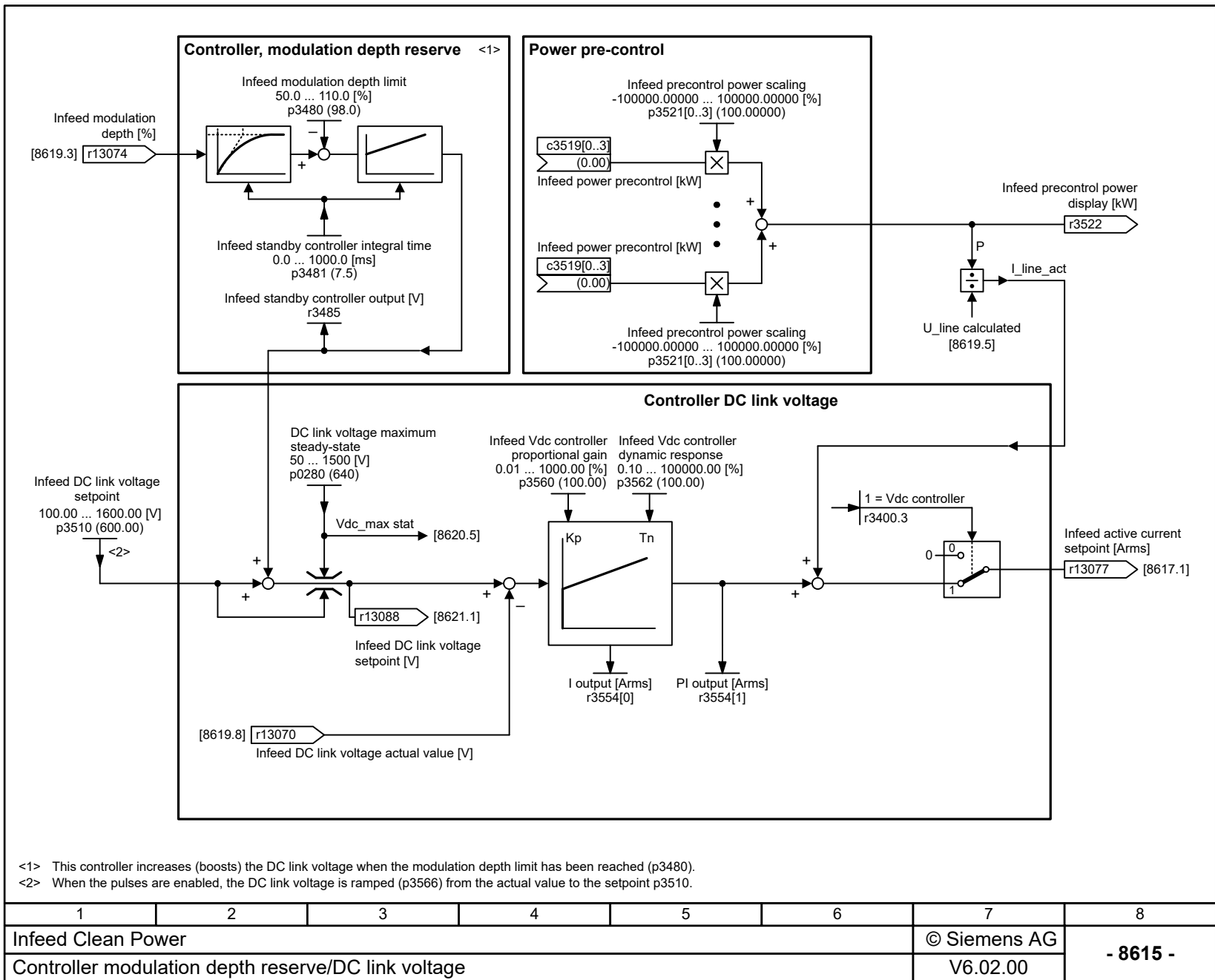




1	2	3	4	5	6	7	8
Infeed Clean Power						© Siemens AG	- 8612 -
Missing enable signals, line contactor control						V6.02.00	

Figure 4-169

8612 – Missing enables, line contactor control



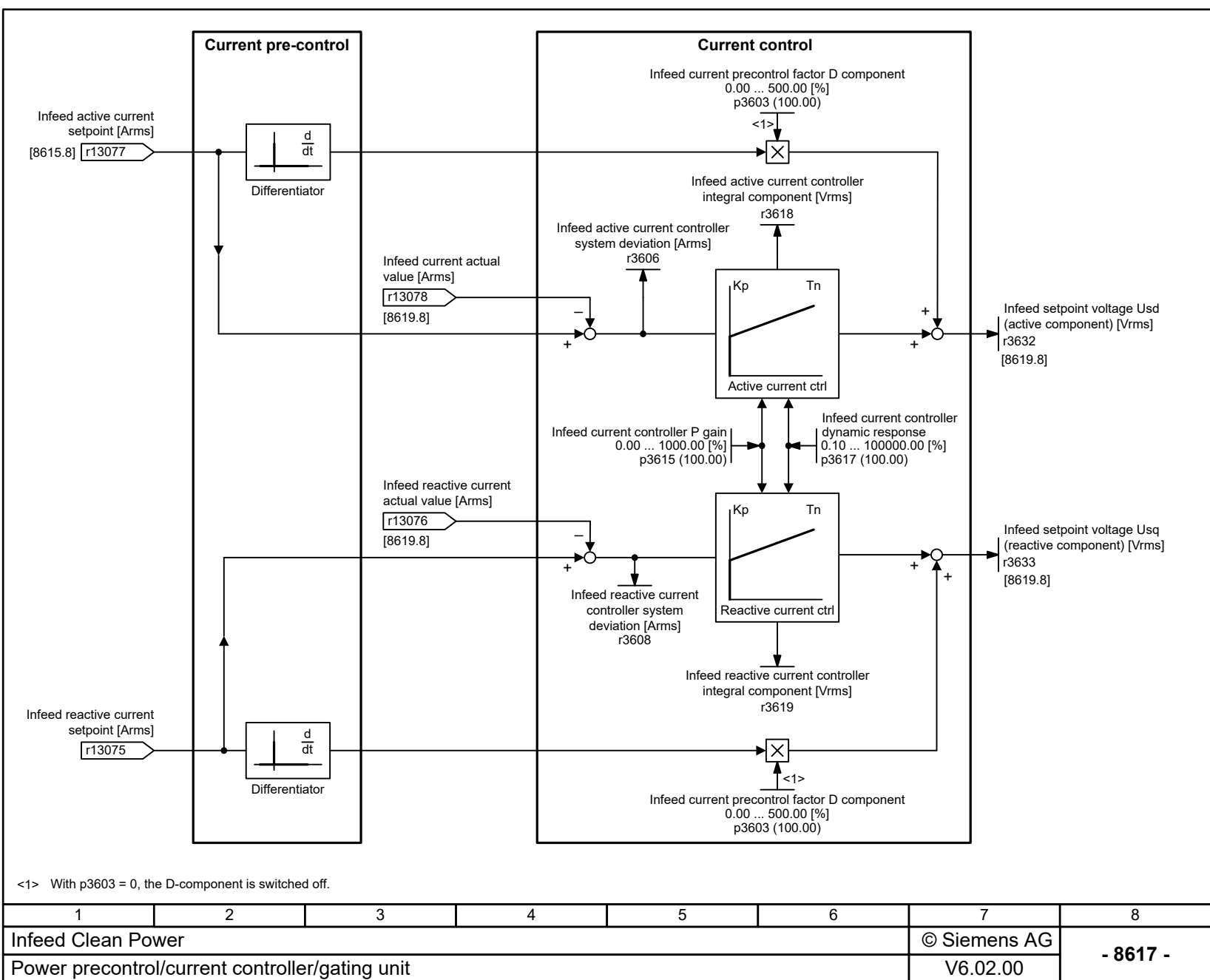


Figure 4-171 8617 – Current precontrol/current controller/gating unit

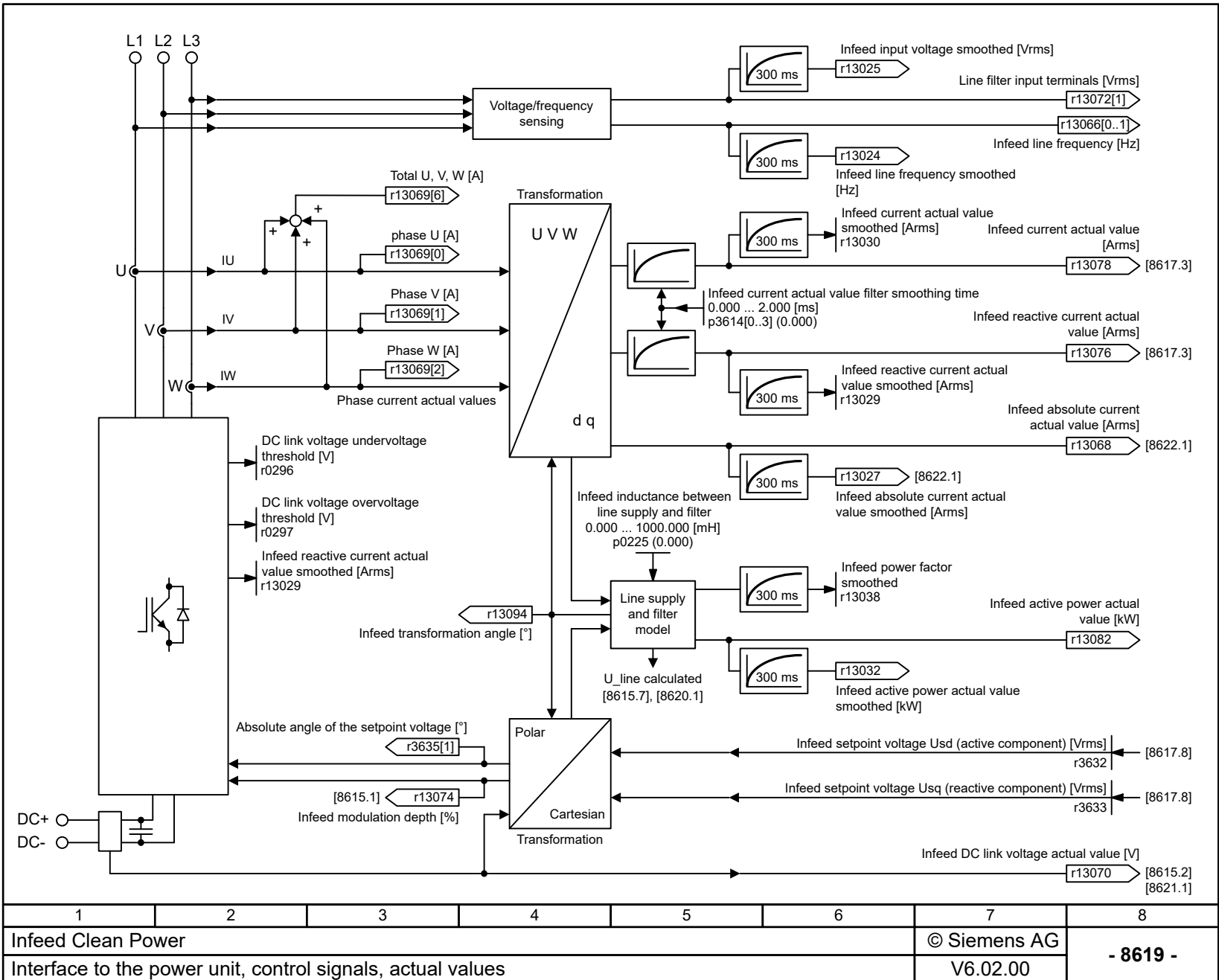
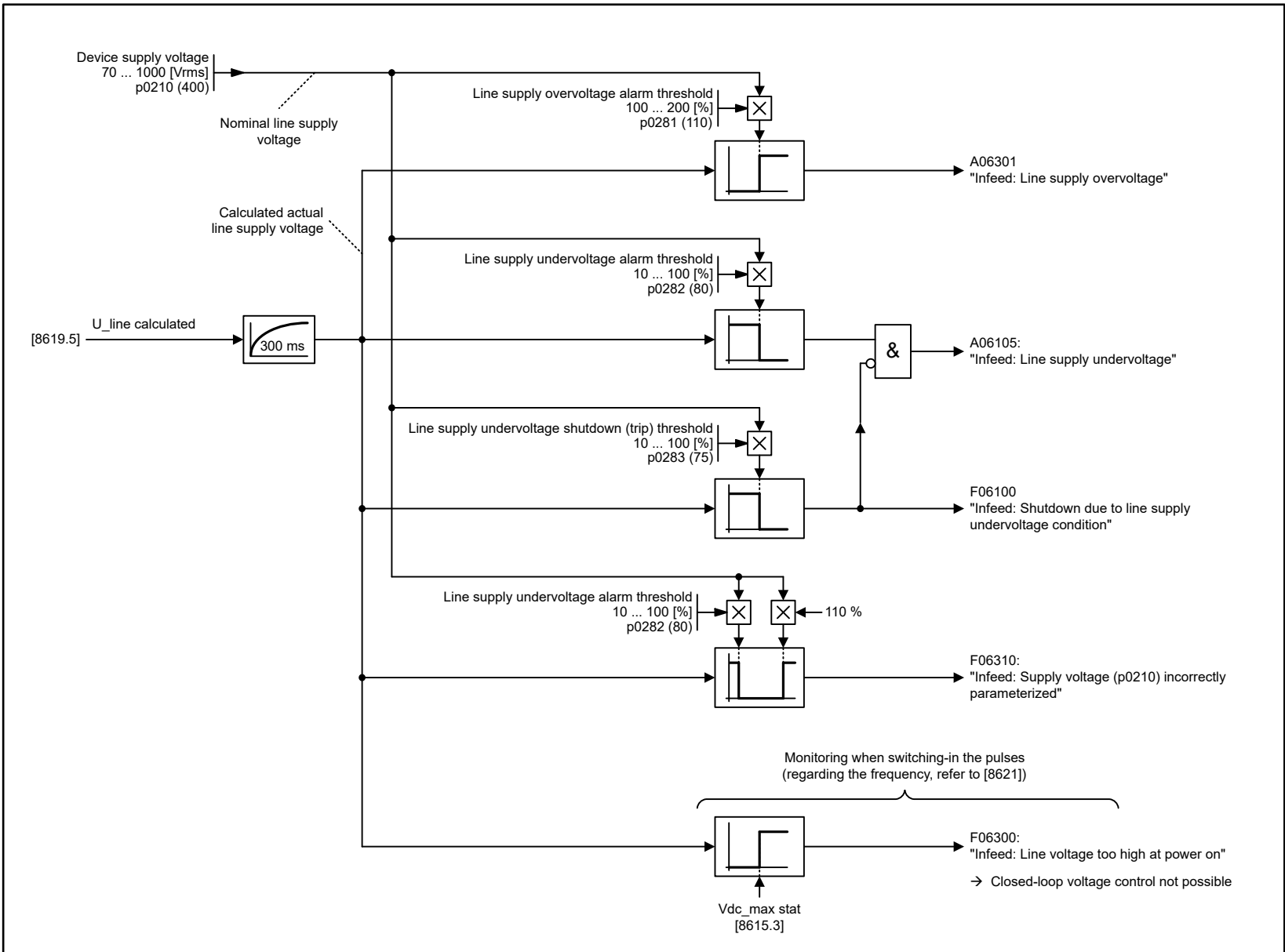


Figure 4-172 8619 – Interface to the power unit, control signals, actual values



1	2	3	4	5	6	7	8
Infeed Clean Power						© Siemens AG	- 8620 -
Line voltage monitoring						V6.02.00	

Figure 4-173 8620 – Line voltage monitoring

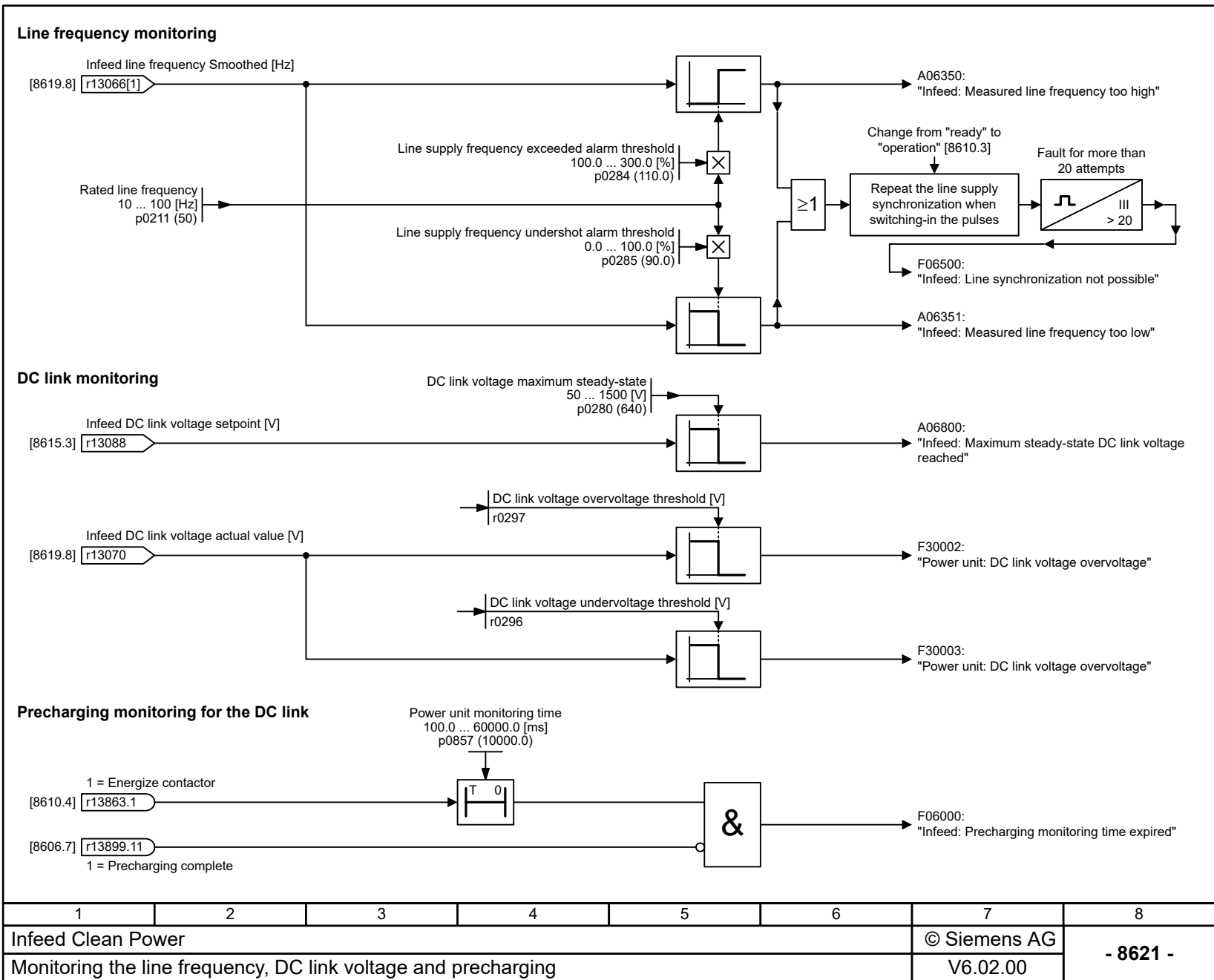


Figure 4-174 8621 – Monitoring line frequency, DC link voltage and precharging

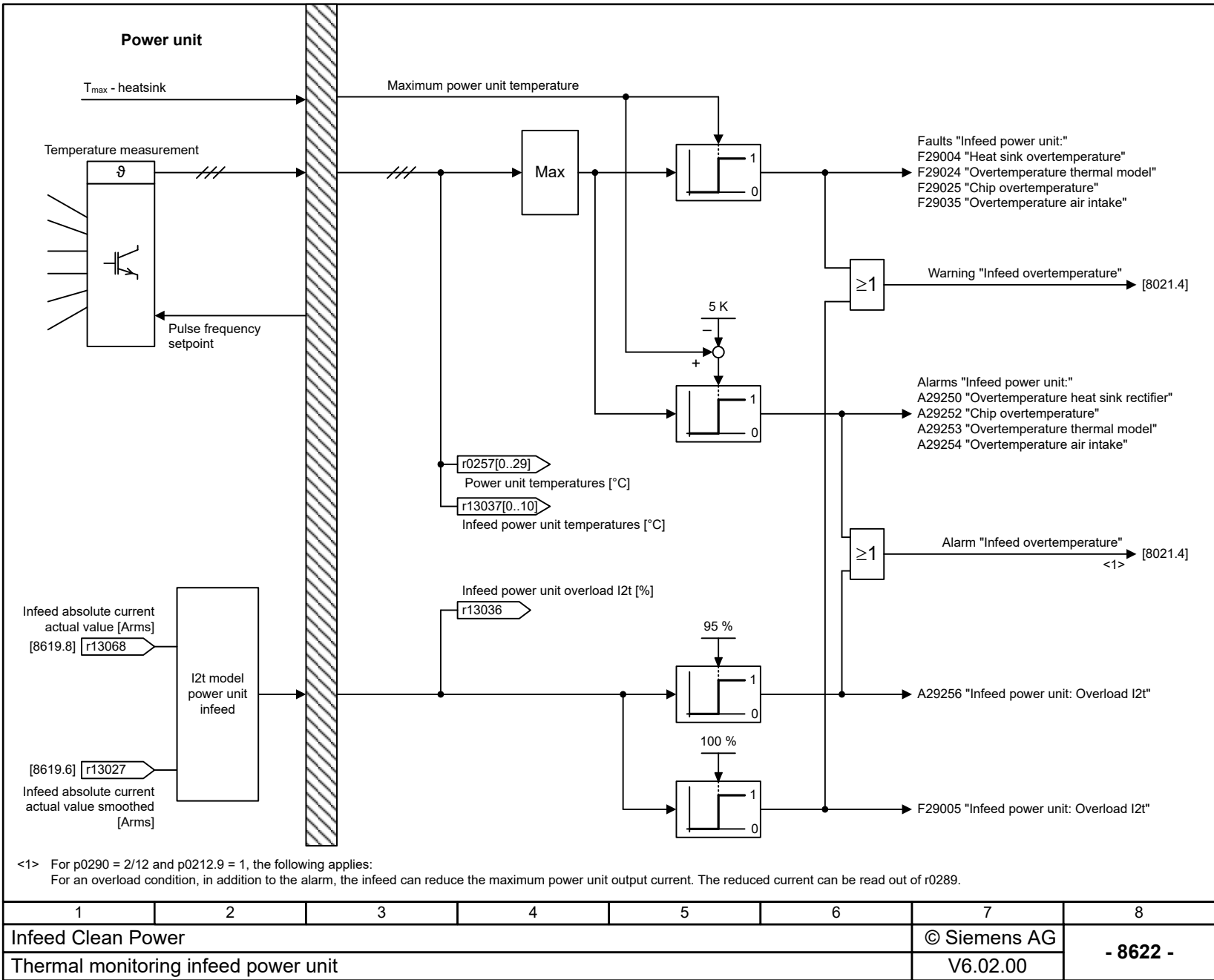


Figure 4-175 8622 – Thermal monitoring power unit infeed

Faults and alarms

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		I32	float	Days	ms	Days	ms
Fault 1		r0945[0]	r0949[0]	r2133[0]	r2130[0]	r0948[0]					
Fault 2		[1]	[1]	[1]	[1]	[1]					
		[2]	[2]	[2]	[2]	[2]					
		[3]	[3]	[3]	[3]	[3]					
...		[4]	[4]	[4]	[4]	[4]					
		[5]	[5]	[5]	[5]	[5]					
		[6]	[6]	[6]	[6]	[6]					
Fault 8		[7]	[7]	[7]	[7]	[7]					

Figure 5-2 Current incident

Acknowledging faults

Once the cause of the fault has been eliminated, 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 = 0/1 edge
- 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.

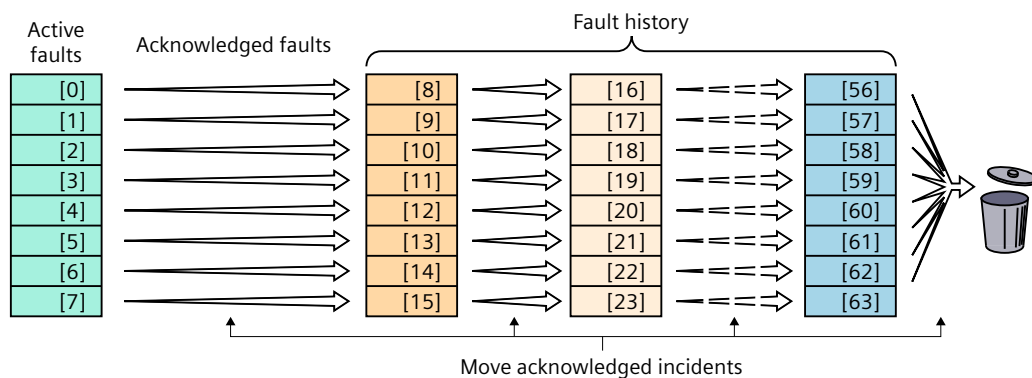


Figure 5-3 Movement of acknowledged faults to the fault history

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		Message time received		Message time acknowledged		Component	Diagnostic attributes
		I32	float	Days	ms	Days	ms				
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]	↓ new	[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]		[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.

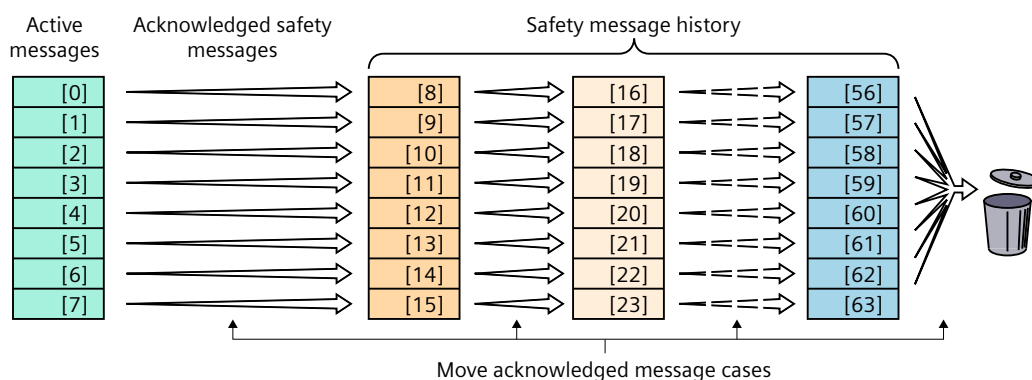


Figure 5-6 Movement of the acknowledged safety messages to the safety message history

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...	SI diagnostic attributes	
20		
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]	↓ new	[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]		[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.

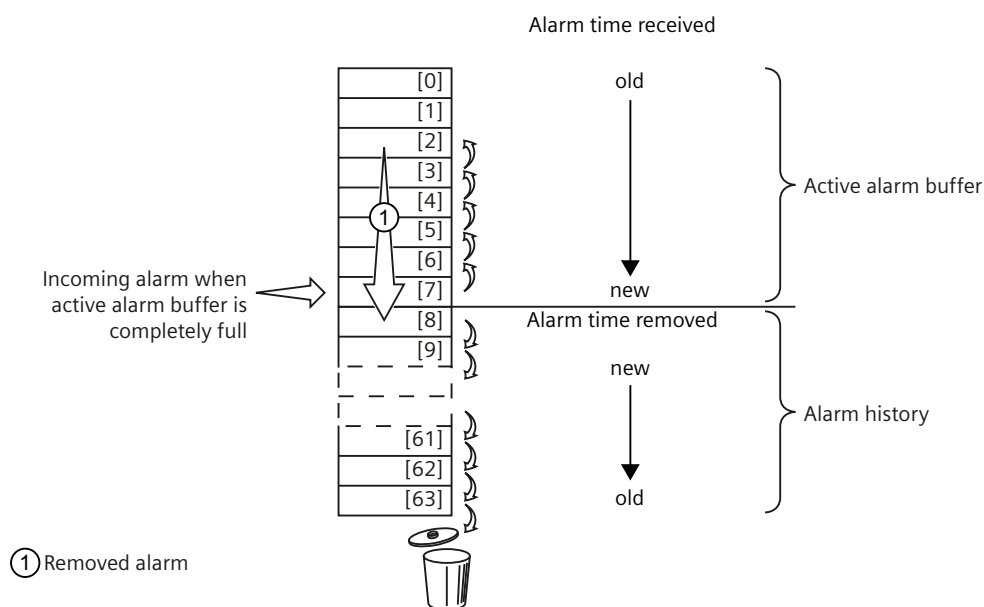


Figure 5-8 Alarm history

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	

5.1 Overview of faults and alarms

r3123[0...63].0... Diagnostic attribute alarm
20

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	
Acknowledgment 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).

5.1 Overview of faults and alarms

- **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) Cause and remedy	Diagnostics interface		
	PN (hex)	DS1 (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	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	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	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	2

Text of the message class (number according to PROFIdrive)	Diagnostics interface		
	PN (hex)	DS1 (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	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	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	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	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	7
Safety monitoring channel has detected an error (10) A safe operation monitoring function (Safety) has detected an error.	9009	9	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	9
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	10

5.1 Overview of faults and alarms

Text of the message class (number according to PROFIdrive)	Diagnostics interface		
	PN (hex)	DS1 (dec)	NAMUR (r3113.x)
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	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	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	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	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	15
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	15

Text of the message class (number according to PROFIdrive)	Diagnostics interface		
	PN (hex)	DS1 (dec)	NAMUR (r3113.x)
General drive fault (19) Group fault. Determine the precise cause of the fault using the commissioning tool.	9012	18	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	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.
- 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.

5.1 Overview of faults and alarms

- **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	PROFI-drive	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 after the cause has been resolved.

• **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: 602015000, 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)

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)

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)

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)
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)
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
Response: NONE

5.2 List of faults and alarms

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

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
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 Control Unit 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:	-
Component:	Control Unit (CU)
Response:	NONE
Acknowledgment:	NONE
Cause:	The temperature (r0037[0]) of the converter has exceeded the specified limit value.
Remedy:	- 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
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

5.2 List of faults and alarms

Acknowl. upon N: NONE

F01014 Topology: DRIVE-CLiQ component property changed

Message class: Hardware/software error (1)

Message value: Component number: %1

Component: None

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)

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.

A01016 (F) Firmware changed

Message class: Hardware/software error (1)

Message value: %1

Component: Control Unit (CU)

Response: NONE

Acknowledgment: NONE

Cause: At least one firmware file in the directory was illegally changed on the non-volatile memory (memory card/device memory) with respect to the version when shipped from the factory.

Alarm value (r2124, interpret decimal):

0: Checksum of one file is incorrect.

1: File missing.

2: File too many.

3: Incorrect firmware version.

4: Incorrect checksum of the backup file.

Remedy: For the non-volatile memory for the firmware (memory card/device memory), restore the delivery condition.

Response upon F: OFF2

Acknowl. upon F: POWER ON

A01017 Component lists changed

Message class: Hardware/software error (1)

Message value: %1

Component: Control Unit (CU)

Response: NONE
Acknowledgment: NONE
Cause: The memory card has a defective file.
Alarm value (r2124, interpret decimal):
xyz dec: x = problem, y = file name
x = 1: file checksum is incorrect.
x = 2: error when parsing the file.
y = 1: file MOTARM.ACX
y = 2: file MOTARMLD.ACX
y = 3: file MOTSRM.ACX
y = 4: file MOTSLM.ACX
y = 5: file MOTRESM.ACX
y = 6: file BEARING.ACX
y = 7: file CFG_BEAR.ACX
y = 8: file BEARINGTYPE.ACX
y = 9: file BRAKE.ACX
y = 10: file CFG_BRAKE.ACX
y = 11: file ENCODER.ACX
y = 12: file CFG_ENCODER.ACX
y = 13: file ENCODERGEAR.ACX
y = 14: file CFG_ENC_GEAR.ACX
y = 15: file LOADGEAR.ACX
y = 16: file THERMMOTMOD3.ACX
y = 17: file CFG_THERMMOTMOD3.ACX
y = 30: file WHITELIST.ACX
Remedy: Correct the file involved.

F01018 Runup has been interrupted several times

Message class: Hardware/software error (1)
Message value: -
Component: None
Response: NONE
Acknowledgment: POWER ON
Cause: Module booting was interrupted several times. As a consequence, the module boots with the factory setting.
Possible reasons for booting being interrupted:
- Power supply interrupted.
- CPU crashed.
- Parameterization invalid.
Remedy: - Carry out a POWER ON (switch-off/switch-on). After switching on, the module reboots from the valid parameterization (if available).
- Restore the valid parameterization.
Examples:
a) Carry out a first commissioning, save, carry out a POWER ON (switch-off/switch-on).
b) Load another valid parameter backup (e.g. from the memory card), save, carry out a POWER ON (switch-off/switch-on).
Note:
If the fault situation is repeated, then this fault is again output after several interrupted boots.

A01019 Writing to the removable data medium unsuccessful

Message class: Hardware/software error (1)
Message value: -
Component: Control Unit (CU)

5.2 List of faults and alarms

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)
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).

F01023 Software timeout (internal)

Message class: Hardware/software error (1)
Message value: %1
Component: Control Unit (CU)
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
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)
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

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.

Remedy: Set the value of the reference parameter to a number different than 0.0.
See also: p0304, p0305, p0310, p2000, p2001, p2002, p2003, r2004

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

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.

Remedy: Set the value of the reference parameter to a number different than 0.0.
See also: p0304, p0305, p0310, p2000, p2001, p2002, p2003, r2004, 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

Response: NONE

Acknowledgment: IMMEDIATELY

5.2 List of faults and alarms

Cause:	The change of a reference parameter meant that for an involved parameter the selected 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, p2000, p2001, p2002, p2003, r2004
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
Response:	NONE
Acknowledgment:	IMMEDIATELY
Cause:	The change of a reference parameter meant that for an involved parameter the selected 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, p2000, p2001, p2002, p2003, r2004, p2008
Remedy:	- Select the value of the reference parameter such that the parameter involved can be calculated in the per unit representation.

A01035 (F) ACX: Parameter backup file corrupted

Message class:	Hardware/software error (1)
Message value:	%1
Component:	Control Unit (CU)
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: Power 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. 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)
Acknowled. upon F:	IMMEDIATELY

F01036 (A) Parameter backup file missing

Message class:	Hardware/software error (1)
Message value:	%1

Component: Control Unit (CU)
Response: NONE (OFF1, OFF2, OFF3)
Acknowledgment: IMMEDIATELY
Cause: When loading the device parameterization, a parameter backup file cannot be found.
Remedy: If you have saved your project data using the commissioning tool, carry-out a new download for your project.
Retentively save parameters (save all parameters p0977 = 1)
This means that the parameter files are again completely written into 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)
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, 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)
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
Response: NONE
Acknowledgment: IMMEDIATELY

5.2 List of faults and alarms

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. - Download the project again to the drive unit. - 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
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.

5.2 List of faults and alarms

- 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

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):

- 1: Device status cannot be changed to device download (drive object ON?).
 - 2: Drive object number incorrect.
 - 3: A drive object that has already been deleted is deleted again.
 - 4: A drive object that has already been registered for generation is deleted.
 - 5: A drive object that does not exist is deleted.
 - 6: An undeleted drive object that already existed is generated.
 - 7: A drive object already registered for generation is generated again.
 - 8: Maximum number of drive objects that can be generated is exceeded.
 - 9: Error when generating the device drive object.
 - 10: Error when generating the target topology parameter.
 - 11: Error when generating a drive object (global component).
 - 12: Error when generating a drive object (drive component).
 - 13: Drive object type unknown.
 - 14: Drive status cannot be changed to "ready for operation" (r0947 and r0949).
 - 15: Drive status cannot be changed to drive download.
 - 16: Device status cannot be changed to "ready for operation".
 - 17: It is not possible to download the topology. The component wiring should be checked, taking into account the various messages/signals.
 - 18: A new download is only possible if the factory settings are restored for the drive unit.
 - 19: The slot for the option module has been configured several times (e.g. CAN and COMM BOARD).
 - 20: The configuration is inconsistent.
 - 21: Error when accepting the download parameters.
 - 22: Software-internal download error.
 - 24: Download not possible during a partial power up after inserting a component.
- 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)
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.

A01045	Configuring data invalid
Message class:	Hardware/software error (1)
Message value:	%1
Component:	Control Unit (CU)
Response:	NONE
Acknowledgment:	NONE
Cause:	An error was detected when evaluating the parameter files PSxxxxxyy.ACX, PTxxxxxyy.ACX, CAxxxxxyy.ACX, or CCxxxxxyy.ACX saved in the non-volatile memory. Under certain circumstances, several of the saved parameter values were not able to be accepted. Alarm value (r2124, 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.

A01049	It is not possible to write to file
Message class:	Hardware/software error (1)
Message value:	%1
Component:	Control Unit (CU)
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)
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

5.2 List of faults and alarms

Component:	Control Unit (CU)
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 drive unit to below 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)
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)
Response:	NONE
Acknowledgment:	NONE
Cause:	The parameter backup on the memory card and the drive unit 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)
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.

F01072 Memory card restored from the backup copy

Message class: General drive fault (19)

Message value: -

Component: Control Unit (CU)

Response: NONE

Acknowledgment: IMMEDIATELY

Cause: The converter was switched-off while writing to the memory card. This is why the visible partition became defective.
After switching on, the data from the non-visible partition (backup copy) were written to the visible partition.

Remedy: Check that the firmware and parameterization is up-to-date.

A01073 (N) POWER ON required for backup copy on memory card

Message class: General drive fault (19)

Message value: -

Component: Control Unit (CU)

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

Response: OFF2 (NONE, OFF1, OFF3)

Acknowledgment: IMMEDIATELY

5.2 List of faults and alarms

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:

- 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.

A01100 Memory card withdrawn

Message class: General drive fault (19)

Message value: -

Component: Control Unit (CU)

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)

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 configurable 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)

Response: NONE

Acknowledgment: IMMEDIATELY

5.2 List of faults and alarms

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
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
Response:	OFF1 (OFF2)
Acknowledgment:	IMMEDIATELY
Cause:	An internal software error occurred while the terminal functions were being initialized. 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
Acknowled. 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
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

Acknowled. 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

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)

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)

5.2 List of faults and alarms

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)
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
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
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
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
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
Response:	NONE

5.2 List of faults and alarms

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

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	

Explanation of the message value: For %3

Component in target topology

Explanation of the message value: 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	

5.2 List of faults and alarms

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

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

Acknowledgment upon N: NONE

A01318 Deactivated signal interconnections available

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Message value: %1

Component: None

Response: NONE

Acknowledgment: NONE

Cause:	This alarm is used in the following cases: - If an inactive/non-operational drive object is active again/ready for operation - The list of parameters that can be interconnected as signal sink is not empty. - The signal interconnections saved in the list of parameters were actually changed.
Remedy:	- Deactivate the drive object again.

A01319 Inserted component not initialized

Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Message value:	-
Component:	None
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
Response:	NONE
Acknowledgment:	IMMEDIATELY
Cause:	The component referenced 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
Response:	NONE
Acknowledgment:	NONE

5.2 List of faults and alarms

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 circuit configuration). - bb = 03 hex = 3 dec: There are more than 10 Motor Modules (8 for a parallel circuit configuration). - 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 circuit. - 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
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
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
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)

5.2 List of faults and alarms

Message value: Fault cause: %1, Component number: %2, Connection number: %3
Component: None
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
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
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
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
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.

5.2 List of faults and alarms

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.

A01361 **Topology: Actual topology contains SINUMERIK and SIMOTION components**

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Message value: %1

Component: None

Response: NONE

Acknowledgment: NONE

Cause:

- The detected actual topology contains SINUMERIK and SIMOTION components.
- The drive system is no longer booted. In this state, the drive control (closed-loop) cannot be enabled.
- Alarm value (r2124, interpret hexadecimal):
ddccbbaa hex: cc = fault cause, bb = component class of the actual topology, aa = component number of the component
- cc = 01 hex = 1 dec:
An NX10 or NX15 was connected to a SIMOTION control.
- cc = 02 hex = 2 dec:
A CX32 was connected to a SINUMERIK control.

Remedy:

- For alarm value = 1:
Replace all NX10 or NX15 by a CX32.
- For alarm value = 2:
Replace all CX32 by an NX10 or NX15.

A01362 **Topology: Topology rule(s) broken**

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Message value: %1

Component: None

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
Response:	NONE

5.2 List of faults and alarms

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	

Explanation of the message value: 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

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

Response: NONE

5.2 List of faults and alarms

Acknowledgment: NONE

Explanation of the message value: For %1

Component in target topology

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	

Explanation of the message value: For %3

Component in actual topology

Explanation of the message value: 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
Response: NONE

5.2 List of faults and alarms

Acknowledgment: NONE

Explanation of the message value: For %1

Component in target topology

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	

Explanation of the message value: For %3

Component in actual topology

Explanation of the message value: 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
Response: NONE

5.2 List of faults and alarms

Acknowledgment: NONE

Explanation of the message value: For %1

Component in target topology

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	

Explanation of the message value: For %3

Component in actual topology

Explanation of the message value: 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
Response: NONE

5.2 List of faults and alarms

Acknowledgment: NONE

Explanation of the message value: For %1

Component in target topology

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	

Explanation of the message value: For %3

Component in actual topology

Explanation of the message value: 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
Response: NONE

5.2 List of faults and alarms

Acknowledgment: NONE

Explanation of the message value: For %1

Component in target topology

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	

Explanation of the message value: For %3

Component in actual topology

Explanation of the message value: 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
Response: NONE

5.2 List of faults and alarms

Acknowledgment: NONE

Explanation of the message value: For %1

Component in target topology

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	

Explanation of the message value: For %3

Component in actual topology

Explanation of the message value: 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
Response: NONE

5.2 List of faults and alarms

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	

Explanation of the message value: For %3

Component in target topology

Explanation of the message value: 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
Response: NONE

5.2 List of faults and alarms

Acknowledgment: NONE

Explanation of the message value: For %1

Component in target topology

Explanation of the message value: 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	

Explanation of the message value: 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 topology and target topologies in the electronic rating plate.

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).

A01425 **Topology: Serial number different**

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Message value: Component: %1, %2, differences: %3

Component: None

Response: NONE

Acknowledgment: NONE

Explanation of the message value: For %1

Component in target topology

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	

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.

5.2 List of faults and alarms

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

Response: NONE

Acknowledgment: NONE

Explanation of the message value: For %1

Component in target topology

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	

Explanation of the message value: 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	

5.2 List of faults and alarms

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
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
Response:	NONE

5.2 List of faults and alarms

Acknowledgment: NONE

Explanation of the message value: For %1, %3

Component in target topology

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	

Explanation of the message value: 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
Response: NONE

5.2 List of faults and alarms

Acknowledgment: NONE

Explanation of the message value: For %1, %3

Component in target topology

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	

Explanation of the message value: 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
Response: NONE

5.2 List of faults and alarms

Acknowledgment: NONE

Explanation of the message value: For %1, %3

Component in target topology

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	

Explanation of the message value: 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
Response:	NONE

5.2 List of faults and alarms

Acknowledgment: NONE

Explanation of the message value: For %1, %3

Component in target topology

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	

Explanation of the message value: 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
Response: NONE

5.2 List of faults and alarms

Acknowledgment: NONE

Explanation of the message value: For %1, %3

Component in target topology

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	

Explanation of the message value: 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
Response: NONE

5.2 List of faults and alarms

Acknowledgment: NONE

Explanation of the message value: For %1, %3

Component in target topology

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	

Explanation of the message value: 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
Response:	NONE

5.2 List of faults and alarms

Acknowledgment: NONE

Explanation of the message value: For %1, %3

Component in target topology

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	

Explanation of the message value: 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
Response: NONE

5.2 List of faults and alarms

Acknowledgment: NONE

Explanation of the message value: For %1, %3

Component in target topology

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	

Explanation of the message value: 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).

A01507 (F, N) Signal interconnections to inactive objects available

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: %1
Component: None
Response: NONE
Acknowledgment: NONE
Cause: There are signal interconnections to an inactive/inoperable drive object.
Alarm value (r2124, interpret decimal):
Number of signal interconnections found to inactive drive objects.

Remedy: - Make the non-operational drive object active/operational again (re-insert or activate components).
Response upon F: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Response upon N: NONE
Acknowl. upon N: NONE

5.2 List of faults and alarms

A01508	Signal interconnections to inactive objects exceeded
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Message value:	-
Component:	None
Response:	NONE
Acknowledgment:	NONE
Cause:	The maximum number of signal interconnections (signal sinks) when deactivating a drive object was exceeded.
Remedy:	Not necessary.
F01510	Signal source is not float type
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Message value:	Parameter: %1
Component:	None
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
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
Acknowled. upon A:	NONE
F01512	No scaling available
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Message value:	%1
Component:	None
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

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

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

5.2 List of faults and alarms

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
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)
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
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
Response:	OFF2
Acknowledgment:	IMMEDIATELY
Cause:	The "Safety Integrated" function integrated in the drive has identified a fault in the self test of the switch-off signal path, and has initiated an STO (Safe Torque Off). Fault 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 was unsuccessful in operation. 1016: Error in the communication path for brake/F-DI/F-DO/STO
Remedy:	- Select STO and then deselect 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)
Response:	OFF2
Acknowledgment:	IMMEDIATELY
Cause:	An error has occurred in the communication with the Option Module Safe Motor Temperature (OM-SMT). Note: This fault 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
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 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)
Response:	OFF2
Acknowledgment:	POWER ON

5.2 List of faults and alarms

Cause: Safety relevant EEPROM data are not correct.
This message results in an STO (Safe Torque Off).

Message 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)

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.

A01637 (F) **SI: Safety configuration not protected**

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Message value: -

Component: None

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)

Acknowledgment upon F: IMMEDIATELY

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)

Response: NONE

Acknowledgment: NONE

Explanation of the message value: For %1

Bit	Cause	Remedy
3	It was identified that OM-SMT has been replaced	
4	It was identified that the Sensor Module has been replaced	
5	It was identified that the sensor has been replaced	

Cause: "Safety Integrated" has 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 functions are active, after a component has been replaced it is necessary to carry out a partial acceptance test.
Alarm value (r2124, interpret binary).

Remedy:

- Save all parameters (p0977 = 1 or retentively save).
- 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)

Response: NONE

Acknowledgment: NONE

Cause: An OM-SMT 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)

Response: OFF2

Acknowledgment: IMMEDIATELY

Cause: An error occurred when parameterizing the Option Module Safe Motor Temperature (OM-SMT).

Fault 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 the converter firmware to a later version.

F01646 SI: Change logbook

Message class: Safety monitoring channel has identified an error (10)

Message value: %1

Component: Control Unit (CU)

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.

5.2 List of faults and alarms

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 following literature:
SINAMICS Function Manual Safety Integrated

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

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

Response: NONE

Acknowledgment: IMMEDIATELY

Cause: The drive has identified a PROFIsafe communication error.

Note:

This message leads to STO, if p9612 = 0 and leads to SS1, if p9612 = 1.

Message value (r60049, interpret decimal):

6000 ... 6166:

PROFIsafe message values (PROFIsafe driver for PROFIBUS DP V1/V2 and 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 PROFIBUS/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).

5.2 List of faults and alarms

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:

- If the fault occurs after powering up or after inserting the PROFIBUS/PROFINET cable, acknowledge the fault.
- 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)

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. - Re-commission the "Safety Integrated" function 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)
Response:	OFF2
Acknowledgment:	IMMEDIATELY
Cause:	The drive-integrated "Safety Integrated" function 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
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]).

5.2 List of faults and alarms

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 ($p9500 / 2 = n * p115[0]$)

For message value = 107, 108:
Set the actual value sensing clock cycle in $p9511$ as an integer multiple of the current controller sampling time ($p9511 = n * p115[0]$), 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: PROFIBUS/PROFINET configuration error

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Message value: %1

Component: None

Response: NONE (OFF1, OFF2, OFF3)

Acknowledgment: IMMEDIATELY

Cause: There is a PROFIBUS/PROFINET configuration error for using Safety Integrated monitoring functions with a higher-level control (F-PLC).

Note:

When the safety functions are enabled, this fault results in an STO (Safe Torque Off).

Fault 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 PROFIBUS/PROFINET configuration of the safety slot on the controller side.

- Upgrade the converter firmware to a later version.

For fault value = 250:

- Remove the PROFIsafe configuring in the higher-level F control or enable PROFIsafe in the drive.

For fault 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

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
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 fault 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
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The PROFIsafe telegram number in p9611 differs from the configured PROFIsafe telegram number in the F-PLC.
Note:
This fault 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.

F01661 SI: Simulation of the safety inputs active

Message class: General drive fault (19)
Message value: Fault cause: %1 bin
Component: Control Unit (CU)
Response: OFF2

5.2 List of faults and alarms

Acknowledgment: IMMEDIATELY

Cause: The simulation of the digital inputs is active (p0795).
It is not permissible that safety inputs are simulated.
Fault 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 fault.

C01668 SI: Checksum error safety monitoring functions

Message class: Safety monitoring channel has identified an error (10)

Message value: %1

Component: Control Unit (CU)

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

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 repeat the drive commissioning. For message value = 2: Use an encoder that supports safety functions. 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.

C01671	SI: Parameterization actual value acquisition incorrect
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Message value:	%1
Component:	None

5.2 List of faults and alarms

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
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
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)
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) 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
Response:	NONE
Acknowledgment:	IMMEDIATELY

5.2 List of faults and alarms

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)
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
Response: OFF2
Acknowledgment: IMMEDIATELY

5.2 List of faults and alarms

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: The parameter must be greater than zero when SS1 (Safe Stop 1) is activated using p9604.2 = 1 with SBR (Safe Brake Ramp) using p9606 = 2. xxxx = 9603: The control type 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: $p9546 * 0.75 \geq p9547$ For xxxx = 9560: Set a parameter value greater than zero. For xxxx = 9603: In p9603, set a control type 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
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)

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 fault does not result in a safety stop response.
Fault 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 fault value = 1:
- Replace the hardware.
For fault 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)
Response: NONE
Acknowledgment: NONE
Cause: The commissioning of the "Safety Integrated" function 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
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
Response: OFF3
Acknowledgment: IMMEDIATELY

5.2 List of faults and alarms

Cause:	The drive is stopped using SS1 (Safe Stop 1) (braked along the OFF3 down ramp). As a result of this fault, 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).

C01706 SI: SAM/SBR limit exceeded

Message class:	Safety monitoring channel has identified an error (10)
Message value:	%1
Component:	None
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) or SLS (Safely-Limited Speed), 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 has detected a fault. 1: SBR 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
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 "SI: SS1 initiated".
Remedy:	- Check whether safety faults are present and if required carry out the appropriate diagnostic routines for the particular faults. - Check whether the standstill tolerance matches the accuracy and control dynamic performance of the axis. - Carry out a POWER ON. This message can be acknowledged without any POWER ON via PROFIsafe (safe acknowledgment). Note: SI: Safety Integrated SOS: Safe Operating Stop SS1: Safe Stop 1 See also: p9530 (SI SOS standstill tolerance)

C01711 SI: SCF (Safety Channel Failure) initiated

Message class:	Safety monitoring channel has identified an error (10)
Message value:	-
Component:	None
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 fault results in an SS1 (Safe Stop 1), 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)

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
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
Response: NONE
Acknowledgment: IMMEDIATELY

Cause: The tolerance for function SDI (Safe Direction) was exceeded. The drive is stopped by the configured stop response (p9566).
Message value (r60049, interpret decimal):
0: Tolerance for function "SDI positive" exceeded.
1: The tolerance for function "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

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

5.2 List of faults and alarms

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_IJT 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
Response:	NONE
Acknowledgment:	IMMEDIATELY
Cause:	The encoder that is used for the safety-relevant motion monitoring functions signals a hardware fault. Note: This fault results in STO (Safe Torque Off). 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
Response:	NONE
Acknowledgment:	IMMEDIATELY
Cause:	The DRIVE-CLiQ encoder for safe motion monitoring signals an error for the internal encoder effectivity tests; the safety software cyclically monitors the sequence. 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
Response:	NONE
Acknowledgment:	IMMEDIATELY

Cause:	The encoder that is used for the safety-relevant motion monitoring functions signals a fault. 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
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
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
Response:	NONE

5.2 List of faults and alarms

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.
If at least one monitoring function is active, then after the parameterized timer has expired, message C01701 is output.
Message value (r60049, interpret hexadecimal): Only for internal Siemens fault diagnostics.

Remedy:

- Carry out a POWER ON (switch-off/switch-on) for all components.
- Re-commission the "Safety Integrated" function 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)

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)

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.

5.2 List of faults and alarms

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
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
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, the following checks have to be made depending on the communication:
 For communication with PROFIsafe F-Host, the following applies:
 - Evaluate any other active PROFIsafe communication messages/signals.
 - Check the operating state of the F-Host.
 - Check the communication connection to the F Host.
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)
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
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)
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

5.2 List of faults and alarms

Component: None
Response: NONE
Acknowledgment: NONE
Explanation of the message value: For %1

Cause: Component in target topology
 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

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 $\leq$ 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)

Acknowledgment 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

Response: NONE

Acknowledgment: NONE

Cause: Parameterization for isochronous operation is not permissible.
Alarm value (r2124, interpret decimal):
0: Bus cycle time $T_{dp} < 0.5$ ms.
1: Bus cycle time $T_{dp} > 32$ ms.
2: Bus cycle time T_{dp} is not an integer multiple of the current controller sampling time.
3: Instant of the actual value sensing $T_i > \text{Bus cycle time } T_{dp}$ or $T_i = 0$.
4: Instant of the actual value sensing T_i is not an integer multiple of the current controller sampling time.
5: Instant of the setpoint acceptance $T_o \geq \text{Bus cycle time } T_{dp}$ or $T_o = 0$.
6: Instant of the setpoint acceptance T_o is not an integer multiple of the current controller sampling time.
7: Controller application cycle time T_{mapc} is not an integer multiple of the speed controller sampling time.
8: Bus reserve bus cycle time T_{dp} - Data exchange time T_{dx} less than two current controller sampling times.
10: Instant of the setpoint acceptance $T_o \leq \text{data exchange time } T_{dx} + \text{current controller sampling time}$
11: Controller application cycle time $T_{mapc} > 14 \times T_{dp}$ or $T_{mapc} = 0$.
12: PLL tolerance window $T_{pll\_w} > T_{pll\_w\_max}$.
13: Bus cycle time T_{dp} is not a multiple of all basic clock cycles.

Remedy: - Adapt the bus parameterization T_{dp} , T_i , T_o .
- Adapt the sampling time for the current controller or speed controller.
For alarm value = 10:
- Reduce T_{dx} 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

Response: NONE

Acknowledgment: NONE

5.2 List of faults and alarms

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)
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
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
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

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

A01925 (F) Modbus TCP: connection interrupted

Message class: Communication error to the higher-level control system (9)

Message value: -

Component: None

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

A01940 PB/PN: clock cycle synchronism not reached

Message class: Communication error to the higher-level control system (9)

5.2 List of faults and alarms

Message value:	-
Component:	None
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
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
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
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

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

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

Response: OFF2 (NONE)

5.2 List of faults and alarms

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

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

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

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
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
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
Response:	NONE
Acknowledgment:	NONE
Cause:	The "PROFINET system redundancy" function is configured and the connection between the primary control and drive device is interrupted. The backup controller assumes control of the drive device.
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
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.

5.2 List of faults and alarms

A02000 Function generator: Start not possible

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Message value: -

Component: None

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

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

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

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
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
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
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.

5.2 List of faults and alarms

A02011	Function generator: The actual drive speed is not zero
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Message value:	-
Component:	None
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
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
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
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

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

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

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)

5.2 List of faults and alarms

Message value: -
Component: None
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
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:
 $\text{Bandwidth\_max} = 1 / (2 \times \text{time slice clock cycle})$
 $\text{Bandwidth\_min} = \text{Bandwidth\_max} / 100000$
Example:
Assumption: Time slice clock cycle = 125 μs
--> $\text{Bandwidth\_max} = 1 / (2 \times 125 \mu\text{s}) = 4000 \text{ Hz}$
--> $\text{Bandwidth\_min} = 4000 \text{ Hz} / 100000 = 0.04 \text{ Hz}$
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
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
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
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
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
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
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
Response: NONE
Acknowledgment: NONE

5.2 List of faults and alarms

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

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

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

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

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
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
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: The trace parameterization in the drive unit 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
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
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 too 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.

5.2 List of faults and alarms

- 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

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 too 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

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

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
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
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.

5.2 List of faults and alarms

Remedy:

- Change the configuration on this converter, e.g.
 - Use fewer axes
 - Reduce the number of configurable 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

Response: OFF2 (NONE)

Acknowledgment: IMMEDIATELY

Cause: A technology function (e.g. Technology Extension, DCB library) does not exist on the drive device. When configuring, a technology function is activated, which does not exist on the drive device. This can occur when downloading a project or when powering up.

Remedy:

- Load the required technology function to the drive device.
- 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)

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.

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)

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
Response: NONE
Acknowledgment: NONE
Cause: The 24 V power supply for the digital outputs (X124) is missing.
Remedy: Check the terminals for the power 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)
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 power supply.
- 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)
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:
- Ensure 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

5.2 List of faults and alarms

Acknowl. upon F: IMMEDIATELY

Response upon: N: NONE

Acknowl. upon N: NONE

A05054 (N) Parallel circuit: Power unit deactivated

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Message value: %1

Component: Power Unit

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

Response: NONE

Acknowledgment: NONE

Cause: The voltage measurement does not supply any plausible values and is not used.

Alarm value (r2124, interpret bit-serial):

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

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 supply voltage connected. 2) The line contactor/line side switch has not been closed. 3) The line supply voltage is too low. 4) Line supply 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:	In general: - Check the line supply voltage at the connecting terminals. - Check the line supply 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 appropriate Equipment Manual). 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 appropriate Equipment Manual) 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
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
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)
Remedy:	Appropriately change the parameter specified in the fault value. See also: r0220 (Infeed line filter type)
Response upon A:	NONE
Acknowled. upon A:	NONE

5.2 List of faults and alarms

F06100	Infeed: Shutdown due to line supply undervoltage condition
Message class:	Network fault (2)
Message value:	%1
Variant:	G220 Clean Power
Component:	None
Response:	OFF2 (NONE, OFF1)
Acknowledgment:	IMMEDIATELY
Cause:	The filtered (steady-state) value of the line supply voltage is less than the fault threshold (p0283). Fault condition: $V_{rms} < p0283 * p0210$ Fault value (r2133, floating point): Actual steady-state line supply voltage. See also: p0283 (Line supply undervoltage shutdown (trip) threshold)
Remedy:	- Check the line supply. - Check the line supply voltage (p0210). - Check the threshold value (p0283).

A06105 (F)	Infeed: Line supply undervoltage
Message class:	Network fault (2)
Message value:	%1
Variant:	G220 Clean Power
Component:	None
Response:	NONE
Acknowledgment:	NONE
Cause:	The filtered (steady-state) value of line supply voltage is lower than the alarm threshold (p0282). Alarm condition: $V_{rms} < p0282 * p0210$ Alarm value (r2134, floating point): Actual steady-state line supply voltage. See also: p0282 (Line supply undervoltage alarm threshold)
Remedy:	- Check the line supply. - Check the line 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:	Network fault (2)
Message value:	-
Variant:	G220 Clean Power
Component:	None
Response:	OFF2 (OFF1)
Acknowledgment:	IMMEDIATELY

Cause:	Failure overvoltage in one or several line supply 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 supply phase
Message class:	Network fault (2)
Message value:	%1
Variant:	G220 Clean Power
Component:	None
Response:	NONE
Acknowledgment:	NONE
Cause:	Voltage dip or overvoltage in one or several line supply 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-serial): Bit 0: Line angle deviation due to a line supply 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.

5.2 List of faults and alarms

Remedy:	When the alarm occurs, the following always applies: - Check the line supply, terminals and fuses. - Check the line supply 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)
Acknowled. upon F:	IMMEDIATELY

A06206 (F) Infeed: Line currents asymmetrical alarm

Message class:	Network fault (2)
Message value:	%1
Variant:	G220 Clean Power
Component:	None
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 supply 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)
Acknowled. upon F:	IMMEDIATELY

F06207 (N, A) Infeed: Line currents asymmetrical

Message class: Network fault (2)
Message value: %1
Variant: G220 Clean Power
Component: Power Unit
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 supply voltage asymmetrical

Message class: Infeed faulted (13)
Message value: -
Variant: G220 Clean Power
Component: Power Unit
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
Response: OFF2 (OFF1)
Acknowledgment: IMMEDIATELY

5.2 List of faults and alarms

Cause:	The smoothed sum of the phase currents ($i_1 + i_2 + i_3$) 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
Response:	NONE
Acknowledgment:	NONE
Cause:	The smoothed sum of the phase currents ($i_1 + i_2 + i_3$) 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)
Acknowled. upon F:	IMMEDIATELY

F06300 Infeed: Line voltage too high at power on

Message class:	Network fault (2)
Message value:	%1
Variant:	G220 Clean Power
Component:	None
Response:	OFF2 (NONE, OFF1)
Acknowledgment:	IMMEDIATELY
Cause:	The RMS line supply voltage V_{rms} 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: $V_{rms} * 1.5 > p0280$. Fault value (r2133, floating point): Lowest possible controlled DC link voltage for the line supply voltage presently connected. See also: p0280 (DC link voltage maximum steady-state)
Remedy:	- Check the line supply voltage. - Check the maximum DC link voltage and if required, increase (p0280). - Check the line supply voltage and compare with the actual line supply voltage (p0210). - Check whether the power unit is dimensioned for the line supply voltage actually being used. See also: p0210 (Device supply voltage), p0280 (DC link voltage maximum steady-state)

A06301 (F) Infeed: Line supply overvoltage

Message class: Network fault (2)
Message value: Line supply voltage: %1
Variant: G220 Clean Power
Component: None
Response: NONE
Acknowledgment: NONE
Cause: The filtered (steady-state) value of the rms line supply voltage V_{rms} is higher than the alarm threshold (p0281).
Alarm condition: $V_{rms} > p0281 * p0210$.
See also: p0281 (Line supply overvoltage alarm threshold)
Remedy: - Check the line supply.
- Check the line supply voltage (p0210).
- Check the alarm threshold (p0281).
See also: p0210 (Device supply voltage), p0281 (Line supply overvoltage alarm threshold)
Response upon: F: NONE (OFF2)
Acknowl. upon F: IMMEDIATELY

F06310 (A) Supply voltage (p0210) incorrectly parameterized

Message class: Network fault (2)
Message value: -
Variant: G220
Component: None
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.
See also: p0210 (Device supply voltage)
Remedy: - Check the parameterized supply voltage and if required change (p0210).
- Check the line supply voltage.
See also: p0210 (Device supply voltage)
Response upon: A: NONE
Acknowl. upon A: NONE

F06310 (A) Supply voltage (p0210) incorrectly parameterized

Message class: Network fault (2)
Message value: Line supply voltage: %1
Variant: G220 Clean Power
Component: None
Response: NONE (OFF1, OFF2)
Acknowledgment: IMMEDIATELY

5.2 List of faults and alarms

Cause:	After precharging has been completed, the supply voltage V_{rms} is not within the tolerance range of the line voltage (p0210). The following applies for the tolerance range: $p0282 * p0210 < V_{rms} < 110 \% * p0210$. Note: The fault can only be acknowledged when the drive is switched off. Fault value (r2133, floating point): Line supply voltage V_{rms} present. See also: p0210 (Device supply voltage)
Remedy:	- Check the parameterized supply voltage and if required change (p0210). - Check the line supply voltage. See also: p0210 (Device supply voltage)
Response upon: A:	NONE
Acknowled. upon A:	NONE

F06311 Infeed: Supply voltage (p0210) incorrect

Message class:	Network fault (2)
Message value:	Line supply voltage: %1
Variant:	G220 Clean Power
Component:	None
Response:	OFF2 (OFF1)
Acknowledgment:	IMMEDIATELY
Cause:	The supply voltage V_{rms} does not lie within the extended tolerance range of the set line voltage (p0210). The following applies for the extended tolerance range: $75 \% * p0210 < V_{rms} < 120 \% * p0210$ Fault value (r2133, floating point): Line supply voltage V_{rms} present. See also: p0210 (Device supply voltage)
Remedy:	- Check the parameterized supply voltage and if required change (p0210). - Check the line supply voltage. See also: p0210 (Device supply voltage)

A06350 (F) Infeed: Measured line frequency too high

Message class:	Network fault (2)
Message value:	Line frequency: %1
Variant:	G220 Clean Power
Component:	None
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 supply 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 supply quality.

See also: p0211 (Rated line frequency), p0284 (Line supply frequency exceeded alarm threshold)

Response upon: F: NONE (OFF1, OFF2)

Acknowl. upon F: IMMEDIATELY

A06351 (F) Infeed: Measured line frequency too low

Message class: Network fault (2)

Message value: Line frequency: %1

Variant: G220 Clean Power

Component: None

Response: NONE

Acknowledgment: NONE

Cause:

The actual line frequency f_{line} is lower than the parameterized alarm threshold ($f_{\text{line}} < p0211 * p0285$).

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 supply 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 supply quality.

See also: p0211 (Rated line frequency), p0285 (Line supply frequency undershot alarm threshold)

Response upon: F: NONE (OFF1, OFF2)

Acknowl. upon F: IMMEDIATELY

F06500 Infeed: Line synchronization not possible

Message class: Network fault (2)

Message value: -

Variant: G220 Clean Power

Component: Power Unit

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.

5.2 List of faults and alarms

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 supply frequency exceeded alarm threshold), p0285 (Line supply 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

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 3% of the maximum permissible converter current (e.g. due to a ground fault in the DC link).

3: There were not enough phase current measured values for the current offset adjustment.

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 supply 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

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 current offset is set to 0.

Notice:

Without a valid measurement, DC components can occur in the line currents (r13069), 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

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

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 supply voltage is too high.
- Supply voltage (p0210) parameterized to be too low.

Remedy:

- Check the line 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

Response: NONE

Acknowledgment: NONE

Cause: The current operating mode is only intended for diagnostic purposes.
See also: p1300 (Open-loop/closed-loop control type)

Remedy: Change the operating mode.

5.2 List of faults and alarms

Response upon N: NONE

Acknowled. upon N: NONE

F07011 Drive: Motor overtemperature

Message class: Motor overload (8)

Message value: %1

Component: Motor

Response: OFF2 (NONE, OFF1, OFF3, STOP2)

Acknowledgment: IMMEDIATELY

Cause: KTY84/Pt1000 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.

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

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

Acknowled. upon N: NONE

F07013 Drive: Motor temperature model configuration fault

Message class: Motor overload (8)

Message value: %1

Component: Motor

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

Response: NONE

Acknowledgment: NONE

5.2 List of faults and alarms

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
Acknowled. 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
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 breakage or sensor not connected (KTY: R > 1630 Ohm, Pt1000: R > 1720 Ohm). - Measured resistance too low (PTC: R < 20 Ohm, KTY: R < 50 Ohm, Pt1000: R < 603 Ohm). 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:	- Ensure 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
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 breakage or sensor not connected (KTY: R > 1630 Ohm, Pt1000: R > 1720 Ohm). - Measured resistance too low (PTC: R < 20 Ohm, KTY: R < 50 Ohm, Pt1000: R < 603 Ohm). 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:	- Ensure 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

F07048 Drive: Incorrect characteristic measurement

Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Message value:	%1
Component:	Motor
Response:	OFF2 (NONE, OFF1)
Acknowledgment:	IMMEDIATELY
Cause:	A fault has occurred during the characteristic measurement. Fault value (r0949, interpret decimal): 1: Speed threshold for DQ saturation not reached.
Remedy:	For fault value = 1: - Check the closed-loop load machine control.

F07080 Drive: Incorrect control parameter

Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Message value:	Parameter: %1
Component:	None
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
Response:	NONE
Acknowledgment:	IMMEDIATELY

5.2 List of faults and alarms

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.

F07083	Template: ACX file not found
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Message value:	Parameter: %1
Component:	None
Response:	NONE
Acknowledgment:	IMMEDIATELY
Cause:	The template to be executed was not able to be found. Fault value (r0949, interpret decimal): Parameter number with which the execution was started.
Remedy:	- Check whether the corresponding template number is available.

F07084	Macro: Condition for WaitUntil not fulfilled
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Message value:	Parameter: %1
Component:	None
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
Response: NONE
Acknowledgment: IMMEDIATELY

Cause: A reference parameter was changed in the system. This resulted in the fact that for the parameters involved, the selected 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, p2000, p2001, p2002, p2003, r2004

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
Response: NONE
Acknowledgment: IMMEDIATELY

Cause: A reference parameter was changed in the system. This resulted in the fact that for the parameters involved, the selected 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, p2000, p2001, p2002, p2003, r2004, 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
Response: NONE
Acknowledgment: IMMEDIATELY

5.2 List of faults and alarms

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 limit is violated the parameter value is rounded down. Fault value (r0949, interpret decimal). See also: p0100 (IEC/NEMA Standards)
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
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)
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)
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.

A07094	General parameter limit violation
Message class:	Hardware/software error (1)
Message value:	Parameter: %1
Component:	None
Response:	NONE
Acknowledgment:	NONE
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. Alarm value (r2124, 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
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: Master control by PLC missing
Message class:	Communication error to the higher-level control system (9)
Message value:	-
Component:	None
Response:	OFF1 (NONE, OFF2, OFF3, STOP2)
Acknowledgment:	IMMEDIATELY
Cause:	The "master control by PLC" signal was missing in operation. - Interconnection of the binary signal sink for "Master control by PLC" is incorrect (c0854). - The higher-level control has withdrawn the "master control by PLC" signal. - Data transfer via the fieldbus (controller/drive) was interrupted.
Remedy:	- Check the interconnection of the binary signal sink for "master control by PLC" (c0854). - Check the "master 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 "master 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
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

5.2 List of faults and alarms

F07311 Bypass motor switch

Message class: Application/technological function faulted (17)

Message value: Fault cause: %1 bin

Component: None

Response: OFF2

Acknowledgment: IMMEDIATELY

Cause: Fault value (r0949, interpret bit-serial):

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, r1261, c1266, p1267, c1269, p1274

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

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, r1261, c1266, p1267, c1269, p1274

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

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, r1261, c1266, p1267, c1269, p1274

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

Acknowledgment: NONE

F07320	Drive: Automatic restart interrupted
Message class:	Application/technological function faulted (17)
Message value:	%1
Component:	None
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
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
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
Response:	NONE
Acknowledgment:	NONE

5.2 List of faults and alarms

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
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
Response:	NONE
Acknowledgment:	NONE
Cause:	The measuring probe is connected to a bidirectional 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
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
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
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 supply voltage is permanently higher than specified for the power unit. - The motor is permanently in the regenerative 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 load duty cycle and load limits are within the permissible limits.
Response upon: N:	NONE
Acknowl. upon N:	NONE

5.2 List of faults and alarms

A07402 (N) Drive: DC link voltage minimum controller active

Message class: Application/technological function faulted (17)

Message value: -

Component: None

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

Acknowled. upon N: NONE

F07403 (N, A) Drive: Lower DC link voltage threshold reached

Message class: Infeed faulted (13)

Message value: -

Component: None

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 supply 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

Acknowled. upon N: NONE

Response upon: A: NONE

Acknowled. upon A: NONE

F07404 Drive: Upper DC link voltage threshold reached

Message class: DC link overvoltage (4)

Message value: -

Component: None

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 supply 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

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
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

A07409 (N) Drive: U/f control, current limiting controller active

Message class: Application/technological function faulted (17)
Message value: %1
Component: None
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
Response: OFF2 (NONE, OFF1)
Acknowledgment: IMMEDIATELY

5.2 List of faults and alarms

Cause:	The condition "I_{act} = 0 and U_{q_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. - The "flying restart" function is not activated.
Remedy:	- Connect the motor 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
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 I_{2t} 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.

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
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 R_s 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

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 pre-set 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

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: $0.5 / \text{speed controller clock cycle}$.

Remedy:

- Reduce the natural frequency of PT2 element for reference model (p1433).

5.2 List of faults and alarms

F07426 (A) Technology controller actual value limited

Message class: Application/technological function faulted (17)

Message value: %1

Component: None

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: c2264 (Technology controller actual value), p2267 (Technology controller upper limit actual value), p2268 (Technology controller lower limit actual value)

Response upon: A: NONE

Acknowledgment upon A: NONE

A07428 (N) Technology controller parameterizing error

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Message value: %1

Component: None

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

Acknowledgment 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

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
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

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
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
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
Response:	NONE
Acknowledgment:	NONE

5.2 List of faults and alarms

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
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): nnxyyy 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
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): abbccd 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
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
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
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
Response:	NONE
Acknowledgment:	NONE

5.2 List of faults and alarms

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

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

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

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):
yyyyxxx 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

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: encoder sin/cos 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

Response: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)

Acknowledgment: IMMEDIATELY

5.2 List of faults and alarms

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
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

Acknowledgment 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

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):
aaaayyxx hex: yy = 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))

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

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

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

5.2 List of faults and alarms

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
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): ccccbaa 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
Acknowled. 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
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
Acknowled. 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
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
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
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.

5.2 List of faults and alarms

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

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

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

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.

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
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

F07800 Drive: No power unit present

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: -
Component: Power Unit
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
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 = $2 \times \text{minimum (p0640, } 4 \times \text{p0305} \times \text{p0306)} \geq 2 \times \text{p0305} \times \text{p0306}$

5.2 List of faults and alarms

- 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

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 line 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

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
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
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
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).

5.2 List of faults and alarms

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

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

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

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
Acknowled. 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
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
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
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).

5.2 List of faults and alarms

A07893	Drive: Load monitoring pump leakage
Message class:	Application/technological function faulted (17)
Message value:	-
Component:	Motor
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
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
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
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

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

Acknowledgment upon N: NONE

F07900 (N, A) Drive: Motor blocked

Message class: Application/technological function faulted (17)

Message value: -

Component: Motor

Response: OFF2 (NONE, OFF1, OFF3, STOP2)

Acknowledgment: IMMEDIATELY

Cause: 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.

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).

Response upon N: NONE

5.2 List of faults and alarms

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

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

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
Response:	NONE
Acknowledgment:	NONE

5.2 List of faults and alarms

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 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
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
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
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).

5.2 List of faults and alarms

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
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
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
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
Response:	NONE
Acknowledgment:	NONE
Cause:	KTY84/Pt1000 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
Response:	NONE

5.2 List of faults and alarms

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

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

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

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
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
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
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)

5.2 List of faults and alarms

Message value:	-
Component:	Motor
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
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
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. See also: p2179 (Output load identification current limit)
Remedy:	- Check the motor feeder cables. - Reduce the threshold value (p2179), e.g. for synchronous motors. - 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)
Acknowledgment upon F:	IMMEDIATELY

F07936 Drive: load failure

Message class:	Application/technological function faulted (17)
Message value:	-

Component: Motor
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
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

F07950 (A) Drive: Incorrect motor parameter

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Message value: Parameter: %1
Component: None
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.
The 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

5.2 List of faults and alarms

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

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

Response: NONE

Acknowledgment: IMMEDIATELY

Cause: Connect the original motor, switch on the converter again (POWER ON) and exit quick commissioning. Or: set p0300 = 10100, without recommissioning (only if the motor data have not changed). 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.
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 = 10100, without recommissioning (only if the motor data have not changed).
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

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
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: $0.0 < p3820 < p3821 < \dots < p3829 \leq p0322 \text{ or } p1082, \text{ if } p0322 = 0$ 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: $0 \leq p3830, p3831 \dots p3839 \leq r0333$ 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
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).

5.2 List of faults and alarms

F07963 Drive: Record friction characteristic canceled

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Message value: Parameter: %1

Component: None

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 (p0504, 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 points along the friction characteristic (automatic parameterization).

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 points along the friction characteristic (automatic parameterization).

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

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

Response: OFF2

Acknowledgment: IMMEDIATELY

5.2 List of faults and alarms

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

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
Response:	OFF2 (NONE)
Acknowledgment:	IMMEDIATELY

5.2 List of faults and alarms

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
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
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
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.

5.2 List of faults and alarms

A07980	Drive: Rotating measurement activated
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Message value:	-
Component:	None
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
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 signal)
F07982	Drive: Rotating measurement encoder test
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Message value:	%1
Component:	None
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
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.

5.2 List of faults and alarms

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
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
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.

5.2 List of faults and alarms

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

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

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

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
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
Response:	OFF2 (NONE, OFF1)
Acknowledgment:	IMMEDIATELY

5.2 List of faults and alarms

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 Z_n .
	3: Identified rotor resistance lies outside the expected range 0.1 ... 100% of Z_n .
	4: Identified stator reactance lies outside the expected range 50 ... 500 % of Z_n .
	5: Identified magnetizing reactance lies outside the expected range 50 ... 900 % of Z_n .
	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 Z_n .
	8: Identified stator leakage reactance lies outside the expected range 2 ... 50% of Z_n .
	9: Identified rotor leakage reactance lies outside the expected range 2 ... 50% of Z_n .
	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:
	$Z_n = V_{mot,nom} / \sqrt{3} / I_{mot,nom}$

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 = 0)

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

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

Response: NONE

Acknowledgment: NONE

5.2 List of faults and alarms

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

F08000 (N, A) TB: +/-15 V power supply faulted

Message class: Supply voltage fault (undervoltage) (3)
Message value: %1
Component: Controller Extension (CX)
Response: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowledgment: IMMEDIATELY
Cause: Terminal Board 30 detects an incorrect internal power supply voltage.
Fault value (r0949, interpret decimal):
0: Error when testing the monitoring circuit.
1: Fault in normal operation.

Remedy:
- Replace Terminal Board 30.
- Replace the converter.

Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

F08010 (N, A) TB: Analog-digital converter

Message class: Hardware/software error (1)
Message value: -
Component: Controller Extension (CX)
Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Acknowledgment: IMMEDIATELY
Cause: The analog/digital converter on Terminal Board 30 has not supplied any converted data.

Remedy:
- Check the power supply.
- Replace Terminal Board 30.

Response upon: N: NONE
Acknowl. upon N: NONE
Response upon: A: NONE
Acknowl. upon A: NONE

A08560 IE: Syntax error in configuration file

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Message value: -
Component: None
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
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
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
Response: NONE
Acknowledgment: NONE

5.2 List of faults and alarms

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
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
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 PROFlenergy energy-saving mode active

Message class:	Communication error to the higher-level control system (9)
Message value:	%1

Component:	None
Response:	NONE
Acknowledgment:	NONE
Cause:	The PROFlenergy energy-saving mode is active Alarm value (r2124, interpret decimal): Mode ID of the active PROFlenergy energy-saving mode. See also: r5600 (PROFlenergy 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 PROFlenergy 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)
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)

5.2 List of faults and alarms

Message value:	-
Component:	Control Unit (CU)
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)
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)
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 drive unit.

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)
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)
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 drive unit.
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
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The power unit has detected an overcurrent condition.

- Closed-loop control is incorrectly parameterized.
- High discharge and post-charging currents for line supply 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 bit-serial):
Bit 0: Phase U.
Bit 1: Phase V.
Bit 2: Phase W.

5.2 List of faults and alarms

- Remedy:**
- Check the parameterization of the closed-loop control
 - Check the line supply 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

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.

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 supply 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

Response: OFF2

Acknowledgment: IMMEDIATELY

Cause: The power unit has detected an undervoltage condition in the DC link.

- Line supply failure.
- Line supply voltage below the permissible value.
- Line supply infeed failed or interrupted.
- Line phase interrupted.

- Remedy:**
- Check the line supply voltage.
 - Check the line supply infeed and observe the fault messages relating to it (if there are any).
 - Check the line supply phases.
 - Check the line 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

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

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 load duty cycle was not maintained.

Fault value (r0949, interpret decimal):

I2t [100 % = 16384].

- Remedy:**
- Reduce the continuous load.
 - Adapt the load 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

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.

5.2 List of faults and alarms

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)

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)

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)

Acknowled. upon F: IMMEDIATELY

F29011 Infeed power unit: Line phase failure in the main circuit

Message class: Network fault (2)

Message value: %1

Variant: G220 Clean Power

Component: Power Unit

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
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 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
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
Response: OFF2

5.2 List of faults and alarms

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
Response:	OFF2
Acknowledgment:	IMMEDIATELY
Cause:	A configuration is requested that is not supported by the power unit. Fault value (r0949, interpret hexadecimal): yyyyxxx 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
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
Response:	OFF2
Acknowledgment:	POWER ON
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 supply of the gating module for the power semiconductors (24 V). - Check the power cable connections. - Select the defective semiconductor and replace.

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
Response:	OFF2
Acknowledgment:	IMMEDIATELY

5.2 List of faults and alarms

Cause: The temperature difference between the power semiconductor involved and the heat sink has exceeded the permissible fault threshold.

- The permissible load 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 load 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

Response: OFF2

Acknowledgment: IMMEDIATELY

Cause: The chip temperature of the power semiconductor involved has exceeded the permissible fault threshold.

- The permissible load 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 load 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)

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

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 supply voltage connected.
- 2) The line contactor/line side switch has not been closed.
- 3) The line supply voltage is too low.
- 4) Line supply 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)

5.2 List of faults and alarms

Remedy:	In general: - Check the line supply voltage at the input terminals. - Check the line supply 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
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
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
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
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
Response:	NONE
Acknowledgment:	NONE

5.2 List of faults and alarms

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. Alarm value (r2124, interpret binary): Bit 0 = 1: Overtemperature in the control electronics area. Bit 1 = 1: Overtemperature in the power electronics area. Bit 2 = 1: Overtemperature in the processor area. Bit 3 = 1: Overtemperature in the processor area. Bit 4 = 1: Overtemperature when the internal fan is defective. Bit 5 = 1: Intake air overtemperature.
Remedy:	- Check the ambient 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
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
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. Fault value (r0949, interpret binary): Bit 0 = 1: Overtemperature in the control electronics area. Bit 1 = 1: Overtemperature in the power electronics area. Bit 2 = 1: Overtemperature in the processor area. Bit 3 = 1: Overtemperature in the processor area. Bit 4 = 1: Overtemperature when the internal fan is defective. Bit 5 = 1: Intake air overtemperature.

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
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
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
Response: NONE
Acknowledgment: NONE

5.2 List of faults and alarms

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 heat sink fan wear counter), r7737 (Power unit auxiliary fan 1 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
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
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

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

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

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

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.

5.2 List of faults and alarms

F29053 Infeed FPGA data error

Message class: Hardware/software error (1)
Message value: %1
Variant: G220 Clean Power
Component: Power Unit
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
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: Network fault (2)
Message value: %1
Variant: G220 Clean Power
Component: Power Unit
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: %1
Variant: G220 Clean Power
Component: Power Unit
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 decimal):
0: Feedback signal of the fan signals a fault
1: Internal communication error to the fan

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
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
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

5.2 List of faults and alarms

Variant:	G220 Clean Power
Component:	Power Unit
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
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
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.

F29105 Infeed power unit: Actual value sensing error

Message class:	Power electronics faulted (5)
Message value:	-
Variant:	G220 Clean Power
Component:	Power Unit
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
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 load 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
Response:	NONE
Acknowledgment:	NONE

5.2 List of faults and alarms

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 load 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

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

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

Acknowled. upon N: NONE

A29256 Infeed power unit: Overload I2t

Message class: Power electronics faulted (5)
Message value: -
Variant: G220 Clean Power
Component: Power Unit
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 load 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: Hardware/software error (1)
Message value: -
Variant: G220 Clean Power
Component: Power Unit
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
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
Response: NONE
Acknowledgment: NONE

5.2 List of faults and alarms

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 wobulation in bit p13810.2 and activate again.
- Carry out a POWER ON (switch-off/switch-on).

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

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)

Acknowled. upon F: IMMEDIATELY

Response upon: N: NONE

Acknowled. 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

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

Acknowled. 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)

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 receive 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

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

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

5.2 List of faults and alarms

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
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
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
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 receive telegram does not match the receive list.

5 (= 05 hex):

The type of the receive 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 receive telegram is set.

16 (= 10 hex):

The receive 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

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.

5.2 List of faults and alarms

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

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

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
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
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
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 receive telegram is not set.
Remedy: - Deselect functions that are not required.
- Replace the component involved (power unit, converter).

5.2 List of faults and alarms

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)

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

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 receive telegram does not match the receive list. xx = 5 (= 05 hex): The type of the receive 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 receive telegram is too early. xx = 17 (= 11 hex): CRC error and the receive 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 receive 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 receive telegram is too early. xx = 20 (= 14 hex): The length of the receive telegram does not match the receive list and the receive telegram is too early. xx = 21 (= 15 hex): The type of the receive telegram does not match the receive list and the receive 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 receive telegram is too early. xx = 25 (= 19 hex): The error bit in the receive telegram is set and the receive 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
Response:	OFF2
Acknowledgment:	IMMEDIATELY

5.2 List of faults and alarms

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 power supply voltage for the components has failed.

Remedy:

- Carry out a POWER ON (switch-off/switch-on).
- Check the power 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

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 receive telegram not set and the receive 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 power 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

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

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

Response: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)

5.2 List of faults and alarms

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

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 cables whose length is the same as or as close as possible to the length of the original cables should be used (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

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

Acknowledgment upon N: NONE

Response upon: A: NONE

Acknowled. 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
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
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
Response: NONE
Acknowledgment: NONE

5.2 List of faults and alarms

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: - Ensure that the sensor is connected correctly.
- Replace the sensor.

Response upon: F: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)

Acknowled. upon F: IMMEDIATELY

A29930 (N) Infeed power unit: Component trace has saved data

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Message value: -

Variant: G220 Clean Power

Component: Power Unit

Response: NONE

Acknowledgment: NONE

Cause:

Remedy:

Response upon: N: NONE

Acknowled. upon N: NONE

F29950 Infeed power unit: Internal software error

Message class: Hardware/software error (1)

Message value: %1

Variant: G220 Clean Power

Component: Power Unit

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

Response: NONE

Acknowledgment: NONE

Cause: An alarm 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

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 bit-serial):
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 - If required, carry out commissioning.
- 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 supply 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 supply phases.

5.2 List of faults and alarms

F30002	Power unit: DC link voltage overvoltage
Message class:	DC link overvoltage (4)
Message value:	%1
Component:	Power Unit
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 supply 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
Response:	OFF2
Acknowledgment:	IMMEDIATELY
Cause:	The power unit has detected an undervoltage condition in the DC link. - Line supply failure. - Line supply voltage below the permissible value. - Line supply 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 supply voltage. - Check the line supply infeed and observe the fault messages relating to it (if there are any). - Check the line supply phases. - Check the line supply voltage setting (p0210). Note: The ready signal for the infeed r0863 must be interconnected to the associated inputs r0864 of the drive. 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
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

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 load 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 load 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)

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)

Response: NONE

5.2 List of faults and alarms

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)

Acknowled. upon F: IMMEDIATELY

F30011 Power unit: Line phase failure in main circuit

Message class: Network fault (2)

Message value: %1

Component: Power Unit

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

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 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
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
Response: OFF2 (NONE, OFF1, OFF3)
Acknowledgment: IMMEDIATELY

5.2 List of faults and alarms

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:	Network fault (2)
Message value:	%1
Component:	Power Unit
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 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
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
Response:	OFF2
Acknowledgment:	IMMEDIATELY

5.2 List of faults and alarms

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)

F30021 Power unit: Ground fault

Message class:	Ground fault / inter-phase short-circuit detected (7)
Message value:	%1
Component:	Power Unit
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
Response:	OFF2
Acknowledgment:	POWER ON

Cause:	In the power unit, the monitoring of the collector-emitter voltage (U_{ce}) of the semiconductor has responded. Possible causes: - Fiber-optic cable interrupted. - 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 fiber-optic cable and if required, replace. - Check the power supply for the power semiconductor gating (24 V). - Check the power cable connections. - Select the defective semiconductor and replace.

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
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 load 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 load 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
Response:	OFF2
Acknowledgment:	IMMEDIATELY

5.2 List of faults and alarms

Cause: The chip temperature of the power semiconductor involved has exceeded the permissible fault threshold.

- The permissible load 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 load 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)

F30027 Power unit: Precharging DC link time monitoring

Message class: Infeed faulted (13)

Message value: Enable signals: %1, Status: %2

Component: Power Unit

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 supply voltage connected.
- 2) The line contactor/line side switch has not been closed.
- 3) The line supply voltage is too low.
- 4) Line supply 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 and/or fuse ruptured in the converter (only for booksize devices).

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 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)

5.2 List of faults and alarms

Remedy:

In general:

- Check the line supply voltage at the input terminals.
- Check the line supply voltage setting (p0210).

For booksize drive units, the following applies:

- 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 (r0863.0) 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 (r0070).

If the DC link voltage generated by the infeed (or external) is not displayed for the converter (r0070), then a fuse has ruptured in the converter.

See also: p0210 (Device supply voltage)

A30030 Power unit: Internal overtemperature alarm

Message class: Power electronics faulted (5)

Message value: %1

Component: Power Unit

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

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
- 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
- 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.

5.2 List of faults and alarms

- 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

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.

Alarm value (r2124, interpret binary):

Bit 0 = 1: Overtemperature in the control electronics area.
Bit 1 = 1: Overtemperature in the power electronics area.
Bit 2 = 1: Overtemperature in the processor area.
Bit 3 = 1: Overtemperature in the processor area.
Bit 4 = 1: Overtemperature when the internal fan is defective.
Bit 5 = 1: Intake air overtemperature.

- Remedy:**
- Check the ambient 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

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.

Fault value (r0949, interpret binary):

Bit 0 = 1: Overtemperature in the control electronics area.
Bit 1 = 1: Overtemperature in the power electronics area.
Bit 2 = 1: Overtemperature in the processor area.
Bit 3 = 1: Overtemperature in the processor area.
Bit 4 = 1: Overtemperature when the internal fan is defective.
Bit 5 = 1: Intake air overtemperature.

- 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

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 supply 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 supply 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

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

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

5.2 List of faults and alarms

A30042 (N)	Power unit: Fan has reached the maximum operating hours
Message class:	Power electronics faulted (5)
Message value:	%1
Component:	Power Unit
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 heat sink fan wear counter), r7737 (Power unit auxiliary fan 1 wear counter)
Response upon N:	NONE
Acknowledgment upon N:	NONE
F30043	Power unit: Overvolt 24 V
Message class:	Supply voltage fault (overvoltage) (3)
Message value:	%1
Component:	Power Unit
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
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

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

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

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

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.

5.2 List of faults and alarms

F30052 EEPROM data error

Message class: Hardware/software error (1)
Message value: %1
Component: Power Unit
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
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
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: Network fault (2)
Message value: %1
Component: Power Unit
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: %1

Component: Power Unit

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 decimal):

0: Feedback signal of the fan signals a fault

1: Internal communication error to the fan

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

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

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.

5.2 List of faults and alarms

A30065 (F, N) Voltage measured values not plausible

Message class: Power electronics faulted (5)
Message value: %1
Component: Power Unit
Response: NONE
Acknowledgment: NONE
Cause: The voltage measurement is not supplying any plausible values
 Alarm value (r2124, interpret bit-serial):
 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
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
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

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

F30105 PU: Actual value sensing fault

Message class: Power electronics faulted (5)

Message value: -

Component: Power Unit

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

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 load 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

Response: NONE

Acknowledgment: NONE

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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 load 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

Acknowled. 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

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):

yyyyxxx 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 load 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

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):

yyyyxxx 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
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 load 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
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 load 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
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 load 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 load duty cycle.
See also: r0206 (Rated power unit power), p0307 (Rated motor power)

F30260 Power unit: Fault in the driver supply for the power semiconductor

Message class: Hardware/software error (1)
Message value: -
Component: Power Unit
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.

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F30262 Power unit: Braking chopper defective

Message class: Power electronics faulted (5)
Message value: -
Component: Power Unit
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
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
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
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

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
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 load 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
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The fault threshold for the active power overload of the power unit has been exceeded.
The permissible load 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 load duty cycle.
See also: r0206 (Rated power unit power), p0307 (Rated motor power)

F30314 Power unit: 24 V power supply overloaded by the converter

Message class: Supply voltage fault (undervoltage) (3)
Message value: -
Component: Power Unit
Response: OFF2
Acknowledgment: IMMEDIATELY
Cause: The 24 V power supply is overloaded by the converter.
An external 24V power supply is not connected to the converter via X124.
Remedy: Connect an external 24V power supply to the converter via X124.

5.2 List of faults and alarms

A30315 (F) Power unit: 24 V power supply overloaded by the converter

Message class: Supply voltage fault (undervoltage) (3)
Message value: -
Component: Power Unit
Response: NONE
Acknowledgment: NONE
Cause: The 24 V power supply is overloaded by the converter.
 An external 24V power supply is not connected to the converter via X124.
Remedy: Connect an external 24V power supply to the converter via X124.
Response upon F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

A30502 Power unit: DC link overvoltage

Message class: DC link overvoltage (4)
Message value: %1
Component: Power Unit
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
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 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
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

A30605 SI: Checksum error has occurred

Message class: Safety monitoring channel has identified an error (10)

Message value: %1

Component: None

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.

C30649 SI: Internal software error

Message class: Hardware/software error (1)

Message value: Module: %1, line: %2

Component: Power Unit

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.
- Re-commission the "Safety Integrated" function and carry out a POWER ON.
- Upgrade the converter firmware to a later version.
- Contact Technical Support.
- Replace the converter.

Note:

SI: Safety Integrated

N30800 (F) Power unit: Group signal

Message class: Power electronics faulted (5)

Message value: -

Component: Power Unit

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

Acknowledgment upon F: IMMEDIATELY

5.2 List of faults and alarms

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)
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 receive 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
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
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
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
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
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
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
Response: OFF2
Acknowledgment: IMMEDIATELY

5.2 List of faults and alarms

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 receive telegram does not match the receive list.

5 (= 05 hex):

The type of the receive 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 receive telegram is set.

16 (= 10 hex):

The receive 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

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
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
Response:	OFF2
Acknowledgment:	IMMEDIATELY

5.2 List of faults and alarms

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

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

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
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 receive 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)
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
Response: OFF2
Acknowledgment: IMMEDIATELY

5.2 List of faults and alarms

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 receive telegram does not match the receive list.

5 (= 05 hex):

The type of the receive 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 receive telegram is too early.

17 (= 11 hex):

CRC error and the receive 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 receive 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 receive telegram is too early.

20 (= 14 hex):

The length of the receive telegram does not match the receive list and the receive telegram is too early.

21 (= 15 hex):

The type of the receive telegram does not match the receive list and the receive 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 receive telegram is too early.

25 (= 19 hex):

The error bit in the receive telegram is set and the receive 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: power supply voltage failed

Message class: Supply voltage fault (undervoltage) (3)

Message value: Component number: %1, fault cause: %2

Component: Power Unit

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 power supply voltage for the components 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
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 receive telegram not set and the receive 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 power 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
Response:	OFF2
Acknowledgment:	IMMEDIATELY

5.2 List of faults and alarms

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

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

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

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 cables whose length is the same as or as close as possible to the length of the original cables should be used (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

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

5.2 List of faults and alarms

F30903 Power unit: I2C bus error occurred

Message class: Hardware/software error (1)
Message value: %1
Component: Power Unit
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
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
Response: NONE
Acknowledgment: NONE
Cause: An alarm 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

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 the zero mark monitoring is set in p0425 (rotary encoder) or p0424 (linear encoder).
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 distance between zero marks (p0424, p0425).
- If message output above 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

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 the zero mark monitoring is set in p0425 (rotary encoder) or p0424 (linear encoder).
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 output above 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)

5.2 List of faults and alarms

Message value:	R track: %1
Component:	Encoder 1
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
Acknowled. upon N:	NONE
Response upon: A:	NONE
Acknowled. 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
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.

5.2 List of faults and alarms

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

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):
 yyyxxxx 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 power 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 power 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
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
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

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

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

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

Response: ENCODER (IASC/DCBRK, NONE)

Acknowledgment: PULSE INHIBIT

5.2 List of faults and alarms

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
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
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
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
Response: ENCODER (IASC/DCBRK, NONE)
Acknowledgment: PULSE INHIBIT

5.2 List of faults and alarms

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
Acknowled. upon N:	NONE
Response upon: A:	NONE
Acknowled. 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
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
Acknowled. upon N:	NONE
Response upon: A:	NONE
Acknowled. 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
Response:	ENCODER (IASC/DCBRK, NONE)
Acknowledgment:	PULSE INHIBIT
Cause:	The error for track C/D is greater than $\pm 15^\circ$ mechanical or $\pm 60^\circ$ electrical or the error for the Hall signals is greater than $\pm 60^\circ$ 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
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 $\pm 18^\circ$ 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 $\pm 60^\circ$ 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)

5.2 List of faults and alarms

- 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

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 output above 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

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
Response: ENCODER (IASC/DCBRK, NONE)
Acknowledgment: PULSE INHIBIT

5.2 List of faults and alarms

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
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):
yyyyxxxx 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).

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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

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):
yxxxxxx 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).

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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

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

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

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

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

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

Response: NONE

Acknowledgment: NONE

5.2 List of faults and alarms

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 the zero mark monitoring is set in p0425 (rotary encoder) or p0424 (linear encoder). 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 distance between zero marks (p0424, 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
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 the zero mark monitoring is set in p0425 (rotary encoder) or p0424 (linear encoder). 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
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

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

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

5.2 List of faults and alarms

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
Response: NONE
Acknowledgment: NONE
Cause: The absolute encoder fault word includes alarm bits that have been set.
 Alarm value (r2124, interpret binary):
 yyyxxxx 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
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
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
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)

5.2 List of faults and alarms

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

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

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
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

5.2 List of faults and alarms

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 distance between zero marks (p0424, 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
Response:	NONE
Acknowledgment:	NONE
Cause:	The error for track C/D is greater than $\pm 15^\circ$ mechanical or $\pm 60^\circ$ electrical or the error for the Hall signals is greater than $\pm 60^\circ$ 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
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

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 distance between zero marks (p0424, 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

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)

5.2 List of faults and alarms

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

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

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

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

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

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

5.2 List of faults and alarms

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

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

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

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)

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 receive 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

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

Response: ENCODER (IASC/DCBRK, NONE)

5.2 List of faults and alarms

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 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

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

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
Response:	NONE
Acknowledgment:	NONE

5.2 List of faults and alarms

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
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
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
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 receive telegram does not match the receive list.

5 (= 05 hex):

The type of the receive 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 receive telegram is set.

16 (= 10 hex):

The receive 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
Response: ENCODER (IASC/DCBRK, NONE)
Acknowledgment: IMMEDIATELY

5.2 List of faults and alarms

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

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

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
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

5.2 List of faults and alarms

F31850 (N, A) Motor encoder: Encoder evaluation internal software error

Message class: Hardware/software error (1)

Message value: %1

Component: Sensor Module Encoder 1

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: Descriptive data from EEPROM incorrect.
 11500 ... 11899: Calibration data from EEPROM incorrect.
 11900 ... 11999: Configuration data from EEPROM incorrect.
 12000 ... 12008: communication with analog/digital converter faulted.
 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

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 receive 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

Acknowled. 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

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 receive telegram does not match the receive list.

5 (= 05 hex):

The type of the receive 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 receive telegram is too early.

17 (= 11 hex):

CRC error and the receive 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 receive 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 receive telegram is too early.

20 (= 14 hex):

The length of the receive telegram does not match the receive list and the receive telegram is too early.

21 (= 15 hex):

The type of the receive telegram does not match the receive list and the receive 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 receive telegram is too early.

25 (= 19 hex):

The error bit in the receive telegram is set and the receive 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, ...).

5.2 List of faults and alarms

Response upon: N: NONE

Acknowled. upon N: NONE

Response upon: A: NONE

Acknowled. 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

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 power supply voltage for the components 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

Acknowled. upon N: NONE

Response upon: A: NONE

Acknowled. 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

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 receive telegram not set and the receive 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 power 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

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
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
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
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 cables whose length is the same as or as close as possible to the length of the original cables should be used (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
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)

5.2 List of faults and alarms

Message value: %1
Component: Sensor Module Encoder 1
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
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
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

5.2 List of faults and alarms

F31912	Motor encoder: Device combination is not permissible
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Message value:	%1
Component:	Encoder 1
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 cycle, DP cycle and Safety cycle is not supported by the EnDat 2.2 converter. 2002: The resolution of the linear measuring unit does not match the pole pair width of the linear motor Pole pair width, minimum = $p0422 * 2^{20}$
Remedy:	For fault value = 1003, 1005, 1006: - Use a measuring unit that is permissible. For fault value = 2001: - Set a permissible cycle combination (if required, use standard settings). For fault value = 2002: - Use a measuring unit with a lower resolution (p0422).
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
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

Acknowled. 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

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

Acknowled. upon N: NONE

Response upon: A: NONE

Acknowled. upon A: NONE

F31950 Motor encoder: Internal software error

Message class: Hardware/software error (1)

Message value: %1

Component: Sensor Module Encoder 1

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

Response: NONE

Acknowledgment: NONE

Cause: An alarm 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)

5.2 List of faults and alarms

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

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 the zero mark monitoring is set in p0425 (rotary encoder) or p0424 (linear encoder).

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 distance between zero marks (p0424, p0425).
- If message output above 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

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 the zero mark monitoring is set in p0425 (rotary encoder) or p0424 (linear encoder).

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 output above 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

Acknowled. 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

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

Acknowled. upon N: NONE

Response upon: A: NONE

Acknowled. 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

Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)

Acknowledgment: PULSE INHIBIT

5.2 List of faults and alarms

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
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 power 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 power 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

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

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

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

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)

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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

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
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
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
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

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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

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

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
Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Acknowledgment: PULSE INHIBIT
Cause: The error for track C/D is greater than $\pm 15^\circ$ mechanical or $\pm 60^\circ$ electrical or the error for the Hall signals is greater than $\pm 60^\circ$ 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
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 $\pm 18^\circ$ 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 $\pm 60^\circ$ 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°

5.2 List of faults and alarms

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

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 output above 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

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
Response:	OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Acknowledgment:	PULSE INHIBIT

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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
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): xxxxxxxx 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).

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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

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):
yxxxxxx 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).

5.2 List of faults and alarms

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

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

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

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
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
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
Response: NONE
Acknowledgment: NONE

5.2 List of faults and alarms

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 the zero mark monitoring is set in p0425 (rotary encoder) or p0424 (linear encoder). 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 distance between zero marks (p0424, 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
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 the zero mark monitoring is set in p0425 (rotary encoder) or p0424 (linear encoder). 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
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

Acknowled. 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

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)

Acknowled. upon F: IMMEDIATELY

Response upon: N: NONE

Acknowled. 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

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)

Acknowled. upon F: IMMEDIATELY

Response upon: N: NONE

Acknowled. upon N: NONE

5.2 List of faults and alarms

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
Response: NONE
Acknowledgment: NONE
Cause: The absolute encoder fault word includes alarm bits that have been set.
 Alarm value (r2124, interpret binary):
 yyyxxxx 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
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
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
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.

5.2 List of faults and alarms

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

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

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
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
Response: NONE

5.2 List of faults and alarms

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 distance between zero marks (p0424, 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

Response: NONE

Acknowledgment: NONE

Cause: The error for track C/D is greater than $\pm 15^\circ$ mechanical or $\pm 60^\circ$ electrical or the error for the Hall signals is greater than $\pm 60^\circ$ 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

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
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 distance between zero marks (p0424, 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
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

5.2 List of faults and alarms

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

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

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

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
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
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

5.2 List of faults and alarms

Response upon: A: NONE

Acknowled. 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

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

Acknowled. upon N: NONE

Response upon: A: NONE

Acknowled. 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

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

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)

Acknowled. 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)

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 receive 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

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

Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)

Acknowledgment: POWER ON

5.2 List of faults and alarms

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 ($\geq$ V2.6 HF3, $\geq$ V4.3 SP2, $\geq$ V4.4).
- Check whether the permissible ambient temperature for the component is 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

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

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
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.

5.2 List of faults and alarms

Response upon F: NONE (OFF1, OFF2, OFF3)

Acknowled. upon F: IMMEDIATELY

Response upon N: NONE

Acknowled. 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

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

Acknowled. upon N: NONE

Response upon A: NONE

Acknowled. 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

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

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 receive telegram does not match the receive list.

5 (= 05 hex):

The type of the receive 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 receive telegram is set.

16 (= 10 hex):

The receive 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

Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)

Acknowledgment: IMMEDIATELY

5.2 List of faults and alarms

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

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

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

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

5.2 List of faults and alarms

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: Descriptive data from EEPROM incorrect.
11500 ... 11899: Calibration data from EEPROM incorrect.
11900 ... 11999: Configuration data from EEPROM incorrect.
12000 ... 12008: communication with analog/digital converter faulted.
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
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 receive 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
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 receive telegram does not match the receive list.

5 (= 05 hex):

The type of the receive 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 receive telegram is too early.

17 (= 11 hex):

CRC error and the receive 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 receive 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 receive telegram is too early.

20 (= 14 hex):

The length of the receive telegram does not match the receive list and the receive telegram is too early.

21 (= 15 hex):

The type of the receive telegram does not match the receive list and the receive 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 receive telegram is too early.

25 (= 19 hex):

The error bit in the receive telegram is set and the receive 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: power supply voltage failed

Message class: Supply voltage fault (undervoltage) (3)
Message value: Component number: %1, fault cause: %2
Component: Sensor Module Encoder 2
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 power supply voltage for the components 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
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 receive telegram not set and the receive 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 power 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

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

Response: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)

Acknowledgment: IMMEDIATELY

5.2 List of faults and alarms

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

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
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 cables whose length is the same as or as close as possible to the length of the original cables should be used (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
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
Response: NONE
Acknowledgment: NONE

5.2 List of faults and alarms

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

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

5.2 List of faults and alarms

F32912	Encoder 2: Device combination is not permissible
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Message value:	%1
Component:	Encoder 2
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 cycle, DP cycle and Safety cycle is not supported by the EnDat 2.2 converter. 2002: The resolution of the linear measuring unit does not match the pole pair width of the linear motor Pole pair width, minimum = $p0422 * 2^{20}$
Remedy:	For fault value = 1003, 1005, 1006: - Use a measuring unit that is permissible. For fault value = 2001: - Set a permissible cycle combination (if required, use standard settings). For fault value = 2002: - Use a measuring unit with a lower resolution (p0422).
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
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 multitrans range is not required.
Response upon: F:	NONE (IASC/DCBRK)
Acknowled. upon F:	IMMEDIATELY

Response upon: N: NONE

Acknowled. 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

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

Acknowled. upon N: NONE

Response upon: A: NONE

Acknowled. upon A: NONE

F32950 Encoder 2: Internal software error

Message class: Hardware/software error (1)

Message value: %1

Component: Sensor Module Encoder 2

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

Response: NONE

Acknowledgment: NONE

Cause: An alarm 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.

5.2 List of faults and alarms

Response upon: F: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)

Acknowled. upon F: IMMEDIATELY

Response upon: N: NONE

Acknowled. upon N: NONE

F34803 VSM: Memory test

Message class: Hardware/software error (1)

Message value: -

Component: Voltage Sensing Module (VSM)

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)

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 maintained.
- Replace the Voltage Sensing Module.

Response upon: N: NONE

Acknowled. upon N: NONE

Response upon: A: NONE

Acknowled. upon A: NONE

F34805 (N, A) VSM: EEPROM checksum error

Message class: Hardware/software error (1)

Message value: %1

Component: Voltage Sensing Module (VSM)

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 maintained.
- Replace the Voltage Sensing Module (VSM).

Response upon: N: NONE

Acknowled. upon N: NONE

Response upon: A: NONE

Acknowled. upon A: NONE

F34806 VSM: Initialization

Message class: Hardware/software error (1)

Message value: -

Component: Voltage Sensing Module (VSM)
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)
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)
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)
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

5.2 List of faults and alarms

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)

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)

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)

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: - Ensure 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)
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)
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

C35550 SMT: Motor temperature fault threshold exceeded

Message class: Safety monitoring channel has identified an error (10)
Message value: -
Component: Motor
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).
The drive must remain in the STO state for 60 seconds, after which acknowledgment is possible.
Remedy: - Reduce the motor load.
- Check the ambient temperature and the motor ventilation.
- Check the wiring and temperature sensor connection.

5.2 List of faults and alarms

A35552 SMT: Motor temperature alarm threshold exceeded

Message class: Safety monitoring channel has identified an error (10)
Message value: -
Component: Motor
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)
Response: OFF2
Acknowledgment: IMMEDIATELY
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)
Response: OFF2
Acknowledgment: IMMEDIATELY
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
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).
Acknowledgment is only possible if the short-circuit has been removed for at least 60 seconds. The drive remains in the STO state during this time.

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)

Response: OFF2

Acknowledgment: IMMEDIATELY

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)

Response: OFF2

Acknowledgment: IMMEDIATELY

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)

Response: OFF2

Acknowledgment: IMMEDIATELY

Cause: The module temperature of the OM-SMT has exceeded the upper 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.

5.2 List of faults and alarms

C35561	SMT: Error for data cross-check
Message class:	Safety monitoring channel has identified an error (10)
Message value:	-
Component:	Terminal Module (TM)
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)
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)
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)
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.

C35567	SMT: Communication error with converter
Message class:	Safety monitoring channel has identified an error (10)
Message value:	%1
Component:	Terminal Module (TM)

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
Response:	NONE
Acknowledgment:	NONE
Cause:	There is a short-circuit at the temperature sensor for alarm.
Remedy:	Check the wiring and temperature sensor connection.

F35950 TM: Internal software error

Message class:	Hardware/software error (1)
Message value:	%1
Component:	Terminal Module (TM)
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)
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

5.2 List of faults and alarms

A36211 (F, N) Hub: Overtemperature alarm component

Message class: Overtemperature of the electronic components (6)
Message value: %1
Component: Terminal Board (TB)
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)
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)
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)
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)
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 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)
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 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)

5.2 List of faults and alarms

Message value:	New message: %1
Component:	Terminal Board (TB)
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)
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)
Response:	NONE
Acknowledgment:	NONE
Cause:	A alarm 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 IloT: Communications problem

Message class: Network fault (2)
Message value: -
Component: None
Response: NONE
Acknowledgment: NONE
Cause: The IloT module has an internal communications problem. It is not possible to transfer data to the EdgeBox.
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) IloT: Group signal

Message class: General drive fault (19)
Message value: -
Component: None
Response: NONE
Acknowledgment: NONE
Cause: The IloT module has detected at least one fault.
Remedy: Evaluation of other active messages.
Response upon F: NONE
Acknowl. upon F: IMMEDIATELY

A39801 (N) IloT: Sign-of-life missing

Message class: Internal (DRIVE-CLiQ) communication error (12)
Message value: Component number: %1, fault cause: %2
Component: Control Unit (CU)
Response: NONE
Acknowledgment: NONE
Cause: There is a DRIVE-CLiQ communication error between the converter and the IloT modules involved.
Error cause:
10 (= 0A hex):
The sign-of-life bit in the receive 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) IloT: Time slice overflow

Message class: Hardware/software error (1)
Message value: %1
Component: None
Response: NONE
Acknowledgment: NONE

5.2 List of faults and alarms

Cause: A time slice overflow has occurred on the IIoT module.
Fault value (r0949, interpret decimal):
xx: Time slice number xx

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

Response: NONE

Acknowledgment: IMMEDIATELY

Cause: A checksum error has occurred when reading-out the program memory on the IIoT 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 maintained.
- Replace the IIoT module.

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

Response: NONE

Acknowledgment: IMMEDIATELY

Cause: The internal parameter data on the IIoT module 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 maintained.
- Replace the IIoT module.

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

Response: NONE

Acknowledgment: IMMEDIATELY

Cause: There is a DRIVE-CLiQ communication error between the converter and the IIoT module 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 receive telegram does not match the receive list.

5 (= 05 hex):

The type of the receive 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 receive telegram is set.

16 (= 10 hex):

The receive 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

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.

5.2 List of faults and alarms

F39836	IloT 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
Response:	NONE
Acknowledgment:	IMMEDIATELY
Cause:	There is a DRIVE-CLiQ communication error between the converter and the IloT modules 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	IloT DRIVE-CLiQ: Component fault
Message class:	Internal (DRIVE-CLiQ) communication error (12)
Message value:	Component number: %1, fault cause: %2
Component:	None
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	IloT DRIVE-CLiQ: Cyclic data transfer error
Message class:	Internal (DRIVE-CLiQ) communication error (12)
Message value:	Component number: %1, fault cause: %2
Component:	None
Response:	NONE
Acknowledgment:	IMMEDIATELY

Cause: There is a DRIVE-CLiQ communication error between the converter and the IIoT modules 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
Response: NONE
Acknowledgment: IMMEDIATELY

Cause: There is a DRIVE-CLiQ communication error between the IIoT module 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 receive 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
Response: NONE
Acknowledgment: IMMEDIATELY

5.2 List of faults and alarms

Cause:	There is a DRIVE-CLiQ communication error between the IloT module 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 receive telegram does not match the receive list. 5 (= 05 hex): The type of the receive 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 receive telegram is too early. 17 (= 11 hex): CRC error and the receive 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 receive 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 receive telegram is too early. 20 (= 14 hex): The length of the receive telegram does not match the receive list and the receive telegram is too early. 21 (= 15 hex): The type of the receive telegram does not match the receive list and the receive 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 receive telegram is too early. 25 (= 19 hex): The error bit in the receive telegram is set and the receive 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 IloT: Supply voltage failed

Message class:	Supply voltage fault (undervoltage) (3)
Message value:	Component number: %1, fault cause: %2
Component:	None
Response:	OFF1 (OFF2)
Acknowledgment:	IMMEDIATELY
Cause:	The component involved has signaled that the 24 V supply has failed. Error cause: 9 (= 09 hex): The power supply voltage for the components 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
Response: NONE
Acknowledgment: IMMEDIATELY
Cause: There is a DRIVE-CLiQ communication error between the IIoT module involved and the converter.
 The nodes do not send and receive in synchronism.
 Error cause:
 26 (= 1A hex):
 Sign-of-life bit in the receive telegram not set and the receive 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
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
Response: NONE

5.2 List of faults and alarms

Acknowledgment: IMMEDIATELY

Cause: A fault was detected on the DRIVE-CLiQ component (IloT module) 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 IloT 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

Response: NONE

Acknowledgment: IMMEDIATELY

Cause: There is a DRIVE-CLiQ communication error between the IloT module 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 IloT DRIVE-CLiQ (CU): Inconsistent component properties

Message class: Internal (DRIVE-CLiQ) communication error (12)

Message value: Component number: %1

Component: None

Response: NONE

Acknowledgment: IMMEDIATELY

Explanation of the message value: For %1
Component in target topology

Cause: The properties of the DRIVE-CLiQ component (IloT module), 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) IloT: Unknown fault

Message class: General drive fault (19)
Message value: New message: %1
Component: None
Response: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowledgment: IMMEDIATELY
Cause: A fault occurred on the IloT 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 IloT 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

F39950 IloT: Internal software error

Message class: Hardware/software error (1)
Message value: %1
Component: None
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 IloT module to a later version.
- Contact Technical Support.

A39999 (F, N) IloT: Unknown alarm

Message class: General drive fault (19)
Message value: New message: %1
Component: None
Response: NONE
Acknowledgment: NONE
Cause: An alarm occurred on the IloT 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.
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 IloT 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

5.2 List of faults and alarms

Acknowl. upon N: NONE

Further information

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