SINAMICS G120

Control Units CU240B-2
Control Units CU240E-2

Parameter Manual · 01/2011

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SINAMICS G120
Control Units CU240B/E-2

Parameter Manual

Valid for Control Units	Firmware version
CU240B-2	4.4
CU240B-2 DP	4.4
CU240E-2	4.4
CU240E-2 DP	4.4
CU240E-2 F	4.4
CU240E-2 DP F	4.4

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01/2011

Safety Guidelines

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

with a safety alert symbol, indicates that minor personal injury **can** result if proper precautions are not taken.

Caution

without a safety alert symbol, indicates that property damage can result if proper precautions are not taken.

Notice

indicates that an unintended result or situation can occur if the corresponding information is not taken into account.

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 device/system may only be set up and used in conjunction with this documentation. Commissioning and operation of a device/system may only be performed by **qualified personnel**. Within the context of the safety notes in this documentation qualified persons are defined as persons who are authorized to commission, ground and label devices, systems and circuits in accordance with established safety practices and standards.

Prescribed Usage of Siemens Products

Note the following:

Warning

This device may only be used for the applications described in the catalog or the technical description and only in connection with devices or components from other manufacturers which have been approved or recommended by Siemens.

Correct, reliable operation of the product requires proper transport, storage, positioning and assembly as well as careful operation and maintenance.

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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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Parameters 1

Contents

1.1 Introduction to Parameters

1.1.1 Explanation of list of parameters

The layout of the parameter description is as follows (example only).

Index BICO (if available)

r0068[0...1] **CO: Absolute current actual value / I_act abs val**

	Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: -	**Scaling:** p2002	**Data set: -**
	Unit group: 6_2	**Unit selection:** p0505	
	Min	**Max**	**Factory setting**
	- [Arms]	- [Arms]	- [Arms]

Fig. 1-1 Read-only parameter

Index BICO (if available)

p0700[0...n] **Command source selection / Cmd src sel**

CU240E-2	**Access level:** 1	**Calculated:** -	**Data type:** Integer16
CU240E-2 F	**Can be changed:** T	**Scaling:** -	**Data set:** CDS, p0170
	Unit group:-	**Unit selection:** -	
	Min	**Max**	**Factory setting**
	0	184	0
CU/PM variants			

Fig. 1-2 Write parameter

Parameter number

Indicates the relevant parameter number. The numbers used are 4 to 5-digit numbers. Numbers prefixed with an “r” indicate that the parameter is a “read-only” parameter, which displays a particular value but cannot be changed directly by specifying a different value via this parameter number.

All other parameters are prefixed with a “p”. The values of these parameters can be changed directly in the range indicated by the “Min” and “Max” settings in the header. If these values have a physical unit, it is shown in brackets.

[index] indicates that the parameter is an indexed parameter and specifies the range of indices available.

.0...15 indicates that the parameter has several bits, which can be evaluated or connected individually.

CU/PM variants

Indicates for which Control Units and/or Power Modules the parameter is valid. If no CUs or PMs are listed the parameter is valid for all variants.

Parameter text (Long name/Short name)

Indicates the name of the relevant parameter.

Certain parameter names include the following abbreviated prefixes: BI, BO, CI, CO and CO/BO followed by a colon.

These abbreviations have the following meanings:

BI	=	P9999 (0)	Binector Input, i.e. parameter selects the source of a binary signal
BO	=	r9999	Binector Output, i.e. parameter connects as a binary signal
CI	=	r9999 (999:9)	Connector Input, i.e. parameter selects the source of an analog signal
CO	=	r9999 [99]	Connector Output, i.e. parameter connects as an analog signal
CO/BO	=	r9999 r9999	Connector/Binector Output, i.e. parameter connects as an analog signal and/or as a binary signal

CoBo.pdf

To make use of BICO you will need access to the full parameter list. At this level many new parameter settings are possible, including BICO functionality. BICO functionality is a different, more flexible way of setting and combining input and output functions.

The BICO system allows complex functions to be programmed. Boolean and mathematical relationships can be set up between inputs (digital, analog, serial etc.) and outputs (inverter current, frequency, analog output, relays, etc.).

At BI and CI parameters the parameter number is specified under Factory setting with which this parameter is connected. In this case the Min and Max values have dashes.

Access level

Indicates the level of user access. For the parameters of all variants of Control Units CU240B-2 and CU240E-2 there is only one freely accessible access level effective. The parameters with the declaration "Access level 1“ to "Access level 3“ belong to them. Parameters with "Access level 4“ are service parameters and password protected.

Data type

The data types available are shown in the table below.

Table 1-1 Available data types

Notation	Meaning
Unsigned8 (U8)	8-bit unsigned
Unsigned16 (U16)	16-bit unsigned
Unsigned32 (U32)	32-bit unsigned
Integer16 (I16)	16-bit integer
Integer32 (I32)	32-bit integer
FloatingPoint32 (Float)	32-bit floating point number

The information of the data types for binector and connector inputs can be composed of two specifications (discreated by a slash):

- First specification: data type of the parameter
- Second specification: data type of the signal source preferably to be connected (binector or connector output)

Depending on the data type of the BICO input parameter (signal sink) and BICO output parameter (signal source) the following combinations are possible when creating BICO interconnections:

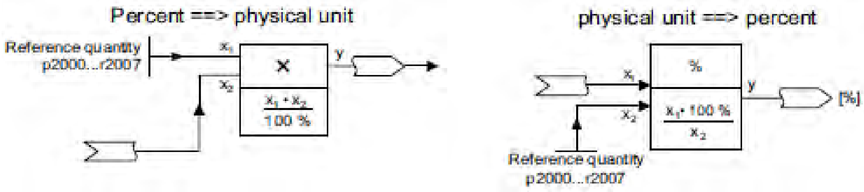
Table 1-2 Possible combinations of BICO interconnections

	BICO input parameter			
	CI parameter			BI parameter
BICO output parameter	**Unsigned32 / Integer16**	**Unsigned32 / Integer32**	**Unsigned32 / FloatingPoint32**	**Unsigned32 / Binary**
CO: Unsigned8	x	x	–	–
CO: Unsigned16	x	x	–	–
CO: Unsigned32	x	x	–	–
CO: Integer16	x	x	r2050	–
CO: Integer32	x	x	–	–
CO: FloatingPoint32	x	x	x	–
BO: Unsigned8	–	–	–	x
BO: Unsigned16	–	–	–	x
BO: Unsigned32	–	–	–	x
BO: Integer16	–	–	–	x
BO: Integer32	–	–	–	x
BO: FloatingPoint32	–	–	–	–
Legend:	x: BICO interconnection permitted –: BICO interconnection not permitted			

Scaling

Specification of the reference value with which a signal value is automatically converted for a BICO interconnection.

Reference quantities, corresponding to 100 %, are required for the statement of physical units as percentages. These reference quantities are entered in parameters p2000 ... p2007.



In addition to p2000 ... p2007 the following scalings are used:

- PERCENT 1.0 = 100 %
- 4000H 4000 hex = 100 %

Calculated

Specifies whether the parameter is influenced by automatic calculations.

p0340 defines the following calculations:

- p0340 = 1 contains the calculations of p0340 = 2, 3, 4, 5.
- p0340 = 2 calculates the motor parameters (p0350 ... p0360, p0625).
- p0340 = 3 contains the calculations of p0340 = 4, 5.
- p0340 = 4 only calculates the controller parameters.
- p0340 = 5 only calculates the controller limits.

Note:

For p3900 > 0, also p0340 = 1 is automatically called.

After p1900 = 1, 2, p0340 = 3 is automatically called.

Parameters referring to p0340 in the specification "Calculated" are dependent on the applied Power Module and motor. In this case, the values of "Factory setting" do not correspond to the actual values because these values are calculated during the commissioning. This also applies to the motor parameters.

Can be changed

Inverter state in which the parameter is changeable. Three states are possible:

- Commissioning C(x)
- Run U
- Ready to run T

In these states the parameter can be changed. One, two or all three states may be specified. If all three states are specified, it is possible to change the parameter setting in all three inverter states. (x) shows, that the parameter is only changeable when p0010 = x.

Data Set

Parameters which are dependent on a data set are identified as follows:

- **CDS (Command Data Set)**

They are always indexed with [0 ... n] (with n = 0 ... 3 depending on setting in p0170).

[0] = Command Data Set 0

[1] = Command Data Set 1

etc.

- **DDS (Drive Data Set)**

They are always indexed with [0 ... n] (with n = 0 ... 3 depending on setting in p0180).

[0] = Drive Data Set 0

[1] = Drive Data Set 1

etc.

- **MDS (Motor Data Set) and PDS (Power unit Data Set)**

They are always indexed with [0 ... n] (with n = 0 ... 3 depending on setting in p0180). The Motor Data Sets and Power unit Data Sets are allocated to the Drive Data Sets, i.e. they are automatically addressed with the selection of a Drive Data Set (e.g. Drive Data Set 1 includes Motor Data Set 1 and Power unit Data Set 1).

Data sets can only be applied and cleared when p0010 = 15 is set.

"Unit group" and "Unit selection"

For parameters where the unit can be switched, the specifications for "Unit group" and "Unit selection" determine the group to which this parameter belongs and with which parameter the unit can be switched over.

The standard unit of a parameter is specified in square parentheses after the values for "Min", "Max", and "Factory setting".

Min
Indicates the minimum value to which the parameter can be set.

Max
Indicates the maximum value to which the parameter can be set.

Factory setting
Indicates the default value, i.e. the value which applies if the user does not specify a particular value for the parameter (see also "Calculated").

Example:

Unit group: 7_1, unit selection: p0505

The parameter belongs to unit group 7_1 and the unit can be switched over using p0505.

All the potential unit groups and possible unit selections are listed below.

Table 1-3 Unit group (p0100)

Unit group	Unit selection for p0100 =			Reference value at %
	0	1	2	
7_4	Nm	lbf ft	Nm	-
14_6	kW	HP	kW	-
25_1	kgm^2	lb ft^2	kgm^2	-
27_1	kg	lb	kg	-
28_1	Nm/A	lbf ft/A	Nm/A	-
29_1	N/Arms	lbf/Arms	N/Arms	-

Table 1-4 Unit group (p0505)

Unit group	Unit selection for p0505 =				Reference value at %
	1	2	3	4	
2_1	Hz	%	Hz	%	p2000
3_1	rpm	%	rpm	%	p2000
5_1	Vrms	%	Vrms	%	p2001
5_2	V	%	V	%	p2001
5_3	V	%	V	%	p2001
6_2	Arms	%	Arms	%	p2002
6_5	A	%	A	%	p2002

Table 1-4 Unit group (p0505), continued

Unit group	Unit selection for p0505 =				Reference value at %
	1	2	3	4	
7_1	Nm	%	lbf ft	%	p2003
7_2	Nm	Nm	lbf ft	lbf ft	-
14_5	kW	%	HP	%	r2004
14_10	kW	kW	HP	HP	-
21_1	°C	°C	°F	°F	-
21_2	K	K	°F	°F	-
39_1	$1/s^2$	%	$1/s^2$	%	p2007

Table 1-5 Unit group (p0595)

Unit group	Unit selection for p0595 =		Reference value at %
	Value	Unit	
9_1	The values that can be set and the technological units are shown in p0595 (see Chapter 1.2).		

Description

Explanation of the parameter function.

Values

List of possible parameter values.

Recommendation

Information about recommended settings.

Index

The name and meaning of each individual index is specified for indexed parameters, except indexed parameters which belong to a data set (see "Data Set").

Bit array

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

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

Dependency

Conditions which need to be fulfilled with regard to this parameter. Also includes special effects which can occur between this parameter and others.

1.1.2 Numerical ranges of parameters

Note:

The following numerical ranges of the parameters describe a general overview of SINAMICS parameters. The specific parameters are listed in Chapter 1.2.

Table 1-6 Numerical ranges of parameters

Range		Description
from	to	
0000	0099	Operation and visualization
0100	0199	Commissioning
0200	0299	Power Module
0300	0399	Motor
0500	0599	Technology and units
0600	0699	Thermal motor protection and motor model, maximum current
0700	0799	Command sources and terminals on Control Unit
0800	0839	CDS, DDS data sets (e.g. switch over, copy)
0840	0879	Sequence control (e.g. source for ON/OFF1)
0880	0899	Control and status words
0900	0999	PROFIBUS/PROFIdrive
1000	1199	Setpoint channel
1200	1299	Functions (e.g. motor holding brake)
1300	1399	V/f control
1400	1799	Closed-loop control
1800	1899	Gating unit
1900	1999	Power Module and motor identification
2000	2099	Communication (PROFIBUS)
2100	2199	Faults and alarms, monitoring functions
2200	2399	Technology controller
3100	3299	Messages
3800	3860	Compound braking
3900	3999	Management parameters
7800	7899	EEPROM read/write parameters
8500	8599	Data and macro management
8800	8899	PROFIdrive
8900	8999	PROFINET, USB
9300	9399	Safety Integrated
9400	9499	Parameter consistency and storage
9500	9899	Safety Integrated
9900	9949	Topology
9950	9999	Diagnostics (internal)
10000	10199	Safety Integrated
20000	20399	Free Function Blocks (FFB)

1.2 List of Parameters

Product: SINAMICS G120 CU240, Version: 4402100, Language: eng
Objects: CU240B-2, CU240B-2 DP, CU240E-2, CU240E-2 DP, CU240E-2 DP F, CU240E-2 F

r0002 Drive operating display / Drv op_display

Access level: 2 | **Calculated:** - | **Data type:** Integer16
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	200	-

Description: Operating display for the drive.

Value:
0: Operation - everything enabled
10: Operation - set "enable setpoint" = "1" (p1142)
12: Operation - RFG frozen, set "RFG start" = "1" (p1141)
13: Operation - set "enable RFG" = "1" (p1140)
14: Operation - MotID, excit. running
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 active (p1230, p1231)
21: Ready for operation - set "Operation enable" = "1" (p0852)
22: Ready for operation - de-magnetizing running (p0347)
31: Ready for switching on - set "ON/OFF1" = "0/1" (p0840)
35: Switching on inhibited - carry out first commissioning (p0010)
41: Switching on inhibited - set "ON/OFF1" = "0" (p0840)
42: Switching on inhibited - set "OC/OFF2" = "1" (p0844, p0845)
43: Switching on inhibited - set "OC/OFF3" = "1" (p0848, p0849)
45: Switching on inhibited - rectify fault, acknowledge fault, STO
46: Switching on inhibited - exit comm mode (p0010)
70: Initialization
200: Wait for booting/partial booting

Dependency: Refer to: r0046

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

Note: OC: Operating condition

RFG: Ramp-function generator

COMM: Commissioning

MotID: Motor data identification

p0003 Access level / Acc_level

Access level: 1 | **Calculated:** - | **Data type:** Integer16
Can be changed: C, U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
3	4	3

Description: Sets the access level to read and write parameters.

Value:
3: Expert
4: Service

Note: Access level 3 (experts):

Expert know-how is required for these parameters (e.g. BICO parameterization).

Access level 4 (service):

For these parameters, it is necessary that authorized service personnel enter the appropriate password (p3950).

p0010 Drive commissioning parameter filter / Drv comm. par_filt

CU240B-2 CU240B-2 DP	**Access level:** 1	**Calculated:** -	**Data type:** Integer16
	Can be changed: C(1), T	**Scaling:** -	**Data set:** -
	Units group: -	**Unit selection:** -	
	Min 0	**Max** 49	**Factory setting** 1

Description: Sets the parameter filter to commission a drive.

Setting this parameter filters out the parameters that can be written into in the various commissioning steps.

Value:
0: Ready
1: Quick commissioning
2: Power unit commissioning
3: Motor commissioning
5: Technological application/units
15: Data sets
29: Only Siemens internal
30: Parameter reset
39: Only Siemens internal
49: Only Siemens internal

Dependency: Refer to: r3996

Notice: When the parameter is reset to a value of 0, short-term communication interruptions may occur.

Note: The drive can only be powered up outside the drive commissioning (inverter enable). To realize this, this parameter must be set to 0.

By setting p3900 to a value other than 0, the quick commissioning is completed, and this parameter is automatically reset to 0.

Procedure for "Reset parameter": Set p0010 to 30 and p0970 to 1.

Once the Control Unit has been booted up for the first time, the motor parameters suitable for the power unit have been defined, and the control parameters have been calculated accordingly, p0010 is automatically reset to 0.

p0010 = 3 is used for the subsequent commissioning of additional drive data sets (creating data sets: see p0010 = 15).

p0010 = 29, 39, 49: Only for internal Siemens use!

p0010 Drive commissioning parameter filter / Drv comm. par_filt

PM230	**Access level:** 1	**Calculated:** -	**Data type:** Integer16
CU240E-2	**Can be changed:** C(1), T	**Scaling:** -	**Data set:** -
CU240E-2 DP	**Units group:** -	**Unit selection:** -	
CU240E-2 DP F			
CU240E-2 F			
	Min 0	**Max** 49	**Factory setting** 1

Description: Sets the parameter filter to commission a drive.

Setting this parameter filters out the parameters that can be written into in the various commissioning steps.

Value:
0: Ready
1: Quick commissioning
2: Power unit commissioning
3: Motor commissioning
5: Technological application/units
15: Data sets
29: Only Siemens internal
30: Parameter reset
39: Only Siemens internal
49: Only Siemens internal

Dependency: Refer to: r3996

Notice: When the parameter is reset to a value of 0, short-term communication interruptions may occur.

Note: The drive can only be powered up outside the drive commissioning (inverter enable). To realize this, this parameter must be set to 0.

By setting p3900 to a value other than 0, the quick commissioning is completed, and this parameter is automatically reset to 0.

Procedure for "Reset parameter": Set p0010 to 30 and p0970 to 1.

Once the Control Unit has been booted up for the first time, the motor parameters suitable for the power unit have been defined, and the control parameters have been calculated accordingly, p0010 is automatically reset to 0.

p0010 = 3 is used for the subsequent commissioning of additional drive data sets (creating data sets: see p0010 = 15).

p0010 = 29, 39, 49: Only for internal Siemens use!

p0010 Drive commissioning parameter filter / Drv comm. par_filt

PM240	**Access level:** 1	**Calculated:** -	**Data type:** Integer16
PM250	**Can be changed:** C(1), T	**Scaling:** -	**Data set:** -
PM260	**Units group:** -	**Unit selection:** -	
CU240E-2			
CU240E-2 DP			
CU240E-2 DP F			
CU240E-2 F			
	Min	**Max**	**Factory setting**
	0	95	1

Description: Sets the parameter filter to commission a drive.

Setting this parameter filters out the parameters that can be written into in the various commissioning steps.

Value:

0: Ready
1: Quick commissioning
2: Power unit commissioning
3: Motor commissioning
5: Technological application/units
15: Data sets
29: Only Siemens internal
30: Parameter reset
39: Only Siemens internal
49: Only Siemens internal
95: Safety Integrated commissioning

Dependency: Refer to: r3996

Notice: When the parameter is reset to a value of 0, short-term communication interruptions may occur.

Note: The drive can only be powered up outside the drive commissioning (inverter enable). To realize this, this parameter must be set to 0.

By setting p3900 to a value other than 0, the quick commissioning is completed, and this parameter is automatically reset to 0.

Procedure for "Reset parameter": Set p0010 to 30 and p0970 to 1.

Once the Control Unit has been booted up for the first time, the motor parameters suitable for the power unit have been defined, and the control parameters have been calculated accordingly, p0010 is automatically reset to 0.

p0010 = 3 is used for the subsequent commissioning of additional drive data sets (creating data sets: see p0010 = 15).

p0010 = 29, 39, 49: Only for internal Siemens use!

p0014 Buffer memory mode / Buf mem mode

Access level: 3 | **Calculated:** - | **Data type:** Integer16

Can be changed: U, T | **Scaling:** - | **Data set:** -

Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	2	0

Description: Sets the mode for the buffer memory.

Value:
0: Save in a non-volatile fashion (RAM)
1: Buffer memory active (non-volatile)
2: Clear buffer memory

Dependency: If p0014 = 1, changes in the same parameter, as well as in following parameters will not be copied to the buffer memory:

Refer to: p0040, p0340, p0650, p0802, p0803, p0804, p0952, p0969, p0970, p0971, p0972, p1900, p1910, p1960, p2111, p3900, p3981

Refer to: A01066, A01067

Caution: For p0014 = 2, entries in the buffer memory are lost and cannot be retrieved.

Notice: After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

Note: The parameter is not influenced by setting the factory setting.

Re p0014 = 0:

Parameter changes are saved in the volatile memory (RAM).

Non-volatile storage from RAM to ROM is carried out in the following cases:

- p0971 = 1
- change from p0014 = 0 to 1

Re p0014 = 1:

With this setting, alarm A01066 followed by alarm A01067 can occur if parameters are continually changed via a fieldbus system.

Parameter changes are entered in the volatile memory (RAM) and also in the non-volatile buffer memory.

In the following cases, the entries in the buffer memory are transferred into the ROM and then the buffer memory is cleared:

- p0971 = 1
- power down/power up the Control Unit
- change from p0014 = 1 to 0

Re p0014 = 2:

The procedure to clear the entries in the buffer memory is initiated.

p0014 is automatically set to 0 after the entries have been cleared.

p0015 Macro drive unit / Macro drv unit

CU240B-2
CU240E-2
CU240E-2 F

Access level: 1 | **Calculated:** - | **Data type:** Unsigned32

Can be changed: C, C(1) | **Scaling:** - | **Data set:** -

Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	999999	12

Description: Runs the corresponding macro files.

The selected macro file must be available on the memory card/device memory.

Example:

p0015 = 6 --> the macro file PM000006.ACX is run.

Dependency: Refer to: p0700, p1000, p1500, r8570

Caution: When executing a specific macro, the corresponding programmed settings are made and become active.

Notice: After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

Note: The macros in the specified directory are displayed in r8570. r8570 is not in the expert list of the commissioning software.

Macros available as standard are described in the technical documentation of the particular product.

The parameter is not influenced by setting the factory setting.

p0015 Macro drive unit / Macro drv unit

CU240B-2 DP
CU240E-2 DP
CU240E-2 DP F

Access level: 1	**Calculated:** -	**Data type:** Unsigned32
Can be changed: C, C(1)	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min 0	**Max** 999999	**Factory setting** 7

Description: Runs the corresponding macro files.

The selected macro file must be available on the memory card/device memory.

Example:

p0015 = 6 --> the macro file PM000006.ACX is run.

Dependency: Refer to: p0700, p1000, p1500, r8570

Caution: When executing a specific macro, the corresponding programmed settings are made and become active.

Notice: After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

Note: The macros in the specified directory are displayed in r8570. r8570 is not in the expert list of the commissioning software.

Macros available as standard are described in the technical documentation of the particular product.

The parameter is not influenced by setting the factory setting.

r0018 Control Unit Firmware-Version / CU FW version

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min 0	**Max** 4294967295	**Factory setting** -

Description: Displays the firmware version of the Control Unit.

Dependency: Refer to: r0197, r0198

Note: Example:

The value 1010100 should be interpreted as V01.01.01.00.

r0020 Speed setpoint smoothed / n_set smth

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2000	**Data set:** -
Units group: 3_1	**Unit selection:** p0505	
Min - [rpm]	**Max** - [rpm]	**Factory setting** - [rpm]

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

Dependency: Refer to: r0060

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 (r0060).

r0021 CO: Actual speed smoothed / n_act smooth

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2000 | **Data set:** -
Units group: 3_1 | **Unit selection:** p0505

Min	Max	Factory setting
- [rpm]	- [rpm]	- [rpm]

Description: Displays the smoothed actual value of the motor speed.
Dependency: Refer to: r0022, 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 / n_act rpm smooth

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2000 | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [rpm]	- [rpm]	- [rpm]

Description: Displays the smoothed actual value of the motor speed.
r0022 is identical to r0021, however, it always has units of rpm and contrary to r0021 cannot be changed over.
Dependency: Refer to: 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 / f_outp smooth

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2000 | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [Hz]	- [Hz]	- [Hz]

Description: Displays the smoothed converter frequency.
Dependency: Refer to: 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 CO: Output voltage smoothed / U_outp smooth

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2001 | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the smoothed output voltage of the power unit.
Dependency: Refer to: 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 CO: DC link voltage smoothed / Vdc smooth

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2001 | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [V]	- [V]	- [V]

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

Dependency: Refer to: r0070

Notice: When measuring a DC link voltage < 200 V, for the Power Module (e.g. PM240) a valid measured value is not supplied. In this case, when an external 24 V power supply is connected, a value of approx. 24 V is displayed in the display parameter.

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).

r0026 sets itself to the lower value of the pulsating DC link voltage.

r0027 CO: Absolute actual current smoothed / I_act abs val smth

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2002 | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [Arms]	- [Arms]	- [Arms]

Description: Displays the smoothed absolute actual current value.

Dependency: Refer to: r0068

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

Note: Smoothing time constant = 300 ms

The signal is not suitable as a process quantity and may only be used as a display quantity.

The absolute current actual value is available smoothed (r0027) and unsmoothed (r0068).

r0028 Modulation depth smoothed / Mod_depth smth

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2002 | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [%]	- [%]	- [%]

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

Dependency: Refer to: 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 smooth

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2002 | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [Arms]	- [Arms]	- [Arms]

Description: Displays the smoothed field-generating actual current.

Dependency: Refer to: 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 smooth

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2002 | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [Arms]	- [Arms]	- [Arms]

Description: Displays the smoothed torque-generating actual current.

Dependency: Refer to: 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 / M_act smooth

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2003 | **Data set:** -
Units group: 7_1 | **Unit selection:** p0505

Min	Max	Factory setting
- [Nm]	- [Nm]	- [Nm]

Description: Displays the smoothed torque actual value.

Dependency: Refer to: 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 active current actual value is available smoothed (r0031) and unsmoothed (r0080).

r0032 CO: Active power actual value smoothed / P_actv_act smth

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** r2004 | **Data set:** -
Units group: 14_10 | **Unit selection:** p0505

Min	Max	Factory setting
- [kW]	- [kW]	- [kW]

Description: Displays the smoothed actual value of the active power.

Dependency: Refer to: 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

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the smoothed torque utilization as a percentage.

The torque utilization is obtained from the required smoothed torque in reference to the torque limit, scaled using p2196.

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

Note: Smoothing time constant = 100 ms

The signal is not suitable as a process quantity and may only be used as a display quantity.

The torque utilization is available smoothed (r0033) and unsmoothed (r0081).

For M_set total (r0079) > 0, the following applies:

- Required torque = M_set total
- Actual torque limit = M_max upper effective (r1538)

For M_set total (r0079) <= 0, the following applies:

- Required torque = - M_set total
- Actual torque limit = - M_max lower effective (r1539)

For the actual torque limit = 0, the following applies: r0033 = 100 %

For the actual torque limit < 0, the following applies: r0033 = 0 %

r0034 CO: Motor utilization / Motor utilization

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the motor utilization from the thermal I2t motor model.

Dependency: The motor utilization is only determined for permanent-magnet synchronous motors and if the I2t motor model is activated.

The motor utilization is formed from the ratio between the I2t motor model temperature (minus 40 Kelvin) and the reference value p0605 (motor overtemperature, fault threshold) - 40 Kelvin. If p0605 is reduced, r0034 increases and the motor temperature remains the same.

Refer to: p0611, p0612, p0615

Note: Smoothing time constant = 100 ms

The signal is not suitable as a process quantity and may only be used as a display quantity.

A value of r0034 = -200.0 % indicates an invalid display, for example, because the thermal I2t motor model was not activated or was incorrectly parameterized.

r0035 CO: Motor temperature / Mot temp

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2006	**Data set:** -
Units group: 21_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Displays 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 sensor is connected.
- for induction motors, the thermal motor model is activated (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.
- for synchronous motors, the thermal motor model is activated (p0601 = 0).

r0036 CO: Power unit overload I2t / PU overload I2t

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the power unit overload determined using the I2t calculation.

A current reference value is defined for the I2t monitoring of the power unit. It represents the current that can be conducted by the power unit 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 power unit is not exceeded, then an overload (0 %) is not displayed.

In the other case, the degree of thermal overload is calculated, whereby 100% results in a trip.

Dependency: Refer to: p0290, p0294

Refer to: F30005

r0037[0...19] CO: Power unit temperatures / PU temperatures

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2006	**Data set:** -
Units group: 21_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Displays the temperatures in the power unit.

Index:
[0] = Inverter
[1] = Depletion layer
[2] = Reserved
[3] = Reserved
[4] = Interior of power unit
[5] = Inverter 1
[6] = Reserved
[7] = Reserved
[8] = Reserved
[9] = Reserved
[10] = Reserved
[11] = Reserved
[12] = Reserved
[13] = Depletion layer 1
[14] = Reserved
[15] = Reserved
[16] = Reserved
[17] = Reserved
[18] = Reserved
[19] = Reserved

Note: The value of -200 indicates that there is no measuring signal.

r0038 Power factor smoothed / Cos phi smooth

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the smoothed actual power factor.

Note: Smoothing time constant = 300 ms

The signal is not suitable as a process quantity and may only be used as a display quantity.

Significance for the motor: Motor power factor

Significance for the infeed: Power factor at the connection point (p3470, p3471)

r0039 Energy consumption / Energy consumption

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
- [kWh]	- [kWh]	- [kWh]

Description: Displays the electrical energy used since the last reset.

Dependency: Refer to: p0040

p0040 Reset energy consumption display / Energy usage reset

Access level: 3	**Calculated:** -	**Data type:** Unsigned8
Can be changed: U, T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	1	0

Description: Setting to reset the energy consumption display (r0039).

Procedure:

Set p0040 = 0 --> 1

The display is reset and the parameter is automatically set to zero.

Dependency: Refer to: r0039

r0041 Energy usage saved / Energy usage saved

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
- [kWh]	- [kWh]	- [kWh]

Description: Displays the saved energy referred to 100 operating hours.

Dependency: Refer to: p0040

p0045 Smoothing time constant, display values / T_smth display

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0.00 [ms]	1000.00 [ms]	4.00 [ms]

Description: Sets the smoothing time constant for the following display values:

r0063[1], r0068[1], r0080[1], r0082[1].

r0046.0...31 CO/BO: Missing enable sig / Missing enable sig

Access level: 1 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

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

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	OFF1 enable missing	Yes	No	-
01	OFF2 enable missing	Yes	No	-
02	OFF3 enable missing	Yes	No	-
03	Operation enable missing	Yes	No	-
04	DC braking enable missing	Yes	No	-
10	Ramp-function generator enable missing	Yes	No	-
11	Ramp-function generator start missing	Yes	No	-
12	Setpoint enable missing	Yes	No	-
16	OFF1 enable internal missing	Yes	No	-
17	OFF2 enable internal missing	Yes	No	-
18	OFF3 enable internal missing	Yes	No	-
19	Pulse enable internal missing	Yes	No	-
20	DC braking internal enable missing	Yes	No	-
21	PU enab. missing	Yes	No	-
26	Drive inactive or not operational	Yes	No	-
27	De-magnetizing not completed	Yes	No	-
28	Brake open missing	Yes	No	-
30	Speed controller inhibited	Yes	No	-
31	Jog setpoint active	Yes	No	-

Dependency: Refer to: r0002

Note: The value r0046 = 0 indicates that all enable signals for this drive are present.

Bit 00 = 1 (enable signal missing), if:

- the signal source in p0840 is a 0 signal.
- there is a "switching on inhibited".

Bit 01 = 1 (enable signal missing), if:

- the signal source in p0844 or p0845 is a 0 signal.

Bit 02 = 1 (enable signal missing), if:

- the signal source in p0848 or p0849 is a 0 signal.

Bit 03 = 1 (enable signal missing), if:

- the signal source in p0852 is a 0 signal.

Bit 04 =1 (DC brake active) when:

- the signal source in p1230 has a 1 signal

Bit 10 = 1 (enable signal missing), if:

- the signal source in p1140 is a 0 signal.

Bit 11 = 1 (enable signal missing) if the speed setpoint is frozen, because:

- the signal source in p1141 is a 0 signal.
- the speed setpoint is entered from jogging and the two signal sources for jogging, bit 0 (p1055) and bit 1 (p1056) have a 1 signal.

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

- the signal source in p1142 is 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:

- commissioning mode is selected (p0010 > 0).
- there is an OFF2 fault response.
- the drive is not operational.

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:

- sequence control does not have a finished message.

Bit 20 = 1 (internal DC brake active), if:

- the drive is not in the state "Operation" or in "OFF1/3".
- the internal pulse enable is missing (r0046.19 = 0).

Bit 21 = 1 (enable signal missing), if:

- the power unit does not issue an enable signal (e.g. because DC link voltage is too low).
- the holding brake opening time (p1216) has still not expired.
- hibernation is active.

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

- the drive is not operational.

Bit 27 = 1 (enable signal missing), if:

- de-magnetization not completed.

Bit 28 = 1 (enable signal missing), if:

- the holding brake is closed or has still not been opened.

Bit 30 = 1 (speed controller inhibited), if one of the following reasons is present:

- 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 ident. routine and speed controller optimization / MotID and n_opt

Access level: 1	**Calculated:** -	**Data type:** Integer16
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	300	-

Description: Displays the actual status for the motor data identification (stationary measurement) and the speed/velocity controller optimization (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
195: Measurement q leakage inductance (part 1)
200: Rotating measurement selected
220: identification, leakage inductance
230: Identification, rotor time constant
240: Identification, stator inductance
250: Identification, stator inductance LQLD
270: Identification, stator resistance
290: Identification, valve lockout time
300: Stationary measurement selected

Note: Re r0047 = 300:

This value is also displayed if encoder calibration p1990 is selected.

r0050.0...1 CO/BO: Command Data Set CDS effective / CDS effective

Access level: 3	**Calculated:** -	**Data type:** Unsigned8
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

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

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	CDS eff., bit 0	ON	OFF	-
01	CDS eff., bit 1	ON	OFF	-

Dependency: Refer to: p0810, p0811, r0836

Note: The Command Data Set selected using a binector input (e.g. p0810) is displayed using r0836.

r0051.0...1 CO/BO: Drive Data Set DDS effective / DDS effective

Access level: 2	**Calculated:** -	**Data type:** Unsigned8
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

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

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DDS eff., bit 0	ON	OFF	-
01	DDS eff., bit 1	ON	OFF	-

Dependency: Refer to: p0820, p0821, r0837

Note: When selecting the motor data identification routine and the rotating measurement, the drive data set changeover is suppressed.

r0052.0...15 CO/BO: Status word 1 / ZSW 1

Access level: 2 **Calculated:** - **Data type:** Unsigned16

Can be changed: - **Scaling:** - **Data set:** -

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

Min	Max	Factory setting
-	-	-

Description: Displays status word 1.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Rdy for switch 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 reached	Yes	No	-
11	I, M, P limit reached	No	Yes	-
12	Motor holding brake open	Yes	No	-
13	Alarm motor overtemperature	No	Yes	-
14	Motor rotates forwards	Yes	No	-
15	Alarm drive converter overload	No	Yes	-

Caution: p2080 is used to define the signal sources of the PROFIdrive status word interconnection.

Note: The following status bits are displayed in r0052.

Bit 00: r0899 Bit 0

Bit 01: r0899 Bit 1

Bit 02: r0899 Bit 2

Bit 03: r2139 Bit 3 (or r1214 Bit 10, if 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 6

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 CO/BO: Status word 2 / ZSW 2

Access level: 2 **Calculated:** - **Data type:** Unsigned16

Can be changed: - **Scaling:** - **Data set:** -

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

Min	Max	Factory setting
-	-	-

Description: Displays status word 2.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
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	-

Caution: p2081 is used to define the signal sources of the PROFIdrive status word interconnection.

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 CO/BO: Control word 1 / STW 1

Access level: 2 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays control word 1.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	ON/OFF1	Yes	No	-
01	OC / OFF2	Yes	No	-
02	OC / OFF3	Yes	No	-
03	Operation enable	Yes	No	-
04	Ramp-function generator enable	Yes	No	-
05	Continue ramp-function generator	Yes	No	-
06	Speed setpoint enable	Yes	No	-
07	Acknowledge fault	Yes	No	-
08	Jog bit 0	Yes	No	3030
09	Jog bit 1	Yes	No	3030
10	Master ctrl by PLC	Yes	No	-
11	Direction reversal (setpoint)	Yes	No	-
13	Motorized potentiometer raise	Yes	No	-
14	Motorized potentiometer lower	Yes	No	-
15	CDS bit 0	Yes	No	-

Note: The following control bits are displayed in r0054:

Bit 00: r0898 Bit 0

Bit 01: r0898 Bit 1

Bit 02: r0898 Bit 2

Bit 03: r0898 Bit 3

Bit 04: r0898 Bit 4

Bit 05: r0898 Bit 5

Bit 06: r0898 Bit 6

Bit 07: r2138 Bit 7

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

Re bit 10:

If p0700 = 2 is set, bit 10 always shows "1".

r0055.0...15 CO/BO: Supplementary control word / Suppl STW

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays supplementary control word.

Bit field:

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

Note: The following control bits are displayed in r0055:

Bit 00: r1198 Bit 0

Bit 01: r1198 Bit 1

Bit 02: r1198 Bit 2

Bit 03: r1198 Bit 3

Bit 04: r0837 Bit 0

Bit 05: r0837 Bit 1

Bit 08: r2349 Bit 0 (negated)

Bit 09: r1239 Bit 11

Bit 11: r1406 Bit 11

Bit 12: r1406 Bit 12

Bit 13: r2138 Bit 13

Bit 15: r0836 Bit 1

r0056.0...15 CO/BO: Status word, closed-loop control / ZSW cl-loop ctrl

PM230
PM240

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

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

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Initialization completed	Yes	No	-
01	De-magnetizing completed	Yes	No	-
02	Pulse enable present	Yes	No	-
03	Soft starting present	Yes	No	-
04	Magnetizing completed	Yes	No	-
05	Voltage boost when starting	Active	Inactive	6300
06	Acceleration voltage	Active	Inactive	6300
07	Frequency negative	Yes	No	-
08	Field weakening active	Yes	No	-
09	Voltage limit active	Yes	No	6714
10	Slip limit active	Yes	No	6310
11	Frequency limit active	Yes	No	-
12	Current limiting controller voltage output active	Yes	No	-
13	Current/torque limiting	Active	Inactive	6060
14	Vdc_max controller active	Yes	No	6220, 6320
15	Vdc_min controller active	Yes	No	6220, 6320

r0056.0...13 CO/BO: Status word, closed-loop control / ZSW cl-loop ctrl

PM250
PM260

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

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

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Initialization completed	Yes	No	-
01	De-magnetizing completed	Yes	No	-
02	Pulse enable present	Yes	No	-
03	Soft starting present	Yes	No	-
04	Magnetizing completed	Yes	No	-
05	Voltage boost when starting	Active	Inactive	6300
06	Acceleration voltage	Active	Inactive	6300
07	Frequency negative	Yes	No	-
08	Field weakening active	Yes	No	-
09	Voltage limit active	Yes	No	6714
10	Slip limit active	Yes	No	6310
11	Frequency limit active	Yes	No	-
12	Current limiting controller voltage output active	Yes	No	-
13	Current/torque limiting	Active	Inactive	6060

r0060 CO: Speed setpoint before the setpoint filter / n_set before filt.

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2000	**Data set:** -
Units group: 3_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

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

Dependency: Refer to: r0020

Note: The speed setpoint is available smoothed (r0020) and unsmoothed (r0060).

r0062 CO: Speed setpoint after the filter / n_set after filter

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2000	**Data set:** -
Units group: 3_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the actual speed setpoint after the setpoint filters.

r0063[0...2] CO: Speed actual value / n_act

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2000	**Data set:** -
Units group: 3_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the actual speed of the closed-loop speed control and the U/f control.

Index:
[0] = Unsmoothed
[1] = Smoothed with p0045
[2] = Calculated from f_set - f_slip

Dependency: Refer to: r0021, r0022

Note: The speed actual value r0063[0] is additionally displayed - smoothed with p0045 - in r0063[1].

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

r0064 CO: Speed controller system deviation / n_ctrl system dev

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2000	**Data set:** -
Units group: 3_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

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

r0065 Slip frequency / f_Slip

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2000	**Data set:** -
Units group: 2_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
- [Hz]	- [Hz]	- [Hz]

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

r0066 CO: Output frequency / f_outp

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: - **Scaling:** p2000 **Data set:** -
Units group: 2_1 **Unit selection:** p0505

Min	Max	Factory setting
- [Hz]	- [Hz]	- [Hz]

Description: Displays the output frequency of the power unit.
Dependency: Refer to: r0024
Note: The output frequency is available smoothed (r0024) and unsmoothed (r0066).

r0067 CO: Output current, maximum / I_outp max

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: - **Scaling:** p2002 **Data set:** -
Units group: 6_2 **Unit selection:** p0505

Min	Max	Factory setting
- [Arms]	- [Arms]	- [Arms]

Description: Displays the maximum output current of the power unit.
Dependency: The maximum output current is determined by the parameterized current limit and the motor and converter thermal protection.
Refer to: p0290, p0640

r0068[0...1] CO: Absolute current actual value / I_act abs val

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: - **Scaling:** p2002 **Data set:** -
Units group: 6_2 **Unit selection:** p0505

Min	Max	Factory setting
- [Arms]	- [Arms]	- [Arms]

Description: Displays actual absolute current.
Index: [0] = Unsmoothed
[1] = Smoothed with p0045
Dependency: Refer to: 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...6] CO: Phase current actual value / I_phase act value

Access level: 4 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: - **Scaling:** p2002 **Data set:** -
Units group: 6_5 **Unit selection:** p0505

Min	Max	Factory setting
- [A]	- [A]	- [A]

Description: Displays the measured actual phase currents as peak value.
Index: [0] = Phase U
[1] = Phase V
[2] = Phase W
[3] = Phase U offset
[4] = Phase V offset
[5] = Phase W offset
[6] = Total U, V, W
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 CO: Actual DC link voltage / Vdc act val

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2001 | **Data set:** -
Units group: 5_2 | **Unit selection:** p0505

Min	Max	Factory setting
- [V]	- [V]	- [V]

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

Dependency: Refer to: r0026

Notice: When measuring a DC link voltage < 200 V, for the Power Module (e.g. PM240) a valid measured value is not supplied. In this case, when an external 24 V power supply is connected, a value of approx. 24 V is displayed in the display parameter.

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

r0071 Maximum output voltage / U_output max

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2001 | **Data set:** -
Units group: 5_1 | **Unit selection:** p0505

Min	Max	Factory setting
- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the maximum output voltage.

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

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

r0072 CO: Output voltage / U_output

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2001 | **Data set:** -
Units group: 5_1 | **Unit selection:** p0505

Min	Max	Factory setting
- [Vrms]	- [Vrms]	- [Vrms]

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

Dependency: Refer to: r0025

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

r0073 Maximum modulation depth / Modulat_depth max

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** PERCENT | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [%]	- [%]	- [%]

Description: Displays the maximum modulation depth.

Dependency: Refer to: p1803

r0074 CO: Modulat_depth / Modulat_depth

Access level: 4 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: - **Scaling:** PERCENT **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
- [%]	- [%]	- [%]

Description: Displays the actual modulation depth.

Dependency: Refer to: 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% have no overcontrol.
The phase voltage (phase-to-phase, rms) is calculated as follows:(r0074 x r0070) / (sqrt(2) x 100 %).
The modulation depth is available smoothed (r0028) and unsmoothed (r0074).

r0075 CO: Current setpoint field-generating / Id_set

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: - **Scaling:** p2002 **Data set:** -
Units group: 6_2 **Unit selection:** p0505

Min	Max	Factory setting
- [Arms]	- [Arms]	- [Arms]

Description: Displays the field-generating current setpoint (Id_set).

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

r0076 CO: Current actual value field-generating / Id_act

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: - **Scaling:** p2002 **Data set:** -
Units group: 6_2 **Unit selection:** p0505

Min	Max	Factory setting
- [Arms]	- [Arms]	- [Arms]

Description: Displays the field-generating current actual value (Id_act).

Dependency: Refer to: 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 CO: Current setpoint torque-generating / Iq_set

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: - **Scaling:** p2002 **Data set:** -
Units group: 6_2 **Unit selection:** p0505

Min	Max	Factory setting
- [Arms]	- [Arms]	- [Arms]

Description: Displays the torque/force generating current setpoint.

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

r0078 CO: Current actual value torque-generating / Iq_act

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: - **Scaling:** p2002 **Data set:** -
Units group: 6_2 **Unit selection:** p0505

Min	Max	Factory setting
- [Arms]	- [Arms]	- [Arms]

Description: Displays the torque-generating current actual value (Iq_act).
Dependency: Refer to: 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 CO: Torque setpoint / M_set total

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: - **Scaling:** p2003 **Data set:** -
Units group: 7_1 **Unit selection:** p0505

Min	Max	Factory setting
- [Nm]	- [Nm]	- [Nm]

Description: Displays the torque setpoint at the output of the speed controller.

r0080[0...1] CO: Torque actual value / M_act

Access level: 4 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: - **Scaling:** p2003 **Data set:** -
Units group: 7_1 **Unit selection:** p0505

Min	Max	Factory setting
- [Nm]	- [Nm]	- [Nm]

Description: Displays the actual torque value.
Index: [0] = Unsmoothed
[1] = Smoothed with p0045
Dependency: Refer to: r0031
Note: The torque actual value is available smoothed (r0031 with 100 ms, r0080[1] with p0045) and unsmoothed (r0080[0]).

r0081 CO: Torque utilization / M_Utilization

Access level: 4 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: - **Scaling:** PERCENT **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
- [%]	- [%]	- [%]

Description: Displays the torque utilization as a percentage.
The torque utilization is obtained from the required smoothed torque referred to the torque limit.
Dependency: This parameter is only available for vector control. For U/f control r0081 = 0 %.
Refer to: 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] CO: Active power actual value / P_act

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** r2004	**Data set:** -
Units group: 14_5	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
- [kW]	- [kW]	- [kW]

Description: Displays the instantaneous active power.

Index:
[0] = Unsmoothed
[1] = Smoothed with p0045
[2] = Electric power

Dependency: Refer to: r0032

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

r0083 CO: Flux setpoint / Flex setp

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the flux setpoint.

r0084[0...1] CO: Flux actual value / Flux act val

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the flux actual value.

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

r0087 CO: Actual power factor / Cos phi act

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the actual active power factor.

r0089[0...2] Actual phase voltage / U_phase act val

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2001	**Data set:** -
Units group: 5_3	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the actual phase voltage.

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

Note: The values are determined from the transistor power-on duration.

r0094 CO: Transformation angle / Transformat_angle

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2005 | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [°]	- [°]	- [°]

Description: Displays the transformation angle.

Dependency: Refer to: r1778

Note: The transformation angle corresponds to the electrical commutation angle.

p0100 IEC/NEMA mot stds / IEC/NEMA mot stds

Access level: 1 | **Calculated:** - | **Data type:** Integer16
Can be changed: C(1) | **Scaling:** - | **Data set:** -
Units 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-Motor (50 Hz, SI units)
1: NEMA motor (60 Hz, US units)
2: NEMA motor (60 Hz, SI units)

Dependency: If p0100 is changed, all of the rated motor 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, r1969).

Refer to: r0206, p0210, p0300, p0304, p0305, p0307, p0308, p0309, p0310, p0311, p0314, p0320, p0322, p0323, p0335, r0337, p1800

Note: The parameter value is not reset when the factory setting is restored (p0010 = 30, p0970).

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

Access level: 2 | **Calculated:** - | **Data type:** Unsigned8
Can be changed: C(15) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
2	4	2

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

Dependency: Refer to: p0010, r3996

Notice: When the data sets are created, short-term communication interruptions may occur.

Note: It is possible to toggle between command parameters (BICO parameters) using this data set changeover.

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

Access level: 3 | **Calculated:** - | **Data type:** Unsigned8
Can be changed: C(15) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
1	4	1

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

Dependency: Refer to: p0010, r3996

Notice: When the data sets are created, short-term communication interruptions may occur.

r0197 Bootloader vers / Bootloader vers

Access level: 4	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the bootloader version.

Dependency: Refer to: r0018, r0198

Note: Example:

The value 1010100 should be interpreted as V01.01.01.00.

r0198[0...1] BIOS/EEPROM data version / BIOS/EEPROM vers

Access level: 4	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the BIOS and EEPROM data version.

r0198[0]: BIOS version

r0198[1]: EEPROM data version

Dependency: Refer to: r0018, r0197

Note: Example:

The value 1010100 should be interpreted as V01.01.01.00.

p0199[0...24] Drive object name / DO name

Access level: 4	**Calculated:** -	**Data type:** Unsigned16
Can be changed: C	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	65535	0

Description: Freely assignable name for a drive object.

In the commissioning software, this name cannot be entered using the expert list, but is specified in the configuration assistant. The object name can be subsequently modified in the Project Navigator using standard Windows resources.

Note: The parameter is not influenced by setting the factory setting.

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

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Data set:** PDS
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

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

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: C(2) | **Scaling:** - | **Data set:** PDS
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	65535	0

Description: Sets the actual code number from r0200 to acknowledge the power unit being used.

When commissioned for the first time, the code number is automatically transferred from r0200 into p0201.

Note: The parameter is used to identify when the drive is being commissioned for the first time.

The power unit commissioning can only be exited (p0201 = r0200), if the actual and acknowledged code numbers are identical (p0010 = 2).

When the code number is changed, the connection voltage (p0210) is checked and, if necessary, adjusted.

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

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: - | **Scaling:** - | **Data set:** PDS
Units group: - | **Unit selection:** -

Min	Max	Factory setting
2	400	-

Description: Displays the type of power unit found.

Value:
2: MICROMASTER 440
3: MICROMASTER 411
4: MICROMASTER 410
5: MICROMASTER 436
6: MICROMASTER 440 PX
7: MICROMASTER 430
100: SINAMICS S
101: SINAMICS S (value)
102: SINAMICS S (combi)
112: PM220 (SINAMICS G120)
113: PM230 (SINAMICS G120)
114: PM240 (SINAMICS G120)
115: PM250 (SINAMICS G120)
116: PM260 (SINAMICS G120)
118: SINAMICS G120 Px
120: PM340 (SINAMICS S120)
133: SINAMICS G120C
150: SINAMICS G
200: SINAMICS GM
250: SINAMICS SM
260: SINAMICS SM120
300: SINAMICS GL
350: SINAMICS SL
400: SINAMICS DCM

Note: For parallel circuit configurations, the parameter index is assigned to a power unit.

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

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** PDS
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

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

Bit field:

Bit	Signal name	1 signal	0 signal	FP
01	RFI filter available	Yes	No	-
07	F3E regenerative feedback into the line supply	Yes	No	-
08	Internal Braking Module	Yes	No	-
12	Safe Brake Control (SBC) supported	No	Yes	-
14	Internal LC output filter	Yes	No	-

p0205 Power unit application / PU application

PM230

Access level: 1 | **Calculated:** - | **Data type:** Integer16
Can be changed: C(1, 2) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	1	1

Description: The duty cycles can be overloaded provided that the drive converter is operated with its base load current before and after the overload. This is based on a load duty cycle of 300 s.

Value:
0: Load duty cycle with high overload for vector drives
1: Load duty cycle with low overload for vector drives

Dependency: Refer to: r3996

Notice: The parameter value is not reset when the factory setting is restored (see p0010 = 30, p0970).

When the power unit use is changed, short-term communication interruptions may occur.

Note: When the parameter is changed, all of the motor parameters, the technological application and the control mode are pre-assigned according to the selected application. The parameter has not influence when calculating the thermal overload.

p0205 can only be changed to the settings that are saved in the power unit EEPROM.

p0205 Power unit application / PU application

PM240
PM250, PM260

Access level: 1 | **Calculated:** - | **Data type:** Integer16
Can be changed: C(1, 2) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	1	0

Description: The duty cycles can be overloaded provided that the drive converter is operated with its base load current before and after the overload. This is based on a load duty cycle of 300 s.

Value:
0: Load duty cycle with high overload for vector drives
1: Load duty cycle with low overload for vector drives

Dependency: Refer to: r3996

Notice: The parameter value is not reset when the factory setting is restored (see p0010 = 30, p0970).

When the power unit use is changed, short-term communication interruptions may occur.

Note: When the parameter is changed, all of the motor parameters, the technological application and the control mode are pre-assigned according to the selected application. The parameter has not influence when calculating the thermal overload.

p0205 can only be changed to the settings that are saved in the power unit EEPROM.

r0206[0...4] Rated power unit power / PU P_rated

Access level: 2 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: - **Scaling:** - **Data set:** -
Units group: 14_6 **Unit selection:** p0100

Min	Max	Factory setting
- [kW]	- [kW]	- [kW]

Description: Displays the rated power unit power for various load duty cycles.

Index:
[0] = Rated value
[1] = Load duty cycle with low overload
[2] = Load duty cycle with high overload
[3] = Reserved
[4] = Reserved

Dependency: IECdrives (p0100 = 0): Units kW
NEMA drives (p0100 = 1): Units hp
Refer to: p0100, p0205

r0207[0...4] Rated power unit current / PU PI_rated

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: - **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
- [Arms]	- [Arms]	- [Arms]

Description: Displays the rated power unit power for various load duty cycles.

Index:
[0] = Rated value
[1] = Load duty cycle with low overload
[2] = Load duty cycle with high overload
[3] = Reserved
[4] = Reserved

Dependency: Refer to: p0205

r0208 Rated power unit line supply voltage / PU U_rated

Access level: 2 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: - **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
- [Vrms]	- [Vrms]	- [Vrms]

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...4] Power unit, maximum current / PU I_max

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: - **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
- [Arms]	- [Arms]	- [Arms]

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

Index:
[0] = Catalog
[1] = Load duty cycle with low overload
[2] = Load duty cycle with high overload
[3] = Reserved
[4] = Reserved

Dependency: Refer to: p0205

p0210 Drive unit line supply voltage / V_connect

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: C(2), T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
1 [V]	63000 [V]	400 [V]

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

Dependency: Set p1254, p1294 (automatic detection of the Vdc switch-on levels) = 0.

The switch-in thresholds of the Vdc_max controller are then directly determined using p0210.

Warning: In the case of regenerative power units (PM250, PM260), the regenerative power limit for U/f control current limitation control is calculated as a proportion of the supply voltage p0210. Therefore, p0210 should not be set to a value higher than the actual line voltage.

Caution: If the line supply voltage is higher than the entered value, the Vdc controller may be automatically de-activated in some cases to prevent the motor from accelerating. In this case, an appropriate alarm 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 ... 480 V

U_rated = 500 V:

- p0210 = 500 ... 600 V

U_rated = 690 V:

- p0210 = 660 ... 690 V

The pre-charging switch-in threshold for the DC link voltage (Vdc) is calculated from p0210:

Vdc_pre = p0210 * 0.82 * 1.35

The undervoltage thresholds for the DC link voltage (Vdc) are calculated from p0210 as a function of the rated power unit voltage:

U_rated = 400 V:

- U_min = p0210 * 0.78 > 360 V

U_rated = 500 V:

- U_min = p0210 * 0.76

U_rated = 690 V:

- U_min = p0210 * 0.74 > 450 V

p0230 Drive filter type, motor side / Drv filt type mot

Access level: 1	**Calculated:** -	**Data type:** Integer16
Can be changed: C(1, 2)	**Scaling:** -	**Data set:** -
Units 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
3: Sine-wave filter, Siemens
4: Sine-wave filter, third-party

Dependency: The following parameters are influenced using p0230:

p0230 = 1:

--> p0233 (power unit, motor reactor) = filter inductance

p0230 = 3:

--> p0233 (power unit, motor reactor) = filter inductance

--> p0234 (power unit sine-wave filter capacitance) = filter capacitance

--> p0290 (power unit overload response) = inhibit pulse frequency reduction

--> p1082 (maximum speed) = Fmax filter / pole pair number

--> p1800 (pulse frequency) >= nominal pulse frequency of the filter

--> p1802 (modulator modes) = space vector modulation without overcontrol

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

Refer to: p0233, p0234, p0290, p1082, p1800, p1802

Note: If the power unit (e.g. PM260) is equipped with an internal sine-wave filter, the parameter cannot be changed.

if a filter type cannot be selected, then this filter type is not permitted for the Motor Module.

p0230 = 1:

Power units with output reactor are limited to output frequencies of 150 Hz.

p0230 = 3:

Power units with sine-wave filter are limited to output frequencies of 200 Hz.

r0231[0...1] Power cable length, maximum / Cable length max

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
- [m]	- [m]	- [m]

Description: Displays the maximum permissible cable lengths between the drive unit and motor.

Index:
[0] = Unshielded
[1] = Shielded

Note: The display value is used to provide information for service and maintenance.

p0233 Power unit motor reactor / PU mot reactor

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(2), U, T	**Scaling:** -	**Data set:** -
Units 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.

Refer to: p0230

Note: When exiting the quick commissioning using p3900 = 1, the parameter value is set to the value of the defined SIEMENS filter or to zero. For this reason, the parameter value of a third-party filter only has to be entered outside the commissioning phase (p0010 = 0) and then the controller calculation (p0340 = 3) is carried out.

The parameter cannot be changed if the power unit (e.g. PM260) is equipped with an internal sine-wave filter.

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

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(2), U, T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0.000 [µF]	1000.000 [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.

Refer to: p0230

Note: The parameter value includes the sum of all of the capacitances of a phase connected in series (phase - ground).

When exiting the quick commissioning using p3900 = 1, the parameter value is set to the value of the defined SIEMENS filter or to zero. For this reason, the parameter value of a third-party filter only has to be entered outside the commissioning phase (p0010 = 0).

The parameter cannot be changed if the power unit (e.g. PM260) is equipped with an internal sine-wave filter.

r0238 Internal power unit resistance / PU R internal

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
- [ohm]	- [ohm]	- [ohm]

Description: Displays the internal resistance of the power unit (IGBT and line resistance).

p0278 DC link voltage undervoltage threshold reduction / Vdc U_under red

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min -80 [V]	**Max** 0 [V]	**Factory setting** 0 [V]

Description: Sets the absolute value by which the threshold to initiate the undervoltage fault (F30003) is reduced.

Dependency: Refer to: p0210, r0296

Refer to: F30003

Notice: When using a Control Supply Module (CSM) for 24 V supply from the DC link, the minimum continuous DC link voltage may not lie below 430 V. DC link voltages in the range 300 ... 430 V are permissible up to a duration of 1 min.

For chassis power units, this parameter has no significance.

Note: The resulting shutdown threshold can be read in r0296 and is dependent on the selected rated voltage (p0210) and the power unit being used.

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

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min 0.0 [%]	**Max** 100.0 [%]	**Factory setting** [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 power unit current (r0209).

Index: [0] = Threshold at which pre-charging starts
[1] = Threshold at which pre-charging stops

Dependency: Refer to: F30021

r0289 CO: Maximum power unit output current / PU I_outp max

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2002	**Data set:** -
Units group: -	**Unit selection:** -	
Min - [Arms]	**Max** - [Arms]	**Factory setting** - [Arms]

Description: Displays the actual maximum output current of the power unit taking into account derating factors.

p0290 Power unit overload response / PU overld response

Access level: 3 **Calculated:** - **Data type:** Integer16
Can be changed: T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
0	3	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 or output frequency
1: No reduction, shutdown when overload threshold is reached
2: Reduce I_output or f_output and f_pulse (not using I2t)
3: Reduce the pulse frequency (not using I2t)

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

If a fault or alarm is present, then r2135.13 or r2135.15 is set.

Refer to: r0036, r0037, p0230, r2135

Refer to: A05000, A05001, A07805

Caution: 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: The setting p0290 = 0, 2 is only practical if the load decreases with decreasing speed (e.g. for applications with variable torque such as for pumps and fans).

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.

For p0290 = 2, 3, the I2t overload detection of the power unit does not influence the responses.

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

p0292[0...1] Power unit temperature alarm threshold / PU T_alrm thresh

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: U, T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
0 [°C]	25 [°C]	[0] 5 [°C] [1] 15 [°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] = Heat sink temperature
[1] = Power semiconductor (chip) temperature

Dependency: Refer to: r0037, p0290

Refer to: A05000

p0294 Power unit alarm with I2t overload / PU I2t alrm thresh

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
10.0 [%]	100.0 [%]	95.0 [%]

Description: Sets the alarm threshold for the I2t power unit overload.

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

Dependency: Refer to: r0036, p0290

Refer to: A07805

Note: The I2t fault threshold is 100 %. If this value is exceeded, fault F30005 is output.

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

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0 [s]	600 [s]	0 [s]

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

Note: - Under certain circumstances, the fan can continue to run for longer than was set (e.g. as a result of the excessively high heat sink temperature).

- For values less than 1 s, a 1 s run on time for the fan is active.

- for a PM230 power unit, sizes D - F the parameter is ineffective.

r0296 DC link voltage undervoltage threshold / Vdc U_lower_thresh

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: If the DC link voltage falls below this threshold, the power unit is shut down due to a DC link undervoltage condition (F30003).

Dependency: Refer to: p0278

Refer to: F30003

r0297 DC link voltage overvoltage threshold / Vdc U_upper_thresh

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: If the DC link voltage exceeds the threshold specified here, the drive unit is tripped due to DC link overvoltage.

Dependency: Refer to: F30002

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

Access level: 2 | **Calculated:** - | **Data type:** Integer16
Can be changed: C(1, 3) | **Scaling:** - | **Data set:** MDS
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	204	0

Description: Selecting the motor type.

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 = Rotating induction motor

2 = Rotating synchronous motor

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 (in the BOP/IOP).

Value:
0: No motor
1: Induction motor (rotating)
2: Synchronous motor (rotating, permanent-magnet)
17: 1LA7 standard induction motor
204: 1LE4 synchronous motor

Dependency: When selecting a motor type from the 1LA7 series, parameters p0335, p0626, p0627, and p0628 of the thermal motor model are pre-assigned as a function of p0307 and p0311.

Note: Once the Control Unit has been powered up for the first time or if the factory settings have been defined accordingly, the motor type is pre-configured to induction motor (p0300 = 1).

If a motor type has not been selected (p0300 = 0), then the drive commissioning routine cannot be exited.

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

Access level: 2 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: C(1, 3) | **Scaling:** - | **Data set:** MDS
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	65535	0

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.

Dependency: Code numbers can only be selected for motor types that correspond to the motor type selected in p0300.

Refer to: p0300

Note: The motor code number can only be changed if the matching catalog motor was first selected in p0300.

When selecting a catalog motor (p0300 >= 100), drive commissioning can only be exited if a code number is selected.

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

Access level: 1 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: C(1, 3) | **Scaling:** - | **Data set:** MDS
Units group: - | **Unit selection:** -

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

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

Caution: 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.

Once the Control Unit has booted for the first time or if the factory settings have been restored, the parameter is pre-assigned to match the power unit.

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

Access level: 1	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(1, 3)	**Scaling:** -	**Data set:** MDS
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0.00 [Arms]	10000.00 [Arms]	0.00 [Arms]

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

Caution: 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.

Notice: If p0305 is changed during quick commissioning (p0010 = 1), then the maximum current p0640 is pre-assigned accordingly.

Note: When the parameter value is entered the connection type of the motor (star-delta) must be taken into account.

Once the Control Unit has booted for the first time or if the factory settings have been restored, the parameter is pre-assigned to match the power unit.

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

Access level: 1	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(1, 3)	**Scaling:** -	**Data set:** MDS
Units 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: IECdrives (p0100 = 0): Units kW

NEMA drives (p0100 = 1): Units hp

NEMA drives (p0100 = 2): Unit kW

Refer to: p0100

Caution: 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: Once the Control Unit has booted for the first time or if the factory settings have been restored, the parameter is pre-assigned to match the power unit.

p0308[0...n] Rated motor power factor / Mot cos_phi_rated

Access level: 1	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(1, 3)	**Scaling:** -	**Data set:** MDS
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0.000	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: This parameter is only available for p0100 = 0, 2.

Refer to: p0100, p0309, r0332

Caution: 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).

Once the Control Unit has booted for the first time or if the factory settings have been restored, the parameter is pre-assigned to match the power unit.

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

Access level: 1 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: C(1, 3) | **Scaling:** - | **Data set:** MDS
Units 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: This parameter is only available for NEMA motors (p0100 = 1).

Refer to: p0100, p0308, r0332

Note: The parameter is not used for synchronous motors.

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

Access level: 1 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: C(1, 3) | **Scaling:** - | **Data set:** MDS
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.00 [Hz]	650.00 [Hz]	0.00 [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.

Refer to: p0311, r0313, p0314

Caution: 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.

Notice: If p0310 is changed during quick commissioning (p0010 = 1), the maximum speed p1082, which is also associated with quick commissioning, is pre-assigned accordingly. This is not the case when commissioning the motor (p0010 = 3).

Note: Once the Control Unit has been booted up for the first time or if the factory settings have been defined accordingly, the parameter is defined in accordance with the power unit.

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

Access level: 1 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: C(1, 3) | **Scaling:** - | **Data set:** MDS
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.0 [rpm]	210000.0 [rpm]	0.0 [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.

Refer to: p0310, r0313, p0314

Caution: 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.

Notice: If p0311 is changed during quick commissioning (p0010 = 1), the maximum speed p1082, which is also associated with quick commissioning, is pre-assigned accordingly. This is not the case when commissioning the motor (p0010 = 3).

Note: Once the Control Unit has been booted up for the first time or if the factory settings have been defined accordingly, the parameter is defined in accordance with the power unit.

r0313[0...n] Motor pole pair number, actual (or calculated) / Mot PolePairNo act

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: - | **Scaling:** - | **Data set:** MDS
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

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).

Refer to: p0307, p0310, p0311, p0314

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

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

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: C(1, 3) | **Scaling:** - | **Data set:** MDS
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	255	0

Description: Sets the motor pole pair number.

p0314 = 1: 2-pole motor

r0314 = 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 during quick commissioning (p0010 = 1), the maximum speed p1082, which is also associated with quick commissioning, is pre-assigned 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

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: C(1, 3), U, T | **Scaling:** - | **Data set:** MDS
Units group: 28_1 | **Unit selection:** p0100

Min	Max	Factory setting
0.00 [Nm/A]	400.00 [Nm/A]	0.00 [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: Refer to: r0334

Caution: 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).

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

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(3)	**Scaling:** -	**Data set:** MDS
Units 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).

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

Note: The parameter is used for the I2t monitoring of the motor (refer to p0611).

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

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

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Data set:** MDS
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0.000 [Arms]	5000.000 [Arms]	0.000 [Arms]

Description: Induction motors:

Sets the rated motor magnetizing current.

For p0320 = 0.000 the magnetizing current is internally calculated and displayed in r0331.

Synchronous motors:

Sets the rated motor short-circuit current.

Caution: 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 p3900 > 0.

If, for induction motors, the magnetizing current p0320 is changed outside the commissioning phase (p0010 > 0), then the magnetizing inductance p0360 is changed so that the EMF r0337 remains constant.

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

Access level: 1	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(1, 3)	**Scaling:** -	**Data set:** MDS
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0.0 [rpm]	210000.0 [rpm]	0.0 [rpm]

Description: Sets the maximum motor speed.

Dependency: Refer to: p1082

Caution: 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.

Notice: If p0322 is changed during quick commissioning (p0010 = 1), the maximum speed p1082, which is also associated with quick commissioning, is pre-assigned accordingly.

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

Access level: 1	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(1, 3)	**Scaling:** -	**Data set:** MDS
Units group: -	**Unit selection:** -	
Min 0.00 [Arms]	**Max** 20000.00 [Arms]	**Factory setting** 0.00 [Arms]

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

Caution: 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.

Notice: If p0323 is changed during quick commissioning (p0010 = 1), then the maximum current p0640 is pre-assigned 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.

p0325[0...n] Motor pole position identification current, 1st phase / Mot PolID I 1st ph

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** MDS
Units group: -	**Unit selection:** -	
Min 0.000 [Arms]	**Max** 10000.000 [Arms]	**Factory setting** 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: Refer to: p0329, p1980, r1984, r1985, r1987

Notice: When the motor code (p0301) is changed, it is possible that p0325 is not pre-assigned.

p0325 can be pre-assigned using p0340 = 3.

Note: The value is automatically pre-assigned for the following events:

- For p0325 = 0 and automatic calculation of the closed-loop control parameters (p0340 = 1, 2, 3).
- for quick commissioning (p3900 = 1, 2, 3).

p0326[0...n] Motor stall torque correction factor / Mot M_stall_corr

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Data set:** MDS
Units group: -	**Unit selection:** -	
Min 5 [%]	**Max** 300 [%]	**Factory setting** 100 [%]

Description: Sets the correction factor for the stall torque/force at a 600 V DC link voltage.

Caution: 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 quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (refer to p0300).

p0327[0...n] Optimum motor load angle / Mot phi_load opt

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Data set:** MDS
Units 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.

Caution: 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.

When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (refer to p0300).

p0328[0...n] Motor reluctance torque constant / Mot kT_reluctance

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Data set:** MDS
Units 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.

Caution: 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.

p0329[0...n] Motor pole position identification current / Mot PolID current

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Data set:** MDS
Units 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.

For a two-stage technique, the current is set for the 2nd phase.

Dependency: Refer to: p0325, p1980, r1984, r1985, r1987

Caution: 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

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Data set:** MDS
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
- [Hz]	- [Hz]	- [Hz]

Description: Displays the rated motor slip.

Dependency: The rated slip is calculated from the rated frequency, rated speed and number of pole pairs.

Refer to: 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

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Data set:** MDS
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [Arms]	- [Arms]	- [Arms]

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.

r0332[0...n] Rated motor power factor / Mot cos_phi_rated

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Data set:** MDS
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the rated power factor for induction motors.
For IEC motors, the following applies (p0100 = 0):
For p0308 = 0, the internally-calculated power factor is displayed.
For p0308 > 0, this value is displayed.
For NEMA motors, the following applies (p0100 = 1):
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

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Data set:** MDS
Units group: 7_4 | **Unit selection:** p0100

Min	Max	Factory setting
- [Nm]	- [Nm]	- [Nm]

Description: Displays the rated motor torque.

Dependency: IEC drives (p0100 = 0): unit Nm
NEMA drives (p0100 = 1): unit lbf ft

Note: For induction motors, r0333 is calculated from p0307 and p0311.
For synchronous motors, r0333 is calculated from p0305, p0316, p0327 and p0328.

r0334[0...n] Actual motor-torque constant / Mot kT act

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Data set:** MDS
Units group: 28_1	**Unit selection:** p0100	
Min	**Max**	**Factory setting**
- [Nm/A]	- [Nm/A]	- [Nm/A]

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

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

For synchronous motors, parameter r0334 is calculated from p0305, p0307 and p0311.

p0335[0...n] Motor cooling type / Motor cooling type

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: C(1, 3), T	**Scaling:** -	**Data set:** MDS
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	128	0

Description: Sets the motor cooling system used.

Value:
0: Non-ventilated
1: Forced cooling
2: Liquid cooling
128: No fan

Dependency: For 1LA7 motors (refer to p0300), the parameter is pre-set as a function of p0307 and p0311.

Caution: 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 influences the thermal 3-mass motor model.

1LA7 motors, frame size 56 are operated without fan.

r0337[0...n] Rated motor EMF / Mot EMF_rated

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Data set:** MDS
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the rated EMF of the motor.

Note: EMF: Electromagnetic force

p0340[0...n] Automatic calculation, motor/control parameters / Calc auto par

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: C(3), T	**Scaling:** -	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min 0	**Max** 5	**Factory setting** 0

Description: Setting to automatically calculate motor parameters and U/f open-loop and closed-loop control parameters from the rating plate data.

Value:
0: No calculation
1: Complete calculation
2: Calculation of equivalent circuit diagram parameters
3: Calculation of closed-loop control parameters
4: Calculation of controller parameters
5: Calculation of technological limits and threshold values

Notice: After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

The following parameters are influenced using p0340:

p0340 = 1:

--> All of the parameters influenced for p0340 = 2, 3, 4, 5

--> p0341, p0342, p0344, p0612, p0640, p1082, p1231, p1232, p1333, p1349, p1611, p1654, p1726, p1825, p1828 ... p1832, p1909, p1959, p2000, p2001, p2002, p2003, p3927, p3928

p0340 = 2:

--> p0350, p0354 ... p0360

--> p0625 (matching p0350)

p0340 = 3:

--> All of the parameters influenced for p0340 = 4, 5

--> p0346, p0347, p0622, p1320 ... p1327, p1582, p1584, p1616, p1755, p1756, p2178

p0340 = 4:

--> p1290, p1292, p1293, p1338, p1339, p1340, p1341, p1345, p1346, p1461, p1463, p1464, p1465, p1470, p1472, p1703, p1715, p1717, p1740, p1756, p1764, p1767, p1781, p1783, p1785, p1786, p1795

p0340 = 5:

--> p1037, p1038, p1520, p1521, p1530, p1531, p1574, p1802, p1803, p2140, p2142, p2148, p2150, p2161, p2162, p2163, p2164, p2175, p2177, p2194, p2390, p2392, p2393

Note: p0340 = 1 contains the calculations of p0340 = 2, 3, 4, 5.

p0340 = 2 calculates the motor parameters (p0350 ... p0360).

p0340 = 3 contains the calculations of p0340 = 4, 5.

p0340 = 4 only calculates the controller parameters.

p0340 = 5 only calculates the controller limits.

When quick commissioning is exited using p3900 > 0, p0340 is automatically set to 1.

At the end of the calculations, p0340 is automatically set to 0.

p0341[0...n] Motor moment of inertia / Mot M_mom of inert

Access level: 3 | **Calculated:** p0340 = 1 | **Data type:** FloatingPoint32
Can be changed: C(3), U, T | **Scaling:** - | **Data set:** MDS
Units group: 25_1 | **Unit selection:** p0100

Min	Max	Factory setting
0.000000 [kgm²]	100000.000000 [kgm²]	0.000000 [kgm²]

Description: Sets the motor moment of inertia (without load).

Dependency: IEC drives (p0100 = 0): unit kg m^2

NEMA drives (p0100 = 1): unit lb ft^2

The parameter value is included, together with p0342, in the rated starting time of the motor.

Refer to: p0342, r0345

Caution: 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 product of p0341 * p0342 is used when the speed controller (p0340 = 4) is calculated automatically.

p0342[0...n] Ratio between the total and motor moment of inertia / Mot MomInert Ratio

Access level: 3 | **Calculated:** p0340 = 1 | **Data type:** FloatingPoint32
Can be changed: C(3), U, T | **Scaling:** - | **Data set:** MDS
Units group: - | **Unit selection:** -

Min	Max	Factory setting
1.000	10000.000	1.000

Description: Sets the ratio between the total moment of inertia/mass (load + motor) and the intrinsic motor moment of inertia/mass (no load).

Dependency: This means that together with p0341, the rated starting (accelerating time) of the motor is calculated for a vector drive.

Refer to: p0341, r0345

Note: The product of p0341 * p0342 is used when the speed controller (p0340 = 4) is calculated automatically.

r0343[0...n] Rated motor current identified / Mot I_rated ident

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Data set:** MDS
Units group: - | **Unit selection:** -

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

Description: Displays the identified rated motor current.

p0344[0...n] Motor weight (for the thermal motor model) / Mot weight th mod

Access level: 3 | **Calculated:** p0340 = 1 | **Data type:** FloatingPoint32
Can be changed: C(3), T | **Scaling:** - | **Data set:** MDS
Units 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 (p0100 = 0): unit kg

NEMA drives (p0100 = 1): unit lb

Caution: 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 influences the thermal 3 mass model of the induction motor.

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

r0345[0...n] Nominal motor starting time / Mot t_start_rated

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Data set:** MDS
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [s]	- [s]	- [s]

Description: Displays the rated motor starting time. This time corresponds to the time from standstill up to reaching the motor rated speed and the acceleration with motor rated torque (r0333).

Dependency: Refer to: r0313, r0333, p0341, p0342

p0346[0...n] Motor excitation build-up time / Mot t_excitation

Access level: 3 | **Calculated:** p0340 = 1,3 | **Data type:** FloatingPoint32
Can be changed: C(3), U, T | **Scaling:** - | **Data set:** MDS
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.000 [s]	20.000 [s]	0.000 [s]

Description: Sets the excitation build-up time of the motor.

This involves the delay 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).

Note: The parameter is calculated using p0340 = 1, 3.

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.

p0347[0...n] Motor de-excitation time / Mot t_de-excitat.

Access level: 3 | **Calculated:** p0340 = 1,3 | **Data type:** FloatingPoint32
Can be changed: C(3), U, T | **Scaling:** - | **Data set:** MDS
Units 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 delay time.

Note: The parameter is calculated using p0340 = 1, 3.

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).

p0350[0...n] Motor stator resistance, cold / Mot R_stator cold

Access level: 3 | **Calculated:** p0340 = 1,2 | **Data type:** FloatingPoint32

Can be changed: C(3), U, T | **Scaling:** - | **Data set:** MDS

Units 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.

Dependency: Refer to: p0625, r1912

Caution: 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 motor identification routine determines the stator resistance from the total stator resistance minus the cable resistance (p0352).

p0352[0...n] Cable resistance / Mot R_cable cold

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32

Can be changed: C(3), U, T | **Scaling:** - | **Data set:** MDS

Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.00000 [ohm]	120.00000 [ohm]	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.

The cable resistance is reset when quick commissioning is exited with p3900 > 0.

p0354[0...n] Motor rotor resistance cold / Mot R_r cold

Access level: 3 | **Calculated:** p0340 = 1,2 | **Data type:** FloatingPoint32

Can be changed: C(3), U, T | **Scaling:** - | **Data set:** MDS

Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.00000 [ohm]	300.00000 [ohm]	0.00000 [ohm]

Description: Sets the rotor/secondary section resistance of the motor at the ambient temperature p0625.

This parameter value is automatically calculated using the motor model (p0340 = 1, 2) or using the motor data identification routine (p1910).

Dependency: Refer to: p0625

Caution: 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 = 2).

p0356[0...n] Motor stator leakage inductance / Mot L_stator leak.

Access level: 3 | **Calculated:** p0340 = 1,2 | **Data type:** FloatingPoint32
Can be changed: C(3), U, T | **Scaling:** - | **Data set:** MDS
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.00000 [mH]	1000.00000 [mH]	0.00000 [mH]

Description: Induction machine: sets the stator leakage inductance of the motor.

Synchronous motor: Sets the stator quadrature axis inductance of the motor.

This parameter value is automatically calculated using the motor model (p0340 = 1, 2) or using the motor identification routine (p1910).

Caution: 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: If the stator leakage inductance (p0356) for induction motors is changed outside the commissioning phase (p0010 > 0), 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).

For permanent-magnet synchronous motors (p0300 = 2), this is the non-saturated value and is, therefore, ideal for a low current.

p0357[0...n] Motor stator inductance, d axis / Mot L_stator d

Access level: 3 | **Calculated:** p0340 = 1,2 | **Data type:** FloatingPoint32
Can be changed: C(3), U, T | **Scaling:** - | **Data set:** MDS
Units 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.

This parameter value is automatically calculated using the motor model (p0340 = 1, 2) or using the motor identification routine (p1910).

Note: For permanent-magnet synchronous motors (p0300 = 2), this is the non-saturated value and is ideal for a low current.

p0358[0...n] Motor rotor leakage inductance / Mot L_rot leak

Access level: 3 | **Calculated:** p0340 = 1,2 | **Data type:** FloatingPoint32
Can be changed: C(3), U, T | **Scaling:** - | **Data set:** MDS
Units 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.

The value is automatically calculated using the motor model (p0340 = 1, 2) or using the motor identification routine (p1910).

Caution: 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: If the rotor leakage inductance (p0358) for induction motors is changed outside the commissioning phase (p0010 > 0), 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 / Mot Lh

Access level: 3 | **Calculated:** p0340 = 1,2 | **Data type:** FloatingPoint32
Can be changed: C(3), U, T | **Scaling:** - | **Data set:** MDS
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.00000 [mH]	10000.00000 [mH]	0.00000 [mH]

Description: Sets the magnetizing inductance of the motor.

This parameter value is automatically calculated using the motor model (p0340 = 1, 2) or using the motor identification routine (p1910).

Caution: 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 = 2).

p0362[0...n] Motor saturation characteristic flux 1 / Mot saturat.flux 1

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: C(3), U, T | **Scaling:** - | **Data set:** MDS
Units group: - | **Unit selection:** -

Min	Max	Factory setting
10.0 [%]	300.0 [%]	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.

Sets the first flux value of the saturation characteristic as a [%] referred to the rated motor flux (100 %).

Dependency: The following applies for the flux values:

p0362 < p0363 < p0364 < p0365

Refer to: p0366

Note: For induction motors, p0362 = 100 % corresponds to the rated motor flux.

When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (refer to p0300).

p0363[0...n] Motor saturation characteristic flux 2 / Mot saturat.flux 2

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: C(3), U, T | **Scaling:** - | **Data set:** MDS
Units group: - | **Unit selection:** -

Min	Max	Factory setting
10.0 [%]	300.0 [%]	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.

Sets the second flux value of the saturation characteristic as a [%] referred to the rated motor flux (100 %).

Dependency: The following applies for the flux values:

p0362 < p0363 < p0364 < p0365

Refer to: p0367

Note: For induction motors, p0363 = 100 % corresponds to the rated motor flux.

When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (refer to p0300).

p0364[0...n] Motor saturation characteristic flux 3 / Mot saturat.flux 3

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: C(3), U, T | **Scaling:** - | **Data set:** MDS
Units group: - | **Unit selection:** -

Min	Max	Factory setting
10.0 [%]	300.0 [%]	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.
Sets the third flux value of the saturation characteristic as a [%] referred to the rated motor flux (100 %).

Dependency: The following applies for the flux values:
p0362 < p0363 < p0364 < p0365
Refer to: p0368

Note: For induction motors, p0364 = 100 % corresponds to the rated motor flux.
When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (refer to p0300).

p0365[0...n] Motor saturation characteristic flux 4 / Mot saturat.flux 4

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: C(3), U, T | **Scaling:** - | **Data set:** MDS
Units group: - | **Unit selection:** -

Min	Max	Factory setting
10.0 [%]	300.0 [%]	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.
Sets the fourth flux value of the saturation characteristic as a [%] referred to the rated motor flux (100 %).

Dependency: The following applies for the flux values:
p0362 < p0363 < p0364 < p0365
Refer to: p0369

Note: For induction motors, p0365 = 100 % corresponds to the rated motor flux.
When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (refer to p0300).

p0366[0...n] Motor saturation characteristic I_mag 1 / Mot sat. I_mag 1

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: C(3), U, T | **Scaling:** - | **Data set:** MDS
Units 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.
Sets the first magnetization current of the saturation characteristic in [%] with reference to the rated magnetization current (r0331).

Dependency: The following applies for the magnetizing currents:
p0366 < p0367 < p0368 < p0369
Refer to: p0362

Note: When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (refer to p0300).

p0367[0...n] Motor saturation characteristic I_mag 2 / Mot sat. I_mag 2

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Data set:** MDS
Units 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.

Sets the second magnetization current of the saturation characteristic in [%] with reference to the rated magnetization current (r0331).

Dependency: The following applies for the magnetizing currents:

p0366 < p0367 < p0368 < p0369

Refer to: p0363

Note: When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (refer to p0300).

p0368[0...n] Motor saturation characteristic I_mag 3 / Mot sat. I_mag 3

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Data set:** MDS
Units 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.

Sets the third magnetization current of the saturation characteristic in [%] with reference to the rated magnetization current (r0331).

Dependency: The following applies for the magnetizing currents:

p0366 < p0367 < p0368 < p0369

Refer to: p0364

Note: When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (refer to p0300).

p0369[0...n] Motor saturation characteristic I_mag 4 / Mot sat. I_mag 4

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Data set:** MDS
Units 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.

Sets the fourth magnetization current of the saturation characteristic in [%] with reference to the rated magnetization current (r0331).

Dependency: The following applies for the magnetizing currents:

p0366 < p0367 < p0368 < p0369

Refer to: p0365

Note: When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (refer to p0300).

r0370[0...n] Motor stator resistance, cold / Mot R_stator cold

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Data set:** MDS
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [ohm]	- [ohm]	- [ohm]

Description: Displays the motor stator resistance at an ambient temperature (p0625).
The value does not include the cable resistance.

Dependency: Refer to: p0625

r0372[0...n] Cable resistance / Mot R_cable

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Data set:** MDS
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [ohm]	- [ohm]	- [ohm]

Description: Displays the total cable resistance between power unit and motor, as well as the internal converter resistance.

Dependency: Refer to: r0238, p0352

r0373[0...n] Motor rated stator resistance / Mot R_stator rated

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Data set:** MDS
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [ohm]	- [ohm]	- [ohm]

Description: Displays the rated motor stator resistance at rated temperature (total of p0625 and p0627).

Dependency: Refer to: p0627

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

r0374[0...n] Motor rotor resistance cold / Mot R_r cold

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Data set:** MDS
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [ohm]	- [ohm]	- [ohm]

Description: Displays the motor rotor resistance at an ambient temperature p0625.

Dependency: Refer to: p0625

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

r0376[0...n] Rated motor rotor resistance / Mot R_rotor rated

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Data set:** MDS
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [ohm]	- [ohm]	- [ohm]

Description: Displays the rated motor rotor resistance at rated temperature (total of p0625 and p0628).

Dependency: Refer to: p0628

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

r0377[0...n] Motor leakage inductance, total / Mot L_leak total

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Data set:** MDS
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [mH]	- [mH]	- [mH]

Description: Displays the stator leakage inductance of the motor including the motor reactor (p0233).

r0378[0...n] Motor stator inductance, d axis / Mot L_stator_d

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Data set:** MDS
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [mH]	- [mH]	- [mH]

Description: Displays the stator longitudinal inductance of the synchronous motor including the motor reactor (p0233).

r0382[0...n] Motor magnetizing inductance transformed / Mot L_magn transf

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Data set:** MDS
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [mH]	- [mH]	- [mH]

Description: Displays the magnetizing inductance of the motor.

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

r0384[0...n] Motor rotor time constant / damping time constant d axis / Mot T_rotor/T_Dd

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Data set:** MDS
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [ms]	- [ms]	- [ms]

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 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 T_stator leak

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Data set:** MDS
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [ms]	- [ms]	- [ms]

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.

r0395[0...n] Actual stator resistance / R_stator act

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Data set:** MDS
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
- [ohm]	- [ohm]	- [ohm]

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.
Refer to: p0350, p0352, p0620

Note: In each case, only the stator resistance of the active Motor Data Set is included with the stator temperature of the thermal motor model.

r0396[0...n] Actual rotor resistance / R_rotor act

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Data set:** MDS
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
- [ohm]	- [ohm]	- [ohm]

Description: Displays the actual rotor resistance (phase value).
The parameter is affected by the motor temperature model.

Dependency: Refer to: 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.
This parameter is not used for synchronous motors (p0300 = 2xx).

p0490 Meas. probe invert / Probe inv

CU240E-2
CU240E-2 DP
CU240E-2 DP F
CU240E-2 F

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: U, T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Setting to invert the digital input signals to connect a measuring probe.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
03	DI 3 (T. 8)	Inverted	Not inverted	-

Dependency: Refer to: p0580

Note: When the measuring probe is inverted, this has no effect on the status displays of the digital inputs (r0721, r0722, r0723).

p0500 Technology application / Tec application

PM230

Access level: 4	**Calculated:** -	**Data type:** Integer16
Can be changed: C(1, 5), T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
3	3	3

Description: Sets the technology application.

The parameter influences the calculation of open-loop and closed-loop control parameters that is e.g. initiated using p0340 = 5.

Value: 3: Pumps and fans, efficiency optimization

Notice: If the technological application is set to p0500 = 0 ... 3 during commissioning (p0010 = 1, 5, 30), the operating mode (p1300) is pre-set accordingly.

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

- when exiting quick commissioning using p3900 > 0
- when writing p0340 = 1, 3, 5

For p0500 = 3 and when the calculation is initiated, the following parameters are set:

- p1574 = 2 V
- p1750 bit 2 = 1: Sensorless closed-loop control of induction motors effective up to a frequency of zero.
- p1802 = 10 (SVM/FLB with overmodulation and modulation depth reduction over 57 Hz)
- p1803 = 115 %

p0500 Technology application / Tec application

PM240	**Access level:** 2	**Calculated:** -	**Data type:** Integer16
PM250, PM260	**Can be changed:** C(1, 5), T	**Scaling:** -	**Data set:** -
	Units group: -	**Unit selection:** -	
	Min 0	**Max** 3	**Factory setting** 0

Description: Sets the technology application.

The parameter influences the calculation of open-loop and closed-loop control parameters that is e.g. initiated using p0340 = 5.

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

Notice: If the technological application is set to p0500 = 0 ... 3 during commissioning (p0010 = 1, 5, 30), the operating mode (p1300) is pre-set accordingly.

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

- when exiting quick commissioning using p3900 > 0

- when writing p0340 = 1, 3, 5

For p0500 = 0 and when the calculation is initiated, the following parameters are set:

- p1574 = 10 V

- p1750 bit 2 = 0

- p1802 = 4 (SVM/FLB without overcontrol) (PM240: p1802 = 0, PM260: p1802 = 2)

- p1803 = 106 % (PM260: p1803 = 103 %)

For p0500 = 1 and when the calculation is initiated, the following parameters are set:

- p1574 = 2 V

- p1750 bit 2 = 0

- p1802 = 4 (SVM/FLB without overcontrol) (PM240: p1802 = 0)

- p1803 = 106 % (PM260: p1803 = 103 %)

For p0500 = 2 and when the calculation is initiated, the following parameters are set:

- p1574 = 2 V (for separately-excited synchronous motors: 4 V)

- p1750 bit 2 = 1

- p1802 = 4 (SVM/FLB without overcontrol) (PM240: p1802 = 0)

- p1803 = 106 % (PM260: p1803 = 103 %)

For p0500 = 3 and when the calculation is initiated, the following parameters are set:

- p1574 = 2 V

- p1750 bit 2 = 1

- p1802 = 4 (SVM/FLB without overcontrol) (PM240: p1802 = 0)

- p1803 = 106 % (PM260: p1803 = 103 %)

Re p1750:

The setting of p1750 is only relevant for induction motors.

p1750 bit 2 = 1: Sensorless closed-loop control of induction motors effective up to a frequency of zero.

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.

Re p1802 / p1803:

p1802 and p1803 are only changed, in all cases, if a sine-wave output filter (p0230 = 3, 4) has not been selected.

p0505 Selecting the system of units / Unit sys select

Access level: 1 | **Calculated:** - | **Data type:** Integer16
Can be changed: C(5) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
1	4	1

Description: Adjustable parameter of the actual system of units.

Value:
1: SI system of units
2: System of units, referred/SI
3: US system of units
4: System of units, referred/US

Dependency: The parameter cannot be changed if the master control was fetched.

Caution: If a per unit representation is selected and if the reference parameters (e.g. p2000) are subsequently changed, then the physical significance of several control parameters is also adapted at the same time. As a consequence, the control behavior can change (see p1576, p1621, p1744, p1752, p1755 and p1609, p1612, p1619, p1620).

Note: Reference parameter for the unit system % are, for example, p2000 ... p2004. Depending on what has been selected, these are displayed using either SI or US units.

p0573 Inhibit automatic reference value calculation / Inhibit calc

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	1	0

Description: Setting to inhibit the calculation of reference parameters (e.g. p2000) when automatically calculating the motor and closed-loop control parameters (p0340, p3900).

Value:
0: No
1: Yes

Notice: The inhibit for the reference value calculation is canceled when new motor parameters (e.g. p0305) are entered and only one drive data set exists (p0180 = 1). This is the case during initial commissioning.

Once the motor and control parameters have been calculated (p0340, p3900), the inhibit for the reference value calculation is automatically re-activated.

Note: If value = 0:

The automatic calculation (p0340, p3900) overwrites the reference parameters.

If value = 1:

The automatic calculation (p0340, p3900) does not overwrite the reference parameters.

p0580 Measuring probe, input terminal / MT input terminal

CU240E-2
CU240E-2 DP
CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	23	0

Description: Sets the input terminal for the measuring probe for speed actual value measurement.

Value:
0: No measuring probe
23: DI 3 (T. 8)

Dependency: Refer to: p0581

Note: DI: Digital Input

p0581 Measuring probe, edge / MT edge

CU240E-2
CU240E-2 DP
CU240E-2 DP F
CU240E-2 F

Access level: 3 **Calculated:** - **Data type:** Integer16
Can be changed: U, T **Scaling:** - **Data set:** -
Units 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: Refer to: p0580

p0582 Measuring probe, pulses per revolution / MT pulses per rev

CU240E-2
CU240E-2 DP
CU240E-2 DP F
CU240E-2 F

Access level: 3 **Calculated:** - **Data type:** Unsigned16
Can be changed: U, T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
1	12	1

Description: Sets the number of pulses per revolution (e.g. for disks with holes).

p0583 Measuring probe, maximum measuring time / MT t_meas max

CU240E-2
CU240E-2 DP
CU240E-2 DP F
CU240E-2 F

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: U, T **Scaling:** - **Data set:** -
Units 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: Refer to: r0586

p0585 Measuring probe gear factor / Probe gear factor

CU240E-2
CU240E-2 DP
CU240E-2 DP F
CU240E-2 F

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: U, T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
0.00000	1000.00000	1.00000

Description: Sets the BERO gear factor.

The measured speed is multiplied by the BERO gear factor and is displayed in r0586.

r0586 CO: Measuring probe, speed actual value / MT n_act

CU240E-2
CU240E-2 DP
CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2000 | **Data set:** -
Units group: 3_1 | **Unit selection:** p0505

Min	Max	Factory setting
- [rpm]	- [rpm]	- [rpm]

Description: Displays the speed actual value measured using the BERO.

Dependency: Refer to: p0580, p0583

Note: For p0580 = 0 (no measuring probe), a value of zero is displayed here.

r0587 CO: Measuring probe, measuring time measured / MT t_meas measured

CU240E-2
CU240E-2 DP
CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

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: Refer to: p0580

Note: For p0580 = 0 (no measuring probe), a value of zero is displayed here.

r0588 CO: Measuring probe, pulse counter / MT pulse counter

CU240E-2
CU240E-2 DP
CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the number of measuring pulses that have occurred (been received) up until now.

Dependency: Refer to: p0580

Note: After reaching 4294967295 (2^32 - 1), the counter starts again at 0.

r0589 Measuring probe, delay time / MT t_delay

CU240E-2
CU240E-2 DP
CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the time since the last measuring pulse was detected.

The delay time is specified as 32-bit value with a resolution of 1/48 µs.

When a measuring pulse occurs (is received) the delay time is reset and is limited to the maximum measuring time in p0583.

Dependency: Refer to: p0580

Note: For p0580 = 0 (no measuring probe), a value of zero is displayed here.

p0595 Selecting technological units / Select tech units

Access level: 1	**Calculated:** -	**Data type:** Integer16
Can be changed: C(5)	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min 1	**Max** 46	**Factory setting** 1

Description: Selects the units for the parameters of the technology controller.

Value:
1: %
2: 1 referred, no dimensions
3: bar
4: °C
5: Pa
6: ltr/s
7: m^3/s
8: ltr/min
9: m^3/min
10: ltr/h
11: m^3/h
12: kg/s
13: kg/min
14: kg/h
15: t/min
16: t/h
17: N
18: kN
19: Nm
20: psi
21: °F
22: gallon/s
23: $inch^3/s$
24: gallon/min
25: $inch^3/min$
26: gallon/h
27: $inch^3/h$
28: lb/s
29: lb/min
30: lb/h
31: lbf
32: lbf ft
33: K
34: rpm
35: parts/min
36: m/s
37: ft^3/s
38: ft^3/min
39: BTU/min
40: BTU/h
41: mbar
42: inch wg
43: ft wg
44: m wg
45: % r.h.
46: g/kg

Dependency: Only units of parameters with unit group 9_1 can be changed over using this parameter.

Refer to: p0596

p0596 Reference quantity, technological units / Ref tech units

Access level: 1 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.01	340.28235E36	1.00

Description: Sets the reference quantity for the technological units. When changing over using changeover parameter 595 to absolute units, all of the parameters involved refer to the reference quantity.

Dependency: Refer to: p0595

p0601[0...n] Motor temperature sensor type / Mot_temp_sens type

Access level: 2 | **Calculated:** - | **Data type:** Integer16
Can be changed: C(3), U, T | **Scaling:** - | **Data set:** MDS
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	4	0

Description: Sets the sensor type for the motor temperature monitoring.

Value:
0: No sensor
1: PTC alarm & timer
2: KTY84
4: Bimetallic NC contact alarm & timer

Dependency: The thermal motor model is only calculated for p0612.1 = 1.

Caution: If, for a selected KTY temperature sensor (p0601 = 2), 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 drive will not be able to be stopped.

Note: PTC thermistor (p0601 = 1): Tripping resistance = 1650 Ohm.

p0604[0...n] Motor temperature alarm threshold / Mot_temp al thr

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: C(3), U, T | **Scaling:** - | **Data set:** MDS
Units group: 21_1 | **Unit selection:** p0505

Min	Max	Factory setting
0.0 [°C]	240.0 [°C]	130.0 [°C]

Description: Sets the alarm threshold for monitoring the motor temperature.

Dependency: Refer to: p0606

Caution: 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 for canceling the alarm is 2 Kelvin.

When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (refer to p0300).

p0605[0...n] Motor temperature fault threshold / Mot_temp flt thr

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: C(3), U, T | **Scaling:** - | **Data set:** MDS
Units group: 21_1 | **Unit selection:** p0505

Min	Max	Factory setting
0.0 [°C]	240.0 [°C]	145.0 [°C]

Description: Sets the fault threshold for monitoring the motor temperature.

Caution: 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 for canceling the fault is 2 Kelvin.

When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (refer to p0300).

p0606[0...n] Motor temperature timer / Mot_temp timer

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: C(3), U, T | **Scaling:** - | **Data set:** MDS
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.000 [s]	600.000 [s]	0.000 [s]

Description: Sets the timer for the alarm threshold for the motor temperature monitoring function.

This timer is started when the temperature alarm threshold (p0604) is exceeded.

If the timer expires before the temperature in the meantime falls below the alarm threshold, the fault F07011 is output.

If the temperature fault threshold (p0605) is prematurely exceeded before the timer has expired, then fault F07011 is immediately output.

As long as the motor temperature has still not exceeded the fault threshold and the alarm thresholds have again been undershot, the fault can be acknowledged.

Dependency: Refer to: p0604, p0605

Refer to: F07011, A07910

Note: With p0606 = 0 s, the timer is de-activated and only the fault threshold is effective.

KTY sensor: When setting the minimum value, the timer is disabled and a fault is not output until p0605 is exceeded.

PTC sensor, bimetallic NC contact: The timer minimum value has no special significance.

p0607[0...n] Temperature sensor fault timer / Sensor fault time

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: C(3), U, T | **Scaling:** - | **Data set:** MDS
Units 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 message 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

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: C(3), T	**Scaling:** -	**Data set:** MDS
Units group: -	**Unit selection:** -	
Min 0	**Max** 2	**Factory setting** 1

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: Alarm with reduction of I_max and fault
2: Alarm and fault no reduction of I_max

Dependency: Refer to: p0601, p0604, p0605

Refer to: F07011, A07910

Note: The I_max reduction is not executed for PTC (p0601 = 1) or bimetallic NC contact (p0601 = 4).

The I_max reduction results in a lower output frequency.

If value = 0:

p0606 is not started, therefore only alarm A07910 is output.

If value = 1:

PTC: Same as value = 2 because there is no reduction in I_max.

KTY84: Alarm A07910 is output, I_max is reduced and p0606 is started. After p0606 has elapsed, fault F0711 is set.

If value = 2:

Alarm A07910 is output and p0606 is started. After p0606 has elapsed, fault F0711 is set.

p0611[0...n] I2t motor model thermal time constant / I2t mot_mod T

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Data set:** MDS
Units group: -	**Unit selection:** -	
Min 0 [s]	**Max** 20000 [s]	**Factory setting** 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 up until a temperature rise of 63 % of the continuously permissible winding temperature has been reached.

Dependency: This parameter is only used for synchronous motors (p0300 = 2xx).

Refer to: r0034, p0612, p0615

Refer to: F07011, A07012, A07910

Caution: 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.

Note: When parameter p0611 is reset to 0, then this switches out the thermal I2t motor model (also refer to p0612).

If no temperature sensor is parameterized, then the ambient temperature for the thermal motor model is referred to p0625.

p0612[0...n] Thermal motor model configuration / Therm Mot_mod conf

Access level: 3 | **Calculated:** p0340 = 1 | **Data type:** Unsigned16
Can be changed: U, T | **Scaling:** - | **Data set:** MDS
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0010 bin

Description: Sets the configuration for the thermal motor model.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Activate I2t motor model	Yes	No	-
01	Activate motor temperature model	Yes	No	-

Dependency: Refer to: r0034, p0611, p0615

Note: Re bit 00:

This bit is only used for permanent-magnet synchronous motors (p0300 = 2xx). It is only possible to switch in thermal I2t monitoring with a time constant greater than zero (p0611 > 0).

Re bit 01:

This bit is used to activate/de-activate the thermal motor model for induction motors.

p0615[0...n] I2t motor model fault threshold / I2t mot_mod thresh

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: C(3), U, T | **Scaling:** - | **Data set:** MDS
Units group: 21_1 | **Unit selection:** p0505

Min	Max	Factory setting
0.0 [°C]	220.0 [°C]	180.0 [°C]

Description: Sets the fault threshold for monitoring using the thermal I2t motor model.

Dependency: The parameter is only used for permanent-magnet synchronous motors (p0300 = 2xx).

Refer to: r0034, p0611, p0612

Refer to: F07011, A07012

Caution: 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.

p0620[0...n] Thermal adaptation, stator and rotor resistance / Mot therm_adapt R

Access level: 4 | **Calculated:** p0340 = 1 | **Data type:** Integer16
Can be changed: C(3), U, T | **Scaling:** - | **Data set:** MDS
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	2	1

Description: Sets the thermal adaptation of the stator/primary section resistance and rotor/secondary section resistance according to r0395 and r0396.

Value:
0: No thermal adaptation of stator and rotor resistances
1: Resistances adapted to the temperatures of the thermal model
2: Resistances adapted to the measured stator winding temperature

Note: For p0620 = 1, the following applies:

The stator resistance is adapted using the temperature in r0035 and the rotor resistance together with the model temperature in r0633.

For p0620 = 2, the following applies:

The stator resistance is adapted using the temperature in r0035. If applicable, the rotor temperature for adapting the rotor resistance is calculated from the stator temperature (r0035) as follows:

theta_R = (r0628 + r0625) / (r0627 + r0625) * r0035

p0621[0...n] Identification stator resistance after restart / Rst_ident Restart

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: C(3), T	**Scaling:** -	**Data set:** MDS
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	2	0

Description: Selects the identification of the stator resistance after booting the Control Unit (only for vector control).

The identification 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 powered up for the first time (pulse enable) after booting the Control Unit.

p0621 = 2:

Identification of the stator resistance every time the drive is powered up (pulse enable).

Value:
0: No Rs identification
1: Rs identification after switching-on again
2: Rs identification after switching-on each time

Dependency: - perform motor data identification (see p1910) with cold motor.

- enter ambient temperature at time of motor data identification in p0625.

Refer to: p0622, r0623

Notice: The calculated stator temperature can only be compared with the measured value of a temperature sensor (KTY) to a certain extent, as the sensor is usually the warmest point of the stator winding, whereas the measured value of identification reflects the mean 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: The measurement is carried out:

- For induction motors
- When vector control is active (see p1300)
- If a temperature sensor (KTY) has not been connected
- When the motor is at a standstill when switched on

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. This occurs only once, however, when the CU is booted (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.

p0622[0...n] Motor excitation time for Rs_ident after powering up again / t_excit Rs_id

Access level: 3	**Calculated:** p0340 = 1,3	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Data set:** MDS
Units 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 powering up again (restart).

Dependency: Refer to: 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 Stator resistance of Rs identification after powering up again / R_Stator Reset_Id

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [ohm]	- [ohm]	- [ohm]

Description: Displays the identified stator resistance after the Rs identification after powering up again.

Dependency: Refer to: p0621, p0622

p0625[0...n] Motor ambient temperature / Mot T_ambient

Access level: 3 | **Calculated:** p0340 = 1,2 | **Data type:** FloatingPoint32
Can be changed: C(3), U, T | **Scaling:** - | **Data set:** MDS
Units group: 21_1 | **Unit selection:** p0505

Min	Max	Factory setting
-40 [°C]	80 [°C]	20 [°C]

Description: Defines the ambient temperature of the motor for calculating the motor temperature model.

Note: The parameters for stator and rotor resistance (p0350, p0354) refer to this temperature.

If the thermal I2t motor model is activated for permanent-magnet synchronous motors (refer to p0611), p0625 is included in the model calculation if a temperature sensor is not being used (see p0601).

p0626[0...n] Motor overtemperature, stator core / Mot T_over core

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: C(3), U, T | **Scaling:** - | **Data set:** MDS
Units group: 21_2 | **Unit selection:** p0505

Min	Max	Factory setting
20 [K]	200 [K]	50 [K]

Description: Defines the rated overtemperature of the stator core referred to the ambient temperature.

Dependency: For 1LA7 motors (refer to p0300), the parameter is pre-set as a function of p0307 and p0311.

Refer to: p0625

Note: When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (refer to p0300).

p0627[0...n] Motor overtemperature, stator winding / Mot T_over stator

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: C(3), U, T | **Scaling:** - | **Data set:** MDS
Units group: 21_2 | **Unit selection:** p0505

Min	Max	Factory setting
20 [K]	200 [K]	80 [K]

Description: Defines the rated overtemperature of the stator winding referred to the ambient temperature.

Dependency: For 1LA7 motors (refer to p0300), the parameter is pre-set as a function of p0307 and p0311.

Refer to: p0625

Note: When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (refer to p0300).

p0628[0...n] Motor overtemperature rotor winding / Mot T_over rotor

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: C(3), U, T | **Scaling:** - | **Data set:** MDS
Units group: 21_2 | **Unit selection:** p0505

Min	Max	Factory setting
20 [K]	200 [K]	100 [K]

Description: Defines the rated overtemperature of the squirrel cage rotor referred to ambient temperature.

Dependency: For 1LA7 motors (refer to p0300), the parameter is pre-set as a function of p0307 and p0311.

Refer to: p0625

Note: When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (refer to p0300).

r0630[0...n] Motor temperature model ambient temperature / MotTMod T_amb.

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2006 | **Data set:** MDS
Units group: 21_1 | **Unit selection:** p0505

Min	Max	Factory setting
- [°C]	- [°C]	- [°C]

Description: Displays the ambient temperature of the motor temperature model.

r0631[0...n] Motor temperature model, stator core temperature / MotTMod T_core

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2006 | **Data set:** MDS
Units group: 21_1 | **Unit selection:** p0505

Min	Max	Factory setting
- [°C]	- [°C]	- [°C]

Description: Displays the stator core temperature of the motor temperature model.

r0632[0...n] Motor temperature model, stator winding temperature / MotTMod T_copper

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2006 | **Data set:** MDS
Units group: 21_1 | **Unit selection:** p0505

Min	Max	Factory setting
- [°C]	- [°C]	- [°C]

Description: Displays the stator winding temperature of the motor temperature model.

r0633[0...n] Motor temperature model, rotor temperature / MotTMod T_rotor

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2006 | **Data set:** MDS
Units group: 21_1 | **Unit selection:** p0505

Min	Max	Factory setting
- [°C]	- [°C]	- [°C]

Description: Displays the rotor temperature of the motor temperature model.

p0634[0...n] Q flux flux constant unsaturated / PSIQ KPSI UNSAT

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Data set:** MDS
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0.000 [Vsrms]	100.000 [Vsrms]	0.000 [Vsrms]

Description: The non-linear and cross-coupled quadrature axis flux functions are defined using 4 coefficients.
The parameter weights the unsaturated component of the quadrature axis flux function.

p0635[0...n] Q flux quadrature axis current constant unsaturated / PSIQ KIQ UNSAT

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Data set:** MDS
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0.00 [Arms]	10000.00 [Arms]	0.00 [Arms]

Description: The non-linear and cross-coupled quadrature axis flux functions are defined using 4 coefficients.
This parameter describes the interdependency of the unsaturated component of the quadrature axis current.

Dependency: Refer to: p0634

p0636[0...n] Q flux direct axis current constant unsaturated / PSIQ KID UNSAT

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Data set:** MDS
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0.00 [Arms]	10000.00 [Arms]	0.00 [Arms]

Description: The non-linear and cross-coupled quadrature axis flux functions are defined using 4 coefficients.
This parameter describes the interdependency of the unsaturated component of the direct axis current.

Dependency: Refer to: p0634

p0637[0...n] Q flux flux gradient saturated / PSIQ Grad SAT

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Data set:** MDS
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0.00 [mH]	10000.00 [mH]	0.00 [mH]

Description: The non-linear and cross-coupled quadrature axis flux functions are defined using 4 coefficients.
This parameter describes the gradients of the saturated component over the quadrature axis current.

Dependency: Refer to: p0634, p0635, p0636

p0640[0...n] Current limit / Current limit

Access level: 2	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: C(1, 3), U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0.00 [Arms]	10000.00 [Arms]	0.00 [Arms]

Description: Sets the current limit.

Dependency: Refer to: r0209, p0323

Note: The parameter is part of the quick commissioning (p0010 = 1); this means that it is appropriately pre-assigned when changing p0305. The current limit p0640 is limited to r0209.

The resulting current limit is displayed in r0067 and if required, r0067 is reduced by the thermal model of the power unit.

The torque and power limits (p1520, p1521, p1530, p1531) matching the current limit are automatically calculated when exiting the quick commissioning using p3900 > 0 or using the automatic parameterization with p0340 = 3, 5.

p0640 is limited to 4.0 x p0305.

p0640 is pre-assigned for the automatic self commissioning routine (e.g. to 1.5 x p0305, with p0305 = r0207[1]).

p0640 must be entered when commissioning the system. This is the reason that p0640 is not calculated by the automatic parameterization when exiting the quick commissioning (p3900 > 0).

p0641[0...n] CI: Current limit, variable / Curr lim var

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the variable current limit.

The value is referred to p0640.

p0650[0...n] Actual motor operating hours / Mot t_oper act

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: T	**Scaling:** -	**Data set:** MDS
Units 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: Refer to: p0651

Refer to: A01590

Note: The operating hours counter in p0650 can only be reset to 0. In this case, p0651 is automatically set to 0.

For p0651 = 0, the operating hours counter is disabled.

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

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: T	**Scaling:** -	**Data set:** MDS
Units 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 fault is output when the operating hours set here are reached.

Dependency: Refer to: p0650

Refer to: A01590

Note: For p0651 = 0, the operating hours counter is disabled.

The operating hours counter only runs with drive data set 0 and 1 (DDS).

p0700[0...n] Command source selection / Cmd src sel

CU240B-2

Access level: 1	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	184	0

Description: Sets the command source.

Value:

0: No Macro
2: Terminals
6: Fieldbus
100: EAQ1
101: EAQ2
110: Set enable signals
120: FBM (fault, operation, signal)
150: MOP 1
181: 2 Wire type 2
182: 2 Wire type 3
183: 3 Wire type 1
184: 3 Wire type 2

Caution: When executing a specific macro, the corresponding programmed settings are made and become active.

p0700[0...n] Command source selection / Cmd src sel

CU240B-2 DP

Access level: 1	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	184	0

Description: Sets the command source.

Value:

0: No Macro
2: Terminals
6: Fieldbus
100: EAQ1
101: EAQ2
110: Set enable signals
120: FBM (fault, operation, signal)
140: CDS
150: MOP 1
170: Jog 1
181: 2 Wire type 2
182: 2 Wire type 3
183: 3 Wire type 1
184: 3 Wire type 2

Caution: When executing a specific macro, the corresponding programmed settings are made and become active.

p0700[0...n] Command source selection / Cmd src sel

CU240E-2 CU240E-2 F	**Access level:** 1	**Calculated:** -	**Data type:** Integer16
	Can be changed: T	**Scaling:** -	**Data set:** CDS, p0170
	Units group: -	**Unit selection:** -	
	Min 0	**Max** 184	**Factory setting** 0

Description: Sets the command source.

Value:
0: No Macro
2: Terminals
6: Fieldbus
100: EAQ1
101: EAQ2
110: Set enable signals
120: FBM (fault, operation, signal)
130: Safety 0
140: CDS
150: MOP 1
152: MOP 3
160: Fix Setpoint 0
162: Fix Setpoint 2
181: 2 Wire type 2
182: 2 Wire type 3
183: 3 Wire type 1
184: 3 Wire type 2

Caution: When executing a specific macro, the corresponding programmed settings are made and become active.

p0700[0...n] Command source selection / Cmd src sel

CU240E-2 DP	**Access level:** 1	**Calculated:** -	**Data type:** Integer16
	Can be changed: T	**Scaling:** -	**Data set:** CDS, p0170
	Units group: -	**Unit selection:** -	
	Min 0	**Max** 184	**Factory setting** 0

Description: Sets the command source.

Value:
0: No Macro
2: Terminals
6: Fieldbus
100: EAQ1
101: EAQ2
110: Set enable signals
120: FBM (fault, operation, signal)
130: Safety 0
140: CDS
150: MOP 1
152: MOP 3
160: Fix Setpoint 0
162: Fix Setpoint 2
170: Jog 1
181: 2 Wire type 2
182: 2 Wire type 3
183: 3 Wire type 1
184: 3 Wire type 2

Caution: When executing a specific macro, the corresponding programmed settings are made and become active.

p0700[0...n] Command source selection / Cmd src sel

CU240E-2 DP F

Access level: 1	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min 0	**Max** 184	**Factory setting** 0

Description: Sets the command source.

Value:
0: No Macro
2: Terminals
6: Fieldbus
100: EAQ1
101: EAQ2
110: Set enable signals
120: FBM (fault, operation, signal)
130: Safety 0
131: Safety 1
140: CDS
150: MOP 1
152: MOP 3
160: Fix Setpoint 0
162: Fix Setpoint 2
170: Jog 1
181: 2 Wire type 2
182: 2 Wire type 3
183: 3 Wire type 1
184: 3 Wire type 2

Caution: When executing a specific macro, the corresponding programmed settings are made and become active.

r0720[0...4] CU number of inputs and outputs / CU I/O count

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min -	**Max** -	**Factory setting** -

Description: Displays the number of inputs and outputs

Index:
[0] = Number of digital inputs
[1] = Number of digital outputs
[2] = Number of digital input/outputs bidirectional
[3] = Number of analog inputs
[4] = Number of analog outputs

r0721 CU digital inputs, terminal actual value / CU DI actual value

CU240B-2
CU240B-2 DP

Access level: 2 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the actual value at the digital inputs.

This means that the actual input signal can be checked at terminal DI x or DI/DO x prior to switching from the simulation mode (p0795.x = 1) to terminal mode (p0795.x = 0).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (T. 5)	High	Low	-
01	DI 1 (T. 6)	High	Low	-
02	DI 2 (T. 7)	High	Low	-
03	DI 3 (T. 8)	High	Low	-
11	DI 11 (T. 3, 4) AI 0	High	Low	-

Note: DI: Digital Input

T: Terminal

r0721 CU digital inputs, terminal actual value / CU DI actual value

CU240E-2
CU240E-2 DP
CU240E-2 DP F
CU240E-2 F

Access level: 2 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the actual value at the digital inputs.

This means that the actual input signal can be checked at terminal DI x or DI/DO x prior to switching from the simulation mode (p0795.x = 1) to terminal mode (p0795.x = 0).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (T. 5)	High	Low	-
01	DI 1 (T. 6)	High	Low	-
02	DI 2 (T. 7)	High	Low	-
03	DI 3 (T. 8)	High	Low	-
04	DI 4 (T. 16)	High	Low	-
05	DI 5 (T. 17)	High	Low	-
11	DI 11 (T. 3, 4) AI 0	High	Low	-
12	DI 12 (T. 10, 11) AI 1	High	Low	-

Note: DI: Digital Input

T: Terminal

r0722.0...11 CO/BO: CU digital inputs, status / CU DI status

CU240B-2	**Access level:** 2	**Calculated:** -	**Data type:** Unsigned32
CU240B-2 DP	**Can be changed:** -	**Scaling:** -	**Data set:** -
	Units group: -	**Unit selection:** -	
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the status of the digital inputs.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (T. 5)	High	Low	-
01	DI 1 (T. 6)	High	Low	-
02	DI 2 (T. 7)	High	Low	-
03	DI 3 (T. 8)	High	Low	-
11	DI 11 (T. 3, 4) AI 0	High	Low	-

Dependency: Refer to: r0723

Notice: To the terminal designation:

The first designation is valid for CU320, the second for CU310.

Note: AI: Analog Input

DI: Digital Input

T: Terminal

r0722.0...12 CO/BO: CU digital inputs, status / CU DI status

CU240E-2	**Access level:** 2	**Calculated:** -	**Data type:** Unsigned32
CU240E-2 DP	**Can be changed:** -	**Scaling:** -	**Data set:** -
CU240E-2 DP F	**Units group:** -	**Unit selection:** -	
CU240E-2 F			
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the status of the digital inputs.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (T. 5)	High	Low	-
01	DI 1 (T. 6)	High	Low	-
02	DI 2 (T. 7)	High	Low	-
03	DI 3 (T. 8)	High	Low	-
04	DI 4 (T. 16)	High	Low	-
05	DI 5 (T. 17)	High	Low	-
11	DI 11 (T. 3, 4) AI 0	High	Low	-
12	DI 12 (T. 10, 11) AI 1	High	Low	-

Dependency: Refer to: r0723

Notice: To the terminal designation:

The first designation is valid for CU320, the second for CU310.

Note: AI: Analog Input

DI: Digital Input

T: Terminal

r0723.0...11 CO/BO: CU digital inputs, status inverted / CU DI status inv

CU240B-2
CU240B-2 DP

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the inverted status of the digital inputs.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (T. 5)	High	Low	-
01	DI 1 (T. 6)	High	Low	-
02	DI 2 (T. 7)	High	Low	-
03	DI 3 (T. 8)	High	Low	-
11	DI 11 (T. 3, 4) AI 0	High	Low	-

Dependency: Refer to: r0722

Notice: To the terminal designation:

The first designation is valid for CU320, the second for CU310.

Note: DI: Digital Input

T: Terminal

r0723.0...12 CO/BO: CU digital inputs, status inverted / CU DI status inv

CU240E-2
CU240E-2 DP
CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the inverted status of the digital inputs.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (T. 5)	High	Low	-
01	DI 1 (T. 6)	High	Low	-
02	DI 2 (T. 7)	High	Low	-
03	DI 3 (T. 8)	High	Low	-
04	DI 4 (T. 16)	High	Low	-
05	DI 5 (T. 17)	High	Low	-
11	DI 11 (T. 3, 4) AI 0	High	Low	-
12	DI 12 (T. 10, 11) AI 1	High	Low	-

Dependency: Refer to: r0722

Notice: To the terminal designation:

The first designation is valid for CU320, the second for CU310.

Note: DI: Digital Input

T: Terminal

p0724 CU digital inputs debounce time / CU DI t_debounce

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units 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

p0730 BI: CU signal source for terminal DO 0 / CU S_src DO 0

Access level: 2 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	52.3

Description: Sets the signal source for terminal DO 0 (NO: T. 19 / NC: T. 18).

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: DO: Digital Output
T: Terminal
Relay output: NO = normally open, NC = normally closed

p0731 BI: CU signal source for terminal DO 1 / CU S_src DO 1

CU240E-2
CU240E-2 DP
CU240E-2 DP F
CU240E-2 F

Access level: 2 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	52.7

Description: Sets the signal source for terminal DO 1 (NO: T. 21).

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: DO: Digital Output
T: Terminal
Relay output: NO = normally open, NC = normally closed

p0732 BI: CU signal source for terminal DO 2 / CU S_src DO 2

CU240E-2
CU240E-2 DP
CU240E-2 DP F
CU240E-2 F

Access level: 2 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	52.2

Description: Sets the signal source for terminal DO 2 (NO: T. 24 / NC: T. 23).

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: DO: Digital Output
T: Terminal
Relay output: NO = normally open, NC = normally closed

r0747 CU, digital outputs status / CU DO status

CU240B-2
CU240B-2 DP

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the status of digital outputs.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DO 0 (NO: T. 19 / NC: T. 18)	High	Low	-

Note: DO: Digital Output
T: Terminal
Relay output: NO = normally open, NC = normally closed
Inversion using p0748 has been taken into account.

r0747 CU, digital outputs status / CU DO status

CU240E-2
CU240E-2 DP
CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the status of digital outputs.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DO 0 (NO: T. 19 / NC: T. 18)	High	Low	-
01	DO 1 (NO: T. 21)	High	Low	-
02	DO 2 (NO: T. 24 / NC: T. 23)	High	Low	-

Note: DO: Digital Output
T: Terminal
Relay output: NO = normally open, NC = normally closed
Inversion using p0748 has been taken into account.

p0748 CU, invert digital outputs / CU DO inv

CU240B-2
CU240B-2 DP

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0000 bin

Description: Setting to invert the signals at the digital outputs.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DO 0 (NO: T. 19 / NC: T. 18)	Inverted	Not inverted	-

Note: DO: Digital Output
T: Terminal
Relay output: NO = normally open, NC = normally closed

p0748 CU, invert digital outputs / CU DO inv

CU240E-2
CU240E-2 DP
CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0000 bin

Description: Setting to invert the signals at the digital outputs.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DO 0 (NO: T. 19 / NC: T. 18)	Inverted	Not inverted	-
01	DO 1 (NO: T. 21)	Inverted	Not inverted	-
02	DO 2 (NO: T. 24 / NC: T. 23)	Inverted	Not inverted	-

Note: DO: Digital Output
T: Terminal
Relay output: NO = normally open, NC = normally closed

r0751.0...9 BO: CU analog inputs status word / CU AI status word

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the status of analog inputs.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
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] CO: CU analog inputs input voltage/current actual / CU AI U/I_inp act

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

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 (T. 3/4)
[1] = AI1 (T. 10/11)

Dependency: The type of analog input AIx (voltage or current input) is set using p0756.

Refer to: p0756

Note: AI: Analog Input

T: Terminal

p0753[0...1] CU analog inputs smoothing time constant / CU AI T_smooth

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units 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 low pass filter for the analog inputs.

Index: [0] = AI0 (T. 3/4)
[1] = AI1 (T. 10/11)

Note: AI: Analog Input

T: Terminal

r0755[0...1] CO: CU analog inputs actual value in percent / CU AI value in %

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

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 (T. 3/4)
[1] = AI1 (T. 10/11)

Note: AI: Analog Input

T: Terminal

p0756[0...1] CU analog inputs type / CU AI type

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: U, T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	8	[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).

In addition, the associated DIP switch must be set.

For the voltage input, DIP switch AI0/1 must be set to "U".

For the current input, DIP switch AI0/1 or AI2 must be set to "I".

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)
8: No sensor connected

Index: [0] = AI0 (T. 3/4)
[1] = AI1 (T. 10/11)

Warning: The maximum voltage difference between analog input terminals AI+, AI-, and the ground must not exceed 35 V.

If the system is operated when the load resistor is switched on (DIP switch set to "I"), the voltage between differential inputs AI+ and AI- must not exceed 10 V or the injected 80 mA current 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, 1, 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] CU analog inputs characteristic value x1 / CU AI char x1

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units 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 (V, mA) of the 1st value pair of the characteristic.

Index: [0] = AI0 (T. 3/4)
[1] = AI1 (T. 10/11)

Note: The parameters for the characteristic do not have a limiting effect.

p0758[0...1] CU analog inputs characteristic value y1 / CU AI char y1

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-1000.00 [%]	1000.00 [%]	0.00 [%]

Description: Sets the scaling characteristic for the analog inputs.
The scaling characteristic for the analog inputs is defined using 2 points.
This parameter specifies the y coordinate (percentage) of the 1st value pair of the characteristic.

Index: [0] = AI0 (T. 3/4)
[1] = AI1 (T. 10/11)

Note: The parameters for the characteristic do not have a limiting effect.

p0759[0...1] CU analog inputs characteristic value x2 / CU AI char x2

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-50.000	160.000	10.000

Description: Sets the scaling characteristic for the analog inputs.
The scaling characteristic for the analog inputs is defined using 2 points.
This parameter specifies the x coordinate (V, mA) of the 2nd value pair of the characteristic.

Index: [0] = AI0 (T. 3/4)
[1] = AI1 (T. 10/11)

Note: The parameters for the characteristic do not have a limiting effect.

p0760[0...1] CU analog inputs characteristic value y2 / CU AI char y2

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-1000.00 [%]	1000.00 [%]	100.00 [%]

Description: Sets the scaling characteristic for the analog inputs.
The scaling characteristic for the analog inputs is defined using 2 points.
This parameter specifies the y coordinate (percentage) of the 2nd value pair of the characteristic.

Index: [0] = AI0 (T. 3/4)
[1] = AI1 (T. 10/11)

Note: The parameters for the characteristic do not have a limiting effect.

p0761[0...1] CU analog inputs wire breakage monitoring response threshold / CU WireBrkThresh

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0.00	20.00	2.00

Description: Sets the response threshold for the wire breakage monitoring of the analog inputs.
The unit for the parameter value depends on the set analog input type.

Index: [0] = AI0 (T. 3/4)
[1] = AI1 (T. 10/11)

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]
Refer to: p0756

Note: AI: Analog Input
When p0761 = 0, wire breakage monitoring is not carried out.

p0762[0...1] CU analog inputs wire breakage monitoring delay time / CU wire brk t_del

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0 [ms]	1000 [ms]	100 [ms]

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

Index: [0] = AI0 (T. 3/4)
[1] = AI1 (T. 10/11)

Note: AI: Analog Input

p0771[0...1] CI: CU analog outputs signal source / CU AO S_src

Access level: 2	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	[0] 21[0] [1] 27[0]

Description: Sets the signal source for the analog outputs.

Index: [0] = AO0 (T 12/13)
[1] = AO1 (T 26/27)

Note: AO: Analog Output
T: Terminal

r0772[0...1] CU analog outputs, output value currently referred / CU AO outp_val

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

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

Index: [0] = AO0 (T 12/13)
[1] = AO1 (T 26/27)

Note: AO: Analog Output
T: Terminal

p0773[0...1] CU analog outputs smoothing time constant / CU AO T_smooth

Access level: 2
Calculated: -
Data type: FloatingPoint32
Can be changed: U, T
Scaling: -
Data set: -
Units 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 low pass filter for the analog outputs.

Index:
[0] = AO0 (T 12/13)
[1] = AO1 (T 26/27)

Note:
AO: Analog Output
T: Terminal

r0774[0...1] CU analog outputs output voltage/current actual / CU AO U/I_outp

Access level: 2
Calculated: -
Data type: FloatingPoint32
Can be changed: -
Scaling: p2001
Data set: -
Units group: -
Unit selection: -

Min	Max	Factory setting
-	-	-

Description: Displays the actual output voltage or output current at the analog outputs.

Index:
[0] = AO0 (T 12/13)
[1] = AO1 (T 26/27)

Dependency: Refer to: p0776

Note:
AO: Analog Output
T: Terminal

p0775[0...1] CU analog outputs activate absolute value generation / CU AO absVal act

Access level: 2
Calculated: -
Data type: Integer16
Can be changed: T
Scaling: -
Data set: -
Units group: -
Unit selection: -

Min	Max	Factory setting
0	1	0

Description: Activates the absolute value generation for the analog outputs.

Value:
0: No absolute value generation
1: Absolute value generation switched in

Index:
[0] = AO0 (T 12/13)
[1] = AO1 (T 26/27)

Note:
AO: Analog Output
T: Terminal

p0776[0...1] CU analog outputs type / CU AO type

Access level: 2 | **Calculated:** - | **Data type:** Integer16
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	2	0

Description: Sets the analog output type.

p0776[x] = 1 corresponds to a voltage output (p0774, p0778, p0780 are displayed in V).

p0776[x] = 0, 2 corresponds to a current output (p0774, 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 (T 12/13)
[1] = AO1 (T 26/27)

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.

p0777[0...1] CU analog outputs characteristic value x1 / CU AO char x1

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-1000.00 [%]	1000.00 [%]	0.00 [%]

Description: Sets the scaling characteristic for the analog outputs.

The scaling characteristic for the analog outputs is defined using 2 points.

This parameter specifies the x coordinate (percentage) of the 1st value pair of the characteristic.

Index:
[0] = AO0 (T 12/13)
[1] = AO1 (T 26/27)

Dependency: Refer to: p0776

Notice: This parameter is automatically overwritten when the analog output type is changed (p0776).

Note: This parameter is automatically overwritten if p0776 (type of analog output) is changed.

The parameters for the characteristic do not have a limiting effect.

p0778[0...1] CU analog outputs characteristic value y1 / CU char y1

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-20.000 [V]	20.000 [V]	0.000 [V]

Description: Sets the scaling characteristic for the analog outputs.

The scaling characteristic for the analog outputs 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 (T 12/13)
[1] = AO1 (T 26/27)

Dependency: The unit of this parameter (V or mA) depends on the analog input type.

Refer to: p0776

Notice: This parameter is automatically overwritten when the analog output type is changed (p0776).

Note: This parameter is automatically overwritten if p0776 (type of analog output) is changed.

The parameters for the characteristic do not have a limiting effect.

p0779[0...1] CU analog outputs characteristic value x2 / CU char x2

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-1000.00 [%]	1000.00 [%]	100.00 [%]

Description: Sets the scaling characteristic for the analog outputs.
The scaling characteristic for the analog outputs is defined using 2 points.
This parameter specifies the x coordinate (percentage) of the 2nd value pair of the characteristic.

Index: [0] = AO0 (T 12/13)
[1] = AO1 (T 26/27)

Dependency: Refer to: p0776

Notice: This parameter is automatically overwritten when the analog output type is changed (p0776).

Note: This parameter is automatically overwritten if p0776 (type of analog output) is changed.
The parameters for the characteristic do not have a limiting effect.

p0780[0...1] CU analog outputs characteristic value y2 / CU char y2

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-20.000 [V]	20.000 [V]	20.000 [V]

Description: Sets the scaling characteristic for the analog outputs.
The scaling characteristic for the analog outputs 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 (T 12/13)
[1] = AO1 (T 26/27)

Dependency: The unit of this parameter (V or mA) depends on the analog input type.
Refer to: p0776

Notice: This parameter is automatically overwritten when the analog output type is changed (p0776).

Note: This parameter is automatically overwritten if p0776 (type of analog output) is changed.
The parameters for the characteristic do not have a limiting effect.

p0782[0...1] BI: CU analog outputs invert signal source / CU AO inv S_src

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source to invert the analog output signals.

Index: [0] = AO0 (T 12/13)
[1] = AO1 (T 26/27)

Note: AO: Analog Output
T: Terminal

r0785.0...1 BO: CU analog outputs status word / CU AO ZSW

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the status of analog outputs.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	AO 0 negative	Yes	No	-
01	AO 1 negative	Yes	No	-

Note: AO: Analog Output

p0795 CU digital inputs simulation mode / CU DI simulation

CU240B-2
CU240B-2 DP

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0000 0000 0000 0000 bin

Description: Sets the simulation mode for digital inputs.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (T. 5)	Simulation	Terminal eval.	-
01	DI 1 (T. 6)	Simulation	Terminal eval.	-
02	DI 2 (T. 7)	Simulation	Terminal eval.	-
03	DI 3 (T. 8)	Simulation	Terminal eval.	-
11	DI 11 (T. 3, 4) AI 0	Simulation	Terminal eval.	-

Dependency: The setpoint for the input signals is specified using p0796.

Refer to: p0796

Note: This parameter is not saved when data is backed up (p0971).

DI: Digital Input

T: Terminal

p0795 CU digital inputs simulation mode / CU DI simulation

CU240E-2
CU240E-2 DP
CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0000 0000 0000 0000 bin

Description: Sets the simulation mode for digital inputs.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (T. 5)	Simulation	Terminal eval.	-
01	DI 1 (T. 6)	Simulation	Terminal eval.	-
02	DI 2 (T. 7)	Simulation	Terminal eval.	-
03	DI 3 (T. 8)	Simulation	Terminal eval.	-
04	DI 4 (T. 16)	Simulation	Terminal eval.	-
05	DI 5 (T. 17)	Simulation	Terminal eval.	-
11	DI 11 (T. 3, 4) AI 0	Simulation	Terminal eval.	-
12	DI 12 (T. 10, 11) AI 1	Simulation	Terminal eval.	-

Dependency: The setpoint for the input signals is specified using p0796.

Refer to: p0796

Note: This parameter is not saved when data is backed up (p0971).

DI: Digital Input

T: Terminal

p0796 CU digital inputs simulation mode setpoint / CU DI simul setp

CU240B-2
CU240B-2 DP

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0000 0000 0000 0000 bin

Description: Sets the setpoint for the input signals in the digital input simulation mode.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (T. 5)	High	Low	-
01	DI 1 (T. 6)	High	Low	-
02	DI 2 (T. 7)	High	Low	-
03	DI 3 (T. 8)	High	Low	-
11	DI 11 (T. 3, 4) AI 0	High	Low	-

Dependency: The simulation of a digital input is selected using p0795.

Refer to: p0795

Notice: To the terminal designation:

The first designation is valid for CU320, the second for CU310.

Note: This parameter is not saved when data is backed up (p0971).

AI: Analog Input

DI: Digital Input

T: Terminal

p0796 CU digital inputs simulation mode setpoint / CU DI simul setp

CU240E-2
CU240E-2 DP
CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0000 0000 0000 0000 bin

Description: Sets the setpoint for the input signals in the digital input simulation mode.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (T. 5)	High	Low	-
01	DI 1 (T. 6)	High	Low	-
02	DI 2 (T. 7)	High	Low	-
03	DI 3 (T. 8)	High	Low	-
04	DI 4 (T. 16)	High	Low	-
05	DI 5 (T. 17)	High	Low	-
11	DI 11 (T. 3, 4) AI 0	High	Low	-
12	DI 12 (T. 10, 11) AI 1	High	Low	-

Dependency: The simulation of a digital input is selected using p0795.

Refer to: p0795

Notice: To the terminal designation:

The first designation is valid for CU320, the second for CU310.

Note: This parameter is not saved when data is backed up (p0971).

AI: Analog Input

DI: Digital Input

T: Terminal

p0797[0...1] CU analog inputs simulation mode / CU AI sim_mode

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: U, T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min 0	**Max** 1	**Factory setting** 0

Description: Sets the simulation mode for the analog inputs.

Value:
0: No simulation mode for analog input x
1: Simulation mode for analog input x

Index:
[0] = AI0 (T. 3/4)
[1] = AI1 (T. 10/11)

Dependency: The setpoint for the input voltage is specified via p0798.

Refer to: p0798

Note: This parameter is not saved when data is backed up (p0971).

AI: Analog Input

p0798[0...1] CU analog inputs simulation mode setpoint / CU AI sim setp

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min -50.000	**Max** 2000.000	**Factory setting** 0.000

Description: Sets the setpoint for the input value in the simulation mode of the analog inputs.

Index:
[0] = AI0 (T. 3/4)
[1] = AI1 (T. 10/11)

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.

Refer to: p0756, p0797

Note: This parameter is not saved when data is backed up (p0971).

AI: Analog Input

p0802 Data transfer: memory card as source/target / mem_card src/targ

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min 0	**Max** 100	**Factory setting** 0

Description: Sets the number for data transfer of a parameter backup from/to memory card.

Transfer from memory card to device memory (p0804 = 1):

- Sets the source of parameter backup (e.g. p0802 = 48 --> PS048xxx.ACX is the source).

Transfer from non-volatile device memory to memory card (p0804 = 2):

- Sets the target of parameter backup (e.g. p0802 = 23 --> PS023xxx.ACX is the target).

Dependency: Refer to: p0803, p0804

Notice: If the data between the volatile and non-volatile device memories differ, then it may be necessary to save the data on the memory card in a non-volatile fashion prior to the transfer (e.g. p0971 = 1).

p0803 Data transfer: device memory as source/target / Dev_mem src/targ

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min 0	**Max** 12	**Factory setting** 0

Description: Sets the number for data transfer of a parameter backup from/to device memory.

Transfer from memory card to device memory (p0804 = 1):

- Sets the target of the parameter backup (e.g. p0803 = 10 --> PS010xxx.ACX is the target).

Transfer from non-volatile device memory to memory card (p0804 = 2):

- Sets the source of the parameter backup (e.g. p0803 = 11 --> PS011xxx.ACX is the source).

Value:
0: Source/target standard
10: Source/target with setting 10
11: Source/target with setting 11
12: Source/target with setting 12

Dependency: Refer to: p0802, p0804

Notice: If the data between the volatile and non-volatile device memories differ, then it may be necessary to save the data on the memory card in a non-volatile fashion prior to the transfer (e.g. p0971 = 1).

p0804 Data transfer start / Data transf start

CU240B-2	**Access level:** 3	**Calculated:** -	**Data type:** Integer16
CU240E-2	**Can be changed:** T	**Scaling:** -	**Data set:** -
CU240E-2 F	**Units group:** -	**Unit selection:** -	
	Min	**Max**	**Factory setting**
	0	1100	0

Description: Sets the transfer direction and start of data transfer between the memory card and non-volatile device memory.

Example 1:

The parameter backup is to be transferred from the device memory to the memory card with setting 0. The parameter backup is to be stored on the memory card with setting 22.

p0802 = 22 (parameter backup stored on memory card as target with setting 22)

p0803 = 0 (parameter backup stored in device memory as source with setting 0)

p0804 = 2 (start data transfer from device memory to memory card)

--> PS000xxx.ACX is transferred from device memory to memory card and stored as PS022xxx.ACX.

Example 2:

The parameter backup is to be transferred from the memory card to the device memory with setting 22. The parameter backup is to be stored in the device memory as setting 0.

p0802 = 22 (parameter backup stored on memory card as source with setting 22)

p0803 = 0 (parameter backup stored in device memory as target with setting 0)

p0804 = 1 (start data transfer from memory card to device memory)

--> PS022xxx.ACX is transferred from memory card to device memory and stored as PS000xxx.ACX.

Example 3 (not supported for PROFIBUS devices):

The communication configuration is to be transferred from the device memory to the memory card.

p0802 = (not relevant)

p0803 = (not relevant)

p0804 = 12 (start transferring the device master data (GSD) to the memory card)

--> The files that are relevant for the communication configuration are transferred from the device memory to the memory card and stored in the /SIEMENS/SINAMICS/DATA/CFG directory.

Value:

0: Inactive
1: Memory card to device memory
2: Device memory to memory card
1001: File on memory card cannot be opened
1002: File in device memory cannot be opened
1003: Memory card not found
1100: File cannot be transferred

Dependency: Refer to: p0802, p0803

Notice: The memory card must not be removed while data is being transferred.

For p0014 = 1, the following applies:

After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

Note: If a parameter backup with setting 0 is detected on the memory card when the Control Unit is switched on (PS000xxx.ACX), this is transferred automatically to the device memory.

When the memory card is inserted, a parameter backup with setting 0 (PS000xxx.ACX) is automatically written to the memory card when the parameters are saved in a non-volatile memory (e.g. by means of "Copy RAM to ROM").

Once the data has been successfully transferred, this parameter is automatically reset to 0. If an error occurs, the parameter is set to a value > 1000. Possible fault causes:

p0804 = 1001:

The parameter backup set in p0802 as the source on the memory card does not exist or there is not sufficient memory space available on the memory card.

p0804 = 1002:

The parameter backup set in p0803 as the source in the device memory does not exist or there is not sufficient memory space available in the device memory.

p0804 = 1003:

No memory card has been inserted.

p0804 Data transfer start / Data transf start

CU240B-2 DP	**Access level:** 3	**Calculated:** -	**Data type:** Integer16
CU240E-2 DP	**Can be changed:** T	**Scaling:** -	**Data set:** -
CU240E-2 DP F	**Units group:** -	**Unit selection:** -	
	Min	**Max**	**Factory setting**
	0	1100	0

Description: Sets the transfer direction and start of data transfer between the memory card and non-volatile device memory.

Example 1:

The parameter backup is to be transferred from the device memory to the memory card with setting 0. The parameter backup is to be stored on the memory card with setting 22.

p0802 = 22 (parameter backup stored on memory card as target with setting 22)

p0803 = 0 (parameter backup stored in device memory as source with setting 0)

p0804 = 2 (start data transfer from device memory to memory card)

--> PS000xxx.ACX is transferred from device memory to memory card and stored as PS022xxx.ACX.

Example 2:

The parameter backup is to be transferred from the memory card to the device memory with setting 22. The parameter backup is to be stored in the device memory as setting 0.

p0802 = 22 (parameter backup stored on memory card as source with setting 22)

p0803 = 0 (parameter backup stored in device memory as target with setting 0)

p0804 = 1 (start data transfer from memory card to device memory)

--> PS022xxx.ACX is transferred from memory card to device memory and stored as PS000xxx.ACX.

Example 3 (not supported for PROFIBUS devices):

The communication configuration is to be transferred from the device memory to the memory card.

p0802 = (not relevant)

p0803 = (not relevant)

p0804 = 12 (start transferring the device master data (GSD) to the memory card)

--> The files that are relevant for the communication configuration are transferred from the device memory to the memory card and stored in the /SIEMENS/SINAMICS/DATA/CFG directory.

Value:

0: Inactive
1: Memory card to device memory
2: Device memory to memory card
12: Device memory (communication configuration) to memory card
1001: File on memory card cannot be opened
1002: File in device memory cannot be opened
1003: Memory card not found
1100: File cannot be transferred

Dependency: Refer to: p0802, p0803

Notice: The memory card must not be removed while data is being transferred.

For p0014 = 1, the following applies:

After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

Note: If a parameter backup with setting 0 is detected on the memory card when the Control Unit is switched on (PS000xxx.ACX), this is transferred automatically to the device memory.

When the memory card is inserted, a parameter backup with setting 0 (PS000xxx.ACX) is automatically written to the memory card when the parameters are saved in a non-volatile memory (e.g. by means of "Copy RAM to ROM").

Once the data has been successfully transferred, this parameter is automatically reset to 0. If an error occurs, the parameter is set to a value > 1000. Possible fault causes:

p0804 = 1001:

The parameter backup set in p0802 as the source on the memory card does not exist or there is not sufficient memory space available on the memory card.

p0804 = 1002:

The parameter backup set in p0803 as the source in the device memory does not exist or there is not sufficient memory space available in the device memory.

p0804 = 1003:

No memory card has been inserted.

p0806 BI: Inhibit master control / PcCtrl inhibit

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to block the master control.

Dependency: Refer to: r0807

Note: The commissioning software (drive control panel) uses the master control.

r0807.0 BO: Master control active / PcCtrl active

Access level: 3	**Calculated:** -	**Data type:** Unsigned8
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays what has the master control.

The drive can be controlled via the BICO interconnection or from external (e.g. the commissioning software).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Master control active	Yes	No	5030, 6031

Dependency: Refer to: p0806

Notice: The master control only influences control word 1 and speed setpoint 1. Other control words/setpoints can be transferred from another automation device.

Note: Bit 0 = 0: BICO interconnection active

Bit 0 = 1: Master control for PC/OP

The master control is used from the commissioning software (drive control panel) and from the Operator Panel (OP, LOCAL mode).

p0809[0...2] Copy Command Data Set CDS / Copy CDS

Access level: 2	**Calculated:** -	**Data type:** Unsigned8
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	3	0

Description: Copies one Command Data Set (CDS) into another.

Index: [0] = Source Command Data Set
[1] = Target Command Data Set
[2] = Start copying procedure

Dependency: Refer to: r3996

Notice: When the command data sets are copied, short-term communication interruptions may occur.

Note: Procedure:

1. In Index 0, enter which command data set should be copied.
2. In Index 1, enter the command data set that is to be copied into.
3. Start copying: Set index 2 from 0 to 1.

p0809[2] is automatically set to 0 when copying is completed.

p0810 BI: Command data set selection CDS bit 0 / CDS select., bit 0

CU240B-2
CU240E-2
CU240E-2 F

Access level: 2 **Calculated:** - **Data type:** U32 / Binary
Can be changed: T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source to select the Command Data Set bit 0 (CDS bit 0).
Dependency: Refer to: r0050, p0811, r0836
Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.
Note: The Command Data Set selected using the binector inputs is displayed in r0836.
The currently effective command data set is displayed in r0050.
A Command Data Set can be copied using p0809.

p0810 BI: Command data set selection CDS bit 0 / CDS select., bit 0

CU240B-2 DP
CU240E-2 DP
CU240E-2 DP F

Access level: 2 **Calculated:** - **Data type:** U32 / Binary
Can be changed: T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	722.3

Description: Sets the signal source to select the Command Data Set bit 0 (CDS bit 0).
Dependency: Refer to: r0050, p0811, r0836
Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.
Note: The Command Data Set selected using the binector inputs is displayed in r0836.
The currently effective command data set is displayed in r0050.
A Command Data Set can be copied using p0809.

p0811 BI: Command data set selection CDS bit 1 / CDS select., bit 1

Access level: 2 **Calculated:** - **Data type:** U32 / Binary
Can be changed: T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source to select the Command Data Set bit 1 (CDS bit 1).
Dependency: Refer to: r0050, p0810, r0836
Note: The Command Data Set selected using the binector inputs is displayed in r0836.
The currently effective command data set is displayed in r0050.
A Command Data Set can be copied using p0809.

p0819[0...2] Copy Drive Data Set DDS / Copy DDS

Access level: 2 **Calculated:** - **Data type:** Unsigned8
Can be changed: C(15) **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
0	3	0

Description: Copies one Drive Data Set (DDS) into another.

Index: [0] = Source Drive Data Set
[1] = Target Drive Data Set
[2] = Start copying procedure

Dependency: Refer to: r3996

Notice: When the drive data sets are copied, short-term communication interruptions may occur.

Note: Procedure:

1. In Index 0, enter which drive data set is to be copied.
2. In Index 1, enter the drive data set data that is to be copied into.
3. Start copying: Set index 2 from 0 to 1.

p0819[2] is automatically set to 0 when copying is completed.

p0820[0...n] BI: Drive Data Set selection DDS bit 0 / DDS select., bit 0

Access level: 3 **Calculated:** - **Data type:** U32 / Binary
Can be changed: C(15), T **Scaling:** - **Data set:** CDS, p0170
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source to select the Drive Data Set, bit 0 (DDS, bit 0).

Dependency: Refer to: r0051, p0826, r0837

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p0821[0...n] BI: Drive Data Set selection DDS bit 1 / DDS select., bit 1

Access level: 3 **Calculated:** - **Data type:** U32 / Binary
Can be changed: C(15), T **Scaling:** - **Data set:** CDS, p0170
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source to select the Drive Data Set, bit 1 (DDS, bit 1).

Dependency: Refer to: r0051, r0837

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p0826[0...n] Motor changeover, motor number / Mot_chng mot No.

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: C(3), T | **Scaling:** - | **Data set:** MDS
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	3	0

Description: Sets the freely-assignable motor number for the drive data set changeover.

If the same motor is driven by different drive data sets, the same motor number must also be entered in these data sets.

If the motor is also switched with the drive data set, different motor numbers must be used. In this case, the data set can only be switched when the pulse inhibit is set.

Note: If the motor numbers are identical, the same thermal motor model is used for calculation after data set changeover. If different motor numbers are used, different models are also used for calculating (the inactive motor cools down in each case).

For the same motor number, the correction values of the Rs, Lh or kT adaptation are applied for the data set changeover (refer to r1782, r1787, r1797).

r0835.2...8 CO/BO: Data set changeover status word / DDS_ZSW

Access level: 2 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the status word for the drive data set changeover.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
02	Internal parameter calculation active	Yes	No	-
04	Armature short circuit active	Yes	No	-
05	Identification running	Yes	No	-
07	Rotating measurement running	Yes	No	-
08	Motor data identification running	Yes	No	-

Note: Re bit 02:

A data set changeover is delayed by the time required for the internal parameter calculation.

Re bit 04:

A data set changeover is only carried out when the armature short circuit is not activated.

Re bit 05:

A data set changeover is only carried out when pole position identification is not running.

Re bit 07:

A data set changeover is only carried out when rotating measurement is not running.

Re bit 08:

A data set changeover is only carried out when motor data identification is not running.

r0836.0...1 CO/BO: Command Data Set CDS selected / CDS selected

Access level: 3 | **Calculated:** - | **Data type:** Unsigned8
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the command data set (CDS) selected via the binector input.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	CDS select. bit 0	ON	OFF	-
01	CDS select. bit 1	ON	OFF	-

Dependency: Refer to: r0050, p0810, p0811

Note: Command data sets are selected via binector input p0810 and following.

The currently effective command data set is displayed in r0050.

r0837.0...1 CO/BO: Drive Data Set DDS selected / DDS selected

Access level: 3	**Calculated:** -	**Data type:** Unsigned8
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the drive data set (DDS) selected via the binector input.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DDS select. bit 0	ON	OFF	-
01	DDS select. bit 1	ON	OFF	-

Dependency: Refer to: r0051, p0820, p0821

Note: Drive data sets are selected via binector input p0820 and 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 binector inputs.

p0840[0...n] BI: ON / OFF (OFF1) / ON / OFF (OFF1)

CU240B-2
CU240E-2
CU240E-2 F

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	[0] 722.0 [1] 0 [2] 0 [3] 0

Description: Sets the signal source for the command "ON/OFF (OFF1)".

For the PROFIdrive profile, this command corresponds to control word 1 bit 0 (STW1.0).

Dependency: Refer to: p1055, p1056

Caution: When "master control from PC" is activated, this binector input is ineffective.

Notice: For binector input p0840 = 0 signal, the motor can be moved, jogging using binector input p1055 or p1056.

The command "ON/OFF (OFF1)" can be issued using binector input p0840 or p1055/p1056.

For binector input p0840 = 0 signal, the switch-on inhibit is acknowledged.

Only the signal source that originally powered up can also power down again.

The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: For drives with closed-loop speed control (p1300 = 20), the following applies:

- BI: p0840 = 0 signal: OFF1 (braking with the ramp-function generator, then pulse suppression and switch-on inhibit)

For drives with closed-loop torque control (p1300 = 22), the following applies:

- BI: p0840 = 0 signal: immediate pulse cancellation

For drives with closed-loop torque control (activated using p1501), the following applies:

- BI: p0840 = 0 signal: No dedicated braking response, but pulse suppression when standstill is detected (p1226, p1227)

For drives with closed-loop speed/torque control, the following applies:

- BI: p0840 = 0/1 signal: ON (pulses can be enabled)

p0840[0...n] BI: ON / OFF (OFF1) / ON / OFF (OFF1)

CU240B-2 DP
CU240E-2 DP
CU240E-2 DP F

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	[0] 2090.0 [1] 0 [2] 0 [3] 0

Description: Sets the signal source for the command "ON/OFF (OFF1)".

For the PROFIdrive profile, this command corresponds to control word 1 bit 0 (STW1.0).

Dependency: Refer to: p1055, p1056

Caution: When "master control from PC" is activated, this binector input is ineffective.

Notice: For binector input p0840 = 0 signal, the motor can be moved, jogging using binector input p1055 or p1056.

The command "ON/OFF (OFF1)" can be issued using binector input p0840 or p1055/p1056.

For binector input p0840 = 0 signal, the switch-on inhibit is acknowledged.

Only the signal source that originally powered up can also power down again.

The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: For drives with closed-loop speed control (p1300 = 20), the following applies:

- BI: p0840 = 0 signal: OFF1 (braking with the ramp-function generator, then pulse suppression and switch-on inhibit)

For drives with closed-loop torque control (p1300 = 22), the following applies:

- BI: p0840 = 0 signal: immediate pulse cancellation

For drives with closed-loop torque control (activated using p1501), the following applies:

- BI: p0840 = 0 signal: No dedicated braking response, but pulse suppression when standstill is detected (p1226, p1227)

For drives with closed-loop speed/torque control, the following applies:

- BI: p0840 = 0/1 signal: ON (pulses can be enabled)

p0844[0...n] BI: No coast-down / coast-down (OFF2) signal source 1 / OFF2 S_src 1

CU240B-2
CU240E-2
CU240E-2 F

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the first signal source for the command "No coast down/coast down (OFF2)".

The following signals are AND'ed:

- BI: p0844 "No coast-down / coast-down (OFF2) signal source 1"
- BI: p0845 "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).

BI: p0844 = 0 signal or BI: p0845 = 0 signal

- OFF2 (immediate pulse suppression and switch on inhibit)

BI: p0844 = 1 signal and BI: p0845 = 1 signal

- No OFF2 (enable is possible)

Caution: When "master control from PC" is activated, this binector input is ineffective.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p0844[0...n] BI: No coast-down / coast-down (OFF2) signal source 1 / OFF2 S_src 1

CU240B-2 DP
CU240E-2 DP
CU240E-2 DP F

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	[0] 2090.1 [1] 1 [2] 2090.1 [3] 2090.1

Description: Sets the first signal source for the command "No coast down/coast down (OFF2)".

The following signals are AND'ed:

- BI: p0844 "No coast-down / coast-down (OFF2) signal source 1"
- BI: p0845 "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).

BI: p0844 = 0 signal or BI: p0845 = 0 signal

- OFF2 (immediate pulse suppression and switch on inhibit)

BI: p0844 = 1 signal and BI: p0845 = 1 signal

- No OFF2 (enable is possible)

Caution: When "master control from PC" is activated, this binector input is ineffective.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p0845[0...n] BI: No coast-down / coast-down (OFF2) signal source 2 / OFF2 S_src 2

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the second signal source for the command "No coast down/coast down (OFF2)".

The following signals are AND'ed:

- BI: p0844 "No coast-down / coast-down (OFF2) signal source 1"
- BI: p0845 "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).

BI: p0844 = 0 signal or BI: p0845 = 0 signal

- OFF2 (immediate pulse suppression and switch on inhibit)

BI: p0844 = 1 signal and BI: p0845 = 1 signal

- No OFF2 (enable is possible)

Caution: When "master control from PC" is activated, this binector input is effective.

p0848[0...n] BI: No Quick Stop / Quick Stop (OFF3) signal source 1 / OFF3 S_src 1

CU240B-2
CU240E-2
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: T | **Scaling:** - | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	**Max**	**Factory setting**
-	-	1

Description: Sets the first signal source for the command "No quick stop/quick stop (OFF3)".
The following signals are AND'ed:
- BI: p0848 "No quick stop / quick stop (OFF3) signal source 1"
- BI: p0849 "No quick stop / quick stop (OFF3) signal source 2"

For the PROFIdrive profile, the result of the AND logic operation corresponds to control word 1 bit 2 (STW1.2).
BI: p0848 = 0 signal or BI: p0849 = 0 signal
- OFF3 (braking along the OFF3 ramp (p1135), then pulse suppression and switch on inhibit)

BI: p0848 = 1 signal and BI: p0849 = 1 signal
- No OFF3 (enable is possible)

Caution: When "master control from PC" is activated, this binector input is ineffective.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p0848[0...n] BI: No Quick Stop / Quick Stop (OFF3) signal source 1 / OFF3 S_src 1

CU240B-2 DP
CU240E-2 DP
CU240E-2 DP F

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: T | **Scaling:** - | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	**Max**	**Factory setting**
-	-	[0] 2090.2 [1] 1 [2] 2090.2 [3] 2090.2

Description: Sets the first signal source for the command "No quick stop/quick stop (OFF3)".
The following signals are AND'ed:
- BI: p0848 "No quick stop / quick stop (OFF3) signal source 1"
- BI: p0849 "No quick stop / quick stop (OFF3) signal source 2"

For the PROFIdrive profile, the result of the AND logic operation corresponds to control word 1 bit 2 (STW1.2).
BI: p0848 = 0 signal or BI: p0849 = 0 signal
- OFF3 (braking along the OFF3 ramp (p1135), then pulse suppression and switch on inhibit)

BI: p0848 = 1 signal and BI: p0849 = 1 signal
- No OFF3 (enable is possible)

Caution: When "master control from PC" is activated, this binector input is ineffective.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p0849[0...n] BI: No Quick Stop / Quick Stop (OFF3) signal source 2 / OFF3 S_src 2

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the second signal source for the command "No quick stop/quick stop (OFF3)".

The following signals are AND'ed:

- BI: p0848 "No quick stop / quick stop (OFF3) signal source 1"
- BI: p0849 "No quick stop / quick stop (OFF3) signal source 2"

For the PROFIdrive profile, the result of the AND logic operation corresponds to control word 1 bit 2 (STW1.2).

BI: p0848 = 0 signal or BI: p0849 = 0 signal

- OFF3 (braking along the OFF3 ramp (p1135), then pulse suppression and switch on inhibit)

BI: p0848 = 1 signal and BI: p0849 = 1 signal

- No OFF3 (enable is possible)

Caution: When "master control from PC" is activated, this binector input is effective.

p0852[0...n] BI: Enable operation/inhibit operation / Operation enable

CU240B-2
CU240E-2
CU240E-2 F

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the command "enable operation/inhibit operation".

For the PROFIdrive profile, this command corresponds to control word 1 bit 3 (STW1.3).

BI: p0852 = 0 signal

Inhibit operation (suppress pulses).

BI: p0852 = 1 signal

Enable operation (pulses can be enabled).

Caution: When "master control from PC" is activated, this binector input is ineffective.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p0852[0...n] BI: Enable operation/inhibit operation / Operation enable

CU240B-2 DP
CU240E-2 DP
CU240E-2 DP F

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	[0] 2090.3 [1] 1 [2] 2090.3 [3] 2090.3

Description: Sets the signal source for the command "enable operation/inhibit operation".

For the PROFIdrive profile, this command corresponds to control word 1 bit 3 (STW1.3).

BI: p0852 = 0 signal

Inhibit operation (suppress pulses).

BI: p0852 = 1 signal

Enable operation (pulses can be enabled).

Caution: When "master control from PC" is activated, this binector input is ineffective.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p0854[0...n] BI: Control by PLC/no control by PLC / Master ctrl by PLC

CU240B-2
CU240E-2
CU240E-2 F

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the command "control by PLC/no control by PLC".

For the PROFIdrive profile, this command corresponds to control word 1 bit 10 (STW1.10).

BI: p0854 = 0 signal

No control by PLC

BI: p0852 = 1 signal

Control by PLC.

Caution: When "master control from PC" is activated, this binector input is ineffective.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: This bit is used to initiate a response for the drives when the control fails (F07220). If there is no control available, then binector input p0854 should be set to 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 p0854 and even in the case of free telegram configuration (p0922 = 999).

p0854[0...n] BI: Control by PLC/no control by PLC / Master ctrl by PLC

CU240B-2 DP
CU240E-2 DP
CU240E-2 DP F

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	[0] 2090.10 [1] 1 [2] 2090.10 [3] 2090.10

Description: Sets the signal source for the command "control by PLC/no control by PLC".

For the PROFIdrive profile, this command corresponds to control word 1 bit 10 (STW1.10).

BI: p0854 = 0 signal

No control by PLC

BI: p0852 = 1 signal

Control by PLC.

Caution: When "master control from PC" is activated, this binector input is ineffective.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: This bit is used to initiate a response for the drives when the control fails (F07220). If there is no control available, then binector input p0854 should be set to 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 p0854 and even in the case of free telegram configuration (p0922 = 999).

p0855[0...n] BI: Unconditionally release holding brake / Uncond open brake

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the command "unconditionally open holding brake".

Dependency: Refer to: p0858

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: The signal via BI: p0858 (unconditionally close holding brake) has a higher priority than via BI: p0855 (unconditionally open holding brake).

p0856[0...n] BI: Speed controller enable / n_ctrl enable

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the command "enable speed controller" (r0898.12).

0 signal: Set the I component and speed controller output to zero.

1 signal: Enable speed controller.

Dependency: Refer to: r0898

Note: If "enable speed controller" is withdrawn, then an existing brake will be closed.

If "speed controller enable" is withdrawn, the pulses are not suppressed.

p0857 Power unit monitoring time / PU t_monit

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32

Can be changed: T **Scaling:** - **Data set:** -

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

Min	Max	Factory setting
100.0 [ms]	60000.0 [ms]	10000.0 [ms]

Description: Sets the monitoring time for the power unit.

The monitoring time is started after 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: Refer to: F07802, F30027

Notice: The maximum time to pre-charge the DC link is monitored in the power unit and cannot be changed. The maximum pre-charging duration depends on the power unit.

The monitoring time for the pre-charging is started after the ON command (BI: p0840 = 0/1 signal). Fault F30027 is output when the maximum pre-charging 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 pre-charge 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.

p0858[0...n] BI: Unconditionally close holding brake / Uncond close brake

Access level: 3 **Calculated:** - **Data type:** U32 / Binary

Can be changed: T **Scaling:** - **Data set:** CDS, p0170

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

Min	Max	Factory setting
-	-	0

Description: Sets the signal source for the command "unconditionally close holding brake".

Dependency: Refer to: p0855

Note: The signal via BI: p0858 (unconditionally close holding brake) has a higher priority than via BI: p0855 (unconditionally open holding brake).

For a 1 signal via BI: p0858, the command "unconditionally close the holding brake" is executed and internally a zero setpoint is entered.

p0897 BI: Parking axis selection / Parking axis sel

Access level: 2 **Calculated:** - **Data type:** U32 / Binary

Can be changed: T **Scaling:** - **Data set:** -

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

Min	Max	Factory setting
-	-	0

Description: Sets the signal source to select the "parking axis" function.

Dependency: BI: p0897 = 0 signal

The function "parking axis" is not selected.

BI: p0897 = 1 signal

The function "parking axis" is selected.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: After it has been selected the "parking axis" function only becomes active when the pulses are suppressed.

r0898.0...14 CO/BO: Control word sequence control / STW seq_ctrl

Access level: 2 | **Calculated:** - | **Data type:** Unsigned16

Can be changed: - | **Scaling:** - | **Data set:** -

Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the control word of the sequence control.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	ON/OFF1	Yes	No	-
01	OC / OFF2	Yes	No	-
02	OC / OFF3	Yes	No	-
03	Operation enable	Yes	No	-
04	Ramp-function generator enable	Yes	No	-
05	Continue ramp-function generator	Yes	No	-
06	Speed setpoint enable	Yes	No	-
07	Command open brake	Yes	No	-
08	Jog 1	Yes	No	-
09	Jog 2	Yes	No	-
10	Master ctrl by PLC	Yes	No	-
12	Speed controller enable	Yes	No	-
14	Command close brake	Yes	No	-

Note: OC: Operating condition

Re bit 10:

If p0700 = 2 is set, bit 10 always shows "1".

r0899.0...13 CO/BO: Status word sequence control / ZSW seq_ctrl

Access level: 2 | **Calculated:** - | **Data type:** Unsigned16

Can be changed: - | **Scaling:** - | **Data set:** -

Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the status word of the sequence control.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Rdy for switch 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: Re bits 00, 01, 02, 04, 05, 06, 09:

For PROFIdrive, these signals are used for status word 1.

p0918 PROFIBUS address / PB address

CU240B-2 DP
CU240E-2 DP
CU240E-2 DP F

Access level: 2	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
1	126	126

Description: Displays or sets the PROFIBUS address for PROFIBUS interface on the Control Unit.

The address can be set as follows:

1) Using the DIP switch on the Control Unit.

--> p0918 can then only be read and displays the selected address.

--> A change only becomes effective after a POWER ON.

2) Using p0918

--> Only if all of the DIP switches are set to ON or OFF.

--> The address is saved in a non-volatile fashion using the function "copy from RAM to ROM".

--> A change only becomes effective after a POWER ON.

Notice: For p0014 = 1, the following applies:

After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

For p0014 = 0, the following applies:

Before a changed setting becomes permanently effective, a non-volatile RAM to ROM data save is required. To do this, set p0971 = 1 or p0014 = 1.

Note: Permissible PROFIBUS addresses: 1 ... 126

Address 126 is used for commissioning.

Every PROFIBUS address change only becomes effective after a POWER ON.

p0922 PROFIdrive telegram selection / PD Telegr_sel

CU240B-2 DP
CU240E-2 DP
CU240E-2 DP F

Access level: 1	**Calculated:** -	**Data type:** Unsigned16
Can be changed: C(1), T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
1	999	1

Description: Sets the send and receive telegram.

Value:
1: Standard telegram 1, PZD-2/2
20: Standard telegram 20, PZD-2/6
350: SIEMENS telegram 350, PZD-4/4
352: SIEMENS telegram 352, PZD-6/6
353: SIEMENS telegram 353, PZD-2/2, PKW-4/4
354: SIEMENS telegram 354, PZD-6/6, PKW-4/4
999: Free telegram configuration with BICO

Dependency: Refer to: F01505

Note: If a value is not equal to 999, a telegram is set and the automatically set interconnections in the telegram are inhibited.

The inhibited interconnections can only be changed again after setting value 999.

r0944 CO: Counter for fault buffer changes / Fault buff change

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays fault buffer changes. This counter is incremented every time the fault buffer changes.

Dependency: Refer to: r0945, r0947, r0948, r0949, r2109

r0945[0...63] Fault code / Fault code

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the numbers of faults that have occurred.

Dependency: Refer to: r0947, r0948, r0949, r2109, r2130, r2133, r2136

Note: The buffer parameters are cyclically updated in the background (refer to status signal in r2139).
Fault buffer structure (general principle):
r0945[0], r0949[0], r0948[0], r2109[0] --> actual fault case, fault 1
. . .
r0945[7], r0949[7], r0948[7], r2109[7] --> actual fault case, fault 8
r0945[8], r0949[8], r0948[8], r2109[8] --> 1st acknowledged fault case, fault 1
. . .
r0945[15], r0949[15], r0948[15], r2109[15] --> 1st acknowledged fault case, fault 8
. . .
r0945[56], r0949[56], r0948[56], r2109[56] --> 7th acknowledged fault case, fault 1
. . .
r0945[63], r0949[63], r0948[63], r2109[63] --> 7th acknowledged fault case, fault 8

r0946[0...65534] Fault code list / Fault code list

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Lists the fault codes stored in the drive unit.
The indices can only be accessed with a valid fault code.

Dependency: The parameter assigned to the fault code is entered in r0951 under the same index.

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

Access level: 2 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: This parameter is identical to r0945.

r0948[0...63] Fault time received in milliseconds / t_fault recv ms

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [ms]	- [ms]	- [ms]

Description: Displays the system runtime in milliseconds when the fault occurred.

Dependency: Refer to: r0945, r0947, r0949, r2109, r2130, r2133, r2136

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

Access level: 3	**Calculated:** -	**Data type:** Integer32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays additional information about the fault that occurred (as integer number).

Dependency: Refer to: r0945, r0947, r0948, r2109, r2130, r2133, r2136

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

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Data set:** -
Units 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.
Refer to: r0945, r0947, r0948, r0949, r2109, r2130, r2133, r2136

r0963 PROFIBUS baud rate / PB baud rate

CU240B-2 DP
CU240E-2 DP
CU240E-2 DP F

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	255	-

Description: Displays the corresponding value for the PROFIBUS baud rate.

Value:
0: 9.6 kbit/s
1: 19.2 kbit/s
2: 93.75 kbit/s
3: 187.5 kbit/s
4: 500 kbit/s
6: 1.5 Mbit/s
7: 3 Mbit/s
8: 6 Mbit/s
9: 12 Mbit/s
10: 31.25 kbit/s
11: 45.45 kbit/s
255: Baud rate unknown

r0964[0...6] Device identification / Device ident.

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

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] = Number of drive objects
[6] = Firmware patch/hot fix

Note: Example:

r0964[0] = 42 --> SIEMENS

r0964[1] = device type, see below

r0964[2] = 403 --> first part of the firmware version V04.03 (for second part, refer to index 6)

r0964[3] = 2010 --> year 2010

r0964[4] = 1705 --> 17th of May

r0964[5] = 1 --> 1 drive object

r0964[6] = 200 --> second part, firmware version (complete version: V04.03.02.00)

Device type:

r0964[1] = 6100 --> SINAMICS G120 CU240B-2 DP

r0964[1] = 6103 --> SINAMICS G120 CU240B-2

r0964[1] = 6210 --> SINAMICS G120 CU240E-2 DP

r0964[1] = 6213 --> SINAMICS G120 CU240E-2

r0964[1] = 6220 --> SINAMICS G120 CU240E-2 DP-F

r0964[1] = 6223 --> SINAMICS G120 CU240E-2 F

r0965 PROFIdrive profile number / PD profile number

CU240B-2 DP
CU240E-2 DP
CU240E-2 DP F

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the PROFIdrive profile number and profile version.

Constant value = 0329 hex.

Byte 1: Profile number = 03 hex = PROFIdrive profile

Byte 2: Profile version = 29 hex = Version 4.1

Note: When the parameter is read via PROFIdrive, the Octet String 2 data type applies.

p0969 System runtime relative / t_System relative

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0 [ms]	4294967295 [ms]	0 [ms]

Description: Displays the system runtime in ms since the last POWER ON.

Note: The value in p0969 can only be reset to 0.

The value overflows after approx. 49 days.

When the parameter is read via PROFIdrive, the TimeDifference data type applies.

p0970 Reset drive parameters / Drive par reset

Access level: 1	**Calculated:** -	**Data type:** Unsigned16
Can be changed: C(1, 30)	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min 0	**Max** 300	**Factory setting** 0

Description: The parameter is used to initiate the reset of the drive parameters.

Parameters p0100, p0205 are not reset.

The following motor parameters are defined in accordance with the power unit: p0300 ... p0311.

When downloading settings 10, 11, 12, the buffer memory mode is automatically deactivated (p0014 = 0).

Value:
0: Inactive
1: Start a parameter reset
5: Starts a safety parameter reset
10: Starts to download setting 10
11: Starts to download setting 11
12: Starts to download setting 12
100: Start a BICO interconnection reset
300: Only Siemens internal

Dependency: Refer to: F01659

Caution: When the buffer memory is active (see p0014), the actual parameters are backed up from RAM to ROM when a parameter set is loaded (p0970 = 10, 11, 12).

Notice: After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

Peculiarities of communication via PROFIBUS DP:

- Communication with Class 1 masters (e.g. S7 controllers) is interrupted.
- Communication with Class 2 masters (e.g. STARTER) is retained.

Note: A factory setting run can only be started if p0010 was first set to 30 (parameter reset).

At the end of the calculations, p0970 is automatically set to 0.

Parameter reset has been completed if p0970 and p0010 have been set to 0.

For p0970 = 5 the following applies:

The password for Safety Integrated must be set.

When Safety Integrated is enabled, this can result in error messages, which then require an acceptance test to be performed.

Then save the parameters and carry out a POWER ON.

For p0970 = 1 the following applies:

If a Safety Integrated function is parameterized (p9601), then the safety parameters are not reset. In this case, an error message (F01659) is output with fault value 2.

The following generally applies:

One index of parameters p2100, p2101, p2118, p2119, p2126, p2127 is not reset, if a parameterized message is precisely active in this index.

p0971 Save parameters / Save par

Access level: 1	**Calculated:** -	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min 0	**Max** 12	**Factory setting** 0

Description: Setting to save parameters in the non-volatile memory.

Value:
0: Inactive
1: Save drive object
10: Save in non-volatile memory as setting 10
11: Save in non-volatile memory as setting 11
12: Save in non-volatile memory as setting 12

Dependency: Refer to: p1960, r3996

Caution: If a memory card (optional) is inserted, the following applies:

The parameters are also saved on the card and therefore overwrite any existing data!

Caution: The Control Unit power supply may only be powered down after data has been saved (i.e. after data save has been started, wait until the parameter again has the value 0).

Notice: Writing to parameters is inhibited while saving.

The progress while saving is displayed in r3996.

p0972 Drive unit reset / Drv_unit reset

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min 0	**Max** 3	**Factory setting** 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 Control Unit must not be accessed.

Note: If value = 1:

Reset is immediately executed and communications interrupted.

After communications have been established, check the reset operation (refer below).

If 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).

If 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 the cyclic communication is active for both PROFIdrive interfaces, then the reset is executed after completing both cycle communications.

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.

r0980[0...299] List of existing parameters 1 / List avail par 1

Access level: 4 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the parameters that exist for this drive.

Dependency: Refer to: r0981, r0989

Note: The existing 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 software. However, they can be read from a higher-level control system (e.g. PROFIBUS master).

r0981[0...299] List of existing parameters 2 / List avail par 2

Access level: 4 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the parameters that exist for this drive.

Dependency: Refer to: r0980, r0989

Note: The existing 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 software. However, they can be read from a higher-level control system (e.g. PROFIBUS master).

r0989[0...299] List of existing parameters 10 / List avail par 10

Access level: 4 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the parameters that exist for this drive.

Dependency: Refer to: r0980, r0981

Note: The existing 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 expert list of the commissioning software. However, they can be read from a higher-level control system (e.g. PROFIBUS master).

r0990[0...99] List of modified parameters 1 / List chang. par 1

Access level: 4	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays those parameters with a value other than the factory setting for this drive.

Dependency: Refer to: r0991, r0999

Note: Modified parameters are displayed in indices 0 to 98. If an index contains the value 0, then the list ends here. In a long list, index 99 contains the parameter number at which position the list continues.

This list consists solely of the following parameters:

r0990[0...99], r0991[0...99] ... r0999[0...99]

The parameters in this list are not displayed in the expert list of the commissioning software. However, they can be read from a higher-level control system (e.g. PROFIBUS master).

r0991[0...99] List of modified parameters 2 / List chang. par 2

Access level: 4	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays those parameters with a value other than the factory setting for this drive.

Dependency: Refer to: r0990, r0999

Note: Modified parameters are displayed in indices 0 to 98. If an index contains the value 0, then the list ends here. In a long list, index 99 contains the parameter number at which position the list continues.

This list consists solely of the following parameters:

r0990[0...99], r0991[0...99] ... r0999[0...99]

The parameters in this list are not displayed in the expert list of the commissioning software. However, they can be read from a higher-level control system (e.g. PROFIBUS master).

r0999[0...99] List of modified parameters 10 / List chang. par 10

Access level: 4	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays those parameters with a value other than the factory setting for this drive.

Dependency: Refer to: r0990, r0991

Note: Modified parameters are displayed in indices 0 to 98. If an index contains the value 0, then the list ends here.

This list consists solely of the following parameters:

r0990[0...99], r0991[0...99] ... r0999[0...99]

The parameters in this list are not displayed in the expert list of the commissioning software. However, they can be read from a higher-level control system (e.g. PROFIBUS master).

p1000[0...n] Speed setpoint selection / n_set sel

CU240B-2	**Access level:** 1	**Calculated:** -	**Data type:** Integer16
	Can be changed: T	**Scaling:** -	**Data set:** CDS, p0170
	Units group: -	**Unit selection:** -	
	Min 0	**Max** 200	**Factory setting** 2

Description: Sets the source for the speed setpoint.

For single-digit values, the following applies:

The value specifies the main setpoint.

For double-digit values, the following applies:

The left-hand digit specifies the supplementary setpoint, the right-hand digit the main setpoint.

Example:

Value = 26

--> The analog setpoint (2) supplies the supplementary setpoint.

--> The fieldbus (6) supplies the main setpoint.

Value:

0: No main setpoint
1: Motorized potentiometer
2: Analog setpoint
3: Fixed speed setpoint
6: Fieldbus
10: Motor potentiometer + no main setpoint
11: Motor potentiometer + motor potentiometer
12: Motor potentiometer + analog setpoint
13: Motor potentiometer + fixed speed setpoint
16: Motor potentiometer + fieldbus
20: Analog setpoint + no main setpoint
21: Analog setpoint + motor potentiometer
22: Analog setpoint + analog setpoint
23: Analog setpoint + fixed speed setpoint
26: Analog setpoint + fieldbus
30: Fixed speed setpoint + no main setpoint
31: Fixed speed setpoint + motor potentiometer
32: Fixed speed setpoint + analog setpoint
33: Fixed speed setpoint + fixed speed setpoint
36: Fixed speed setpoint + fieldbus
60: Fieldbus + no main setpoint
61: Fieldbus + motor potentiometer
62: Fieldbus + analog setpoint
63: Fieldbus + fixed speed setpoint
66: Fieldbus+fieldbus
200: Analog output connection

Dependency: When changing this parameter, the following settings are influenced:

Refer to: p1070, p1071, p1075, p1076

Caution: If p1000 is selected as the main setpoint of the fieldbus, the following BICO interconnection is set automatically:

p2051[1] = r0063

Caution: When executing a specific macro, the corresponding programmed settings are made and become active.

p1000[0...n] Speed setpoint selection / n_set sel

CU240B-2 DP	**Access level:** 1	**Calculated:** -	**Data type:** Integer16
	Can be changed: T	**Scaling:** -	**Data set:** CDS, p0170
	Units group: -	**Unit selection:** -	
	Min 0	**Max** 200	**Factory setting** 6

Description: Sets the source for the speed setpoint.

For single-digit values, the following applies:

The value specifies the main setpoint.

For double-digit values, the following applies:

The left-hand digit specifies the supplementary setpoint, the right-hand digit the main setpoint.

Example:

Value = 26

--> The analog setpoint (2) supplies the supplementary setpoint.

--> The fieldbus (6) supplies the main setpoint.

Value:

0: No main setpoint
1: Motorized potentiometer
2: Analog setpoint
3: Fixed speed setpoint
6: Fieldbus
10: Motor potentiometer + no main setpoint
11: Motor potentiometer + motor potentiometer
12: Motor potentiometer + analog setpoint
13: Motor potentiometer + fixed speed setpoint
16: Motor potentiometer + fieldbus
20: Analog setpoint + no main setpoint
21: Analog setpoint + motor potentiometer
22: Analog setpoint + analog setpoint
23: Analog setpoint + fixed speed setpoint
26: Analog setpoint + fieldbus
30: Fixed speed setpoint + no main setpoint
31: Fixed speed setpoint + motor potentiometer
32: Fixed speed setpoint + analog setpoint
33: Fixed speed setpoint + fixed speed setpoint
36: Fixed speed setpoint + fieldbus
60: Fieldbus + no main setpoint
61: Fieldbus + motor potentiometer
62: Fieldbus + analog setpoint
63: Fieldbus + fixed speed setpoint
66: Fieldbus+fieldbus
200: Analog output connection

Dependency: When changing this parameter, the following settings are influenced:

Refer to: p1070, p1071, p1075, p1076

Caution: If p1000 is selected as the main setpoint of the fieldbus, the following BICO interconnection is set automatically:

p2051[1] = r0063

Caution: When executing a specific macro, the corresponding programmed settings are made and become active.

p1000[0...n] Speed setpoint selection / n_set sel

CU240E-2	**Access level:** 1	**Calculated:** -	**Data type:** Integer16
CU240E-2 F	**Can be changed:** T	**Scaling:** -	**Data set:** CDS, p0170
	Units group: -	**Unit selection:** -	
	Min 0	**Max** 200	**Factory setting** 2

Description: Sets the source for the speed setpoint.

For single-digit values, the following applies:

The value specifies the main setpoint.

For double-digit values, the following applies:

The left-hand digit specifies the supplementary setpoint, the right-hand digit the main setpoint.

Example:

Value = 26

--> The analog setpoint (2) supplies the supplementary setpoint.

--> The fieldbus (6) supplies the main setpoint.

Value:

0: No main setpoint
1: Motorized potentiometer
2: Analog setpoint
3: Fixed speed setpoint
6: Fieldbus
7: Analog setpoint 2
10: Motor potentiometer + no main setpoint
11: Motor potentiometer + motor potentiometer
12: Motor potentiometer + analog setpoint
13: Motor potentiometer + fixed speed setpoint
16: Motor potentiometer + fieldbus
17: Motor potentiometer + analog setpoint 2
20: Analog setpoint + no main setpoint
21: Analog setpoint + motor potentiometer
22: Analog setpoint + analog setpoint
23: Analog setpoint + fixed speed setpoint
26: Analog setpoint + fieldbus
27: Analog setpoint + analog setpoint 2
30: Fixed speed setpoint + no main setpoint
31: Fixed speed setpoint + motor potentiometer
32: Fixed speed setpoint + analog setpoint
33: Fixed speed setpoint + fixed speed setpoint
36: Fixed speed setpoint + fieldbus
37: Fixed speed setpoint + analog setpoint 2
60: Fieldbus + no main setpoint
61: Fieldbus + motor potentiometer
62: Fieldbus + analog setpoint
63: Fieldbus + fixed speed setpoint
66: Fieldbus+fieldbus
67: Fieldbus + analog setpoint 2
70: Analog setpoint 2 + no main setpoint
71: Analog setpoint 2 + motor potentiometer
72: Analog setpoint 2 + analog setpoint
73: Analog setpoint 2 + fixed speed setpoint
76: Analog setpoint 2 + fieldbus
77: Analog setpoint 2 + analog setpoint 2
200: Analog output connection

Dependency: When changing this parameter, the following settings are influenced:

Refer to: p1070, p1071, p1075, p1076

Caution: If p1000 is selected as the main setpoint of the fieldbus, the following BICO interconnection is set automatically:
p2051[1] = r0063

Caution: When executing a specific macro, the corresponding programmed settings are made and become active.

p1000[0...n] Speed setpoint selection / n_set sel

CU240E-2 DP
CU240E-2 DP F

Access level: 1	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	200	6

Description: Sets the source for the speed setpoint.

For single-digit values, the following applies:

The value specifies the main setpoint.

For double-digit values, the following applies:

The left-hand digit specifies the supplementary setpoint, the right-hand digit the main setpoint.

Example:

Value = 26

--> The analog setpoint (2) supplies the supplementary setpoint.

--> The fieldbus (6) supplies the main setpoint.

Value:

0: No main setpoint
1: Motorized potentiometer
2: Analog setpoint
3: Fixed speed setpoint
6: Fieldbus
7: Analog setpoint 2
10: Motor potentiometer + no main setpoint
11: Motor potentiometer + motor potentiometer
12: Motor potentiometer + analog setpoint
13: Motor potentiometer + fixed speed setpoint
16: Motor potentiometer + fieldbus
17: Motor potentiometer + analog setpoint 2
20: Analog setpoint + no main setpoint
21: Analog setpoint + motor potentiometer
22: Analog setpoint + analog setpoint
23: Analog setpoint + fixed speed setpoint
26: Analog setpoint + fieldbus
27: Analog setpoint + analog setpoint 2
30: Fixed speed setpoint + no main setpoint
31: Fixed speed setpoint + motor potentiometer
32: Fixed speed setpoint + analog setpoint
33: Fixed speed setpoint + fixed speed setpoint
36: Fixed speed setpoint + fieldbus
37: Fixed speed setpoint + analog setpoint 2
60: Fieldbus + no main setpoint
61: Fieldbus + motor potentiometer
62: Fieldbus + analog setpoint
63: Fieldbus + fixed speed setpoint
66: Fieldbus+fieldbus
67: Fieldbus + analog setpoint 2
70: Analog setpoint 2 + no main setpoint
71: Analog setpoint 2 + motor potentiometer
72: Analog setpoint 2 + analog setpoint
73: Analog setpoint 2 + fixed speed setpoint
76: Analog setpoint 2 + fieldbus
77: Analog setpoint 2 + analog setpoint 2
200: Analog output connection

Dependency: When changing this parameter, the following settings are influenced:

Refer to: p1070, p1071, p1075, p1076

Caution: If p1000 is selected as the main setpoint of the fieldbus, the following BICO interconnection is set automatically:

p2051[1] = r0063

Caution: When executing a specific macro, the corresponding programmed settings are made and become active.

p1001[0...n] CO: Fixed speed setpoint 1 / n_set_fixed 1

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** p2000	**Data set:** DDS, p0180
Units group: 3_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets a value for the fixed speed / velocity setpoint 1.

Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1002[0...n] CO: Fixed speed setpoint 2 / n_set_fixed 2

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** p2000	**Data set:** DDS, p0180
Units group: 3_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets a value for the fixed speed / velocity setpoint 2.

Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1003[0...n] CO: Fixed speed setpoint 3 / n_set_fixed 3

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** p2000	**Data set:** DDS, p0180
Units group: 3_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets a value for the fixed speed / velocity setpoint 3.

Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1004[0...n] CO: Fixed speed setpoint 4 / n_set_fixed 4

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** p2000	**Data set:** DDS, p0180
Units group: 3_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets a value for the fixed speed / velocity setpoint 4.

Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1005[0...n] CO: Fixed speed setpoint 5 / n_set_fixed 5

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** p2000	**Data set:** DDS, p0180
Units group: 3_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets a value for the fixed speed / velocity setpoint 5.

Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1006[0...n] CO: Fixed speed setpoint 6 / n_set_fixed 6

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** p2000	**Data set:** DDS, p0180
Units group: 3_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets a value for the fixed speed / velocity setpoint 6.

Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1007[0...n] CO: Fixed speed setpoint 7 / n_set_fixed 7

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** p2000	**Data set:** DDS, p0180
Units group: 3_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets a value for the fixed speed / velocity setpoint 7.

Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1008[0...n] CO: Fixed speed setpoint 8 / n_set_fixed 8

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** p2000	**Data set:** DDS, p0180
Units group: 3_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets a value for the fixed speed / velocity setpoint 8.

Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1009[0...n] CO: Fixed speed setpoint 9 / n_set_fixed 9

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** p2000	**Data set:** DDS, p0180
Units group: 3_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets a value for the fixed speed / velocity setpoint 9.

Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1010[0...n] CO: Fixed speed setpoint 10 / n_set_fixed 10

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** p2000	**Data set:** DDS, p0180
Units group: 3_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets a value for the fixed speed / velocity setpoint 10.

Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1011[0...n] **CO: Fixed speed setpoint 11 / n_set_fixed 11**

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** p2000	**Data set:** DDS, p0180
Units group: 3_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets a value for the fixed speed / velocity setpoint 11.

Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1012[0...n] **CO: Fixed speed setpoint 12 / n_set_fixed 12**

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** p2000	**Data set:** DDS, p0180
Units group: 3_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets a value for the fixed speed / velocity setpoint 12.

Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1013[0...n] **CO: Fixed speed setpoint 13 / n_set_fixed 13**

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** p2000	**Data set:** DDS, p0180
Units group: 3_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets a value for the fixed speed / velocity setpoint 13.

Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1014[0...n] **CO: Fixed speed setpoint 14 / n_set_fixed 14**

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** p2000	**Data set:** DDS, p0180
Units group: 3_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets a value for the fixed speed / velocity setpoint 14.

Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1015[0...n] **CO: Fixed speed setpoint 15 / n_set_fixed 15**

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** p2000	**Data set:** DDS, p0180
Units group: 3_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets a value for the fixed speed / velocity setpoint 15.

Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1016 Fixed speed setpoint mode / n_setp_fixed mode

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min 1	**Max** 2	**Factory setting** 1

Description: Sets the mode to select the fixed speed setpoint.

Value:
1: Direct selection
2: Selection binary coded

Note: Re p1016 = 1:
In this mode, the fixed speed setpoint is entered using p1001 ... p1004.
Re p1016 = 2:
In this mode, the fixed speed setpoint is entered using p1001 ... p1015.

p1020[0...n] BI: Fixed speed setpoint selection Bit 0 / n_set_fixed Bit 0

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min -	**Max** -	**Factory setting** 0

Description: Sets the signal source for selecting the fixed speed setpoint.

Dependency: Selects the required fixed speed setpoint using p1020 ... p1023.
Displays the number of the actual fixed speed setpoint in r1197.
Sets the values for the fixed speed setpoints 1 ... 15 using p1001 ... p1015.
Refer to: p1021, p1022, p1023, r1197

Note: If a fixed speed setpoint has not been selected (p1020 ... p1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0).

p1021[0...n] BI: Fixed speed setpoint selection Bit 1 / n_set_fixed Bit 1

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min -	**Max** -	**Factory setting** 0

Description: Sets the signal source for selecting the fixed speed setpoint.

Dependency: Selects the required fixed speed setpoint using p1020 ... p1023.
Displays the number of the actual fixed speed setpoint in r1197.
Sets the values for the fixed speed setpoints 1 ... 15 using p1001 ... p1015.
Refer to: p1020, p1022, p1023, r1197

Note: If a fixed speed setpoint has not been selected (p1020 ... p1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0).

p1022[0...n] BI: Fixed speed setpoint selection Bit 2 / n_set_fixed Bit 2

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min -	**Max** -	**Factory setting** 0

Description: Sets the signal source for selecting the fixed speed setpoint.

Dependency: Selects the required fixed speed setpoint using p1020 ... p1023.
Displays the number of the actual fixed speed setpoint in r1197.
Sets the values for the fixed speed setpoints 1 ... 15 using p1001 ... p1015.
Refer to: p1020, p1021, p1023, r1197

Note: If a fixed speed setpoint has not been selected (p1020 ... p1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0).

p1023[0...n] BI: Fixed speed setpoint selection Bit 3 / n_set_fixed Bit 3

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for selecting the fixed speed setpoint.

Dependency: Selects the required fixed speed setpoint using p1020 ... p1023.

Displays the number of the actual fixed speed setpoint in r1197.

Sets the values for the fixed speed setpoints 1 ... 15 using p1001 ... p1015.

Refer to: p1020, p1021, p1022, r1197

Note: If a fixed speed setpoint has not been selected (p1020 ... p1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0).

r1024 CO: Fixed speed setpoint effective / n_set_fixed eff

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2000	**Data set:** -
Units group: 3_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the selected and effective 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).

Dependency: Selects the required fixed speed setpoint using p1020 ... p1023.

Displays the number of the actual fixed speed setpoint in r1197.

Sets the values for the fixed speed setpoints 1 ... 15 using p1001 ... p1015.

Refer to: p1070, r1197

Note: If a fixed speed setpoint has not been selected (p1020 ... p1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0).

r1025.0 BO: Fixed speed setpoint status / n_setp_fix status

Access level: 3	**Calculated:** -	**Data type:** Unsigned8
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status when selecting the fixed speed setpoints.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Fixed speed setpoint selected	Yes	No	-

Dependency: Refer to: p1016

Note: Re 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] Motorized potentiometer configuration / Mop configuration

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0000 0110 bin

Description: Sets the configuration for the motorized potentiometer.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Data save active	Yes	No	-
01	Automatic mode, ramp-function generator active	Yes	No	-
02	Initial rounding-off active	Yes	No	-
03	Save in NVRAM active	Yes	No	-
04	Ramp-function generator always active	Yes	No	-

Notice: For p0014 = 1, the following applies:

After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

Note: Re 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.

Re 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.

For manual operation (0 signal via BI: p1041), the ramp-function generator is always active.

Re 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.

Re bit 03:

0: Non-volatile data save de-activated.

1: The setpoint for the motorized potentiometer is saved in a non-volatile fashion (for bit 00 = 1).

Re 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.

p1035[0...n] BI: Motorized potentiometer setpoint raise / Mop raise

CU240B-2
CU240E-2
CU240E-2 F

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to continually increase the setpoint for the motorized potentiometer.

The setpoint change (CO: r1050) depends on the set ramp-up time (p1047) and the duration of the signal that is present (BI: p1035).

Dependency: Refer to: p1036

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p1035[0...n] BI: Motorized potentiometer setpoint raise / Mop raise

CU240B-2 DP	**Access level:** 3	**Calculated:** -	**Data type:** U32 / Binary
CU240E-2 DP	**Can be changed:** T	**Scaling:** -	**Data set:** CDS, p0170
CU240E-2 DP F	**Units group:** -	**Unit selection:** -	
	Min	**Max**	**Factory setting**
	-	-	[0] 2090.13 [1] 0 [2] 0 [3] 0

Description: Sets the signal source to continually increase the setpoint for the motorized potentiometer.

The setpoint change (CO: r1050) depends on the set ramp-up time (p1047) and the duration of the signal that is present (BI: p1035).

Dependency: Refer to: p1036

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p1036[0...n] BI: Motorized potentiometer lower setpoint / Mop lower

CU240B-2	**Access level:** 3	**Calculated:** -	**Data type:** U32 / Binary
CU240E-2	**Can be changed:** T	**Scaling:** -	**Data set:** CDS, p0170
CU240E-2 F	**Units group:** -	**Unit selection:** -	
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source to continuously lower the setpoint for the motorized potentiometer.

The setpoint change (CO: r1050) depends on the set ramp-down time (p1048) and the duration of the signal that is present (BI: p1036).

Dependency: Refer to: p1035

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p1036[0...n] BI: Motorized potentiometer lower setpoint / Mop lower

CU240B-2 DP	**Access level:** 3	**Calculated:** -	**Data type:** U32 / Binary
CU240E-2 DP	**Can be changed:** T	**Scaling:** -	**Data set:** CDS, p0170
CU240E-2 DP F	**Units group:** -	**Unit selection:** -	
	Min	**Max**	**Factory setting**
	-	-	[0] 2090.14 [1] 0 [2] 0 [3] 0

Description: Sets the signal source to continuously lower the setpoint for the motorized potentiometer.

The setpoint change (CO: r1050) depends on the set ramp-down time (p1048) and the duration of the signal that is present (BI: p1036).

Dependency: Refer to: p1035

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p1037[0...n] Motorized potentiometer maximum speed / MotP n_max

Access level: 3	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: 3_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets the maximum speed/velocity for the motorized potentiometer.

Note: This parameter is automatically pre-assigned in the commissioning phase.

The setpoint output from the motorized potentiometer is limited to this value (see function diagram 3020).

p1038[0...n] Motorized potentiometer minimum speed / MotP n_min

Access level: 3 | **Calculated:** p0340 = 1,3,5 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: 3_1 | **Unit selection:** p0505

Min	Max	Factory setting
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets the minimum speed/velocity for the motorized potentiometer.

Note: This parameter is automatically pre-assigned in the commissioning phase.

The setpoint output from the motorized potentiometer is limited to this value (see function diagram 3020).

p1039[0...n] BI: Motorized potentiometer inversion / MotP inv

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: T | **Scaling:** - | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source to invert the minimum speed/velocity or the maximum speed/velocity for the motorized potentiometer.

Dependency: Refer to: 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

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: 3_1 | **Unit selection:** p0505

Min	Max	Factory setting
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets the starting value for the motorized potentiometer. This starting value becomes effective after the drive has been powered up.

Dependency: Only effective if p1030.0 = 0.

Refer to: p1030

p1041[0...n] BI: Motorized potentiometer manual/automatic / Mop manual/auto

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: T | **Scaling:** - | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source to change over from manual to automatic when using a motorized potentiometer.

In the manual mode, the setpoint is changed using two signals - raise and lower. In the automatic mode, the setpoint must be interconnected via a connector input.

Dependency: Refer to: p1030, p1035, p1036, p1042

Note: The effectiveness of the internal ramp-function generator can be set in automatic mode.

p1042[0...n] CI: Motorized potentiometer automatic setpoint / Mop auto setpoint

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** p2000	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the setpoint of the motorized potentiometer in the automatic mode.

Dependency: Refer to: p1041

p1043[0...n] BI: Motorized potentiometer accept setting value / MotP acc set val

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to accept the setting value for the motorized potentiometer.

Dependency: Refer to: p1044

Note: The setting value (CI: p1044) becomes effective for a 0/1 edge of the setting command (BI: p1043).

p1044[0...n] CI: Motorized potentiometer setting value / Mop set val

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** p2000	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the setting value for the motorized potentiometer.

Dependency: Refer to: p1043

Note: The setting value (CI: p1044) becomes effective for a 0/1 edge of the setting command (BI: p1043).

r1045 CO: Mot. potentiometer speed setp. in front of ramp-fct. gen. / Mop n_set bef RFG

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2000	**Data set:** -
Units group: 3_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Sets 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

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units 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: Refer to: 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

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units 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: Refer to: p1030, p1047, p1082

Note: The deceleration time is extended corresponding to the activated initial rounding-off (p1030.2).

r1050 CO: Motor. potentiometer setpoint after the ramp-function generator / Mop setp after RFG

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2000	**Data set:** -
Units group: 3_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Sets 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).

Dependency: Refer to: p1070

Note: For "With ramp-function generator", after an OFF1, OFF2, OFF3 or for a 0 signal via BI: p0852 (inhibit operation, cancel pulses) the ramp-function generator output (r1050) is set to the starting value (configuration via p1030.0).

p1051[0...n] CI: Speed limit RFG positive direction of rotation / n_limit RFG pos

CU240B-2
CU240B-2 DP
CU240E-2
CU240E-2 DP

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** p2000	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	1083[0]

Description: Sets the signal source for the speed limit of the positive direction on the ramp-function generator input.

p1051[0...n] CI: Speed limit RFG positive direction of rotation / n_limit RFG pos

CU240E-2 DP F
CU240E-2 F

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** p2000	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	9733[0]

Description: Sets the signal source for the speed limit of the positive direction on the ramp-function generator input.

p1052[0...n] CI: Speed limit RFG negative direction of rotation / n_limit RFG neg

CU240B-2
CU240B-2 DP
CU240E-2
CU240E-2 DP

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** p2000	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	1086[0]

Description: Sets the signal source for the speed limit of the negative direction on the ramp-function generator input.

p1052[0...n] CI: Speed limit RFG negative direction of rotation / n_limit RFG neg

CU240E-2 DP F	**Access level:** 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
CU240E-2 F	**Can be changed:** T	**Scaling:** p2000	**Data set:** CDS, p0170
	Units group: -	**Unit selection:** -	
	Min	**Max**	**Factory setting**
	-	-	9733[1]

Description: Sets the signal source for the speed limit of the negative direction on the ramp-function generator input.

p1055[0...n] BI: Jog bit 0 / Jog bit 0

CU240B-2	**Access level:** 3	**Calculated:** -	**Data type:** U32 / Binary
CU240E-2	**Can be changed:** T	**Scaling:** -	**Data set:** CDS, p0170
CU240E-2 F	**Units group:** -	**Unit selection:** -	
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source for jog 1.

Dependency: Refer to: p0840, p1058

Notice: The drive is enabled for jogging using BI: p1055 or BI: p1056.
The command "ON/OFF1" can be issued using BI: p0840 or using BI: p1055/p1056.
Only the signal source that was used to power up can also be used to power down again.

p1055[0...n] BI: Jog bit 0 / Jog bit 0

CU240B-2 DP	**Access level:** 3	**Calculated:** -	**Data type:** U32 / Binary
CU240E-2 DP	**Can be changed:** T	**Scaling:** -	**Data set:** CDS, p0170
CU240E-2 DP F	**Units group:** -	**Unit selection:** -	
	Min	**Max**	**Factory setting**
	-	-	[0] 0 [1] 722.0 [2] 0 [3] 0

Description: Sets the signal source for jog 1.

Dependency: Refer to: p0840, p1058

Notice: The drive is enabled for jogging using BI: p1055 or BI: p1056.
The command "ON/OFF1" can be issued using BI: p0840 or using BI: p1055/p1056.
Only the signal source that was used to power up can also be used to power down again.

p1056[0...n] BI: Jog bit 1 / Jog bit 1

CU240B-2	**Access level:** 3	**Calculated:** -	**Data type:** U32 / Binary
CU240E-2	**Can be changed:** T	**Scaling:** -	**Data set:** CDS, p0170
CU240E-2 F	**Units group:** -	**Unit selection:** -	
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source for jog 2.

Dependency: Refer to: p0840, p1059

Notice: The drive is enabled for jogging using BI: p1055 or BI: p1056.
The command "ON/OFF1" can be issued using BI: p0840 or using BI: p1055/p1056.
Only the signal source that was used to power up can also be used to power down again.

p1056[0...n] BI: Jog bit 1 / Jog bit 1

CU240B-2 DP
CU240E-2 DP
CU240E-2 DP F

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	[0] 0 [1] 722.1 [2] 0 [3] 0

Description: Sets the signal source for jog 2.

Dependency: Refer to: p0840, p1059

Notice: The drive is enabled for jogging using BI: p1055 or BI: p1056.
The command "ON/OFF1" can be issued using BI: p0840 or using BI: p1055/p1056.
Only the signal source that was used to power up can also be used to power down again.

p1058[0...n] Jog 1 speed setpoint / Jog 1 n_set

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Data set:** DDS, p0180
Units group: 3_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
-210000.000 [rpm]	210000.000 [rpm]	150.000 [rpm]

Description: Sets the speed/velocity for jog 1. Jogging is level-triggered and allows the motor to be incrementally moved.

Dependency: Refer to: p1055, p1056

p1059[0...n] Jog 2 speed setpoint / Jog 2 n_set

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Data set:** DDS, p0180
Units group: 3_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
-210000.000 [rpm]	210000.000 [rpm]	-150.000 [rpm]

Description: Sets the speed/velocity for jog 2. Jogging is level-triggered and allows the motor to be incrementally moved.

Dependency: Refer to: p1055, p1056

p1063[0...n] Speed limit setpoint channel / n_limit setp

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: 3_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
0.000 [rpm]	210000.000 [rpm]	210000.000 [rpm]

Description: Sets the speed limit/velocity limit effective in the setpoint channel.

Dependency: Refer to: p1082, p1083, p1085, p1086, p1088

p1070[0...n] CI: Main setpoint / Main setpoint

CU240B-2
CU240E-2
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** U32 / FloatingPoint32
Can be changed: T | **Scaling:** p2000 | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	[0] 755[0] [1] 0 [2] 0 [3] 0

Description: Sets the signal source for the main setpoint.
Examples:
r1024: Fixed speed setpoint effective
r1050: Motor. potentiometer setpoint after the ramp-function generator

Dependency: Refer to: p1071, r1073, r1078

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p1070[0...n] CI: Main setpoint / Main setpoint

CU240B-2 DP
CU240E-2 DP
CU240E-2 DP F

Access level: 3 | **Calculated:** - | **Data type:** U32 / FloatingPoint32
Can be changed: T | **Scaling:** p2000 | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	[0] 2050[1] [1] 0 [2] 0 [3] 0

Description: Sets the signal source for the main setpoint.
Examples:
r1024: Fixed speed setpoint effective
r1050: Motor. potentiometer setpoint after the ramp-function generator

Dependency: Refer to: p1071, r1073, r1078

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p1071[0...n] CI: Main setpoint scaling / Main setp scal

Access level: 3 | **Calculated:** - | **Data type:** U32 / FloatingPoint32
Can be changed: T | **Scaling:** PERCENT | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	1

Description: Sets the signal source for scaling the main setpoint.

r1073 CO: Main setpoint effective / Main setpoint eff

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2000 | **Data set:** -
Units group: 3_1 | **Unit selection:** p0505

Min	Max	Factory setting
- [rpm]	- [rpm]	- [rpm]

Description: Displays the effective main setpoint. The value shown is the main setpoint after scaling.

p1075[0...n] CI: Suppl setpoint / Suppl setpoint

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** p2000	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the supplementary setpoint.

Dependency: Refer to: p1076, r1077, r1078

p1076[0...n] CI: Supplementary setpoint scaling / Suppl setp scal

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for scaling the supplementary setpoint.

r1077 CO: Supplementary setpoint effective / Suppl setpoint eff

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2000	**Data set:** -
Units group: 3_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the effective supplementary setpoint. The value shown is the additional setpoint after scaling.

r1078 CO: Total setpoint effective / Total setpoint eff

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2000	**Data set:** -
Units group: 3_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the total effective setpoint. The value indicates the sum of the effective main setpoint and supplementary setpoint.

p1080[0...n] Minimum speed / n_min

Access level: 1	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(1), T	**Scaling:** -	**Data set:** DDS, p0180
Units group: 3_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
0.000 [rpm]	19500.000 [rpm]	0.000 [rpm]

Description: Sets the lowest possible motor speed.

This value is not undershot in operation.

Note: The parameter value applies for both motor directions.

In exceptional cases, the motor can operate below this value (e.g. when reversing).

p1082[0...n] Maximum speed / n_max

Access level: 1 | **Calculated:** p0340 = 1 | **Data type:** FloatingPoint32
Can be changed: C(1), T | **Scaling:** - | **Data set:** DDS, p0180
Units group: 3_1 | **Unit selection:** p0505

Min	Max	Factory setting
0.000 [rpm]	210000.000 [rpm]	1500.000 [rpm]

Description: Sets the highest possible speed.

Dependency: Refer to: p0230, r0313, p0322

Notice: After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

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 (p0010 = 1), it is defined appropriately when p0310, p0311, p0322, p0324, p0530, p0531, and p0532 are changed.

The following limits are always effective for p1082:

p1082 <= min(p0324, p0532) if p0324 > 0 and p0532 > 0

p1082 <= p0322 if p0324 = 0 or p0532 = 0 and p0322 > 0

p1082 <= 60 x maximum(15 x r0310, 650 Hz) / r0313

p1082 <= 60 x maximum power unit pulse frequency / (k x r0313), with k = 12 (vector control), k = 6.5 (U/f control)

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). For reactors and dU/dt filters, it is limited to 120 Hz / r0313.

During automatic calculation (p0340 = 1, p3900 > 0), the parameter value is assigned the maximum motor speed (p0322). If p0322 = 0, the rated motor speed (p0311) is used as default (pre-assignment) value. For induction motors, the synchronous no-load speed is used as the default value (p0310 x 60 / r0313).

For synchronous motors, the following additionally applies:

During automatic calculation (p0340, p3900), p1082 is limited to speeds where the EMF does not exceed the DC link voltage.

p1082 is also available in the quick commissioning (p0010 = 1); this means that when exiting via p3900 > 0, the value is not changed.

For vector control, the maximum speed is restricted to 60.0 / (8.333 x 500 µs x r0313). 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.

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.

p1083[0...n] CO: Speed limit in positive direction of rotation / n_limit pos

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** p2000 | **Data set:** DDS, p0180
Units group: 3_1 | **Unit selection:** p0505

Min	Max	Factory setting
0.000 [rpm]	210000.000 [rpm]	210000.000 [rpm]

Description: Sets the maximum speed for the positive direction.

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

r1084 CO: Speed limit positive effective / n_limit pos eff

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2000 | **Data set:** -
Units group: 3_1 | **Unit selection:** p0505

Min	Max	Factory setting
- [rpm]	- [rpm]	- [rpm]

Description: Displays the effective positive speed limit.

Dependency: Refer to: p1082, p1083, p1085

p1085[0...n] CI: Speed limit in positive direction of rotation / n_limit pos

Access level: 3 | **Calculated:** - | **Data type:** U32 / FloatingPoint32
Can be changed: T | **Scaling:** p2000 | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	1083[0]

Description: Sets the signal source for the speed limit of the positive direction.

p1086[0...n] CO: Speed limit in negative direction of rotation / n_limit neg

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** p2000 | **Data set:** DDS, p0180
Units group: 3_1 | **Unit selection:** p0505

Min	Max	Factory setting
-210000.000 [rpm]	0.000 [rpm]	-210000.000 [rpm]

Description: Sets the speed limit for the negative direction.
Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

r1087 CO: Speed limit negative effective / n_limit neg eff

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2000 | **Data set:** -
Units group: 3_1 | **Unit selection:** p0505

Min	Max	Factory setting
- [rpm]	- [rpm]	- [rpm]

Description: Displays the effective negative speed limit.
Dependency: Refer to: p1082, p1086, p1088

p1088[0...n] CI: Speed limit in negative direction of rotation / n_limit neg

Access level: 3 | **Calculated:** - | **Data type:** U32 / FloatingPoint32
Can be changed: T | **Scaling:** p2000 | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	1086[0]

Description: Sets the signal source for the speed/velocity limit of the negative direction.

p1091[0...n] Skip speed 1 / n_skip 1

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** p2000 | **Data set:** DDS, p0180
Units group: 3_1 | **Unit selection:** p0505

Min	Max	Factory setting
0.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets skip speed 1.
Dependency: Refer to: 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

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** p2000	**Data set:** DDS, p0180
Units group: 3_1	**Unit selection:** p0505	
Min 0.000 [rpm]	**Max** 210000.000 [rpm]	**Factory setting** 0.000 [rpm]

Description: Sets skip speed 2.

Dependency: Refer to: 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

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** p2000	**Data set:** DDS, p0180
Units group: 3_1	**Unit selection:** p0505	
Min 0.000 [rpm]	**Max** 210000.000 [rpm]	**Factory setting** 0.000 [rpm]

Description: Sets skip speed 3.

Dependency: Refer to: 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

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** p2000	**Data set:** DDS, p0180
Units group: 3_1	**Unit selection:** p0505	
Min 0.000 [rpm]	**Max** 210000.000 [rpm]	**Factory setting** 0.000 [rpm]

Description: Sets skip speed 4.

Dependency: Refer to: p1091, p1092, p1093, p1101

Notice: Skip bandwidths can also become ineffective as a result of the downstream limits in the setpoint channel.

p1101[0...n] Skip speed bandwidth / n_skip bandwidth

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** p2000	**Data set:** DDS, p0180
Units group: 3_1	**Unit selection:** p0505	
Min 0.000 [rpm]	**Max** 210000.000 [rpm]	**Factory setting** 0.000 [rpm]

Description: Sets the bandwidth for the skip speeds/velocities 1 to 4.

Dependency: Refer to: 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]

p1108[0...n] BI: Total setpoint selection / Total setp sel

Access level: 4	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to select the total setpoint.

Dependency: The selection of the total speed setpoint is automatically interconnected to the status word of the technology controller (r2349.4) if the technology controller is selected (p2200 > 0) and operated in the mode p2251 = 0.

Refer to: p1109

Caution: If the technology controller is to supply the total setpoint using p1109, then it is not permissible to withdraw the interconnection to its status word (r2349.4).

p1109[0...n] CI: Total setpoint / Total setp

Access level: 4	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** p2000	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the total setpoint.

For p1108 = 1 signal, the total setpoint is read in via p1109.

Dependency: The signal source of the total setpoint is automatically interconnected to the output of the technology controller (r2294) if the technology controller is selected (p2200 > 0) and operated in the mode p2251 = 0.

Refer to: p1108

Caution: If the technology controller is to supply the total setpoint using p1109, then it is not permissible to disable the interconnection to its output (r2294).

p1110[0...n] BI: Inhibit negative direction / Inhib neg dir

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to disable the negative direction.

Dependency: Refer to: p1111

p1111[0...n] BI: Inhibit positive direction / Inhib pos dir

Access level: 4	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to disable the positive direction.

Dependency: Refer to: p1110

r1112 CO: Speed setpoint after minimum limiting / n_set n. min_lim

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2000	**Data set:** -
Units group: 3_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the speed setpoint after the minimum limiting.

Dependency: Refer to: p1091, p1092, p1093, p1094, p1101

p1113[0...n] BI: Setpoint inversion / Setp inv

CU240B-2
CU240E-2
CU240E-2 F

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	[0] 722.1 [1] 0 [2] 0 [3] 0

Description: Sets the signal source to invert the setpoint.

Dependency: Refer to: r1198

Caution: If the technology controller is being used as the speed main setpoint (p2251 = 0), do not invert the setpoint using p1113 when the technology controller is enabled because this can cause the speed to change suddenly and lead to positive couplings in the control loop.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p1113[0...n] BI: Setpoint inversion / Setp inv

CU240B-2 DP
CU240E-2 DP
CU240E-2 DP F

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	[0] 2090.11 [1] 0 [2] 0 [3] 0

Description: Sets the signal source to invert the setpoint.

Dependency: Refer to: r1198

Caution: If the technology controller is being used as the speed main setpoint (p2251 = 0), do not invert the setpoint using p1113 when the technology controller is enabled because this can cause the speed to change suddenly and lead to positive couplings in the control loop.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

r1114 CO: Setpoint after the direction limiting / Setp after limit

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2000	**Data set:** -
Units group: 3_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the speed/velocity setpoint after the changeover and limiting the direction.

p1115 Ramp-function generator selection / RFG selection

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: T | **Scaling:** - | **Data set:** -
Units 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 CO: Ramp-function generator setpoint at the input / RFG setp at inp

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2000 | **Data set:** -
Units group: 3_1 | **Unit selection:** p0505

Min	Max	Factory setting
- [rpm]	- [rpm]	- [rpm]

Description: Displays the setpoint at the input of the ramp-function generator.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

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

Access level: 1 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: C(1), U, T | **Scaling:** - | **Data set:** DDS, p0180
Units 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: Refer to: p1082, p1123

Note: 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), ramp-up times of 0 s are not expedient. 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

PM230

Access level: 1 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: C(1), U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.000 [s]	999999.000 [s]	30.000 [s]

Description: 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: The parameter is pre-assigned depending on the size of the power unit.

Refer to: p1082, p1123

Note: For U/f control and sensorless vector control (see p1300), ramp-down times of 0 s are not recommended. 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

PM240
PM250, PM260

Access level: 1 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: C(1), U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.000 [s]	999999.000 [s]	10.000 [s]

Description: 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: Refer to: p1082, p1123

Note: For U/f control and sensorless vector control (see p1300), ramp-down times of 0 s are not recommended. The setting should be based on the startup times (r0345) of the motor.

p1122[0...n] BI: Bypass ramp-function generator / Bypass RFG

Access level: 4 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: U, T | **Scaling:** - | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source for bypassing the ramp generator (ramp-up and ramp-down times = 0).

Caution: If the technology controller is operated in mode p2251 = 0 (technology controller as main speed setpoint), then it is not permissible to disable the interconnection to its status word (r2349).

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: In the case of sensorless vector control, the ramp-function generator must not be bypassed, other than indirectly by means of interconnection with r2349.

p1123[0...n] Ramp-function generator minimum ramp-up time / RFG t_RU min

Access level: 4 | **Calculated:** p0340 = 1 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units 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: Refer to: p1082

Note: For U/f control and sensorless vector control (see p1300), ramp-down times of 0 s are not recommended. 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

Access level: 4 | **Calculated:** p0340 = 1 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units 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.

Dependency: Refer to: p1082

Note: For U/f control and sensorless vector control (see p1300), ramp-down times of 0 s are not recommended. The setting should be based on the startup times (r0345) of the motor. If the maximum speed p1082 changes, p1123 is re-calculated.

p1130[0...n] Ramp-function generator initial rounding-off time / RFG t_start_round

PM230

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.000 [s]	30.000 [s]	2.000 [s]

Description: Sets the initial 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.

p1130[0...n] Ramp-function generator initial rounding-off time / RFG t_start_round

PM240
PM250, PM260

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units 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 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

PM230

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.000 [s]	30.000 [s]	2.000 [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.

p1131[0...n] Ramp-function generator final rounding-off time / RFG t_end_delay

PM240
PM250, PM260

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units 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.

p1134[0...n] Ramp-function generator rounding-off type / RFG round-off type

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min 0	**Max** 1	**Factory setting** 0

Description: Sets the smoothed response to the OFF1 command or the reduced setpoint for the extended ramp-function generator.

Value:
0: Cont. smoothing
1: Discont smoothing

Dependency: No effect up to initial rounding-off time (p1130) > 0 s.

Note: p1134 = 0 (continuous smoothing)

If the setpoint is reduced while ramping-up, initially a final rounding-off is carried out and then the ramp-up completed. During the final rounding-off, the output of the ramp-function generator continues to go in the direction of the previous setpoint (overshoot). After the final rounding-off has been completed, the output goes toward the new setpoint.

p1134 = 1 (discontinuous smoothing)

If the setpoint is reduced while ramping-up, then the output goes immediately in the direction of the new setpoint. For the setpoint change there is no rounding-off.

p1135[0...n] OFF3 ramp-down time / OFF3 t_RD

PM230

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(1), U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min 0.000 [s]	**Max** 5400.000 [s]	**Factory setting** 30.000 [s]

Description: Sets the ramp-down time from the maximum speed down to zero speed for the OFF3 command.

Dependency: The parameter is pre-assigned depending on the size of the power unit.

Note: This time can be exceeded if the DC link voltage reaches its maximum value.

p1135[0...n] OFF3 ramp-down time / OFF3 t_RD

PM240
PM250, PM260

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(1), U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min 0.000 [s]	**Max** 5400.000 [s]	**Factory setting** 0.000 [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

PM230

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min 0.000 [s]	**Max** 30.000 [s]	**Factory setting** 2.000 [s]

Description: Sets the initial rounding-off time for OFF3 for the extended ramp generator.

p1136[0...n] OFF3 initial rounding-off time / RFGOFF3 t_strt_rnd

PM240
PM250, PM260

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min 0.000 [s]	**Max** 30.000 [s]	**Factory setting** 0.000 [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

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min 0.000 [s]	**Max** 30.000 [s]	**Factory setting** 0.000 [s]

Description: Sets the final rounding-off time for OFF3 for the extended ramp generator.

p1140[0...n] BI: Enable ramp-function generator/inhibit ramp-function generator / RFG enable

CU240B-2
CU240E-2
CU240E-2 F

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min -	**Max** -	**Factory setting** 1

Description: Sets the signal source for the command "enable ramp-function generator/inhibit ramp-function generator".
For the PROFIdrive profile, this command corresponds to control word 1 bit 4 (STW1.4).
BI: p1140 = 0 signal:
Inhibits the ramp-function generator (the ramp-function generator output is set to zero).
BI: p1140 = 1 signal:
Enables the ramp-function generator.

Dependency: Refer to: r0054, p1141, p1142

Caution: When "master control from PC" is activated, this binector input is ineffective.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p1140[0...n] BI: Enable ramp-function generator/inhibit ramp-function generator / RFG enable

CU240B-2 DP	**Access level:** 3	**Calculated:** -	**Data type:** U32 / Binary
CU240E-2 DP	**Can be changed:** T	**Scaling:** -	**Data set:** CDS, p0170
CU240E-2 DP F	**Units group:** -	**Unit selection:** -	
	Min	**Max**	**Factory setting**
	-	-	[0] 2090.4 [1] 1 [2] 2090.4 [3] 2090.4

Description: Sets the signal source for the command "enable ramp-function generator/inhibit ramp-function generator".
For the PROFIdrive profile, this command corresponds to control word 1 bit 4 (STW1.4).
BI: p1140 = 0 signal:
Inhibits the ramp-function generator (the ramp-function generator output is set to zero).
BI: p1140 = 1 signal:
Enables the ramp-function generator.

Dependency: Refer to: r0054, p1141, p1142

Caution: When "master control from PC" is activated, this binector input is ineffective.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p1141[0...n] BI: Continue ramp-function generator/freeze ramp-function generator / Continue RFG

CU240B-2	**Access level:** 3	**Calculated:** -	**Data type:** U32 / Binary
CU240E-2	**Can be changed:** T	**Scaling:** -	**Data set:** CDS, p0170
CU240E-2 F	**Units group:** -	**Unit selection:** -	
	Min	**Max**	**Factory setting**
	-	-	1

Description: Sets the signal source for the command "continue ramp-function generator/freeze ramp-function generator".
For the PROFIdrive profile, this command corresponds to control word 1 bit 5 (STW1.5).
BI: p1141 = 0 signal:
Freezes the ramp-function generator.
BI: p1141 = 1 signal:
Continues the ramp-function generator.

Dependency: Refer to: r0054, p1140, p1142

Caution: When "master control from PC" is activated, this binector input 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.

p1141[0...n] BI: Continue ramp-function generator/freeze ramp-function generator / Continue RFG

CU240B-2 DP
CU240E-2 DP
CU240E-2 DP F

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: T | **Scaling:** - | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	[0] 2090.5 [1] 1 [2] 2090.5 [3] 2090.5

Description: Sets the signal source for the command "continue ramp-function generator/freeze ramp-function generator".
For the PROFIdrive profile, this command corresponds to control word 1 bit 5 (STW1.5).
BI: p1141 = 0 signal:
Freezes the ramp-function generator.
BI: p1141 = 1 signal:
Continues the ramp-function generator.

Dependency: Refer to: r0054, p1140, p1142

Caution: When "master control from PC" is activated, this binector input 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.

p1142[0...n] BI: Enable setpoint/inhibit setpoint / Setpoint enable

CU240B-2
CU240E-2
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: T | **Scaling:** - | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	1

Description: Sets the signal source for the command "enable setpoint/inhibit setpoint".
For the PROFIdrive profile, this command corresponds to control word 1 bit 6 (STW1.6).
BI: p1142 = 0 signal
Inhibits the setpoint (the ramp-function generator input is set to zero).
BI: p1142 = 1 signal
Enables the setpoint.

Dependency: Refer to: p1140, p1141

Caution: When "master control from PC" is activated, this binector input is ineffective.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p1142[0...n] BI: Enable setpoint/inhibit setpoint / Setpoint enable

CU240B-2 DP
CU240E-2 DP
CU240E-2 DP F

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	[0] 2090.6 [1] 1 [2] 2090.6 [3] 2090.6

Description: Sets the signal source for the command "enable setpoint/inhibit setpoint".

For the PROFIdrive profile, this command corresponds to control word 1 bit 6 (STW1.6).

BI: p1142 = 0 signal

Inhibits the setpoint (the ramp-function generator input is set to zero).

BI: p1142 = 1 signal

Enables the setpoint.

Dependency: Refer to: p1140, p1141

Caution: When "master control from PC" is activated, this binector input is ineffective.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p1143[0...n] BI: Ramp-function generator, accept setting value / RFG accept set v

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for accepting the setting value of the ramp-function generator.

Dependency: The signal source for the ramp-function generator setting value is set using parameters.

Refer to: p1144

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.

p1144[0...n] CI: Ramp-function generator setting value / RFG setting value

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: U, T	**Scaling:** p2000	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the ramp-function generator setting value.

Dependency: The signal source for accepting the setting value is set using parameters.

Refer to: p1143

p1145[0...n] Ramp-function generator tracking intensity. / RFG track intens

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.0	50.0	0.0

Description: Sets the ramp-function generator tracking.

The output value of the ramp-function generator is tracked (corrected) corresponding to the maximum possible drive acceleration. The reference value is the deviation at the speed/velocity controller input that is necessary to ensure that the motor accelerates at the torque/force limit.

Notice: If ramp-function generator tracking is activated and the ramp time is set too short, this can cause unsteady acceleration.

Remedy:

- switch off 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.

p1148[0...n] Ramp-function gen., tolerance for ramp-up and ramp-down active / RFG tol HL/RL act

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: 3_1 | **Unit selection:** p0505

Min	Max	Factory setting
0.000 [rpm]	1000.000 [rpm]	19.800 [rpm]

Description: Sets the tolerance value for the status of the ramp-function generator (ramp-up active, ramp-down active).

If the input of the ramp-function generator does not change in comparison to the output by more than the entered tolerance time, then the status bits "ramp-up active" and "ramp-down active" are not influenced.

Dependency: Refer to: r1199

r1149 CO: Ramp-function generator, acceleration / RFG acceleration

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2007 | **Data set:** -
Units group: 39_1 | **Unit selection:** p0505

Min	Max	Factory setting
- [rev/s²]	- [rev/s²]	- [rev/s²]

Description: Displays the acceleration of the ramp-function generator.

Dependency: Refer to: p1145

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

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2000 | **Data set:** -
Units group: 3_1 | **Unit selection:** p0505

Min	Max	Factory setting
- [rpm]	- [rpm]	- [rpm]

Description: Displays the setpoint at the output of the ramp-function generator.

p1155[0...n] CI: Speed controller speed setpoint 1 / n_ctrl n_set 1

Access level: 4 | **Calculated:** - | **Data type:** U32 / FloatingPoint32
Can be changed: T | **Scaling:** p2000 | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source for speed setpoint 1 of the speed controller.

Dependency: The effectiveness of this setpoint depends on, e.g. STW1.4 and STW1.6.

The signal source of the total setpoint is automatically interconnected to the output of the technology controller (r2294) if the technology controller is selected (p2200 > 0) and operated in the mode p2251 = 1.

Refer to: r0002, p0840, p0844, p0848, p0852, p0854, r0898, p1140, p1142, p1160, r1170

Caution: If the technology controller is activated, then it is not permissible to withdraw the parameter interconnection.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p1160[0...n] CI: Speed controller speed setpoint 2 / n_ctrl n_set 2

Access level: 4 | **Calculated:** - | **Data type:** U32 / FloatingPoint32
Can be changed: T | **Scaling:** p2000 | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source for speed setpoint 2 of the speed controller.

Dependency: Refer to: p1155, r1170

Note: For OFF1/OFF3, the ramp-function generator ramp is effective.

The ramp-function generator is set (to the setpoint (r1170)) and stops the drive corresponding to the ramp-down time (p1121 or p1135). While stopping via the ramp-function generator, STW1.4 is effective (enable ramp-function generator).

r1169 CO: Speed controller, speed setpoints 1 and 2 / n_ctrl n_set 1/2

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2000 | **Data set:** -
Units group: 3_1 | **Unit selection:** p0505

Min	Max	Factory setting
- [rpm]	- [rpm]	- [rpm]

Description: Displays the speed setpoint after the addition of the speed setpoint 1 (p1155) and speed setpoint 2 (p1160).

Dependency: Refer to: p1155, p1160

Note: The value is only correctly displayed at r0899.2 = 1 (operation enabled).

r1170 CO: Speed controller, setpoint sum / n_ctrl setp sum

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2000 | **Data set:** -
Units group: 3_1 | **Unit selection:** p0505

Min	Max	Factory setting
- [rpm]	- [rpm]	- [rpm]

Description: Displays the speed setpoint after selecting the ramp-function generator and adding the speed setpoint 1 (p1155) and speed setpoint 2 (p1160).

Dependency: Refer to: r1150, p1155, p1160

r1197 Fixed speed setpoint number actual / n_set_fixed No act

Access level: 4 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the number of the selected fixed speed/velocity setpoint.

Dependency: Refer to: p1020, p1021, p1022, p1023

Note: If a fixed speed setpoint has not been selected (p1020 ... p1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0).

r1198.0...15 CO/BO: Control word setpoint channel / STW setpoint chan

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the control word for the setpoint channel.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Fixed setp bit 0	Yes	No	3010
01	Fixed setp bit 1	Yes	No	3010
02	Fixed setp bit 2	Yes	No	3010
03	Fixed setp bit 3	Yes	No	3010
05	Inhibit negative direction	Yes	No	3040
06	Inhibit positive direction	Yes	No	3040
11	Setpoint inversion	Yes	No	3040
13	Motorized potentiometer raise	Yes	No	3020
14	Motorized potentiometer lower	Yes	No	3020
15	Bypass ramp-function generator	Yes	No	3060, 3070

r1199.0...6 CO/BO: Ramp-function generator status word / RFG ZSW

Access level: 4 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the status word for the ramp-function generator (RFG).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Ramp-up active	Yes	No	-
01	Ramp-down active	Yes	No	-
02	RFG 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	-

Note: Re bit 02:

The bit is an OR logic operation - bit 00 and bit 01.

p1200[0...n] FlyRest oper mode / FlyRest op_mode

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min 0	**Max** 4	**Factory setting** 0

Description: Sets the operating mode for flying restart.

The flying restart allows the drive converter to be powered up while the motor is still rotating. In so doing, the drive converter output frequency is changed until the actual motor speed/velocity is found. The motor then accelerates up to the setpoint at 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: 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

For synchronous motors, flying restart cannot be activated.

Refer to: p1201

Refer to: F07330, F07331

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: When p1200 = 1, 4: Flying restart is active after faults, OFF1, OFF2, OFF3.

When p1200 = 1: The search is made in both directions.

When p1200 = 4: The search is only made in the setpoint direction.

For U/f control (p1300 < 20), the following applies:

The speed can only be sensed for values above approx. 5 % of the rated motor speed. For lower speeds, it is assumed that the motor is at a standstill.

If p1200 is changed during commissioning (p0010 > 0), 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 a parameter that was set when the drive was commissioned (e.g. p0300).

p1201[0...n] BI: Flying restart enable signal source / Fly_res enab S_src

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min -	**Max** -	**Factory setting** 1

Description: Sets the signal source to enable the "flying restart" function.

Dependency: Refer to: p1200

Note: Withdrawing the enable signal has the same effect as setting p1200 = 0.

p1202[0...n] FlyRest srch curr / FlyRest I_srch

PM230

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
10 [%]	400 [%]	90 [%]

Description: Sets the search current for the "flying restart" function.

The value is referred to the motor magnetizing current.

Dependency: Refer to: 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 prevailing search current is set dependent upon the frequency on the basis of voltage inputs.

Reducing the search current can also improve flying restart performance (if the system moment of inertia is not very high, for example).

p1202[0...n] FlyRest srch curr / FlyRest I_srch

PM240
PM250, PM260

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units 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.

Dependency: Refer to: 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 prevailing search current is set dependent upon the frequency on the basis of voltage inputs.

Reducing the search current can also improve flying restart performance (if the system moment of inertia is not very high, for example).

p1203[0...n] Flying restart search rate factor / FlyRst v_Srch Fact

PM230

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
10 [%]	4000 [%]	150 [%]

Description: The value influences the rate at which the output frequency is changed during a flying restart . A higher value results in a longer search time.

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).

p1203[0...n] Flying restart search rate factor / FlyRst v_Srch Fact

PM240
PM250, PM260

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
10 [%]	4000 [%]	100 [%]

Description: The value influences the rate at which the output frequency is changed during a flying restart . A higher value results in a longer search time.

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).

r1204.0...13 CO/BO: Flying restart, U/f control status / FlyRest Uf st

Access level: 4 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the status for checking and monitoring flying restart states in the U/f control mode.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
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 act	Yes	No	-
07	Positive gradient	Yes	No	-
08	Current < thresh	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	-

r1205.0...15 CO/BO: Flying restart, vector control status / FlyRest vector st

Access level: 4 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the status for checking and monitoring flying restart states in the vector control mode.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
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 comp 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	-

Note: Re bit 00 ... 09:

Used to control internal sequences during the flying restart.

Depending on the motor type (p0300), the number of active bits differs.

Re bits 10 ... 15:

Are used to monitor the flying restart sequence.

For permanent-magnet synchronous motors (PEM) only bits 10, 11 and 15 are supported.

p1206[0...9] Set the fault number without automatic restart / Fault_No w/o AR

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	65535	0

Description: Selects the faults for which automatic restart should not be effective.

Dependency: The setting is only effective for p1210 = 6, 16.

Refer to: p1210

p1210 Automatic restart, mode / AR mode

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: U, T	**Scaling:** -	**Data set:** -
Units 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 p0971 = 1 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: Acknowledging all faults and reclosing for an ON command

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 acknowledgement is required for an automatic restart.

For p1210 = 26, the ON command can also be entered with a delay. After the line supply returns or acknowledging a fault, the restart waits for an ON command. The maximum wait time is specified using p1213[0].

Refer to: p0840, p0857

Refer to: F30003

Danger: If the automatic restart is activated (p1210 > 1) if there is an ON command (refer to p0840), the drive is powered up as soon as any fault messages that are present can be acknowledged. This also occurs after the line supply returns or the Control Unit boots if the DC link voltage is present again. This automatic power-up sequence can only be interrupted by withdrawing the ON command.

Caution: 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: Re 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.

Re 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 the 24 V Control Unit power supply fails, then this is interpreted as a line supply failure.

Re p1210 = 6:

An automatic restart is carried out if any fault has occurred.

Re p1210 = 14:

As for p1210 = 4. However, faults that are present must be manually acknowledged.

Re p1210 = 16:

As for p1210 = 6. However, faults that are present must be manually acknowledged.

Re p1210 = 26:

As for p1210 = 6. However, at the time that the fault is acknowledged or at power on, a switch-on command is not necessary. This can be set with a time delay. The drive is switched-on again as soon as the switch-on command is set. The restart can be interrupted with either OFF2 or OFF3.

p1211 Automatic restart, start attempts / AR start attempts

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units 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: Refer to: p1210, r1214

Refer to: F07320

Caution: A change is only accepted and made in the state "initialization" (r1214.0) and "wait for alarm" (r1214.1).

Notice: After fault F07320 occurs, the power-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 decrements this start attempt by 1. If a further attempt to acknowledge is started by the automatic restart function prior to power failure, e.g. when the CU remains active on power failure longer than the time p1212 / 2, the fault 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 been completed if the motor was magnetized (r0056.4 = 1) and an additional delay 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 acknowledgement 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, acknowledgement is immediate and when the line supply returns, the system is powered up. If, between successfully acknowledging the line fault and the line supply returning, another fault occurs, then its acknowledgement also causes the start counter to be decremented.

For p1210 = 26, the start counter is decremented if after a successful fault acknowledgement, the on command is present.

p1212 Automatic restart, delay time start attempts / AR t_wait start

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.1 [s]	1000.0 [s]	1.0 [s]

Description: Sets the delay 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 delay time, no restart.

Refer to: p1210, r1214

Caution: 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 delay time.

If the cause of a fault is not removed in the first half of the delay time, then it is no longer possible to acknowledge in the delay time.

p1213[0...1] Automatic restart, monitoring time / AR t_monitoring

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min 0.0 [s]	**Max** 10000.0 [s]	**Factory setting** [0] 60.0 [s] [1] 0.0 [s]

Description: Sets the monitoring time of the automatic restart (AR).

Index: [0] = For restart
[1] = To reset the start counter

Dependency: Refer to: p1210, r1214

Caution: A change is only accepted and made in the state "initialization" (r1214.0) and "wait for alarm" (r1214.1).

Notice: After fault F07320 occurs, the power-on command must be withdrawn and all of the faults acknowledged so that the automatic restart function is re-activated.

Note: Index 0:

The monitoring time starts when the faults are detected. If the automatic acknowledgements 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 de-activated with p1213 = 0. If p1213 is set lower than the sum of p1212, the magnetizing time p0346 and the additional delay time due to the flying restart, then fault F07320 is generated at each restart. If, for p1210 = 1, the time in p1213 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 index 0. Otherwise, fault F07320 is generated after the set time.

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 index 1 has expired. The delay time is not effective for fault acknowledgement without automatic restart (p1210 = 1). After a power failure (blackout) the delay time only starts after the line supply returns and the Control Unit boots. The start counter is set to p1211, if F07320 occurred, the power-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 fault must have been successfully acknowledged and the switch-on command issued within the time in p1213, index 0. Otherwise, fault F07320 is generated after the set time.

r1214.0...15 CO/BO: Automatic restart, status / AR status

Access level: 4	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status of the automatic restart (AR).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Initialization	Yes	No	-
01	Wait for alarm	Yes	No	-
02	Auto restart act	Yes	No	-
03	Setting the acknowledgement command	Yes	No	-
04	Acknowledge alarms	Yes	No	-
05	Restart	Yes	No	-
06	Delay time running after automatic power-up	Yes	No	-
07	Fault	Yes	No	-
10	Effective fault	Yes	No	-
12	Start count. bit 0	ON	OFF	-
13	Start count. bit 1	ON	OFF	-
14	Start count. bit 2	ON	OFF	-
15	Start count. bit 3	ON	OFF	-

Note: Re bit 00:

State to display the single initialization after POWER ON.

Re bit 01:

State in which the automatic restart function waits for faults (initial state).

Re bit 02:

General display that a fault has been identified and that the restart or acknowledgement has been initiated.

Re 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.

Re bit 04:

State in which the faults that are present are acknowledged. The state is exited again after successful acknowledgement. A change is only made into the next state if it is signaled that a fault is no longer present after an acknowledgement command (bit 3 = 1).

Re bit 05:

State in which the drive is automatically powered up (only for p1210 = 4, 6).

Re bit 06:

State in which the system waits after having been powered up, 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.

Re 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 power-on command.

Re bit 10:

When the automatic restart function is active, r1214 bit 7 is displayed, otherwise the effective fault r2139 bit 3.

Re bits 12 ... 15:

Actual state of the start counter (binary coded).

In addition to bit 04:

For p1210 = 26, the system waits in this state until the switch-on command is available.

p1215 Motor holding brake configuration / Brake config

PM230

Access level: 2 | **Calculated:** - | **Data type:** Integer16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	3	0

Description: Sets the holding brake configuration.

Value:
0: No motor holding brake being used
3: Motor holding brake like sequence control, connection via BICO

Dependency: Refer to: 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 suppressed, the brake is closed even if the motor is still rotating. Pulse suppression can either be caused by a 0 signal at p0844, p0845 or p0852 or as a result of a fault with 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 p0855.

Note: 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.

p1215 Motor holding brake configuration / Brake config

PM240
PM250, PM260

Access level: 2 | **Calculated:** - | **Data type:** Integer16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	3	0

Description: Sets the holding brake configuration.

Value:
0: No motor holding brake being used
1: Motor holding brake acc. to sequence control
2: Motor holding brake always open
3: Motor holding brake like sequence control, connection via BICO

Dependency: Refer to: 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 1 or if p1215 was set to 3, then when the pulses are suppressed, the brake is closed even if the motor is still rotating. Pulse suppression can either be caused by a 0 signal at p0844, p0845 or p0852 or as a result of a fault with 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 p0855.

Note: If a holding brake integrated in the motor is used, 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 Motor holding brake, opening time / Brake t_open

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0 [ms]	10000 [ms]	100 [ms]

Description: Sets the time to open the motor holding brake.

After the holding brake has been controlled (opened), the speed setpoint remains at zero for this time. After this, the speed setpoint is enabled.

Dependency: Refer to: p1215, p1217

p1217 Motor holding brake closing time / Brake t_close

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min 0 [ms]	**Max** 10000 [ms]	**Factory setting** 100 [ms]

Description: Sets the time to apply the motor holding brake.

After OFF1 or OFF3 and the controlling (closing) of the holding brake, the drive remains stationary under closed-loop control for this time with a speed setpoint of zero. The pulses are suppressed when the time expires.

Dependency: Refer to: p1215, p1216

Notice: If the selected closing time is too short with respect to the actual closing time of the brake, then the load can sag.

If the closing time is selected to be too long with respect to the actual closing time of the brake, the control works against the brake and therefore reduces its lifetime.

p1226[0...n] Threshold for zero speed detection / n_standst n_thresh

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: 3_1	**Unit selection:** p0505	
Min 0.00 [rpm]	**Max** 210000.00 [rpm]	**Factory setting** 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.

Dependency: Refer to: p1227

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 Zero speed detection monitoring time / n_standst t_monit

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0.000 [s]	300.000 [s]	300.000 [s]

Description: Sets the monitoring time for the standstill identification.

When braking with OFF1 or OFF3, standstill is identified after this time has expired, after the setpoint speed has fallen below p1226 (also refer to p1145).

Dependency: The parameter is pre-assigned depending on the size of the power unit.

Refer to: p1226

Notice: For p1145 > 0.0 (RFG 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 suppressed.

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 p1227 = 300.000 s, the following applies:

Monitoring is de-activated.

For p1227 = 0.000 s, the following applies:

With OFF1 or OFF3 and a ramp-down time = 0, the pulses are immediately suppressed and the motor "coasts" down.

Once the Control Unit has been booted up for the first time or if the factory settings have been defined accordingly, the parameter is defined in accordance with the power unit.

p1228 Pulse suppression delay time / Pulse suppr t_del

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0.000 [s]	299.000 [s]	0.010 [s]

Description: Sets the delay time for pulse suppression.

After OFF1 or OFF3 and zero speed detection, the system waits for this time to expire and the pulses are then suppressed.

Dependency: Refer to: p1226, p1227

Notice: If the motor holding brake is activated, the pulse suppression is only conducted if this delay time (p1228) and then the closing time for the brake (p1217) have elapsed.

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.

p1230[0...n] BI: DC braking activation / DC brake act

Access level: 2	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: U, T	**Scaling:** -	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to activate DC braking.

Dependency: Refer to: p1231, p1232, p1233, p1234, r1239

Note: 1 signal: DC braking activated.

0 signal: DC braking de-activated.

p1231[0...n] DC braking configuration / DCBRK config

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: U, T	**Scaling:** -	**Data set:** MDS
Units group: -	**Unit selection:** -	
Min 0	**Max** 14	**Factory setting** 0

Description: Setting to activate DC braking.

Value:
0: No function
4: DC braking
5: DC braking for OFF1/OFF3
14: DC braking below starting speed

Dependency: Refer to: p0300, p1232, p1233, p1234, r1239

Note: The function is activated as soon as the activation criterion is fulfilled.

- the function can be initiated by an OFF2 response.

Activation criterion (one of the following criteria is fulfilled):

- binector input p1230 = 1 signal (DC braking activation).
- the drive is not in the state "S4: Operation" or in "S5x" (refer to function chart 2610).
- the internal pulse enable is missing (r0046.19 = 0).

The function can only be used for induction motors (p0300 = 1).

DC braking can only be withdrawn (p1231 = 0) if it is not being used as a fault response in p2101.

Re p1231 = 5:

DC braking can only be set for induction motors.

DC braking is activated if the OFF1 or OFF3 command is present. Binector input p1230 is ineffective. 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, 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. Flying restart must be activated if the motor is still rotating.

DC braking by means of fault response continues to be possible.

Re p1231 = 14:

In addition to the function for p1231 = 5, binector input p1230 is evaluated.

DC braking is only automatically activated when the speed threshold p1234 is fallen below if binector input p1230 = 1 signal.

Notice:

This is also the case, if no OFF command is present. After demagnetization and after the time in p1233 has expired, the drive changes back into normal operation or is switched-off (for OFF1/OFF3).

If a 0 signal is applied to binector input p1230, for OFF1 and OFF3 no DC braking is executed.

Note:

DCBRK: DC Braking

p1232[0...n] DC braking, braking current / DCBRK I_brake

Access level: 2	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** MDS
Units 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: Refer to: p1230, 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 vector control, a current value of 1.4142 x p1232 is obtained in the output phase U. For U/f control, the phase angle is offset by -30 degrees to obtain a current measurement of 1.2247 x p1232 in output phase U.

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

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** MDS
Units 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: Refer to: p1230, p1231, p1232, p1234, r1239

p1234[0...n] Speed at the start of DC braking / DCBRK n_start

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** MDS
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	210000.00 [rpm]

Description: Sets the starting speed for DC braking.

If the actual speed falls below this threshold, then DC braking is activated.

Dependency: Refer to: p1230, p1231, p1232, p1233, r1239

r1239.8...13 CO/BO: DC braking status word / DCBRK ZSW

Access level: 2	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Status word of the DC braking.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
08	DC braking active	Yes	No	7017
10	DC braking ready	Yes	No	7017
11	DC braking selected	Yes	No	-
12	DC braking selection internally inhibited	Yes	No	-
13	DC braking for OFF1/OFF3	Yes	No	-

Dependency: Refer to: p1231, p1232, p1233, p1234

Note: Re bit 12, 13:

Only effective for p1231 = 14.

p1240[0...n] Vdc controller or Vdc monitoring configuration (vector control) / Vdc_ctr config vec

PM230	**Access level:** 3	**Calculated:** -	**Data type:** Integer16
	Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
	Units group: -	**Unit selection:** -	
	Min 0	**Max** 3	**Factory setting** 1

Description: Sets the controller configuration of the DC link voltage (Vdc controller) in the closed-loop control mode. For U/f control: see p1280.

Value:
0: Inhib Vdc ctrl
1: Vdc_max controller enable
3: Vdc_min controller and Vdc_max controller enable

Dependency: Refer to: p1245

Refer to: A07400, A07401, A07402, F07405, F07406

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 power unit 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. If overvoltage faults occur in spite of the Vdc_max controller being active, the ramp-down time in p1121 might need to be increased.

- set the input voltage p0210 as low as possible in line with the supply voltage (in so doing avoid A07401).

p1240 = 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[0...n] Vdc controller or Vdc monitoring configuration (vector control) / Vdc_ctr config vec

PM240	**Access level:** 3	**Calculated:** -	**Data type:** Integer16
	Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
	Units group: -	**Unit selection:** -	
	Min 0	**Max** 3	**Factory setting** 1

Description: Sets the controller configuration of the DC link voltage (Vdc controller) in the closed-loop control mode. For U/f control: see p1280.

Value:
0: Inhib Vdc ctrl
1: Vdc_max controller enable
2: Vdc_min controller (kinetic buffering) enable
3: Vdc_min controller and Vdc_max controller enable

Dependency: Refer to: p1245

Refer to: A07400, A07401, A07402, F07405, F07406

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 power unit 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.

r1242 Vdc_max controller switch-in level / Vdc_max on_level

PM230 PM240	**Access level:** 3	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: -	**Scaling:** p2001	**Data set:** -
	Units group: -	**Unit selection:** -	
	Min - [V]	**Max** - [V]	**Factory setting** - [V]

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 = 1.15 * sqrt(2) * V_mains = 1.15 * sqrt(2) * p0210 (supply voltage)

PM230: r1242 is limited to Vdc_max - 50.0 V.

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)

Note: The Vdc_max controller is not switched back off until the DC-link voltage falls below the threshold 0.95 * p1242 and the controller output is zero.

p1243[0...n] Vdc_max controller dynamic factor / Vdc_max dyn_factor

PM230 PM240	**Access level:** 3	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
	Units group: -	**Unit selection:** -	
	Min 1 [%]	**Max** 10000 [%]	**Factory setting** 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.

p1245[0...n] Vdc_min controller switch-in level (kinetic buffering) / Vdc_min on_level

PM230	**Access level:** 3	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
	Units group: -	**Unit selection:** -	
	Min 65 [%]	**Max** 150 [%]	**Factory setting** 73 [%]

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: Refer to: p0210

Warning: An excessively high value may adversely affect normal drive operation.

p1245[0...n] Vdc_min controller switch-in level (kinetic buffering) / Vdc_min on_level

PM240			
	Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
	Units group: -	**Unit selection:** -	
	Min	**Max**	**Factory setting**
	65 [%]	150 [%]	76 [%]

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: Refer to: p0210

Warning: An excessively high value may adversely affect normal drive operation.

r1246 Vdc_min controller switch-in level (kinetic buffering) / Vdc_min on_level

PM230 PM240			
	Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: -	**Scaling:** p2001	**Data set:** -
	Units group: -	**Unit selection:** -	
	Min	**Max**	**Factory setting**
	- [V]	- [V]	- [V]

Description: Displays the switch-in level for the Vdc_min controller (kinetic buffering).

Note: The Vdc_min controller is not switched back off until the DC-link voltage rises above the threshold 1.05 * p1246 and the controller output is zero.

p1247[0...n] Vdc_min controller dynamic factor (kinetic buffering) / Vdc_min dyn_factor

PM230 PM240			
	Access level: 3	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
	Units group: -	**Unit selection:** -	
	Min	**Max**	**Factory setting**
	1 [%]	10000 [%]	300 [%]

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.

p1249[0...n] Vdc_max controller speed threshold / Vdc_max n_thresh

PM230 PM240			
	Access level: 3	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
	Units group: 3_1	**Unit selection:** p0505	
	Min	**Max**	**Factory setting**
	0.00 [rpm]	210000.00 [rpm]	10.00 [rpm]

Description: Sets the lower speed threshold for the Vdc_max controller. When this speed threshold is undershot, the Vdc_max control is switched out and the speed is controlled using the ramp-function generator.

Note: For fast braking where the ramp-function generator tracking was active, it is possible to prevent the drive rotating in the opposite direction by increasing the speed threshold and setting a final rounding-off time in the ramp-function generator (p1131). This is supported using a dynamic setting of the speed controller.

p1250[0...n] Vdc controller proportional gain / Vdc_ctrl Kp

PM230
PM240

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: U, T **Scaling:** - **Data set:** DDS, p0180
Units group: - **Unit selection:** -

Min	Max	Factory setting
0.00	100.00	1.00

Description: Sets the proportional gain for the DC-link voltage controller (Vdc_min controller, Vdc_max controller).
Dependency: The effective proportional gain is obtained taking into account p1243 (Vdc_max controller dynamic factor) and the DC link capacitance of the power unit.

p1251[0...n] Vdc controller integral time / Vdc_ctrl Tn

PM230
PM240

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: U, T **Scaling:** - **Data set:** DDS, p0180
Units group: - **Unit selection:** -

Min	Max	Factory setting
0 [ms]	10000 [ms]	0 [ms]

Description: Sets the integral time for the DC-link voltage controller (Vdc_min controller, 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 de-activated.

p1252[0...n] Vdc controller rate time / Vdc_ctrl t_rate

PM230
PM240

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: U, T **Scaling:** - **Data set:** DDS, p0180
Units group: - **Unit selection:** -

Min	Max	Factory setting
0 [ms]	1000 [ms]	0 [ms]

Description: Sets the rate time constant for the DC-link voltage controller (Vdc_min controller, 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

PM230

Access level: 3 **Calculated:** - **Data type:** Integer16
Can be changed: U, T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
0	1	0

Description: Activates/de-activates the automatic sensing of the switch-in level for the Vdc_max controller.
Value:
0: Automatic detection inhibited
1: Automatic detection enabled

p1254 Vdc_max controller automatic ON level detection / Vdc_max SenseOnLev

PM240

Access level: 3 **Calculated:** - **Data type:** Integer16
Can be changed: U, T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
0	1	1

Description: Activates/de-activates 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_thresh

PM230
PM240

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units 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: Refer to: 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

PM230
PM240

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units 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: Refer to: F07405, F07406

p1257[0...n] Vdc_min controller speed threshold / Vdc_min n_thresh

PM230
PM240

Access level: 3	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: 3_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	50.00 [rpm]

Description: Sets the speed threshold for the Vdc-min controller (kinetic buffering).

If this value is exceeded a fault is output; the required response can be parameterized .

r1258 CO: Vdc controller output / Vdc_ctrl output

PM230
PM240

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2002	**Data set:** -
Units group: 6_2	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

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 pre-control 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.

p1280[0...n] Vdc controller or Vdc monitoring configuration (U/f) / Vdc_ctr config U/f

PM230

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	1	1

Description: Sets the configuration of the controller for the DC link voltage (Vdc controller) in the U/f operating mode.

Value:
0: Inhib Vdc ctrl
1: Vdc_max controller enable

Note: For high input voltages (see p0210), the following settings can improve the degree of ruggedness of the Vdc_max controller:

- Set the input voltage p0210 as low as possible (in so doing avoid A07401).
- 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 bit 1 = 1) or reduce the derivative action time of the controller (p1292) (factor 0.5).

In this case, we always recommend using vector control (p1300 = 20) (Vdc controller, see p1240).

p1280[0...n] Vdc controller or Vdc monitoring configuration (U/f) / Vdc_ctr config U/f

PM240

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	3	1

Description: Sets the configuration of the controller for the DC link voltage (Vdc controller) in the U/f operating mode.

Value:
0: Inhib Vdc ctrl
1: Vdc_max controller enable
2: Vdc_min controller (kinetic buffering) enable
3: Vdc_min controller and Vdc_max controller enable

Note: For high input voltages (see p0210), the following settings can improve the degree of ruggedness of the Vdc_max controller:

- Set the input voltage p0210 as low as possible (in so doing avoid A07401).
- 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 bit 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 bit 1 = 1).

r1282 Vdc_max controller switch-in level (U/f) / Vdc_max on_level

PM230
PM240

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2001 | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [V]	- [V]	- [V]

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 = 1.15 * sqrt(2) * V_mains = 1.15 * sqrt(2) * p0210 (supply voltage)

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)

Note: The Vdc_max controller is not switched back off until the DC-link voltage falls below the threshold 0.95 * p1282 and the controller output is zero.

p1283[0...n] Vdc_max controller dynamic factor (U/f) / Vdc_max dyn_factor

PM230
PM240

Access level: 3 | **Calculated:** p0340 = 1,3,4 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units 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.

p1285[0...n] Vdc_min controller switch-in level (kinetic buffering) (U/f) / Vdc_min on_level

PM240

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
65 [%]	150 [%]	76 [%]

Description: Sets the switch-in level for the Vdc-min controller (kinetic buffering).

The value is obtained as follows:

p1286[V] = p1285[%] * sqrt(2) * p0210

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

PM240

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2001 | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [V]	- [V]	- [V]

Description: Displays the switch-in level for the Vdc_min controller (kinetic buffering).

Note: The Vdc_min controller is not switched back off until the DC-link voltage rises above the threshold 1.05 * p1286 and the controller output is zero.

p1287[0...n] Vdc_min controller dynamic factor (kinetic buffering) (U/f) / Vdc_min dyn_factor

PM240

Access level: 3 | **Calculated:** p0340 = 1,3,4 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units 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.

p1288[0...n] Vdc_max controller feedback coupling factor ramp-fct. gen. (U/f) / Vdc_max factor RFG

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.000	100.000	0.500

Description: Sets the feedback factor for the ramp-function generator. Its ramp times are decelerated relative to the output signal of the Vdc_max controller.

Note: For values p1288 = 0.0 to 0.5, the controller dynamics are automatically adapted internally.

p1290[0...n] Vdc controller proportional gain (U/f) / Vdc_ctrl Kp

PM230
PM240

Access level: 3 | **Calculated:** p0340 = 1,3,4 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.00	100.00	1.00

Description: Sets the proportional gain for the Vdc controller (DC link voltage controller).

Note: The gain factor is proportional to the capacitance of the DC link. The parameter is pre-set to a value that is optimally adapted to the capacitance of the power unit.

p1291[0...n] Vdc controller integral time (U/f) / Vdc_ctrl Tn

PM230
PM240

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0 [ms]	10000 [ms]	40 [ms]

Description: Sets the integral time for the Vdc controller (DC link voltage controller).

p1292[0...n] Vdc controller rate time (U/f) / Vdc_ctrl t_rate

PM230
PM240

Access level: 3 | **Calculated:** p0340 = 1,3,4 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0 [ms]	1000 [ms]	10 [ms]

Description: Sets the rate time constant for the Vdc controller (DC link voltage controller).

p1293[0...n] Vdc min controller output limit (U/f) / Vdc_min outp_lim

PM240

Access level: 4
Calculated: p0340 = 1,3,4
Data type: FloatingPoint32
Can be changed: U, T
Scaling: -
Data set: DDS, p0180
Units group: -
Unit selection: -

Min	Max	Factory setting
0.00 [Hz]	600.00 [Hz]	600.00 [Hz]

Description: Sets the output limit for the Vdc min controller (DC link undervoltage controller).

p1294 Vdc_max controller automatic detection ON signal level (U/f) / Vdc_max SenseOnLev

PM230
PM240

Access level: 3
Calculated: -
Data type: Integer16
Can be changed: U, T
Scaling: -
Data set: -
Units group: -
Unit selection: -

Min	Max	Factory setting
0	1	0

Description: Activates/de-activates the automatic sensing of the switch-in level for the Vdc_max controller. When the sensing function is de-activated, 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

p1295[0...n] Vdc_min controller time threshold (U/f) / Vdc_min t_thresh

PM240

Access level: 3
Calculated: -
Data type: FloatingPoint32
Can be changed: U, T
Scaling: -
Data set: DDS, p0180
Units group: -
Unit selection: -

Min	Max	Factory setting
0.000 [s]	10000.000 [s]	0.000 [s]

Description: Sets the time threshold for the Vdc_min controller (kinetic buffering). If this value is exceeded a fault is output; the required response can be parameterized.

Prerequisite: p1296 = 1.

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

PM240

Access level: 3
Calculated: -
Data type: Integer16
Can be changed: U, T
Scaling: -
Data set: DDS, p0180
Units 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

Note: Re 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_thresh

PM240

Access level: 3 | **Calculated:** p0340 = 1 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: 3_1 | **Unit selection:** p0505

Min	Max	Factory setting
0.00 [rpm]	210000.00 [rpm]	50.00 [rpm]

Description: Sets the speed threshold for the Vdc-min controller (kinetic buffering).

If this value is exceeded a fault is output; the required response can be parameterized .

r1298 CO: Vdc controller output (U/f) / Vdc_ctrl output

PM230
PM240

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2000 | **Data set:** -
Units group: 3_1 | **Unit selection:** p0505

Min	Max	Factory setting
- [rpm]	- [rpm]	- [rpm]

Description: Displays the actual output of the Vdc controller (DC link voltage controller)

p1300[0...n] Open-loop/closed-loop control operating mode / Op/cl-lp ctrl_mode

Access level: 2 | **Calculated:** - | **Data type:** Integer16
Can be changed: C(1), T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	22	0

Description: Sets the open and closed-loop control mode of a drive.

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)
22: Torque control (encoderless)

Dependency: Only operation with U/f characteristic is possible if the rated motor speed is not entered (p0311).

Operation with a U/f characteristic is not supported for 1LE4 synchronous motors.

Refer to: p0300, p0311, p0500, p1501

Notice: Active slip compensation is required in the U/f control types with Eco mode (p1300 = 4, 7). The scaling of the slip compensation (p1335) should be set so that the slip is completely compensated (generally 100%).

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: Only by selecting closed-loop speed control (p1300 = 20) is it possible to change over in operation to closed-loop torque control (p1501). 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 Imax frequency controller are switched off internally so that the output frequency can be set precisely. The Imax voltage controller remains active.

During operation (the pulses enabled) the open-loop/closed-loop control mode cannot be changed by changing over drive data sets.

p1310[0...n] Voltage boost permanent / U_boost perm

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.0 [%]	250.0 [%]	50.0 [%]

Description: Defines the voltage boost as a [%] referred to the rated motor current (p0305).

The magnitude of the permanent voltage boost is reduced with increasing frequency so that at the rated motor frequency, the rated motor voltage is present.

The magnitude of the boost in Volt at a frequency of zero is defined as follows:

Voltage boost [V] = 1.732 x p0305 (rated motor current [A]) x r0395 (stator/primary section resistance [ohm]) x p1310 (permanent voltage boost [%]) / 100 %

At low output frequencies, there is only a low output voltage in order to maintain the motor flux. However, the output voltage can be too low in order to achieve the following:

- magnetize the induction motor.
- hold the load.
- compensate for losses in the system.

This is the reason that the output voltage can be increased using p1310.

The voltage boost can be used for both linear as well as square-law U/f characteristics.

Dependency: The current limit p0640 limits the boost.

For vector control, the permanent voltage boost (p1310) has no effect as the drive converter automatically sets the optimum operating conditions.

Refer to: p1300, p1311, p1312, r1315

Notice: The voltage boost increases the motor temperature (particularly at zero speed).

Note: 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] Voltage boost at acceleration / U_boost accelerate

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units 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 disappears as soon as the setpoint has been reached. The build-up and withdrawal of the voltage boost are smoothed.

The magnitude of the boost in Volt at a frequency of zero is defined as follows:

Voltage boost [V] = 1.732 * p0305 (rated motor current [A]) x r0395 (stator/primary section resistance [ohm]) x p1311 (voltage boost when accelerating [%]) / 100 %

Dependency: The current limit p0640 limits the boost.

Refer to: p1300, p1310, p1312, r1315

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] Voltage boost when starting / U_boost starting

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min 0.0 [%]	**Max** 250.0 [%]	**Factory setting** 0.0 [%]

Description: Setting for an additional voltage boost when powering-up, however, only for the first acceleration phase.

The voltage boost becomes effective for a positive setpoint increase and disappears as soon as the setpoint has been reached. The build-up and withdrawal of the voltage boost are smoothed.

Dependency: The current limit p0640 limits the boost.

Refer to: p1300, p1310, p1311, r1315

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

r1315 Voltage boost total / U_boost total

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2001	**Data set:** -
Units group: -	**Unit selection:** -	
Min - [Vrms]	**Max** - [Vrms]	**Factory setting** - [Vrms]

Description: Displays the total resulting voltage boost in volt.

r1315 = p1310 + p1311 + p1312

Dependency: Refer to: p1310, p1311, p1312

p1320[0...n] U/f control programmable characteristic frequency 1 / Uf char f1

Access level: 3	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min 0.00 [Hz]	**Max** 3000.00 [Hz]	**Factory setting** 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.

Refer to: p1300, p1310, p1311, p1321, p1322, p1323, p1324, p1325, p1326, p1327

Note: Linear interpolation is carried out between the points 0 Hz/p1310, p1320/p1321 ... p1326/p1327.

The voltage boost when accelerating (p1311) is also applied to the freely programmable U/f characteristic.

p1321[0...n] U/f control programmable characteristic voltage 1 / Uf char U1

Access level: 3 **Calculated:** p0340 = 1 **Data type:** FloatingPoint32

Can be changed: U, T **Scaling:** - **Data set:** DDS, p0180

Units 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.

Refer to: 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

Access level: 3 **Calculated:** p0340 = 1 **Data type:** FloatingPoint32

Can be changed: U, T **Scaling:** - **Data set:** DDS, p0180

Units 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.

Refer to: p1310, p1311, p1320, p1321, p1323, p1324, p1325, p1326, p1327

p1323[0...n] U/f control programmable characteristic voltage 2 / Uf char U2

Access level: 3 **Calculated:** p0340 = 1 **Data type:** FloatingPoint32

Can be changed: U, T **Scaling:** - **Data set:** DDS, p0180

Units 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: Refer to: p1310, p1311, p1320, p1321, p1322, p1324, p1325, p1326, p1327

p1324[0...n] U/f control programmable characteristic frequency 3 / Uf char f3

Access level: 3 **Calculated:** p0340 = 1 **Data type:** FloatingPoint32

Can be changed: U, T **Scaling:** - **Data set:** DDS, p0180

Units 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.

Refer to: p1310, p1311, p1320, p1321, p1322, p1323, p1325, p1326, p1327

p1325[0...n] U/f control programmable characteristic voltage 3 / Uf char U3

Access level: 3	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0.0 [Vrms]	10000.0 [Vrms]	0.0 [Vrms]

Description: The programmable characteristic for the U/f control is defined using 4 points and 0 Hz/p1310.

This parameter specifies the voltage of the third point along the characteristic.

Dependency: Refer to: p1310, p1311, p1320, p1321, p1322, p1323, p1324, p1326, p1327

p1326[0...n] U/f control programmable characteristic frequency 4 / Uf char f4

Access level: 3	**Calculated:** p0340 = 1,3	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units 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.

Refer to: 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

Access level: 3	**Calculated:** p0340 = 1,3	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units 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.

Refer to: 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.

p1330[0...n] CI: U/f control independent voltage setpoint / Uf U_set independ.

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** p2001	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source 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.

Refer to: p1300

p1333[0...n] U/f control FCC starting frequency / U/f FCC f_start

Access level: 3	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units 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).

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

Access level: 3	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units 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.

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

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0.0 [%]	600.0 [%]	0.0 [%]

Description: Sets the setpoint for slip compensation in [%] referred to r0330 (motor rated slip).

p1335 = 0.0 %: Slip compensation de-activated.

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 types with Eco optimization (4 and 7), the slip compensation must be activated in order to guarantee correct operation.

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 the open-loop control modes p1300 = 5 and 6 (textile sector), the slip compensation is internally disabled in order to be able to precisely set the output frequency.

If p1335 is changed during commissioning (p0010 > 0), 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

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units 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 (motor rated slip).

r1337 CO: Actual slip compensation / Slip comp act val

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the actual compensated slip [%] referred to r0330 (rated motor slip).

Dependency: p1335 > 0 %: Slip compensation active.

Refer to: p1335

p1338[0...n] U/f mode resonance damping gain / Uf Res_damp gain

Access level: 3	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0.00	100.00	0.00

Description: Sets the gain for resonance damping for U/f control.

Dependency: Refer to: 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 of approximately 5 ... 90 % of the rated motor frequency (p0310), but up to a maximum of 45 Hz.

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 T

Access level: 4	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
1.00 [ms]	1000.00 [ms]	20.00 [ms]

Description: Sets the filter time constant for resonance damping for U/f control.

Dependency: Refer to: p1300, p1338, p1349

p1340[0...n] I_max frequency controller proportional gain / I_max_ctrl Kp

Access level: 3 | **Calculated:** p0340 = 1,3,4 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.000	0.500	0.000

Description: Sets the proportional gain of the I_max voltage 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.

Notice: When de-activating the I_max controller, the following must be carefully observed:

When the maximum current (r0067) is exceeded, the output current is no longer reduced, however, overcurrent alarm messages are generated. The drive is shut down if the overcurrent limit (r0209) is exceeded.

Note: The I_max limiting controller becomes ineffective if the ramp-function generator is de-activated with p1122 = 1.

p1341 = 0: I_max frequency controller de-activated and I_max voltage controller activated over the complete speed range.

p1341[0...n] I_max frequency controller integral time / I_max_ctrl Tn

Access level: 3 | **Calculated:** p0340 = 1,3,4 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units 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: Refer to: p1340

Note: When p1341 = 0, the current limiting controller influencing the frequency is de-activated and only the current limiting controller influencing the output voltage remains active (p1345, p1346).

In the case of power units with regenerative feedback (PM250, PM260), current limitation control for a regenerative load is always implemented by influencing the frequency. This current limiting function is de-activated with p1340 = p1341 = 0.

r1343 CO: I_max controller frequency output / I_max_ctrl f_outp

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2000 | **Data set:** -
Units group: 3_1 | **Unit selection:** p0505

Min	Max	Factory setting
- [rpm]	- [rpm]	- [rpm]

Description: Displays the effective frequency limit.

Dependency: Refer to: p1340

r1344 I_max controller voltage output / I_max_ctrl U_outp

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2001 | **Data set:** -
Units group: 5_1 | **Unit selection:** p0505

Min	Max	Factory setting
- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the amount by which the converter output voltage is reduced.

Dependency: Refer to: p1340

p1345[0...n] I_max voltage controller proportional gain / I_max_U_ctrl Kp

Access level: 3	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0.000	100000.000	0.000

Description: Sets the proportional gain for the I_max voltage controller.

Dependency: Refer to: 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

Access level: 3	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0.000 [s]	50.000 [s]	0.030 [s]

Description: Sets the integral time for the I_max voltage controller.

Dependency: Refer to: p1340

Note: p1346 = 0: Integral time of the I_max voltage controller de-activated.

The controller settings are also used in the current controller of the DC braking (refer to p1232).

r1348 CO: U/f control Eco factor actual value / U/f Eco fac act v

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the economic factor determined for optimizing motor consumption.

Dependency: Refer to: 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

Access level: 4	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units 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: Refer to: p1338, p1339

Note: For p1349 = 0, the changeover limit is automatically set to 95 % of the rated motor frequency - however, to a max. of 45 Hz.

p1350[0...n] Soft starting / Soft starting

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min 0	**Max** 1	**Factory setting** 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

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] CO: Motor holding brake starting frequency / Brake f_start

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min -300.00 [%]	**Max** 300.00 [%]	**Factory setting** 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 %).

Refer to: p1352

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

Note: Connected with p1352 a value of 100% corresponds to the motor rated slip (r0330).

p1352[0...n] CI: Motor holding brake starting frequency signal source / Brake f_start

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min -	**Max** -	**Factory setting** 1351[0]

Description: Sets the signal source for the frequency setting value at the slip compensation output for starting up with motor holding brake.

Dependency: Refer to: p1216

Note: A value of 100% corresponds to the motor rated slip (r0330).

The setting of the starting frequency begins after magnetizing (see p0346, r0056.4) and ends once the brake opening time (p1216) has elapsed and the starting frequency (p1334) has been reached.

A setting value of zero means that no setting procedure will take place.

p1400[0...n] Speed control configuration / n_ctrl config

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	1000 0000 0010 0001 bin

Description: Sets the configuration for the closed-loop speed control.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Automatic Kp/Tn adaptation active	Yes	No	6040
01	Sensorless vector control freeze I comp	Yes	No	6040
05	Kp/Tn adaptation active	Yes	No	6040
06	Free Tn adaptation active	Yes	No	6050
14	Torque pre-control	Always active	For n_ctrl enab	6060
15	Sensorless vector control, speed pre-control	Yes	No	6030

Note: Re bit 01:

When the bit is set, the I component of the speed controller is kept when changing into the open-loop controlled mode.

p1401[0...n] Flux control configuration / Flux ctrl config

Access level: 4	**Calculated:** -	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0000 0110 bin

Description: Sets the configuration for flux setpoint control

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Flux setpoint soft starting active	Yes	No	6722
01	Flux setpoint differentiation active	Yes	No	6723
02	Flux build-up control active	Yes	No	6722, 6723
06	Quick magnetizing	Yes	No	6722
07	Pre-control speed limitation	Yes	No	6640

Note: Re bit 00 (not for permanent-magnet synchronous 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.

Re bit 01 (not for permanent-magnet synchronous 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. When quick magnetizing (p1401.6 = 1) is selected, soft starting is internally de-activated and alarm A07416 is displayed.

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.

Re bit 02 (not for permanent-magnet synchronous 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.

Re bit 06 (not for induction motors):

Magnetizing is performed with maximum current (0.9 * r0067). With active identification of the stator resistance (see p0621) quick magnetizing is internally de-activated and alarm A07416 is displayed. During a flying restart of a rotating motor (see p1200) no quick magnetizing takes place.

Re 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).

p1402[0...n] Closed-loop current control and motor model configuration / I_ctrl config

Access level: 4	**Calculated:** p0340 = 1,3	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Sets the configuration for the closed-loop control and the motor model.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
02	Current controller adaptation active	Yes	No	-

r1406.4...15 CO/BO: Control word speed controller / STW n_ctrl

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the control word of the speed controller.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
04	Hold speed controller I component	Yes	No	6040
05	Set speed controller I component	Yes	No	6040
11	Droop enable	Yes	No	6030
12	Torque control active	Yes	No	6060
15	Set speed adaptation controller I component	Yes	No	-

r1407.0...15 CO/BO: Status word speed controller / ZSW n_ctrl

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status word of the speed controller.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	U/f control active	Yes	No	-
01	Encoderless operation active	Yes	No	-
02	Torque control active	Yes	No	6030, 6060, 8010
03	Speed control active	Yes	No	6040
05	Speed controller I component frozen	Yes	No	6040
06	Speed controller I component set	Yes	No	6040
07	Torque limit reached	Yes	No	6060
08	Upper torque limit active	Yes	No	6060
09	Lower torque limit active	Yes	No	6060
10	Droop enabled	Yes	No	6030
11	Speed setpoint limited	Yes	No	6030
12	Ramp-function generator set	Yes	No	-
13	Encoderless operation due to a fault	Yes	No	-
15	Torque limit reached (without pre-control)	Yes	No	6060

r1408.0...14 CO/BO: Status word current controller / ZSW I_ctrl

Access level: 4 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the current controller status word.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Current ctrl act	Active	Not active	-
01	Id control, I component limiting	Active	Not active	6714
03	Voltage limiting	Active	Not active	6714
10	Speed adaptation, limiting	Active	Not active	-
12	Motor stalled	Yes	No	-
13	Separately excited synchronous motor is excited	Yes	No	-
14	Current model FEM: magnetizing excitation current limited to 0	Yes	No	-

p1416[0...n] Speed setpoint filter 1 time constant / n_set_filt 1 T

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units 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).

r1438 CO: Speed controller, speed setpoint / n_ctrl n_set

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2000 | **Data set:** -
Units group: 3_1 | **Unit selection:** p0505

Min	Max	Factory setting
- [rpm]	- [rpm]	- [rpm]

Description: Displays the speed setpoint after setpoint limiting for the P component of the speed controller.
For U/f operation, the value that is displayed is of no relevance.

Dependency: Refer to: r1439

Note: In the standard state (the reference model is de-activated), r1438 = r1439.

r1439 Speed setpoint, I component / n_set I_comp

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2000 | **Data set:** -
Units group: 3_1 | **Unit selection:** p0505

Min	Max	Factory setting
- [rpm]	- [rpm]	- [rpm]

Description: Displays the speed setpoint for the I component of the speed controller (output of the reference model after the setpoint limiting).

Dependency: Refer to: r1438

Note: In the standard state (the reference model is de-activated), r1438 = r1439.

r1444 Speed controller, speed setpoint steady-state (static) / n_ctrl n_set stat

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2000	**Data set:** -
Units group: 3_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

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 (p1155).
- speed setpoint 2 (p1160).
- speed setpoint for the speed pre-control (p1430).
- setpoint from DSC (for DSC active).
- setpoint via PC (for master control active).

Dependency: Refer to: r1119, p1155, p1160

r1445 CO: Actual speed smoothed / n_act smooth

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2000	**Data set:** -
Units group: 3_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the actual smoothed actual speed for speed control.

p1452[0...n] Speed controller speed actual value smoothing time (SLVC) / n_C n_act T_s SLVC

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0.00 [ms]	32000.00 [ms]	10.00 [ms]

Description: Sets the smoothing time for the actual speed of the speed controller for encoderless closed-loop speed control.

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 (e.g. using p0340 = 4).

r1454 CO: Speed controller system deviation I component / n_ctrl sys dev Tn

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2000	**Data set:** -
Units group: 3_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the system deviation of the I component of the speed controller.

p1455[0...n] CI: Speed controller P gain adaptation signal / n_ctrl Adpt_sig Kp

Access level: 4	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the source for the adaptation signal to additionally adapt the P gain of the speed controller.

Dependency: Refer to: p1456, p1457, p1458, p1459

p1456[0...n] Speed controller P gain adaptation lower starting point / n_ctrl AdaptKpLow

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units 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: Refer to: p1455, 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 AdaptKp up

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units 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: Refer to: p1455, 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

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.0 [%]	200000.0 [%]	100.0 [%]

Description: Sets the adaptation factor before the adaptation range (0 % ... p1456) to additionally adapt the P gain of the speed/velocity controller.

Dependency: Refer to: p1455, 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

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units 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: Refer to: p1455, 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.

p1461[0...n] Speed controller Kp adaptation speed, upper scaling / n_ctrl Kp n upper

Access level: 3 | **Calculated:** p0340 = 1,3,4 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units 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 p1470).

Dependency: Refer to: 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.

p1463[0...n] Speed controller Tn adaptation speed, upper scaling / n_ctrl Tn n upper

Access level: 3 | **Calculated:** p0340 = 1,3,4 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units 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 p1472).

Dependency: Refer to: 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

Access level: 3 | **Calculated:** p0340 = 1,3,4 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: 3_1 | **Unit selection:** p0505

Min	Max	Factory setting
0.00 [rpm]	210000.00 [rpm]	0.00 [rpm]

Description: Sets the lower adaptation speed of the speed controller.

No adaptation is effective below this speed.

Dependency: Refer to: p1461, p1463, p1465

Note: If the upper transition point p1465 of the speed controller adaptation is set to lower values than the lower transition point p1464, then the controller below p1465 is adapted with p1461 or p1463. This means that an adaptation can be implemented for low speeds without having to change the controller parameters.

p1465[0...n] Speed controller adaptation speed, upper / n_ctrl n upper

Access level: 3 | **Calculated:** p0340 = 1,3,4 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: 3_1 | **Unit selection:** p0505

Min	Max	Factory setting
0.00 [rpm]	210000.00 [rpm]	210000.00 [rpm]

Description: Sets the upper adaptation speed of the speed controller.

No adaptation is effective above this speed.

For P gain, p1470 x p1461 is effective. For the integral time, p1472 x p1463 is effective.

Dependency: Refer to: p1461, 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.

p1466[0...n] CI: Speed controller P-gain scaling / n_ctrl Kp scal

Access level: 4 | **Calculated:** - | **Data type:** U32 / FloatingPoint32
Can be changed: T | **Scaling:** PERCENT | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	1

Description: Sets the signal source for the scaling of the P gain of the speed controller. This also makes the effective P gain (including adaptations) scalable.

r1468 CO: Speed controller P-gain effective / n_ctr Kp eff

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the effective P gain of the speed controller.

r1469 Speed controller integral time effective / n_ctr Tn eff

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [ms]	- [ms]	- [ms]

Description: Displays the effective integral time of the speed controller.

p1470[0...n] Speed controller encoderless operation P-gain / n_ctrl SLVC Kp

Access level: 2 | **Calculated:** p0340 = 1,3,4 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.000	999999.000	0.300

Description: Sets the P gain for encoderless operation for the speed controller.

Note: The product p0341 x p0342 is taken into account when automatically calculating the speed controller (p0340 = 1, 3, 4).

p1472[0...n] Speed controller encoderless operation integral time / n_ctrl SLVC Tn

Access level: 2 | **Calculated:** p0340 = 1,3,4 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units 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.

Note: The integral component is stopped if the complete controller output or the sum of controller output and torque pre-control reach the torque limit.

p1475[0...n] CI: Speed controller torque setting value for motor holding brake / n_ctrl M_sv MHB

Access level: 3 | **Calculated:** - | **Data type:** U32 / FloatingPoint32
Can be changed: T | **Scaling:** p2003 | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source for the torque setting value when starting up with motor holding brake.

Dependency: The switching in of the torque setting value for the motor holding brake has a higher priority than the setting of the integrator value using p1477 and p1478.

Note: The setting of the integral output of the speed controller begins after magnetizing (see p0346, r0056 bit 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.

If p1351 is used as a signal source for the torque setting value, the percentage value is interpreted in relation to the rated torque (p2003).

p1476[0...n] BI: Speed controller hold integrator / n_ctrl integ stop

Access level: 4 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: T | **Scaling:** - | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source to hold the integrator for the speed controller.

p1477[0...n] BI: Speed controller set integrator value / n_ctrl integ set

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: T | **Scaling:** - | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source to set the integrator setting value (p1478).

Dependency: Refer to: p1478, p1479

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p1478[0...n] CI: Speed controller integrator setting value / n_ctr integ_setVal

Access level: 3 | **Calculated:** - | **Data type:** U32 / FloatingPoint32
Can be changed: T | **Scaling:** p2003 | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source for the integrator setting value for the velocity controller.

The signal to set this integrator setting value is interconnected via p1477.

Dependency: The setting value of the speed controller integrator is weighted with the scaling factor of the signal source in p1479.

If p1478 is interconnected to the integral output of the speed controller (r1482), then after the magnetizing time (r0346) and if the speed controller is enabled, the integral component of the controller is set to the last value before the pulse inhibit. This value is set if no setting command (p1477) is interconnected or, at the instant that the pulses were inhibited, a setting command is available, which is not de-activated up to the next time that the pulses are inhibited. 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 pre-controlled (e.g. p1496).

If p1478 is interconnected to another output other than r1482, then after magnetizing and speed controller enable, the integral output is set once if the setting command is not interconnected (p1477 = 0).

Refer to: p1477, p1479

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p1479[0...n] CI: Speed controller integrator setting value scaling / n_ctrl I_val scal

Access level: 4 | **Calculated:** - | **Data type:** U32 / FloatingPoint32
Can be changed: T | **Scaling:** PERCENT | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	1

Description: Sets the signal source for scaling the integrator setting value (p1478) of the speed controller.

Dependency: Refer to: p1477, p1478

r1482 CO: Speed controller I torque output / n_ctrl I-M_output

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2003 | **Data set:** -
Units group: 7_1 | **Unit selection:** p0505

Min	Max	Factory setting
- [Nm]	- [Nm]	- [Nm]

Description: Displays the torque setpoint at the output of the I speed controller.

p1486[0...n] CI: Droop compensation torque / Droop M_comp

Access level: 3 | **Calculated:** - | **Data type:** U32 / FloatingPoint32
Can be changed: T | **Scaling:** p2003 | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source for the compensation torque to be output within the droop calculation.

p1487[0...n] Droop compensation torque scaling / Droop M_comp scal

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** PERCENT | **Data set:** DDS, p0180
Units 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.

p1488[0...n] Droop input source / Droop input source

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	3	0

Description: Sets the source for droop feedback.

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: Refer to: p1489, r1490, p1492

p1489[0...n] Droop feedback scaling / Droop scaling

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.000	0.500	0.050

Description: Sets the scaling for the droop feedback

Dependency: Refer to: p1488, r1490, p1492

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 CO: Droop feedback speed reduction / Droop n_reduction

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2000 | **Data set:** -
Units group: 3_1 | **Unit selection:** p0505

Min	Max	Factory setting
- [rpm]	- [rpm]	- [rpm]

Description: Displays the output signal of the droop calculation. The droop feedback result is subtracted from the speed setpoint when activated (p1492).

Dependency: Refer to: p1488, p1489, p1492

p1492[0...n] BI: Droop feedback enable / Droop enable

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: U, T | **Scaling:** - | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Enables the droop to be applied to the speed/velocity setpoint.

Dependency: Refer to: 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 CO: Moment of inertia, total / M_inertia total

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: 25_1 | **Unit selection:** p0100

Min	Max	Factory setting
- [kgm²]	- [kgm²]	- [kgm²]

Description: Displays the parameterized total moment of inertia ((p0341 * p0342) * p1496).

p1496[0...n] Acceleration pre-control scaling / a_before scaling

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min 0.0 [%]	**Max** 10000.0 [%]	**Factory setting** 0.0 [%]

Description: Sets the scaling for the acceleration pre-control of the speed/velocity controller.

Dependency: Refer to: p0341, p0342

Note: The parameter is set to 100% by the rotating measurement (refer to p1960).

The acceleration pre-control 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 pre-control mode is not used if there is gearbox backlash.

p1499[0...n] Accelerating for torque control, scaling / a for M_ctrl scal

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min 0.0 [%]	**Max** 400.0 [%]	**Factory setting** 100.0 [%]

Description: Sets the scaling for the acceleration integrator at low speeds (only for encoderless torque control).

Dependency: Refer to: p0341, p0342

p1500[0...n] Torque setpoint selection / M_set sel

CU240B-2

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: C(1), T	**Scaling:** -	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min 0	**Max** 66	**Factory setting** 2

Description: Sets the source for the torque setpoint.

For single-digit values, the following applies:

The value specifies the main setpoint.

For double-digit values, the following applies:

The left-hand digit specifies the supplementary setpoint, the right-hand digit the main setpoint.

Example:

Value = 26

--> The analog setpoint (2) supplies the supplementary setpoint.

--> The fieldbus (6) supplies the main setpoint.

Value:
0: No main setpoint
2: Analog setpoint
6: Fieldbus
20: Analog setpoint + no main setpoint
22: Analog setpoint + analog setpoint
26: Analog setpoint + fieldbus
60: Fieldbus + no main setpoint
62: Fieldbus + analog setpoint
66: Fieldbus+fieldbus

Dependency: When changing this parameter, the following settings are influenced:

Refer to: p1503, p1511

Caution: When executing a specific macro, the corresponding programmed settings are made and become active.

p1500[0...n] Torque setpoint selection / M_set sel

CU240B-2 DP	**Access level:** 2	**Calculated:** -	**Data type:** Integer16
	Can be changed: C(1), T	**Scaling:** -	**Data set:** CDS, p0170
	Units group: -	**Unit selection:** -	
	Min 0	**Max** 66	**Factory setting** 6

Description: Sets the source for the torque setpoint.

For single-digit values, the following applies:

The value specifies the main setpoint.

For double-digit values, the following applies:

The left-hand digit specifies the supplementary setpoint, the right-hand digit the main setpoint.

Example:

Value = 26

--> The analog setpoint (2) supplies the supplementary setpoint.

--> The fieldbus (6) supplies the main setpoint.

Value:

0: No main setpoint
2: Analog setpoint
6: Fieldbus
20: Analog setpoint + no main setpoint
22: Analog setpoint + analog setpoint
26: Analog setpoint + fieldbus
60: Fieldbus + no main setpoint
62: Fieldbus + analog setpoint
66: Fieldbus+fieldbus

Dependency: When changing this parameter, the following settings are influenced:

Refer to: p1503, p1511

Caution: When executing a specific macro, the corresponding programmed settings are made and become active.

p1500[0...n] Torque setpoint selection / M_set sel

CU240E-2	**Access level:** 2	**Calculated:** -	**Data type:** Integer16
CU240E-2 F	**Can be changed:** C(1), T	**Scaling:** -	**Data set:** CDS, p0170
	Units group: -	**Unit selection:** -	
	Min 0	**Max** 77	**Factory setting** 2

Description: Sets the source for the torque setpoint.

For single-digit values, the following applies:

The value specifies the main setpoint.

For double-digit values, the following applies:

The left-hand digit specifies the supplementary setpoint, the right-hand digit the main setpoint.

Example:

Value = 26

--> The analog setpoint (2) supplies the supplementary setpoint.

--> The fieldbus (6) supplies the main setpoint.

Value:

0: No main setpoint
2: Analog setpoint
6: Fieldbus
7: Analog setpoint 2
20: Analog setpoint + no main setpoint
22: Analog setpoint + analog setpoint
26: Analog setpoint + fieldbus
27: Analog setpoint + analog setpoint 2
60: Fieldbus + no main setpoint
62: Fieldbus + analog setpoint
66: Fieldbus+fieldbus
67: Fieldbus + analog setpoint 2
70: Analog setpoint 2 + no main setpoint
72: Analog setpoint 2 + analog setpoint
76: Analog setpoint 2 + fieldbus
77: Analog setpoint 2 + analog setpoint 2

Dependency: When changing this parameter, the following settings are influenced:

Refer to: p1503, p1511

Caution: When executing a specific macro, the corresponding programmed settings are made and become active.

p1500[0...n] Torque setpoint selection / M_set sel

CU240E-2 DP
CU240E-2 DP F

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: C(1), T	**Scaling:** -	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min 0	**Max** 77	**Factory setting** 6

Description: Sets the source for the torque setpoint.

For single-digit values, the following applies:

The value specifies the main setpoint.

For double-digit values, the following applies:

The left-hand digit specifies the supplementary setpoint, the right-hand digit the main setpoint.

Example:

Value = 26

--> The analog setpoint (2) supplies the supplementary setpoint.

--> The fieldbus (6) supplies the main setpoint.

Value:
0: No main setpoint
2: Analog setpoint
6: Fieldbus
7: Analog setpoint 2
20: Analog setpoint + no main setpoint
22: Analog setpoint + analog setpoint
26: Analog setpoint + fieldbus
27: Analog setpoint + analog setpoint 2
60: Fieldbus + no main setpoint
62: Fieldbus + analog setpoint
66: Fieldbus+fieldbus
67: Fieldbus + analog setpoint 2
70: Analog setpoint 2 + no main setpoint
72: Analog setpoint 2 + analog setpoint
76: Analog setpoint 2 + fieldbus
77: Analog setpoint 2 + analog setpoint 2

Dependency: When changing this parameter, the following settings are influenced:

Refer to: p1503, p1511

Caution: When executing a specific macro, the corresponding programmed settings are made and become active.

p1501[0...n] BI: Change over between closed-loop speed/torque control / Changeov n/M_ctrl

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: U, T	**Scaling:** -	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min -	**Max** -	**Factory setting** 0

Description: Sets the signal source for toggling between speed and torque control.

Dependency: The input connectors to enter the torque are provided using p1511, p1512 and p1513.

Refer to: p1300

Caution: If the closed-loop torque control is not activated (p1300) and a change is made to closed-loop torque control (p1501), OFF1 (p0840) does not have its own braking response but pulse suppression when standstill is detected (p1226, p1227).

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: 0 signal: Closed-loop speed control

1 signal: Closed-loop torque control

p1503[0...n] CI: Torque setpoint / M_set

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** p2003	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the torque setpoint for torque control.

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 the changeover source in p1501.

it is also possible to change over in operation using p1501.

r1508 CO: Torque setpoint before supplementary torque / M_set bef. M_suppl

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2003	**Data set:** -
Units group: 7_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

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 p1503.

p1511[0...n] CI: Supplementary torque 1 / M_suppl 1

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** p2003	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for supplementary torque 1.

p1512[0...n] CI: Supplementary torque 1 scaling / M_suppl 1 scal

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for scaling the supplementary torque 1.

p1513[0...n] CI: Supplementary torque 2 / M_suppl 2

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** p2003	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for supplementary torque 2.

p1514[0...n] Supplementary torque 2 scaling / M_suppl 2 scal

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-2000.0 [%]	2000.0 [%]	100.0 [%]

Description: Sets the scaling for supplementary torque 2.

r1515 Supplementary torque total / M_suppl total

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2003	**Data set:** -
Units group: 7_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Displays the total supplementary torque.

The displayed value is the total of supplementary torque values 1 and 2 (p1511, p1512, p1513, p1514).

r1516 CO: Supplementary torque and acceleration torque / M_suppl + M_accel

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2003	**Data set:** -
Units group: 7_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Displays the total supplementary torque and the accelerating torque.

The displayed value is the total of the smoothed supplementary torque and the accelerating torque (p1516 = p1518[1] + r1515).

p1517[0...n] Accelerating torque smoothing time constant / M_accel T_smooth

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units 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 pre-control is inhibited if the smoothing is set to the maximum value.

r1518[0...1] CO: Accelerating torque / M_accel

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2003	**Data set:** -
Units group: 7_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Displays the accelerating torque for pre-control of the speed controller.

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

Dependency: Refer to: p0341, p0342, p1496

p1520[0...n] CO: Torque limit upper / M_max upper

Access level: 2 | **Calculated:** p0340 = 1,3,5 | **Data type:** FloatingPoint32

Can be changed: U, T | **Scaling:** p2003 | **Data set:** DDS, p0180

Units group: 7_1 | **Unit selection:** p0505

Min	Max	Factory setting
-1000000.00 [Nm]	20000000.00 [Nm]	0.00 [Nm]

Description: Sets the fixed, upper torque limit.

Dependency: Refer to: p1521, p1522, p1523, r1538, r1539

Danger: Negative values when setting the upper torque limit (p1520 < 0) can result in the motor accelerating in an uncontrollable fashion.

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

Note: The torque limit is limited to 400% of the rated motor torque. When automatically calculating the motor/closed-loop control parameters (p0340), the torque limit is set to match the current limit (p0640).

p1521[0...n] CO: Torque limit lower / M_max lower

Access level: 2 | **Calculated:** p0340 = 1,3,5 | **Data type:** FloatingPoint32

Can be changed: U, T | **Scaling:** p2003 | **Data set:** DDS, p0180

Units group: 7_1 | **Unit selection:** p0505

Min	Max	Factory setting
-20000000.00 [Nm]	1000000.00 [Nm]	0.00 [Nm]

Description: Sets the fixed, lower torque limit.

Dependency: Refer to: p1520, p1522, p1523

Danger: Positive values when setting the lower torque limit (p1521 > 0) can result in the motor accelerating in an uncontrollable fashion.

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

Note: The torque limit is limited to 400% of the rated motor torque. When automatically calculating the motor/closed-loop control parameters (p0340), the torque limit is set to match the current limit (p0640).

p1522[0...n] CI: Torque limit upper / M_max upper

Access level: 3 | **Calculated:** - | **Data type:** U32 / FloatingPoint32

Can be changed: T | **Scaling:** p2003 | **Data set:** CDS, p0170

Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	1520[0]

Description: Sets the signal source for the upper torque limit.

Dependency: Refer to: p1520, p1521, p1523

Danger: Negative values resulting from the signal source and scaling can cause the motor to accelerate in an uncontrolled manner.

p1523[0...n] CI: Torque limit lower / M_max lower

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** p2003	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	1521[0]

Description: Sets the signal source for the lower torque limit.

Dependency: Refer to: p1520, p1521, p1522

Danger: Positive values resulting from the signal source and scaling can cause the motor to accelerate in an uncontrolled manner.

p1524[0...n] CO: Torque limit upper/motoring scaling / M_max up/mot scal

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-2000.0 [%]	2000.0 [%]	100.0 [%]

Description: Sets the scaling for the upper torque limit or the torque limit when motoring.

Dependency: p1400.4 = 0: upper/lower

p1400.4 = 1: motoring / regenerating

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

Note: This parameter can be freely interconnected.

The value has the meaning stated above if it is interconnected from connector input p1528.

p1525[0...n] CO: Torque limit lower scaling / M_max lower scal

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-2000.0 [%]	2000.0 [%]	100.0 [%]

Description: Sets the scaling for the lower torque limit.

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

Note: This parameter can be freely interconnected.

The value has the meaning stated above if it is interconnected from connector input p1528.

r1526 CO: Torque limit upper without offset / M_max up w/o offs

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2003	**Data set:** -
Units group: 7_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Displays the upper torque limit of all torque limits without offset.

Dependency: Refer to: p1520, p1521, p1522, p1523, p1528, p1529

r1527 CO: Torque limit lower without offset / M_max low w/o offs

Access level: 3
Calculated: -
Data type: FloatingPoint32
Can be changed: -
Scaling: p2003
Data set: -
Units group: 7_1
Unit selection: p0505

Min	Max	Factory setting
- [Nm]	- [Nm]	- [Nm]

Description: Displays the lower torque limit of all torque limits without offset.

Dependency: Refer to: p1520, p1521, p1522, p1523, p1528, p1529

p1528[0...n] CI: Torque limit upper scaling / M_max upper scal

Access level: 4
Calculated: -
Data type: U32 / FloatingPoint32
Can be changed: T
Scaling: PERCENT
Data set: CDS, p0170
Units group: -
Unit selection: -

Min	Max	Factory setting
-	-	1524[0]

Description: Sets the signal source for the scaling of the upper torque limit in p1522.

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: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p1529[0...n] CI: Torque limit lower scaling / M_max lower scal

Access level: 4
Calculated: -
Data type: U32 / FloatingPoint32
Can be changed: T
Scaling: PERCENT
Data set: CDS, p0170
Units group: -
Unit selection: -

Min	Max	Factory setting
-	-	1525[0]

Description: Sets the signal source for the scaling of the lower torque limit in p1523.

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: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p1530[0...n] Power limit motoring / P_max mot

Access level: 2
Calculated: p0340 = 1,3,5
Data type: FloatingPoint32
Can be changed: U, T
Scaling: -
Data set: DDS, p0180
Units group: 14_5
Unit selection: p0505

Min	Max	Factory setting
0.00 [kW]	100000.00 [kW]	0.00 [kW]

Description: Sets the power limit when motoring.

Dependency: Refer to: p0500, p1531

Note: The power limit is limited to 300% of the rated motor power.

p1531[0...n] Power limit regenerative / P_max gen

Access level: 2 | **Calculated:** p0340 = 1,3,5 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: 14_5 | **Unit selection:** p0505

Min	Max	Factory setting
-100000.00 [kW]	-0.01 [kW]	-0.01 [kW]

Description: Sets the regenerative power limit.

Dependency: Refer to: r0206, 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.

For power units with energy recovery, the parameter is limited to the negative value of r0206[2].

r1533 Current limit torque-generating total / Iq_max total

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2002 | **Data set:** -
Units group: 6_2 | **Unit selection:** p0505

Min	Max	Factory setting
- [Arms]	- [Arms]	- [Arms]

Description: Displays the maximum torque/force generating current as a result if all current limits.

r1536 Current limit maximum torque-generating current / Isq_max

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2002 | **Data set:** -
Units group: 6_2 | **Unit selection:** p0505

Min	Max	Factory setting
- [Arms]	- [Arms]	- [Arms]

Description: Displays the maximum limit for the torque-generating current component.

r1537 Current limit minimum torque-generating current / Isq_min

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2002 | **Data set:** -
Units group: 6_2 | **Unit selection:** p0505

Min	Max	Factory setting
- [Arms]	- [Arms]	- [Arms]

Description: Displays the minimum limit for the torque-generating current component.

r1538 CO: Upper effective torque limit / M_max upper eff

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2003 | **Data set:** -
Units group: 7_1 | **Unit selection:** p0505

Min	Max	Factory setting
- [Nm]	- [Nm]	- [Nm]

Description: Displays the currently effective upper torque limit.

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).

The torque limit p1520 can be re-calculated using p0340 = 1, 3 or 5.

r1539 CO: Lower effective torque limit / M_max lower eff

Access level: 2 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: - **Scaling:** p2003 **Data set:** -
Units group: 7_1 **Unit selection:** p0505

Min	Max	Factory setting
- [Nm]	- [Nm]	- [Nm]

Description: Displays the currently effective lower torque limit.

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).

The torque limit p1520 can be re-calculated using p0340 = 1, 3 or 5.

r1547[0...1] CO: Torque limit for speed controller output / M_max outp n_ctrl

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: - **Scaling:** p2003 **Data set:** -
Units group: 7_1 **Unit selection:** p0505

Min	Max	Factory setting
- [Nm]	- [Nm]	- [Nm]

Description: Displays the torque limit to limit the speed controller output.

Index: [0] = Upper limit
[1] = Lower limit

r1548[0...1] CO: Stall current limit torque-generating maximum / Isq_max stall

Access level: 4 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: - **Scaling:** p2002 **Data set:** -
Units group: 6_2 **Unit selection:** p0505

Min	Max	Factory setting
- [Arms]	- [Arms]	- [Arms]

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

p1552[0...n] CI: Torque limit upper scaling without offset / M_max up w/o offs

Access level: 3 **Calculated:** - **Data type:** U32 / FloatingPoint32
Can be changed: T **Scaling:** PERCENT **Data set:** CDS, p0170
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	1

Description: Sets the signal source for the scaling of the upper torque limiting to limit the speed controller output without taking into account the current and power limits.

p1554[0...n] CI: Torque limit lower scaling without offset / M_max low w/o offs

Access level: 3 **Calculated:** - **Data type:** U32 / FloatingPoint32
Can be changed: T **Scaling:** PERCENT **Data set:** CDS, p0170
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	1

Description: Sets the signal source for the scaling of the lower torque limiting to limit the speed controller output without taking into account the current and power limits.

p1570[0...n] CO: Flux setpoint / Flux setpoint

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
50.0 [%]	200.0 [%]	100.0 [%]

Description: Sets the flux setpoint referred to rated motor flux.

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

Note: For p1570 > 100%, the flux setpoint increases as a function of the load from 100% (no-load operation) to the setting in p1570 (above rated motor torque), if p1580 > 0% has been set.

p1571[0...n] CI: Supplementary flux setpoint / Suppl flux setp

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** p2003	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the supplementary flux setpoint.

Notice: Low flux setpoints can cause the drive to stall at higher loads. This is the reason that the flux setpoint should only be adapted for slow load changes.

Note: The supplementary flux setpoint is limited to +/- 50 %.

p1573[0...n] Flux threshold value magnetizing / Flux thresh magnet

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Data set:** DDS, p0180
Units 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.

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

PM230

Access level: 3	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: 5_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
0.0 [Vrms]	150.0 [Vrms]	2.0 [Vrms]

Description: Sets a dynamic voltage reserve.

Dependency: Refer to: p0500

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).

p1574[0...n] Voltage reserve dynamic / U_reserve dyn

PM240
PM250, PM260

Access level: 3 | **Calculated:** p0340 = 1,3,5 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: 5_1 | **Unit selection:** p0505

Min	Max	Factory setting
0.0 [Vrms]	150.0 [Vrms]	10.0 [Vrms]

Description: Sets a dynamic voltage reserve.

Dependency: Refer to: p0500

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).

p1580[0...n] Efficiency optimization / Efficiency opt.

PM230

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0 [%]	100 [%]	80 [%]

Description: Sets the efficiency optimization. When optimizing the efficiency, the flux setpoint of the closed-loop control is adapted as a function of the load.

For p1580 = 100 %, under no-load operating conditions, the flux setpoint is reduced to 50 % of the rated motor flux.

Note: 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.

p1580[0...n] Efficiency optimization / Efficiency opt.

PM240
PM250, PM260

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0 [%]	100 [%]	0 [%]

Description: Sets the efficiency optimization. When optimizing the efficiency, the flux setpoint of the closed-loop control is adapted as a function of the load.

For p1580 = 100 %, under no-load operating conditions, the flux setpoint is reduced to 50 % of the rated motor flux.

Note: 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.

p1582[0...n] Flux setpoint smoothing time / Flux setp T_smth

Access level: 3 | **Calculated:** p0340 = 1,3 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
4 [ms]	5000 [ms]	15 [ms]

Description: Sets the smoothing time for the flux setpoint.

r1583 Flux setpoint smoothed / Flux setp smooth

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the smoothed flux setpoint.
The value is referred to the rated motor flux.

p1584[0...n] Field weakening operation, flux setpoint smoothing time / Field weak T_smth

Access level: 4	**Calculated:** p0340 = 1,3	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0 [ms]	20000 [ms]	0 [ms]

Description: Sets the smoothing time for the flux setpoint in the field-weakening range

Note: Only the flux setpoint rise is smoothed

r1589 Field-weakening current, pre-control value / I_FieldWeak prectr

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2002	**Data set:** -
Units group: 6_2	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the pre-control value for the field weakening current.

r1593[0...1] CO: Field weakening controller / flux controller output / Field/Fl_ctrl outp

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2002	**Data set:** -
Units group: 6_2	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the output of the field weakening controller (synchronous motor).

Index: [0] = PI output
[1] = I output

p1594[0...n] Field-weakening controller, P gain / Field_ctrl Kp

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0.00	1000.00	0.00

Description: Sets the P gain of the field-weakening controller.

p1596[0...n] Field weakening controller integral-action time / Field_ctrl Tn

Access level: 3	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min 10 [ms]	**Max** 10000 [ms]	**Factory setting** 300 [ms]

Description: Sets the integral-action time of the field-weakening controller.

r1597 CO: Field weakening controller output / Field_ctrl outp

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Data set:** -
Units group: -	**Unit selection:** -	
Min - [%]	**Max** - [%]	**Factory setting** - [%]

Description: Displays the output of the field weakening controller.

The value is referred to the rated motor flux.

r1598 CO: Total flux setpoint / Flux setp total

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Data set:** -
Units group: -	**Unit selection:** -	
Min - [%]	**Max** - [%]	**Factory setting** - [%]

Description: Displays the effective flux setpoint.

The value is referred to the rated motor flux.

p1610[0...n] Torque setpoint static (SLVC) / M_set static

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min -200.0 [%]	**Max** 200.0 [%]	**Factory setting** 50.0 [%]

Description: Sets the static torque setpoint for sensorless vector control (SLVC).

This parameter is entered as a percentage referred to the rated motor torque (r0333).

For sensorless vector control, when the motor model is shut down, 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.

Note: For p1610 = 0%, a current setpoint is calculated that corresponds to the no-load case (ASM: rated 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.

p1611[0...n] Supplementary accelerating torque (SLVC) / M_suppl_accel

Access level: 2 | **Calculated:** p0340 = 1 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.0 [%]	200.0 [%]	30.0 [%]

Description: Enters the dynamic torque setpoint for the low-speed range for sensorless vector control (SLVC). 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 pre-control of the speed controller (p1496).

p1616[0...n] Current setpoint smoothing time / I_set T_smooth

Access level: 4 | **Calculated:** p0340 = 1,3 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
4 [ms]	10000 [ms]	40 [ms]

Description: Sets the smoothing time for the current setpoint.

The current setpoint is generated from p1610 and p1611.

Note: This parameter is only effective in the range where current is injected for sensorless vector control.

r1623[0...1] Field-generating current setpoint (steady-state) / Id_set stationary

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2002 | **Data set:** -
Units group: 6_2 | **Unit selection:** p0505

Min	Max	Factory setting
- [Arms]	- [Arms]	- [Arms]

Description: Displays the steady-state field generating current setpoint (Id_set).

Note: Re index 1:

Displays the stationary field-generating current on the stator side in the case of separately excited synchronous motors without the excitation current monitoring component (r1644).

r1624 Field-generating current setpoint, total / Id_setp total

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2002 | **Data set:** -
Units group: 6_2 | **Unit selection:** p0505

Min	Max	Factory setting
- [Arms]	- [Arms]	- [Arms]

Description: Displays the limited field-generating current setpoint (Id_set).

This value comprises the steady-state field-generating current setpoint r1623 and a dynamic component that is only set when changes are made to the flux setpoint.

r1650 Current setpoint torque-generating before filter / Iq_set before filt

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2002 | **Data set:** -
Units group: 6_2 | **Unit selection:** p0505

Min	Max	Factory setting
- [Arms]	- [Arms]	- [Arms]

Description: Displays the torque generating current setpoint Iqset after the torque limits and the clock cycle interpolation is ahead of the current setpoint filters.

p1654[0...n] Curr. setpoint torque-gen. smoothing time field weakening range / Isq_s T_smth FW

Access level: 4 | **Calculated:** p0340 = 1 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.1 [ms]	50.0 [ms]	4.8 [ms]

Description: Sets the smoothing time constant for the setpoint of the torque-generating current components.

Note: The smoothing time does not become effective until the field-weakening range is reached.

p1702[0...n] Isd current controller pre-control scaling / Isd_ctr_prectrScal

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.0 [%]	200.0 [%]	70.0 [%]

Description: Sets the scaling of the dynamic current controller pre-control for the flux-generating current component Isd.

Note: The parameter is effective for permanent-magnet synchronous motors.

p1703[0...n] Isq current controller pre-control scaling / Isq_ctr_prectrScal

Access level: 4 | **Calculated:** p0340 = 1,3,4 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.0 [%]	200.0 [%]	60.0 [%]

Description: Sets the scaling of the dynamic current controller pre-control for the torque/force-generating current component Isq.

p1715[0...n] Current controller P gain / I_ctrl Kp

Access level: 4 | **Calculated:** p0340 = 1,3,4 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.000	100000.000	0.000

Description: Sets the proportional gain of the current controller.

This value is automatically pre-set using p3900 or p0340 when commissioning has been completed.

p1717[0...n] Current controller integral-action time / I_ctrl Tn

Access level: 4 | **Calculated:** p0340 = 1,3,4 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.00 [ms]	1000.00 [ms]	2.00 [ms]

Description: Sets the integral-action time of the current controller.

Dependency: Refer to: p1715

r1718 CO: Isq controller output / Isq_ctrl outp

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2001 | **Data set:** -
Units group: 5_1 | **Unit selection:** p0505

Min	Max	Factory setting
- [Vrms]	- [Vrms]	- [Vrms]

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.

r1719 Isq controller integral component / Isq_ctrl I_comp

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2001 | **Data set:** -
Units group: 5_1 | **Unit selection:** p0505

Min	Max	Factory setting
- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the integral component of the Isq current controller (torque/force-generating current, PI controller).

r1723 CO: Isd controller output / Isd_ctrl outp

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2001 | **Data set:** -
Units group: 5_1 | **Unit selection:** p0505

Min	Max	Factory setting
- [Vrms]	- [Vrms]	- [Vrms]

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.

r1724 Isd controller integral component / Isd_ctrl I_comp

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2001 | **Data set:** -
Units group: 5_1 | **Unit selection:** p0505

Min	Max	Factory setting
- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the integral component of the Isd current controller (flux-generating current, PI controller).

r1725 Isd controller integral component limit / Isd_ctrl I_limit

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2001 | **Data set:** -
Units group: 5_1 | **Unit selection:** p0505

Min	Max	Factory setting
- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the limit value for the integral component of the Isd current controller.

p1726[0...n] Quadrature arm decoupling, scaling / Transv_decpl scal

Access level: 4 | **Calculated:** p0340 = 1 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.0 [%]	200.0 [%]	75.0 [%]

Description: Sets the scaling of the quadrature arm decoupling

Note: This parameter is ineffective for sensorless vector control. In this case, p1727 is always used. If p1726 is set to 0, then the quadrature de-coupling is de-activated. The integral component of the Isd current controller remains effective in the complete speed control range.

For the closed-loop control of synchronous motors, this parameter is used to scale the current controller de-coupling.

p1727[0...n] Quadrature arm decoupling at voltage limit scaling / TrnsvDecplVmaxScal

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.0 [%]	200.0 [%]	50.0 [%]

Description: Sets the scaling of quadrature arm decoupling when the voltage limit is reached.

r1728 De-coupling voltage, in-line axis / U_dir-axis_decoupl

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2001 | **Data set:** -
Units group: 5_1 | **Unit selection:** p0505

Min	Max	Factory setting
- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the actual output of the quadrature channel de-coupling for the d axis.

r1729 De-coupling voltage, quadrature axis / U_quad_decoupl

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2001 | **Data set:** -
Units group: 5_1 | **Unit selection:** p0505

Min	Max	Factory setting
- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the actual output of the quadrature channel de-coupling for the q axis.

p1730[0...n] Isd controller integral component shutdown threshold / Isd_ctrl I_thresh

Access level: 4 | **Calculated:** p0340 = 1,3,4 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
30 [%]	150 [%]	30 [%]

Description: Sets the speed activation threshold (referred to the synchronous speed r0336 / r0313) for pure quadrature branch operation of the closed-loop current control.

The d current controller is only effective as P controller for speeds greater than the threshold value.

Warning: For settings above 80%, the d current controller is active up to the field weakening limit (maximum voltage)

This can result in unstable behavior as the closed-loop control at the maximum voltage is based on pure quadrature branch operation.

Setting values as high as this should not be selected; they are only intended for test purposes.

Note: The parameter is only effective for induction motor operation without an encoder.

r1732[0...1] CO: Direct-axis voltage setpoint / Direct U set

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2001	**Data set:** -
Units group: 5_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the direct-axis voltage setpoint Ud.

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

r1733[0...1] CO: Quadrature-axis voltage setpoint / Quad U set

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2001	**Data set:** -
Units group: 5_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the quadrature-axis component of voltage setpoint Uq.

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

p1740[0...n] Gain resonance damping for encoderless closed-loop control / Gain res_damp

Access level: 3	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units 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.

p1745[0...n] Motor model error threshold stall detection / MotMod ThreshStall

Access level: 3	**Calculated:** p0340 = 1,3	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0.0 [%]	1000.0 [%]	5.0 [%]

Description: Sets the fault threshold in order to detect a motor that has stalled.

If the error signal (r1746) 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.

Refer to: p2178

Note: Monitoring is only effective in the low-speed range (below p1755 * (100% - p1756)).

r1746 Motor model error signal stall detection / MotMod sig stall

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Signal to initiate stall detection

Note: The signal is not calculated while magnetizing and only in the low speed range (below p1755 * (100 % - p1756)).

p1750[0...n] Motor model configuration / MotMod config

PM230

Access level: 3 | **Calculated:** p0340 = 1,3,5 | **Data type:** Unsigned8

Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180

Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0000 1100 bin

Description: Sets the configuration for the motor model.

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

Bit field:

Bit	Signal name	1 signal	0 signal	FP
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	-
06	Closed-loop control when motor is blocked	Yes	No	-

Dependency: Refer to: p0500

Caution: Do not use bit 6 = 1 if the motor can be reversed by the load. Long delay times due to blocking (p2177) can cause the motor to stall. In this case you should de-activate the function or use closed-loop control throughout the speed range (note the information re bit 2 = 1).

Note: Bits 0 ... 2 only have an influence for encoderless vector control, bit 2 is pre-assigned depending on p0500.

Re bit 2 = 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 de-selection 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.

Re bit 2 = 0:

Bit 3 is also automatically deactivated.

Re bit 6 = 1:

The following applies for encoderless 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.

p1750[0...n] Motor model configuration / MotMod config

PM240 PM250, PM260	**Access level:** 3	**Calculated:** p0340 = 1,3,5	**Data type:** Unsigned8
	Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
	Units group: -	**Unit selection:** -	
	Min -	**Max** -	**Factory setting** 0000 0000 bin

Description: Sets the configuration for the motor model.

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

Bit field:

Bit	Signal name	1 signal	0 signal	FP
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	-
06	Closed-loop control when motor is blocked	Yes	No	-

Dependency: Refer to: p0500

Caution: Do not use bit 6 = 1 if the motor can be reversed by the load. Long delay times due to blocking (p2177) can cause the motor to stall. In this case you should de-activate the function or use closed-loop control throughout the speed range (note the information re bit 2 = 1).

Note: Bits 0 ... 2 only have an influence for encoderless vector control, bit 2 is pre-assigned depending on p0500.

Re bit 2 = 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 de-selection 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.

Re bit 2 = 0:

Bit 3 is also automatically deactivated.

Re bit 6 = 1:

The following applies for encoderless 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.

r1751 Motor model status / MotMod status

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the status of the motor model.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Controlled operation	Active	Inactive	6721
01	Set ramp-function generator	Active	Inactive	-
02	Stop RsLh adaptation	Yes	No	-
03	Feedback	Active	Inactive	-
05	Holding angle	Yes	No	-
06	Acceleration criterion	Active	Inactive	-
07	Set angular integrator PEM	No	Yes	-
08	Stop Kt adaptation PEM	No	Yes	-
09	PolID active PEM SLVC	No	Yes	-
10	I injection PEM	No	Yes	-
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	Motor mode	Regenerative mode	-
16	Pulse injection active PEM	Yes	No	-
17	Operation with feedback	Selected	Deselected	-

p1755[0...n] Motor model changeover speed encoderless operation / MotMod n_chgSnsorl

Access level: 3 | **Calculated:** p0340 = 1,3 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: 3_1 | **Unit selection:** p0505

Min	Max	Factory setting
0.00 [rpm]	210000.00 [rpm]	210000.00 [rpm]

Description: Sets the speed to change over the motor model to encoderless operation.

Dependency: Refer to: p1756

Notice: The changeover speed represents the steady-state minimum speed up to which the motor model can be used in steady-state operation without encoder.
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 Motor model changeover speed hysteresis encoderless operation / MotMod n_chgov hys

Access level: 3 | **Calculated:** p0340 = 1,3 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units 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: Refer to: p1755

Note: The parameter value refers to p1755.

p1758[0...n] Motor model changeover delay time closed/open-loop control / MotMod t cl_op

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units 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: Refer to: p1755, p1756

p1759[0...n] Motor model changeover delay time open/closed-loop control / MotMod t op_cl

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	**Max**	**Factory setting**
0 [ms]	2000 [ms]	0 [ms]

Description: Sets the minimum time for exceeding the changeover speed when changing from open-loop controlled operation to closed-loop controlled operation.

Dependency: Refer to: p1755, p1756

Note: When p1759 = 2000 ms, the delay time becomes ineffective and the model changeover is determined by the output frequency only.

r1762[0...1] Motor model deviation component 1 / MotMod dev comp 1

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	**Max**	**Factory setting**
-	-	-

Description: Induction motor (ASM):

Displays the referred imaginary system deviation for the adaptation circuit of the motor model.

Permanent-magnet synchronous motor (PESM):

Displays the system deviation for speed adaptation.

r1762.0: Angular deviation [rad-el] of the estimated EMF.

r1762.1: Angular deviation [electr. deg.] of the low-level signal response for pulse technique.

Index: [0] = Deviation Model1
[1] = Deviation Model2

r1763 Motor model deviation component 2 / MotMod dev comp 2

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	**Max**	**Factory setting**
-	-	-

Description: Induction motor (ASM):

Displays the referred real system deviation for the adaptation circuit of the motor model.

Permanent-magnet synchronous motor (PESM):

Not used.

p1764[0...n] Motor model without encoder speed adaptation Kp / MotMod woE n_adaKp

Access level: 4 | **Calculated:** p0340 = 1,3,4 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.000	100000.000	1000.000

Description: Sets the proportional gain of the controller for speed adaptation without encoder.

r1765 Motor model, speed adaptation Kp effective / MotM n_ada Kp act

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2001 | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the effective proportional gain of the controller for the speed adaptation.

p1767[0...n] Motor model without encoder speed adaptation Tn / MotMod woE n_adaTn

Access level: 4 | **Calculated:** p0340 = 1,3,4 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
1 [ms]	200 [ms]	4 [ms]

Description: Sets the integral time of the controller for speed adaptation without encoder

r1768 Motor model, speed adaptation Vi effective / MotM n_ada Vi act

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2001 | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the effective gain of the integral component of the controller for speed adaptation.

r1770 CO: Motor model speed adaptation proportional component / MotMod n_adapt Kp

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2000 | **Data set:** -
Units group: 3_1 | **Unit selection:** p0505

Min	Max	Factory setting
- [rpm]	- [rpm]	- [rpm]

Description: Displays the P component of the controller for speed adaptation.

r1771 CO: Motor model speed adaptation I comp. / MotMod n_adapt Tn

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2000 | **Data set:** -
Units group: 3_1 | **Unit selection:** p0505

Min	Max	Factory setting
- [rpm]	- [rpm]	- [rpm]

Description: Displays the I component of the controller for speed adaptation.

r1773[0...1] Motor model slip speed / MotMod slip

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: 3_1 | **Unit selection:** p0505

Min	Max	Factory setting
- [rpm]	- [rpm]	- [rpm]

Description: Displays estimated (speed) signals of the motor model.

r1773[0]: Displays the estimated (mechanical) slip of the motor model.

r1773[1]: Displays the estimated input speed of the motor model.

Index: [0] = Slip speed estimated
[1] = Speed estimated

p1774[0...n] Motor model, offset voltage compensation alpha / MotMod offs comp A

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-5.000 [V]	5.000 [V]	0.000 [V]

Description: Sets the offset voltage in the alpha direction; this compensates the offset voltages of the drive converter/inverter at low speeds. The value is valid for the rated (nominal) pulse frequency of the power unit.

Note: The value is pre-set during the rotating measurement.

p1775[0...n] Motor model, offset voltage compensation beta / MotMod offs comp B

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-5.000 [V]	5.000 [V]	0.000 [V]

Description: Sets the offset voltage in the beta direction; this compensates the offset voltages of the drive converter/inverter at low speeds. The value is valid for the rated (nominal) pulse frequency of the power unit.

Note: The value is pre-set during the rotating measurement.

r1776[0...6] Motor model status signals / MotMod status sig

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the internal status signals of the motor model:

Index 0: Changeover ramp between current and voltage models

Index 1: Changeover ramp for model tracking (encoderless induction motors only)

Index 2: Changeover ramp for zero frequency range (encoderless induction motors only)

Index 3: Transition ramp actual speed from speed setpoint to model value (encoderless FEM)

Index 4: Speed controller enable (encoderless FEM)

Index 5: Transition ramp between current and voltage models (encoderless FEM)

Index 6: Transition ramp for EMF deviation at PLL input (encoderless PESM)

Index: [0] = Changeover ramp motor model
[1] = Changeover ramp model tracking
[2] = Changeover ramp zero frequency encoderless ASM
[3] = Changeover ramp actual speed encoderless FEM
[4] = Enable speed controller encoderless FEM
[5] = Changeover ramp motor model encoderless FEM
[6] = Changeover ramp motor model encoderless PESM

Note: Indices 3 through 5 are only relevant in the case of encoderless control of separately excited synchronous motors.

r1778 Motor model flux angle difference / MotMod ang. diff.

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2005 | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [°]	- [°]	- [°]

Description: Displays the difference between the motor model flux angle and the transformation angle.

Dependency: A setting for smoothing the display can be made using p1754.

p1780[0...n] Motor model adaptation configuration / MotMod adapt conf

Access level: 4 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0101 1100 bin

Description: Sets the configuration for the adaptation circuit of the motor model.

Induction motor (ASM): Rs, Lh, and offset compensation.

Permanent magnet synchronous motor (PEM): kT

Bit field:

Bit	Signal name	1 signal	0 signal	FP
01	Select motor model ASM Rs adaptation	Yes	No	-
02	Select motor model ASM Lh adaptation	Yes	No	-
03	Select motor model PEM kT adaptation	Yes	No	-
04	Select motor model offset adaptation	Yes	No	-
06	Select pole position identification PEM encoderless	Yes	No	-
07	Select T(valve) with Rs adaptation	Yes	No	-

Note: ASM: Induction motor

PEM: Permanent magnet synchronous motor

When selecting the compensation of the valve interlocking via Rs (bit 7), the compensation in the gating unit is de-activated and is instead taken into account in the motor model.

In order that the correction values of the Rs, Lh and kT adaptation (selected using Bit 0 ... Bit 2) are correctly accepted when changing over the drive data set, a dedicated motor number must be entered into p0826 for each different motor.

p1784[0...n] Motor model feedback scaling / Mod_FB_scal

Access level: 3 | **Calculated:** p0340 = 1,3,4 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.0 [%]	1000.0 [%]	0.0 [%]

Description: Sets the scaling for model fault feedback.

Note: Feeding back the measured model fault to the model states increases the control stability and makes the motor model rugged against parameter errors.

The model feedback is only effective for encoderless operation of the ASM.

When feedback is selected (p1784 > 0), Lh adaptation is not effective.

p1785[0...n] Motor model Lh adaptation Kp / MotMod Lh Kp

Access level: 4 | **Calculated:** p0340 = 1,3,4 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.000	10.000	0.100

Description: Sets the proportional gain for the Lh adaptation of the motor model for an induction motor (ASM).

p1786[0...n] Motor model Lh adaptation integral time / MotMod Lh Tn

Access level: 4 | **Calculated:** p0340 = 1,3,4 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
10 [ms]	10000 [ms]	100 [ms]

Description: Sets the integral time for the Lh adaptation of the motor model for an induction motor (ASM).

r1787[0...n] Motor model Lh adaptation corrective value / MotMod Lh corr

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [mH]	- [mH]	- [mH]

Description: Displays the corrective value for the Lh adaptation of the motor model for an induction motor (ASM).

Dependency: Refer to: 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.

r1791 Motor model Lh adaptation power-on frequency / MotMod Lh f_on

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [Hz]	- [Hz]	- [Hz]

Description: Displays the power-on stator frequency/ primary section frequency for the Lh adaptation for the induction motor (ASM).

r1792 Motor model Lh adaptation power-on slip / MotMod Lh fslip

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [Hz]	- [Hz]	- [Hz]

Description: Displays the power-on slip frequency for the Lh adaptation for the induction motor (ASM).

p1795[0...n] Motor model kT adaptation integral time / MotMod kT Tn

Access level: 4 | **Calculated:** p0340 = 1,3,4 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
10 [ms]	10000 [ms]	100 [ms]

Description: Sets the integral time of the kT adaptation of the motor model for a permanent-magnet synchronous motor (PEM).

r1797[0...n] Motor model kT adaptation corrective value / MotMod kT corr

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [Nm/A]	- [Nm/A]	- [Nm/A]

Description: Displays the corrective value of the kT adaptation of the motor model for a permanent-magnet synchronous motor (PEM).

Dependency: Refer to: p0826, p1780

Note: The display of the inactive data sets is only updated when changing over the data set.

p1800[0...n] Pulse frequency setpoint / Pulse freq setp

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
2.000 [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: Refer to: p0230

Note: The maximum possible pulse frequency is also determined by the power unit being used.

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 output reactors, the pulse frequency is limited to 4 kHz (see p0230).

If p1800 is changed during commissioning (p0010 > 0), 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).

r1801[0...1] CO: Pulse frequency / Pulse frequency

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** p2000 | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [kHz]	- [kHz]	- [kHz]

Description: Display and connector output for the actual converter switching frequency.

Index: [0] = Actual
[1] = Modulator minimum 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

PM230

Access level: 3 | **Calculated:** p0340 = 1,3,5 | **Data type:** Integer16
Can be changed: T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	10	10

Description: Sets the modulator mode.

Value:
0: Automatic changeover SVM/FLB
2: Space vector modulation (SVM)
3: SVM without overcontrol
4: SVM/FLB without overcontrol
10: SVM/FLB with modulation depth reduction

Dependency: If a sine-wave filter is parameterized as output filter (p0230 = 3, 4), then only space vector modulation without overcontrol can be selected as modulation type (p1802 = 3). This is not valid for the power units PM260. p1802 = 10 can only be set for the PM230 and PM240 power units.

Refer to: p0230, p0500

Note: When modulation modes are enabled that could lead to overmodulation (p1802 = 0, 2, 10), the modulation depth must be limited using p1803 (pre-assignment, p1803 = 98%). The higher the overmodulation, the greater the current ripple and torque ripple. With p1802 = 10, the modulation depth limit is automatically reduced to 100% in the critical output frequency range (over approx. 57 Hz).

When changing p1802[x], the values for all of the other existing indices are also changed.

p1802[0...n] Modulator mode / Modulator mode

PM240

Access level: 3 | **Calculated:** p0340 = 1,3,5 | **Data type:** Integer16
Can be changed: T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	10	0

Description: Sets the modulator mode.

Value:
0: Automatic changeover SVM/FLB
2: Space vector modulation (SVM)
3: SVM without overcontrol
4: SVM/FLB without overcontrol
10: SVM/FLB with modulation depth reduction

Dependency: If a sine-wave filter is parameterized as output filter (p0230 = 3, 4), then only space vector modulation without overcontrol can be selected as modulation type (p1802 = 3). This is not valid for the power units PM260. p1802 = 10 can only be set for the PM230 and PM240 power units.

Refer to: p0230, p0500

Note: When modulation modes are enabled that could lead to overmodulation (p1802 = 0, 2,10), 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.

p1802[0...n] Modulator mode / Modulator mode

PM250 PM260	**Access level:** 3	**Calculated:** p0340 = 1,3,5	**Data type:** Integer16
	Can be changed: T	**Scaling:** -	**Data set:** DDS, p0180
	Units group: -	**Unit selection:** -	
	Min 0	**Max** 4	**Factory setting** 4

Description: Sets the modulator mode.

Value:
0: Automatic changeover SVM/FLB
2: Space vector modulation (SVM)
3: SVM without overcontrol
4: SVM/FLB without overcontrol

Dependency: If a sine-wave filter is parameterized as output filter (p0230 = 3, 4), then only space vector modulation without overcontrol can be selected as modulation type (p1802 = 3). This is not valid for the power units PM260. p1802 = 10 can only be set for the PM230 and PM240 power units.

Refer to: p0230, p0500

Note: When modulation modes are enabled that could lead to overmodulation (p1802 = 0, 2,10), 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.

p1803[0...n] Maximum modulation depth / Modulat depth max

PM230	**Access level:** 3	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
	Units group: -	**Unit selection:** -	
	Min 20.0 [%]	**Max** 120.0 [%]	**Factory setting** 115.0 [%]

Description: Defines the maximum modulation depth.

Dependency: Refer to: p0500

Note: p1803 = 100% is the overcontrol limit for space vector modulation (for an ideal drive converter without any switching delay).

p1803[0...n] Maximum modulation depth / Modulat depth max

PM240	**Access level:** 3	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
	Units group: -	**Unit selection:** -	
	Min 20.0 [%]	**Max** 150.0 [%]	**Factory setting** 106.0 [%]

Description: Defines the maximum modulation depth.

Dependency: Refer to: p0500

Note: p1803 = 100% is the overcontrol limit for space vector modulation (for an ideal drive converter without any switching delay).

p1803[0...n] Maximum modulation depth / Modulat depth max

PM250 PM260	**Access level:** 3	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
	Units group: -	**Unit selection:** -	
	Min 20.0 [%]	**Max** 150.0 [%]	**Factory setting** 106.0 [%]

Description: Defines the maximum modulation depth.

Dependency: Default setting PM260: 103 %.

Refer to: p0500

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 / T_filt Vdc_corr

Access level: 4	**Calculated:** p0340 = 1,3	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0.0 [ms]	10000.0 [ms]	0.0 [ms]

Description: Sets the filter time constant of the DC link voltage used to calculate the modulation depth.

r1808 DC link voltage actual value for U_max calculation / Vdc act val U_max

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2001	**Data set:** -
Units group: 5_2	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: DC link voltage used to determine the maximum possible output voltage.

r1809 CO: Modulator mode actual / Modulator mode act

Access level: 4	**Calculated:** -	**Data type:** Integer16
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
1	2	-

Description: Displays the effective modulator mode.

Value:
1: Flat top modulation (FLB)
2: Space vector modulation (SVM)

p1810 Modulator configuration / Modulator config

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Sets the configuration for the modulator.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Avg value filter for U_lim (only for Vdc_comp. in modulator)	Yes	No	-
01	DC link voltage compensation in the current control	Yes	No	-

Notice: Bit 1 = 1 can only be set under a pulse inhibit and for r0192.14 = 1.

Note: Re bit 00 = 0:

Voltage limitation from the minimum of the DC link voltage (lower ripple in the output current, reduced output voltage).

Re bit 00 = 1:

Voltage limitation from averaged DC link voltage (higher output voltage with increased ripple in the output current).

The selection is only valid if the DC link compensation is not performed in the Control Unit (bit 1 = 0).

Re bit 01 = 0:

DC link voltage compensation in the modulator.

Re bit 01 = 1:

DC link voltage compensation in the current control.

p1820[0...n] Reverse the output phase sequence / Outp_ph_seq rev

Access level: 2 | **Calculated:** - | **Data type:** Integer16
Can be changed: C(2), T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	1	0

Description: Sets the phase sequence reversal for the motor without setpoint change.

If the motor does not rotate in the required direction, then the output phase sequence can be reversed using this parameter. This means that the direction of the motor is reversed without the setpoint being changed.

Value:
0: OFF
1: ON

Note: This setting can only be changed when the pulses are inhibited.

p1825 Converter valve threshold voltage / Threshold voltage

Access level: 4 | **Calculated:** p0340 = 1 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units 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 Compensation valve lockout time phase U / Comp t_lock ph U

Access level: 4 | **Calculated:** p0340 = 1 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.00 [µs]	3.99 [µs]	0.00 [µs]

Description: Sets the valve lockout time to compensate for phase U.

Note: The value is automatically calculated in the motor data identification routine.

p1829 Compensation valve lockout time phase V / Comp t_lock ph V

Access level: 4 | **Calculated:** p0340 = 1 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.00 [µs]	3.99 [µs]	0.00 [µs]

Description: Sets the valve lockout time to compensate for phase V.

p1830 Compensation valve lockout time phase W / Comp t_lock ph W

Access level: 4 | **Calculated:** p0340 = 1 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.00 [µs]	3.99 [µs]	0.00 [µs]

Description: Sets the valve lockout time to compensate for phase W.

p1832 Dead time compensation current level / t_dead_comp I_lev

Access level: 4 | **Calculated:** p0340 = 1 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units 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 factor setting of p1832 is automatically set to 0.02 * rated drive converter current (r0207).

p1900 Motor data identification and rotating measurement / MotID and rot meas

Access level: 2 | **Calculated:** - | **Data type:** Integer16
Can be changed: C(1), T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	3	0

Description: Sets the motor data identification and speed controller optimization.

p1900 = 0:

Function inhibited.

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 power-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 power-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 power-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 power-on command, a rotating motor data identification routine is carried out - and in addition, speed controller optimization by taking measurements at different motor speeds.

Value:
0: Inhibited
1: Identify motor data at standstill and with motor rotating
2: Identify motor data at standstill
3: Identify motor data with motor rotating

Dependency: Refer to: p1300, p1910, p1960

Refer to: A07980, A07981, F07983, F07984, F07985, F07986, F07988, F07990, A07991

Notice: 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 (p0971).

For p0014 = 1, the following applies:

After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

Note: The motor and control parameters are only optimally set when both measurements are carried out (initially at standstill, and then with the motor rotating).

An appropriate alarm is output when the parameter is set.

The power-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.

p1901 Test pulse evaluation configuration / Test puls config

Access level: 4	**Calculated:** -	**Data type:** Unsigned32
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Sets the configuration for the test pulse evaluation.

Re bit 00:

Check for conductor-to-conductor short circuit when pulse is enabled.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Phase short-circuit test pulse active	Yes	No	-

Note: Re bit 00:

If the test was successful once after POWER ON (see r1902.0), it is not repeated.

If a conductor-to-conductor short-circuit is detected during the test, this is displayed in r1902.1.

r1902 Test pulse evaluation status / Test puls ev stat

Access level: 4	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status of the test pulse evaluation.

Short-circuit test:

Bit 0: The short-circuit test was run without any faults detected.

Bit 1: A phase short circuit has been detected.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Short-circuit test executed	Yes	No	-
01	Phase short-circuit detected	Yes	No	-

p1909[0...n] Motor data identification control word / MotID STW

Access level: 3	**Calculated:** p0340 = 1	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Data set:** MDS
Units group: -	**Unit selection:** -	
Min -	**Max** -	**Factory setting** 0000 0000 0000 0000 bin

Description: Sets the configuration for the motor data identification.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
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	De-activate vibration detection	Yes	No	-
11	De-activate pulse measurement Lq Ld	Yes	No	-
12	De-activate rotor resistance Rr measurement	Yes	No	-
14	De-activate valve interlocking time measurement	Yes	No	-
15	Determine only stator resistance, valve voltage fault, dead time	Yes	No	-

Note: The following applies to permanent-magnet synchronous motors:

Without de-selection in bit 11, in the closed-loop control mode, the direct inductance LD and the quadrature inductance Lq are measured at a low current.

When de-selecting with bit 11 or in the U/f mode, the stator inductance is measured at half the rated motor current.

If the stator is inductance is not measured but is to be estimated, then bit 0 should be set and bit 11 should be deselected.

p1910 Motor data identification selection / MotID selection

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min 0	**Max** 26	**Factory setting** 0

Description: Sets the motor data identification routine.

The motor data identification routine is carried out after the next power-on command.

p1910 = 1:

All motor data and the drive converter characteristics are identified and then transferred to the following parameters:

p0350, p0354, p0356, p0357, p0358, p0360, p1825, p1828, p1829, p1830

After this, the control parameter p0340 = 3 is automatically calculated.

p1910 = 20:

Only for internal SIEMENS use.

Value:
0: Inhibited
1: Complete identification (ID) and acceptance of motor data
2: Complete identification (ID) of motor data without acceptance
20: Voltage vector input
21: Voltage vector input without filter
22: Rectangular voltage vector input without filter
23: Triangular voltage vector input without filter
24: Rectangular voltage vector input with filter
25: Triangular voltage vector input with filter
26: Enter voltage vector with DTC correction

Dependency: "Quick commissioning" must be carried out (p0010 = 1, p3900 > 0) before executing the motor data identification routine!

When selecting the motor data identification routine, the drive data set changeover is suppressed.

Refer to: p1900

Caution: 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 power-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 torque is generated.

Notice: 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 (p0971).

Note: 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 identified parameters are only displayed in the range r1912 ... r1926 (service parameters). The controller settings remain unchanged.

p1911 Number of phases to be identified / Qty ph to ident

Access level: 4	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min 1	**Max** 3	**Factory setting** 1

Description: Sets the number of phases to be identified.

Value:
1: 1 phase U
2: 2 phases U, V
3: 3 phases U, V, W

Note: When identifying with several phases, the accuracy increases and also the time it takes to make the measurement.

r1912[0...2] Identified stator resistance / R_stator ident

Access level: 4 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: - **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
- [ohm]	- [ohm]	- [ohm]

Description: Displays the identified stator resistance.

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

r1913[0...2] Identified rotor time constant / T_rotor ident

Access level: 4 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: - **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
- [ms]	- [ms]	- [ms]

Description: Displays the identified rotor time constant.

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

r1914[0...2] Identified total leakage inductance / L_total_leak ident

Access level: 4 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: - **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
- [mH]	- [mH]	- [mH]

Description: Displays the identified total leakage inductance.

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

r1915[0...2] Identified nominal stator inductance / L_stator ident

Access level: 4 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: - **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
- [mH]	- [mH]	- [mH]

Description: Displays the nominal stator inductance identified.

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

r1916[0...2] Identified stator inductance 1 / L_stator 1 ident

Access level: 4 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: - **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
- [mH]	- [mH]	- [mH]

Description: Displays the nominal stator inductance identified for the 1st point of the saturation characteristic.

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

r1917[0...2] Identified stator inductance 2 / L_stator 2 ident

Access level: 4 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: - **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
- [mH]	- [mH]	- [mH]

Description: Displays the nominal stator inductance identified for the 2nd point of the saturation characteristic.

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

r1918[0...2] Identified stator inductance 3 / L_stator 3 ident

Access level: 4 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: - **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
- [mH]	- [mH]	- [mH]

Description: Displays the nominal stator inductance identified for the 3rd point of the saturation characteristic.

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

r1919[0...2] Identified stator inductance 4 / L_stator 4 ident

Access level: 4 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: - **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
- [mH]	- [mH]	- [mH]

Description: Displays the nominal stator inductance identified for the 4th point of the saturation characteristic.

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

r1925[0...2] Identified threshold voltage / U_threshold ident

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the identified IGBT threshold voltage.

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

r1926[0...2] Identified effective valve lockout time / t_lock_valve id

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [µs]	- [µs]	- [µs]

Description: Displays the identified effective valve lockout time.

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

r1927[0...2] Identified rotor resistance / R_rotor ident

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [ohm]	- [ohm]	- [ohm]

Description: Displays identified rotor resistance (on separately excited synchronous motors: damping resistance).

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

p1959[0...n] Rotating measurement configuration / Rot meas config

Access level: 3 | **Calculated:** p0340 = 1 | **Data type:** Unsigned16
Can be changed: T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0001 1110 bin

Description: Sets the configuration of the rotating measurement.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
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	-

Dependency: Refer to: F07988

Note: The following parameters are influenced for the individual optimization steps:

Bit 01: p0320, p0360, p0362 ... p0369

Bit 02: p0341, p0342

Bit 03: p1400.0, p1458, p1459, p1463, p1470, p1472, p1496

Bit 04: Dependent on p1960

p1960 = 1, 3: p1400.0, p1458, p1459, p1470, p1472, p1496

p1960 Rotating measurement selection / Rot meas sel

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	3	0

Description: Sets the rotating measurement.

The rotating measurement is carried out after the next power-on command.

The setting possibilities of the parameter depend on the open-loop/closed-loop control 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.

Value:
0: Inhibited
1: Rotating measurement in encoderless operation
3: Speed controller optimization in encoderless operation

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.

Refer to: p1300, p1900, p1959

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 (p1215 = 2).

To permanently accept the determined settings they must be saved in a non-volatile fashion (p0971).

Note: When the rotating measurement is activated, it is not possible to save the parameters (p0971).

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.

p1961 Saturation characteristic speed to determine / Sat_char n determ

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
26 [%]	75 [%]	40 [%]

Description: Sets the speed to determine the saturation characteristic.

The percentage value is referred to p0310 (rated motor frequency).

Dependency: Refer to: p0310, p1959

Refer to: 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

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units 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: Refer to: p0310, p1959

Refer to: 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 (refer to p1959 bit 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 Speed_ctrl_opt dynamic factor / n_opt dyn_factor

Access level: 3 | **Calculated:** p0340 = 1 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	**Max**	**Factory setting**
1 [%]	400 [%]	100 [%]

Description: Sets the dynamic response factor for speed controller optimization.

Dependency: For power units with a reduced DC link capacitance (e.g., PM250), the dynamic response of the controller is set to 40%.

Refer to: p1959

Refer to: 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).

r1968 Speed_ctrl_opt dynamic factor actual / n_opt dyn_fact act

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the dynamic factor which is actually achieved for the vibration test

Dependency: Refer to: p1959, p1967

Refer to: F07985

Note: This dynamic factor only refers to the control mode of the speed controller set in p1960.

r1969 Speed_ctrl_opt moment of inertia determined / n_opt M_inert det

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: 25_1 | **Unit selection:** p0100

Min	Max	Factory setting
- [kgm²]	- [kgm²]	- [kgm²]

Description: Displays the determined moment of inertia of the drive.
After it has been determined, the value is transferred to p0341, p0342.

Dependency: IEC drives (p0100 = 0): unit kg m^2
NEMA drives (p0100 = 1): unit lb ft^2
Refer to: p0341, p0342, p1959
Refer to: F07984

r1970[0...1] Speed_ctrl_opt vibration test vibration frequency determined / n_opt f_vibration

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [Hz]	- [Hz]	- [Hz]

Description: Displays the vibration frequencies determined by the vibration test.

Index: [0] = Frequency low
[1] = Frequency high

Dependency: Refer to: p1959
Refer to: F07985

p1980[0...n] PolID technique / PolID technique

Access level: 4 | **Calculated:** - | **Data type:** Integer16
Can be changed: U, T | **Scaling:** - | **Data set:** MDS
Units group: - | **Unit selection:** -

Min	Max	Factory setting
1	10	4

Description: Sets the pole position identification technique.

Value:
1: Voltage pulsing 1st harmonics
4: Voltage pulsing 2-stage
6: Voltage pulsing 2-stage inverse
10: DC current injection

Dependency: Refer to: p1780

Note: Voltage pulse technique (p1980 = 1, 4) cannot be applied to operation with sine-wave output filters (p0230).

r1984 PolID angular difference / PolID ang diff

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [°]	- [°]	- [°]

Description: Displays the angular difference between the actual electrical commutation angle and the angle determined by the pole position identification.

Dependency: Refer to: p0325, p0329, p1980, r1985, r1987

Note: When the pole position identification routine is executed several times, the spread of the measured values can be determined using this value. At the same position, the spread should be less than 2 degrees electrical.

r1985 PolID saturation curve / PolID sat_char

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [Arms]	- [Arms]	- [Arms]

Description: Displays the saturation characteristic of the pole position identification routine (saturation technique).

Displays the current characteristic of the pole position identification routine (elasticity technique).

Dependency: Refer to: p0325, p0329, p1980, r1984, r1987

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

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [%]	- [%]	- [%]

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: Refer to: p0325, p0329, p1980, r1984, r1985

Note: PolID: Pole position identification

The following information and data can be taken from the trigger characteristic.

- the value -100% marks the angle at the start of the measurement.
- the value +100 % marks the commutation angle determined from the pole position identification routine.

p1999[0...n] Ang. commutation offset calibr. and PolID scaling / Com_ang_offs scal

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** MDS
Units group: - | **Unit selection:** -

Min	Max	Factory setting
10 [%]	5000 [%]	100 [%]

Description: Sets the scaling for the runtime of the pole position identification technique in which the current is injected.

Dependency: Refer to: p0341, p0342

Caution: For p1999 > 100 % (setting large moments of inertia) the following applies:

There is no locked rotor monitoring (F07970 fault value 2).

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

Access level: 2	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min 6.00 [rpm]	**Max** 210000.00 [rpm]	**Factory setting** 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 in this parameter corresponds to 100% or 4000 hex or 4000 0000 hex.

The following applies: Reference frequency (in Hz) = reference speed (in ((rpm) / 60) x pole pair number).

Dependency: This parameter is only updated during the automatic calculation (p0340 = 1, p3900 > 0) if motor commissioning was carried out beforehand for drive data set zero. This means that the parameter is not locked against overwriting using p0573 = 1.

Refer to: p2001, p2002, p2003, r2004, r3996

Notice: When the reference speed / reference frequency is changed, short-term communication interruptions may occur.

Note: If a BICO 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 (e.g. r0755[0]) is connected to a speed setpoint (e.g. p1070[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 connected to a speed setpoint (e.g. p1070[0]). The actual input value is cyclically converted into a percentage value via the pre-specified scaling 4000 hex. This percentage value is converted to the absolute speed setpoint via reference speed (p2000).

p2001 Reference voltage / Reference voltage

Access level: 3	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min 10 [Vrms]	**Max** 100000 [Vrms]	**Factory setting** 1000 [Vrms]

Description: Sets the reference quantity for voltages.

All voltages specified as relative value are referred to this reference quantity. This also applies for direct voltage values (= rms value) like the DC-link voltage.

The reference quantity in this parameter corresponds to 100% or 4000 hex or 4000 0000 hex.

Dependency: p2001 is only updated during automatic calculation (p0340 = 1, p3900 > 0) if motor commissioning has been carried out first for drive data set zero and as a result overwriting of the parameter has not been blocked by setting p0573 = 1.

Refer to: r3996

Notice: When the reference voltage is changed, short-term communication interruptions may occur.

Note: If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.

For infeed units, the parameterized device supply voltage (p0210) is pre-assigned as the reference quantity.

Example:

The actual value of the DC link voltage (r0070) is connected to a test socket (e.g. p0771[0]). The actual voltage value is cyclically converted into a percentage of the reference voltage (p2001) and output according to the parameterized scaling.

p2002 Reference current / I_ref

Access level: 3 **Calculated:** p0340 = 1 **Data type:** FloatingPoint32

Can be changed: T **Scaling:** - **Data set:** -

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

Min	Max	Factory setting
0.10 [Arms]	100000.00 [Arms]	100.00 [Arms]

Description: Sets the reference quantity for currents.

All currents specified as relative value are referred to this reference quantity.

The reference quantity in this parameter corresponds to 100% or 4000 hex or 4000 0000 hex.

Dependency: This parameter is only updated during the automatic calculation (p0340 = 1, p3900 > 0) if motor commissioning was carried out beforehand for drive data set zero. This means that the parameter is not locked against overwriting using p0573 = 1.

Refer to: r3996

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 must be taken into account.

Example:

p2002 = 100 A

Reference quantity 100 A corresponds to 100 %

p305[0] = 100 A

Rated motor current 100 A for MDS0 in DDS0 --> 100 % corresponds to 100 % of the rated motor current

p305[1] = 50 A

Rated motor current 50 A for MDS1 in DDS1 --> 100 % corresponds to 200 % of the rated motor current

When the reference current is changed, short-term communication interruptions may occur.

Note: If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.

For infeed units, the rated line current, which is obtained from the rated power and parameterized rated line supply voltage (p2002 = r0206 / p0210 / 1.73) is pre-assigned as the reference quantity.

Example:

The actual value of a phase current (r0069[0]) is connected to a test socket (e.g. p0771[0]). The actual current value is cyclically converted into a percentage of the reference current (p2002) and output according to the parameterized scaling.

p2003 Reference torque / M_ref

Access level: 3 **Calculated:** p0340 = 1 **Data type:** FloatingPoint32

Can be changed: T **Scaling:** - **Data set:** -

Units group: 7_2 **Unit selection:** p0505

Min	Max	Factory setting
0.01 [Nm]	20000000.00 [Nm]	1.00 [Nm]

Description: Sets the reference quantity for torque.

All torques specified as relative value are referred to this reference quantity.

The reference quantity in this parameter corresponds to 100% or 4000 hex or 4000 0000 hex.

Dependency: This parameter is only updated during the automatic calculation (p0340 = 1, p3900 > 0) if motor commissioning was carried out beforehand for drive data set zero. This means that the parameter is not locked against overwriting using p0573 = 1.

Refer to: r3996

Notice: When the reference torque is changed, short-term communication interruptions may occur.

Note: If a BICO 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 connected to a test socket (e.g. p0771[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

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: 14_10 | **Unit selection:** p0505

Min	**Max**	**Factory setting**
- [kW]	- [kW]	- [kW]

Description: Displays the reference quantity for power.
All power ratings specified as relative value are referred to this reference quantity.
The reference quantity in this parameter corresponds to 100% or 4000 hex or 4000 0000 hex.

Dependency: This value is calculated as follows:
Infeed: Calculated from voltage times current.
Closed-loop control: Calculated from torque times speed.
Refer to: p2000, p2001, p2002, p2003

Note: If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.
The reference power is calculated as follows:
- 2 * Pi * reference speed / 60 * reference torque (motor)
- reference voltage * reference current * root(3) (infeed)

p2005 Reference angle / Reference angle

Access level: 4 | **Calculated:** p0340 = 1 | **Data type:** FloatingPoint32
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	**Max**	**Factory setting**
90.00 [°]	180.00 [°]	90.00 [°]

Description: Sets the reference quantity for angle.
All angles specified as relative value are referred to this reference quantity.
The reference quantity in this parameter corresponds to 100% or 4000 hex or 4000 0000 hex.

Dependency: This parameter is only updated during the automatic calculation (p0340 = 1, p3900 > 0) if motor commissioning was carried out beforehand for drive data set zero. This means that the parameter is not locked against overwriting using p0573 = 1.

Note: If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.

p2006 Reference temp / Ref temp

Access level: 3 | **Calculated:** p0340 = 1 | **Data type:** FloatingPoint32
Can be changed: T | **Scaling:** - | **Data set:** -
Units 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.
The reference quantity in this parameter corresponds to 100% or 4000 hex or 4000 0000 hex.

p2007 Reference acceleration / a_ref

Access level: 4 | **Calculated:** p0340 = 1 | **Data type:** FloatingPoint32
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.01 [rev/s²]	500000.00 [rev/s²]	0.01 [rev/s²]

Description: Sets the reference quantity for acceleration rates.

All acceleration rates specified as relative value are referred to this reference quantity.

The reference quantity in this parameter corresponds to 100% or 4000 hex or 4000 0000 hex.

Dependency: This parameter is only updated during the automatic calculation (p0340 = 1, p3900 > 0) if motor commissioning was carried out beforehand for drive data set zero. This means that the parameter is not locked against overwriting using p0573 = 1.

Note: If a BICO 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:

p2007 = p2000 / 1 [s]

p2010 Comm interface baud rate / Comm baud

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
4	12	12

Description: Sets the baud rate for the commissioning interface (USS, RS232).

Value:
4: 2400 baud
5: 4800 baud
6: 9600 baud
7: 19200 baud
8: 38400 baud
9: 57600 baud
10: 76800 baud
11: 93750 baud
12: 115200 baud

Note: Commissioning interface

The parameter is not influenced by setting the factory setting.

p2011 Comm int address / Comm add

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	31	2

Description: Sets the address for the commissioning interface (USS, RS232).

Note: The parameter is not influenced by setting the factory setting.

p2016[0...3] CI: Comm IF USS PZD send word / Comm USS send word

Access level: 3	**Calculated:** -	**Data type:** U32 / Integer16
Can be changed: U, T	**Scaling:** 4000H	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Selects the PZD (actual values) to be sent via the commissioning interface USS.

The actual values are displayed on an intelligent operator panel (IOP).

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4

r2019[0...7] Comm int error statistics / Comm err

Access level: 4	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the receive errors at the commissioning interface (USS, RS232).

Index:
[0] = Number of error-free telegrams
[1] = Number of rejected telegrams
[2] = Number of framing errors
[3] = Number of overrun errors
[4] = Number of parity errors
[5] = Number of starting character errors
[6] = Number of checksum errors
[7] = Number of length errors

p2020 Field bus interface baud rate / Field bus baud

CU240B-2
CU240E-2
CU240E-2 F

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
4	13	8

Description: Sets the baud rate for the field bus interface (RS485).

Value:
4: 2400 baud
5: 4800 baud
6: 9600 baud
7: 19200 baud
8: 38400 baud
9: 57600 baud
10: 76800 baud
11: 93750 baud
12: 115200 baud
13: 187500 baud

Notice: For p0014 = 1, the following applies:

After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

For p0014 = 0, the following applies:

Before a changed setting becomes permanently effective, a non-volatile RAM to ROM data save is required. To do this, set p0971 = 1 or p0014 = 1.

Note: Fieldbus SS: Fieldbus interface

Changes only become effective after POWER ON.

The parameter is not influenced by setting the factory setting.

The parameter is set to the factory setting when the protocol is reselected.

When p2030 = 1 (USS), the following applies:

Min./max./factory setting: 4/13/8

When p2030 = 2 (MODBUS), the following applies:

Min./max./factory setting: 5/13/7

p2021 Field bus interface address / Field bus address

CU240B-2	**Access level:** 2	**Calculated:** -	**Data type:** Unsigned16
CU240E-2	**Can be changed:** T	**Scaling:** -	**Data set:** -
CU240E-2 F	**Units group:** -	**Unit selection:** -	
	Min	**Max**	**Factory setting**
	0	247	0

Description: Displays or sets the address for the fieldbus interface (RS485).

The address can be set as follows:

1) Using the address switch on the Control Unit.

--> p2021 displays the address setting.

--> A change only becomes effective after a POWER ON.

2) Using p2021

--> Only if an address of 0 or an address which is invalid for the fieldbus selected in p2030 has been set using the address switch.

--> The address is saved in a non-volatile fashion using the function "copy from RAM to ROM".

--> A change only becomes effective after a POWER ON.

Dependency: Refer to: p2030

Notice: For p0014 = 1, the following applies:

After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

For p0014 = 0, the following applies:

Before a changed setting becomes permanently effective, a non-volatile RAM to ROM data save is required. To do this, set p0971 = 1 or p0014 = 1.

Note: Changes only become effective after POWER ON.

The parameter is not influenced by setting the factory setting.

The parameter is set to the factory setting when the protocol is reselected.

When p2030 = 1 (USS), the following applies:

Min./max./factory setting: 0/30/0

When p2030 = 2 (MODBUS), the following applies:

Min./max./factory setting: 1/247/1

p2022 Field bus int USS PZD no. / Field bus USS PZD

CU240B-2	**Access level:** 2	**Calculated:** -	**Data type:** Unsigned16
CU240E-2	**Can be changed:** T	**Scaling:** -	**Data set:** -
CU240E-2 F	**Units group:** -	**Unit selection:** -	
	Min	**Max**	**Factory setting**
	0	8	2

Description: Sets the number of 16-bit words in the PZD part of the USS telegram for the field bus interface.

Dependency: Refer to: p2030

Note: The parameter is not influenced by setting the factory setting.

p2023 Field bus int USS PKW no. / Field bus USS PKW

CU240B-2	**Access level:** 2	**Calculated:** -	**Data type:** Integer16
CU240E-2	**Can be changed:** T	**Scaling:** -	**Data set:** -
CU240E-2 F	**Units group:** -	**Unit selection:** -	
	Min	**Max**	**Factory setting**
	0	127	127

Description: Sets the number of 16-bit words in the PKW part of the USS telegram for the field bus interface.

Value:
0: PKW 0 words
3: PKW 3 words
4: PKW 4 words
127: PKW variable

Dependency: Refer to: p2030

Note: The parameter is not influenced by setting the factory setting.

p2024[0...2] Fieldbus interface times / Fieldbus times

CU240B-2	**Access level:** 3	**Calculated:** -	**Data type:** FloatingPoint32
CU240E-2	**Can be changed:** U, T	**Scaling:** -	**Data set:** -
CU240E-2 F	**Units group:** -	**Unit selection:** -	
	Min	**Max**	**Factory setting**
	0 [ms]	10000 [ms]	[0] 1000 [ms] [1] 0 [ms] [2] 0 [ms]

Description: Sets the time values for the fieldbus interface.

The following applies for MODBUS:

p2024[0]: Maximum permissible telegram processing time of the MODBUS slave in which a reply is sent back to the MODBUS master.

p2024[1]: Character delay time (time between individual characters in the telegram).

p2024[2]: Telegram pause time (pause time between two telegrams).

Index:
[0] = Max. processing time
[1] = Character delay time
[2] = Telegram pause time

Dependency: Refer to: p2020, p2030

Note: Re p2024[1,2] (MODBUS):

If the field bus baud rate is changed (p2020), the default time settings are restored.

The default setting is the time required for 1.5 characters (p2024[1]) or 3.5 characters (p2024[2]) (depending on the set baud rate).

r2029[0...7] Field bus int error statistics / Field bus error

CU240B-2	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned32
CU240E-2	**Can be changed:** -	**Scaling:** -	**Data set:** -
CU240E-2 F	**Units group:** -	**Unit selection:** -	
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the receive errors on the field bus interface (RS485).

Index:
[0] = Number of error-free telegrams
[1] = Number of rejected telegrams
[2] = Number of framing errors
[3] = Number of overrun errors
[4] = Number of parity errors
[5] = Number of starting character errors
[6] = Number of checksum errors
[7] = Number of length errors

p2030 Field bus int protocol selection / Field bus protocol

CU240B-2	**Access level:** 1	**Calculated:** -	**Data type:** Integer16
CU240E-2	**Can be changed:** T	**Scaling:** -	**Data set:** -
CU240E-2 F	**Units group:** -	**Unit selection:** -	
	Min	**Max**	**Factory setting**
	0	2	0

Description: Sets the communication protocol for the field bus interface.

Value:
0: No protocol
1: USS
2: MODBUS

Notice: For p0014 = 1, the following applies:

After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

Note: Changes only become effective after POWER ON.

The parameter is not influenced by setting the factory setting.

p2030 Field bus int protocol selection / Field bus protocol

CU240B-2 DP
CU240E-2 DP
CU240E-2 DP F

Access level: 1 | **Calculated:** - | **Data type:** Integer16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	3	3

Description: Sets the communication protocol for the field bus interface.

Value:
0: No protocol
3: PROFIBUS

Notice: For p0014 = 1, the following applies:

After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

Note: Changes only become effective after POWER ON.

The parameter is not influenced by setting the factory setting.

r2032 Master control, control word effective / PcCtrl STW eff

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the effective control word 1 (STW1) of the drive for the master control.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	ON/OFF1	Yes	No	-
01	OC / OFF2	Yes	No	-
02	OC / OFF3	Yes	No	-
03	Operation enable	Yes	No	-
04	Ramp-function generator enable	Yes	No	-
05	Start ramp-function generator	Yes	No	-
06	Speed setpoint enable	Yes	No	-
07	Acknowledge fault	Yes	No	-
08	Jog bit 0	Yes	No	3030
09	Jog bit 1	Yes	No	3030
10	Master ctrl by PLC	Yes	No	-

Notice: The master control only influences control word 1 and speed setpoint 1. Other control words/setpoints can be transferred from another automation device.

Note: OC: Operating condition

p2037 PROFIdrive STW1.10 = 0 mode / PD STW1.10=0

CU240B-2 DP
CU240E-2 DP
CU240E-2 DP F

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	2	0

Description: Sets the processing mode for PROFIdrive STW1.10 "master control by PLC".

Generally, control world 1 is received with the first receive word (PZD1) (this is in conformance to the PROFIdrive profile). The behavior of STW1.10 = 0 corresponds to that of the PROFIdrive profile. For other applications that deviate from this, the behavior can be adapted using this particular parameter.

Value:
0: Freeze setpoints and continue to process sign-of-life
1: Freeze setpoints and sign-of-life
2: Setpoints are not frozen

Note: If the STW1 is not transferred according to the PROFIdrive with PZD1 (with bit 10 "master control by PLC"), then p2037 should be set to 2.

p2038 PROFIdrive STW/ZSW interface mode / PD STW/ZSW IF mode

CU240B-2 DP
CU240E-2 DP
CU240E-2 DP F

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min 0	**Max** 2	**Factory setting** 0

Description: Sets the interface mode of the PROFIdrive control words and status words.

When selecting a telegram via p0922 (p2079), this parameter influences the device-specific assignment of the bits in the control and status words.

Value:
0: SINAMICS
2: VIK-NAMUR

Dependency: Refer to: p0922, p2079

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: - For p0922 (p2079) = 1, 350 ... 999, p2038 is automatically set to 0.

- For p0922 (p2079) = 20, p2038 is automatically set to 2.

It is not then possible to change p2038.

p2039 Select debug monitor interface / Debug monit select

Access level: 4	**Calculated:** -	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min 0	**Max** 3	**Factory setting** 0

Description: The serial interface for the debug monitor is COM1 (commissioning interface, RS232) or COM2 (fieldbus interface, RS485).

Value = 0: De-activated

Value = 1: COM1, commissioning protocol is de-activated

Value = 2: COM2, field bus is de-activated

Value = 3: Reserved

Note: Value = 2 is only possible for Control Units with RS485 as a field bus interface.

p2040 Fieldbus interface monitoring time / Fieldbus t_monit

CU240B-2
CU240E-2
CU240E-2 F

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min 0 [ms]	**Max** 1999999 [ms]	**Factory setting** 100 [ms]

Description: Sets the monitoring time to monitor the process data received via the fieldbus interface.

If no process data is received within this time, an appropriate message is output.

Dependency: Refer to: F01910

Note: 0: The monitoring is de-activated.

p2042 PROFIBUS Ident Number / PB Ident No.

CU240B-2 DP	**Access level:** 3	**Calculated:** -	**Data type:** Integer16
CU240E-2 DP	**Can be changed:** T	**Scaling:** -	**Data set:** -
CU240E-2 DP F	**Units group:** -	**Unit selection:** -	
	Min	**Max**	**Factory setting**
	0	1	0

Description: Sets the PROFIBUS Ident Number (PNO-ID).

SINAMICS can be operated with various identities on PROFIBUS. This allows the use of a PROFIBUS GSD that is independent of the device (e.g. PROFIdrive VIK-NAMUR with Ident Number 3AA0 hex).

Value:
0: SINAMICS
1: VIK-NAMUR

Notice: For p0014 = 1, the following applies:

After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

Note: Every change only becomes effective after a POWER ON.

r2043.0...2 BO: PROFIdrive PZD state / PD PZD state

CU240B-2 DP	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned8
CU240E-2 DP	**Can be changed:** -	**Scaling:** -	**Data set:** -
CU240E-2 DP F	**Units group:** -	**Unit selection:** -	
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the PROFIdrive PZD state.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Setpoint failure	Yes	No	-
02	Fieldbus oper	Yes	No	-

Dependency: Refer to: p2044

Note: When using the "setpoint failure" signal, the bus can be monitored and an application-specific response triggered when the setpoint fails.

p2044 PROFIdrive fault delay / PD fault delay

CU240B-2 DP	**Access level:** 3	**Calculated:** -	**Data type:** FloatingPoint32
CU240E-2 DP	**Can be changed:** U, T	**Scaling:** -	**Data set:** -
CU240E-2 DP F	**Units group:** -	**Unit selection:** -	
	Min	**Max**	**Factory setting**
	0 [s]	100 [s]	0 [s]

Description: Sets the delay time to initiate fault F01910 after a setpoint failure.

The time until the fault is initiated can be used by the application. This means that is is possible to respond to the failure while the drive is still operational (e.g. emergency retraction).

Dependency: Refer to: r2043

Refer to: F01910

p2047 PROFIBUS additional monitoring time / PB suppl t_monit

CU240B-2 DP	**Access level:** 3	**Calculated:** -	**Data type:** FloatingPoint32
CU240E-2 DP	**Can be changed:** U, T	**Scaling:** -	**Data set:** -
CU240E-2 DP F	**Units group:** -	**Unit selection:** -	
	Min	**Max**	**Factory setting**
	0 [ms]	20000 [ms]	0 [ms]

Description: Sets the additional monitoring time to monitor the process data received via PROFIBUS.

The additional monitoring time enables short bus faults to be compensated.

If no process data is received within this time, an appropriate message is output.

Dependency: Refer to: F01910

Note: For controller STOP, the additional monitoring time is not effective.

r2050[0...7] CO: PROFIBUS PZD receive word / PZD recv word

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: -	**Scaling:** 4000H	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Connector output to interconnect PZD (setpoints) with word format received from the fieldbus master.

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

p2051[0...7] CI: PROFIdrive PZD send word / PZD send word

CU240B-2
CU240E-2
CU240E-2 F

Access level: 3	**Calculated:** -	**Data type:** U32 / Integer16
Can be changed: U, T	**Scaling:** 4000H	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Selects the PZD (actual values) with word format to be sent to the fieldbus master.

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

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p2051[0...7] CI: PROFIdrive PZD send word / PZD send word

CU240B-2 DP
CU240E-2 DP
CU240E-2 DP F

Access level: 3	**Calculated:** -	**Data type:** U32 / Integer16
Can be changed: U, T	**Scaling:** 4000H	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	[0] 2089[0] [1] 63[0] [2...7] 0

Description: Selects the PZD (actual values) with word format to be sent to the fieldbus master.

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

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

r2053[0...7] PROFIdrive diagnostics send PZD word / Diag send word

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the PZD (actual values) with word format sent to the fieldbus master.

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

Bit field:

Bit	Signal name	1 signal	0 signal	FP
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	-

r2054 PROFIBUS status / PB status

CU240B-2 DP
CU240E-2 DP
CU240E-2 DP F

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	4	-

Description: Status display for the PROFIBUS interface.

Value:
0: OFF
1: No connection (search for baud rate)
2: Connection OK (baud rate found)
3: Cyclic connection with master (data exchange)
4: Cyclic data OK

r2055[0...2] PROFIBUS diagnostics standard / PB diag standard

CU240B-2 DP
CU240E-2 DP
CU240E-2 DP F

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Diagnostics display for the PROFIBUS interface.

Index:
[0] = Master bus address
[1] = Master input total length bytes
[2] = Master output total length bytes

r2074[0...7] PROFIdrive diagnostics bus address PZD receive / Diag addr recv

CU240B-2 DP
CU240E-2 DP
CU240E-2 DP F

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the PROFIBUS address of the sender from which the process data (PZD) is received.

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

Note: Value range:
0 - 125: Bus address of the sender
255: Not assigned

r2075[0...7] PROFIdrive diagnostics telegram offset PZD receive / Diag offs recv

CU240B-2 DP
CU240E-2 DP
CU240E-2 DP F

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the PZD byte offset in the PROFIdrive receive telegram (controller output).

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

Note: Value range:
0 - 242: Byte offset
65535: not assigned

r2076[0...7] PROFIdrive diagnostics telegram offset PZD send / Diag offs send

CU240B-2 DP
CU240E-2 DP
CU240E-2 DP F

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the PZD byte offset in the PROFIdrive send telegram (controller input).

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

Note: Value range:
0 - 242: Byte offset
65535: not assigned

r2077[0...15] PROFIBUS diagnostics peer-to-peer data transfer addresses / PB diag peer addr

CU240B-2 DP
CU240E-2 DP
CU240E-2 DP F

Access level: 3 | **Calculated:** - | **Data type:** Unsigned8
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the addresses of the slaves (peers) where peer-to-peer data transfer has been configured via PROFIBUS.

p2079 PROFIdrive PZD telegram selection extended / PD PZD tel ext

CU240B-2 DP
CU240E-2 DP
CU240E-2 DP F

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
1	999	1

Description: Sets the send and receive telegram.

Contrary to p0922, a telegram can be selected using p2079 and subsequently expanded.

For p0922 < 999 the following applies:

p2079 has the same value and is inhibited. All of the interconnections and extensions contained in the telegram are inhibited.

For p0922 = 999 the following applies:

p2079 can be freely set. If p2079 is also set to 999, then all of the interconnections can be set.

For p0922 = 999 and p2079 < 999 the following applies:

The interconnections contained in the telegram are inhibited. However, the telegram can be extended.

Value:
1: Standard telegram 1, PZD-2/2
20: Standard telegram 20, PZD-2/6
350: SIEMENS telegram 350, PZD-4/4
352: SIEMENS telegram 352, PZD-6/6
353: SIEMENS telegram 353, PZD-2/2, PKW-4/4
354: SIEMENS telegram 354, PZD-6/6, PKW-4/4
999: Free telegram configuration with BICO

Dependency: Refer to: p0922

p2080[0...15] BI: Binector-connector converter status word 1 / Bin/con ZSW1

CU240B-2
CU240E-2
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Selects bits to be sent to the PROFIdrive controller.

The individual bits are combined to form status word 1.

Index:
[0] = Bit 0
[1] = Bit 1
[2] = Bit 2
[3] = Bit 3
[4] = Bit 4
[5] = Bit 5
[6] = Bit 6
[7] = Bit 7
[8] = Bit 8
[9] = Bit 9
[10] = Bit 10
[11] = Bit 11
[12] = Bit 12
[13] = Bit 13
[14] = Bit 14
[15] = Bit 15

Dependency: Refer to: p2088, r2089

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p2080[0...15] BI: Binector-connector converter status word 1 / Bin/con ZSW1

CU240B-2 DP	**Access level:** 3	**Calculated:** -	**Data type:** U32 / Binary
CU240E-2 DP	**Can be changed:** U, T	**Scaling:** -	**Data set:** -
CU240E-2 DP F	**Units group:** -	**Unit selection:** -	
	Min	**Max**	**Factory setting**
	-	-	[0] 899.0 [1] 899.1 [2] 899.2 [3] 2139.3 [4] 899.4 [5] 899.5 [6] 899.6 [7] 2139.7 [8] 2197.7 [9] 899.9 [10] 2199.1 [11] 1407.7 [12] 899.12 [13] 2135.14 [14] 2197.3 [15] 2135.15

Description: Selects bits to be sent to the PROFIdrive controller.

The individual bits are combined to form status word 1.

Index:
[0] = Bit 0
[1] = Bit 1
[2] = Bit 2
[3] = Bit 3
[4] = Bit 4
[5] = Bit 5
[6] = Bit 6
[7] = Bit 7
[8] = Bit 8
[9] = Bit 9
[10] = Bit 10
[11] = Bit 11
[12] = Bit 12
[13] = Bit 13
[14] = Bit 14
[15] = Bit 15

Dependency: Refer to: p2088, r2089

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p2081[0...15] BI: Binector-connector converter status word 2 / Bin/con ZSW2

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: U, T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Selects bits to be sent to the PROFIdrive controller.

The individual bits are combined to form status word 2.

Index:
[0] = Bit 0
[1] = Bit 1
[2] = Bit 2
[3] = Bit 3
[4] = Bit 4
[5] = Bit 5
[6] = Bit 6
[7] = Bit 7
[8] = Bit 8
[9] = Bit 9
[10] = Bit 10
[11] = Bit 11
[12] = Bit 12
[13] = Bit 13
[14] = Bit 14
[15] = Bit 15

Dependency: Refer to: p2088, r2089

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p2082[0...15] BI: Binector-connector converter status word 3 / Bin/con ZSW3

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: U, T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Selects bits to be sent to the PROFIdrive controller.

The individual bits are combined to form free status word 3.

Index:
[0] = Bit 0
[1] = Bit 1
[2] = Bit 2
[3] = Bit 3
[4] = Bit 4
[5] = Bit 5
[6] = Bit 6
[7] = Bit 7
[8] = Bit 8
[9] = Bit 9
[10] = Bit 10
[11] = Bit 11
[12] = Bit 12
[13] = Bit 13
[14] = Bit 14
[15] = Bit 15

Dependency: Refer to: p2088, r2089

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p2083[0...15] BI: Binector-connector converter status word 4 / Bin/con ZSW4

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: U, T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Selects bits to be sent to the PROFIdrive controller.
The individual bits are combined to form free status word 4.

Index:
[0] = Bit 0
[1] = Bit 1
[2] = Bit 2
[3] = Bit 3
[4] = Bit 4
[5] = Bit 5
[6] = Bit 6
[7] = Bit 7
[8] = Bit 8
[9] = Bit 9
[10] = Bit 10
[11] = Bit 11
[12] = Bit 12
[13] = Bit 13
[14] = Bit 14
[15] = Bit 15

Dependency: Refer to: p2088, r2089

p2084[0...15] BI: Binector-connector converter status word 5 / Bin/con ZSW5

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: U, T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Selects bits to be sent to the PROFIdrive controller.
The individual bits are combined to form free status word 5.

Index:
[0] = Bit 0
[1] = Bit 1
[2] = Bit 2
[3] = Bit 3
[4] = Bit 4
[5] = Bit 5
[6] = Bit 6
[7] = Bit 7
[8] = Bit 8
[9] = Bit 9
[10] = Bit 10
[11] = Bit 11
[12] = Bit 12
[13] = Bit 13
[14] = Bit 14
[15] = Bit 15

Dependency: Refer to: p2088, r2089

p2088[0...4] Invert binector-connector converter status word / Bin/con ZSW inv

CU240B-2
CU240E-2
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0000 0000 0000 0000 bin

Description: Setting to invert the individual binector inputs of the binector connector converter.

Index:
[0] = Status word 1
[1] = Status word 2
[2] = Free status word 3
[3] = Free status word 4
[4] = Free status word 5

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	Inverted	Not inverted	-
01	Bit 1	Inverted	Not inverted	-
02	Bit 2	Inverted	Not inverted	-
03	Bit 3	Inverted	Not inverted	-
04	Bit 4	Inverted	Not inverted	-
05	Bit 5	Inverted	Not inverted	-
06	Bit 6	Inverted	Not inverted	-
07	Bit 7	Inverted	Not inverted	-
08	Bit 8	Inverted	Not inverted	-
09	Bit 9	Inverted	Not inverted	-
10	Bit 10	Inverted	Not inverted	-
11	Bit 11	Inverted	Not inverted	-
12	Bit 12	Inverted	Not inverted	-
13	Bit 13	Inverted	Not inverted	-
14	Bit 14	Inverted	Not inverted	-
15	Bit 15	Inverted	Not inverted	-

Dependency: Refer to: p2080, p2081, p2082, p2083, r2089

p2088[0...4] Invert binector-connector converter status word / Bin/con ZSW inv

CU240B-2 DP
CU240E-2 DP
CU240E-2 DP F

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	[0] 1010 1000 0000 0000 bin [1...4] 0000 0000 0000 0000 bin

Description: Setting to invert the individual binector inputs of the binector connector converter.

Index:
[0] = Status word 1
[1] = Status word 2
[2] = Free status word 3
[3] = Free status word 4
[4] = Free status word 5

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	Inverted	Not inverted	-
01	Bit 1	Inverted	Not inverted	-
02	Bit 2	Inverted	Not inverted	-
03	Bit 3	Inverted	Not inverted	-
04	Bit 4	Inverted	Not inverted	-
05	Bit 5	Inverted	Not inverted	-
06	Bit 6	Inverted	Not inverted	-
07	Bit 7	Inverted	Not inverted	-
08	Bit 8	Inverted	Not inverted	-
09	Bit 9	Inverted	Not inverted	-
10	Bit 10	Inverted	Not inverted	-
11	Bit 11	Inverted	Not inverted	-
12	Bit 12	Inverted	Not inverted	-
13	Bit 13	Inverted	Not inverted	-
14	Bit 14	Inverted	Not inverted	-
15	Bit 15	Inverted	Not inverted	-

Dependency: Refer to: p2080, p2081, p2082, p2083, r2089

r2089[0...4] CO: Send binector-connector converter status word / Bin/con ZSW send

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Connector output to interconnect the status words to a PZD send word.

Index:
[0] = Status word 1
[1] = Status word 2
[2] = Free status word 3
[3] = Free status word 4
[4] = Free status word 5

Bit field:

Bit	Signal name	1 signal	0 signal	FP
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: Refer to: p2051, p2080, p2081, p2082, p2083

Note: r2089 together with p2080 to p2084 forms five binector-connector converters.

r2090.0...15 BO: PROFIdrive PZD1 receive bit-serial / PZD1 recv bitw

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Binector output for bit-serial interconnection of PZD1 (normally control word 1) received from the PROFIdrive controller.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
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	-

r2091.0...15 BO: PROFIdrive PZD2 receive bit-serial / PZD2 recv bitw

Access level: 3 **Calculated:** - **Data type:** Unsigned16

Can be changed: - **Scaling:** - **Data set:** -

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

Min	Max	Factory setting
-	-	-

Description: Binector output for bit-serial interconnection of PZD2 received from the PROFIdrive controller.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
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	-

r2092.0...15 BO: PROFIdrive PZD3 receive bit-serial / PZD3 recv bitw

Access level: 3 **Calculated:** - **Data type:** Unsigned16

Can be changed: - **Scaling:** - **Data set:** -

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

Min	Max	Factory setting
-	-	-

Description: Binector output for bit-serial interconnection of PZD3 received from the PROFIdrive controller.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
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	-

r2093.0...15 BO: PROFIdrive PZD4 receive bit-serial / PZD4 recv bitw

Access level: 3 **Calculated:** - **Data type:** Unsigned16
Can be changed: - **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Binector output for bit-serial interconnection of PZD4 (normally control word 2) received from the PROFIdrive controller.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
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	-

r2094.0...15 BO: Connector-binector converter binector output / Con/bin outp

Access level: 3 **Calculated:** - **Data type:** Unsigned16
Can be changed: - **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Binector output for bit-serial onward interconnection of a PZD word received from the PROFIdrive controller.
The PZD is selected via p2099[0].

Bit field:

Bit	Signal name	1 signal	0 signal	FP
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: Refer to: p2099

r2095.0...15 BO: Connector-binector converter binector output / Con/bin outp

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Binector output for bit-serial interconnection of a PZD word received from the PROFIdrive controller.

The PZD is selected via p2099[1].

Bit field:

Bit	Signal name	1 signal	0 signal	FP
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: Refer to: p2099

p2098[0...1] Inverter connector-binector converter binector output / Con/bin outp inv

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 bin

Description: Setting to invert the individual binector outputs of the connector-binector converter.

Using p2098[0], the signals of CI: p2099[0] are influenced.

Using p2098[1], the signals of CI: p2099[1] are influenced.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	Inverted	Not inverted	-
01	Bit 1	Inverted	Not inverted	-
02	Bit 2	Inverted	Not inverted	-
03	Bit 3	Inverted	Not inverted	-
04	Bit 4	Inverted	Not inverted	-
05	Bit 5	Inverted	Not inverted	-
06	Bit 6	Inverted	Not inverted	-
07	Bit 7	Inverted	Not inverted	-
08	Bit 8	Inverted	Not inverted	-
09	Bit 9	Inverted	Not inverted	-
10	Bit 10	Inverted	Not inverted	-
11	Bit 11	Inverted	Not inverted	-
12	Bit 12	Inverted	Not inverted	-
13	Bit 13	Inverted	Not inverted	-
14	Bit 14	Inverted	Not inverted	-
15	Bit 15	Inverted	Not inverted	-

Dependency: Refer to: r2094, r2095, p2099

p2099[0...1] CI: Connector-binector converter signal source / Con/bin S_src

Access level: 3 | **Calculated:** - | **Data type:** U32 / Integer16
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source for the connector-binector converter.
A PZD receive word can be selected as signal source. The signals are available to be serially passed-on (interconnection).

Dependency: Refer to: r2094, r2095

Note: From the signal source set via the connector input, the corresponding lower 16 bits are converted.
p2099[0...1] together with r2094.0...15 and r2095.0...15 forms two connector-binector converters:
Connector input p2099[0] to binector output in r2094.0...15
Connector input p2099[1] to binector output in r2095.0...15

p2100[0...19] Setting the fault number for fault response / F_no F response

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units 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.
Refer to: p2101

Notice: For the following cases, it is not possible to re-parameterize the fault response to a fault:
- if there is no existing fault number.
- the message type is not "fault" (F).
- when a fault is present.

p2101[0...19] Setting the fault response / Fault response

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: U, T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min 0	**Max** 6	**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

Dependency: The fault is selected and the required response is set under the same index.

Refer to: p2100

Notice: It is not possible to re-parameterize the response to a specific fault for faults that are already present (queued).

Note: The fault response can only be changed for faults with the appropriate identification.

Example:

F12345 and fault response = NONE (OFF1, OFF2)

--> The fault response NONE can be changed to OFF1 or OFF2.

Re value = 1 (OFF1):

Braking along the ramp-function generator down ramp followed by a pulse inhibit.

Re value = 2 (OFF2):

Internal/external pulse inhibit.

Re value = 3 (OFF3):

Braking along the OFF3 down ramp followed by a pulse inhibit.

Re value = 5 (STOP2):

n_set = 0

Re value = 6 (armature short-circuit, internal/DC braking):

This value can only be set for all drive data sets when p1231 = 4.

a) DC braking is not possible for synchronous motors.

b) DC braking is possible for induction motors.

p2103[0...n] BI: 1. Acknowledge faults / 1. Acknowledge

CU240B-2
CU240E-2
CU240E-2 F

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: U, T	**Scaling:** -	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min -	**Max** -	**Factory setting** [0] 722.2 [1] 0 [2] 0 [3] 0

Description: Sets the first signal source to acknowledge faults.

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: A fault acknowledgement is triggered with a 0/1 signal.

p2103[0...n] BI: 1. Acknowledge faults / 1. Acknowledge

CU240B-2 DP
CU240E-2 DP
CU240E-2 DP F

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: U, T | **Scaling:** - | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	[0] 2090.7 [1] 722.2 [2] 2090.7 [3] 2090.7

Description: Sets the first signal source to acknowledge faults.
Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.
Note: A fault acknowledgement is triggered with a 0/1 signal.

p2104[0...n] BI: 2. Acknowledge faults / 2. Acknowledge

CU240B-2
CU240E-2
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: U, T | **Scaling:** - | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the second signal source to acknowledge faults.
Note: A fault acknowledgement is triggered with a 0/1 signal.

p2104[0...n] BI: 2. Acknowledge faults / 2. Acknowledge

CU240B-2 DP
CU240E-2 DP
CU240E-2 DP F

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: U, T | **Scaling:** - | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	[0] 722.2 [1] 0 [2] 0 [3] 0

Description: Sets the second signal source to acknowledge faults.
Note: A fault acknowledgement is triggered with a 0/1 signal.

p2105[0...n] BI: 3. Acknowledge faults / 3. Acknowledge

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: U, T | **Scaling:** - | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the third signal source to acknowledge faults.
Note: A fault acknowledgement is triggered with a 0/1 signal.

p2106[0...n] BI: External fault 1 / External fault 1

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: U, T | **Scaling:** - | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	1

Description: Sets the signal source for external fault 1.

Dependency: Refer to: F07860

Note: An external fault is triggered with a 1/0 signal.

p2107[0...n] BI: External fault 2 / External fault 2

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: U, T | **Scaling:** - | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	1

Description: Sets the signal source for external fault 2.

Dependency: Refer to: F07861

Note: An external fault is triggered with a 1/0 signal.

p2108[0...n] BI: External fault 3 / External fault 3

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: U, T | **Scaling:** - | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	1

Description: Sets the signal source for external fault 3.

External fault 3 is initiated by the following AND logic operation:

- BI: p2108 negated
- BI: p3111
- BI: p3112 negated

Dependency: Refer to: p3110, p3111, p3112

Refer to: F07862

Note: An external fault is triggered with a 1/0 signal.

r2109[0...63] Fault time removed in milliseconds / t_flt resolved ms

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [ms]	- [ms]	- [ms]

Description: Displays the system runtime in milliseconds when the fault was removed.

Dependency: Refer to: r0945, r0947, r0948, r0949, r2130, r2133, r2136

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.

r2110[0...63] Alarm number / Alarm number

Access level: 2	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: This parameter is identical to r2122.

p2111 Alarm counter / Alarm counter

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	65535	0

Description: Number of alarms that have occurred after the last reset.

Dependency: When p2111 is set to 0, the following is initiated:

- all of the alarms of the alarm buffer that have gone [0...7] are transferred into the alarm history [8...63].
- the alarm buffer [0...7] is deleted.

Refer to: r2110, r2122, r2123, r2124, r2125

Note: The parameter is reset to 0 at POWER ON.

p2112[0...n] BI: External alarm 1 / External alarm 1

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: U, T	**Scaling:** -	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for external alarm 1.

Dependency: Refer to: A07850

Note: An external alarm is triggered with a 1/0 signal.

r2114[0...1] System runtime total / Sys runtime tot

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the total system runtime for the drive unit.

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

Dependency: Refer to: r0948, r2109, r2123, r2125, r2130, r2136, r2145, r2146

Note: When the electronic power supply is switched out, the counter values are saved.

After the drive unit is powered up, the counter continues to run with the last value that was saved.

p2116[0...n] BI: External alarm 2 / External alarm 2

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: U, T | **Scaling:** - | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	1

Description: Sets the signal source for external alarm 2.

Dependency: Refer to: A07851

Note: An external alarm is triggered with a 1/0 signal.

p2117[0...n] BI: External alarm 3 / External alarm 3

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: U, T | **Scaling:** - | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	1

Description: Sets the signal source for external alarm 3.

Dependency: Refer to: A07852

Note: An external alarm is triggered with a 1/0 signal.

p2118[0...19] Sets the message number for message type. / Msg_no Msg_type

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	65535	0

Description: Selects faults or alarms for which the message type should be changed.

Dependency: Selects the fault or alarm selection and sets the required type of message realized under the same index.

Refer to: p2119

Notice: It is not possible to re-parameterize the message type in the following cases:

- if there is no existing message number.
- if a message is present.

p2119[0...19] Setting the message type / Message type

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
1	3	1

Description: Sets the message type for the selected fault or alarm.

Value:
1: Fault (F)
2: Alarm (A)
3: No message (N)

Dependency: Selects the fault or alarm selection and sets the required type of message realized under the same index.

Refer to: p2118

Notice: It is not possible to re-parameterize the message type for the existing faults or alarms.

Note: The message type can only be changed for messages with the appropriate identification.

Example:

F12345(A) --> Fault F12345 can be changed to alarm A12345.

In this case, the message number that may be possibly entered in p2100[0...19] and p2126[0...19] is automatically removed.

r2120 CO: Sum of fault and alarm buffer changes / Sum buffer changed

Access level: 4	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the sum of all of the fault and alarm buffer changes in the drive unit.

Dependency: Refer to: r0944, r2121

r2121 CO: Counter, alarm buffer changes / Alrm buff changed

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: This counter is incremented every time the alarm buffer changes.

Dependency: Refer to: r2110, r2122, r2123, r2124, r2125

r2122[0...63] Alarm code / Alarm code

Access level: 2	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the number of alarms that have occurred.

Dependency: Refer to: r2110, r2123, r2124, r2125, r2134, r2145, r2146

Note: The buffer parameters are cyclically updated in the background (refer to status signal in r2139).

Alarm buffer structure (general principle):

r2122[0], r2124[0], r2123[0], r2125[0] --> alarm 1 (the oldest)

. . .

r2122[7], r2124[7], r2123[7], r2125[7] --> Alarm 8 (the latest)

When the alarm buffer is full, the alarms that have gone are entered into the alarm history:

r2122[8], r2124[8], r2123[8], r2125[8] --> Alarm 1 (the latest)

. . .

r2122[63], r2124[63], r2123[63], r2125[63] --> alarm 56 (the oldest)

r2123[0...63] Alarm time received in milliseconds / t_alarm recv ms

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
- [ms]	- [ms]	- [ms]

Description: Displays the system runtime in milliseconds when the alarm occurred.

Dependency: Refer to: r2110, r2122, r2124, r2125, r2134, r2145, r2146

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

Access level: 3	**Calculated:** -	**Data type:** Integer32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays additional information about the active alarm (as integer number).

Dependency: Refer to: r2110, r2122, r2123, r2125, r2134, r2145, r2146

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 res ms

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
- [ms]	- [ms]	- [ms]

Description: Displays the system runtime in milliseconds when the alarm was cleared.

Dependency: Refer to: r2110, r2122, r2123, r2124, r2134, r2145, r2146

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.

p2126[0...19] Setting fault number for acknowledge mode / Fault_no ackn_mode

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	65535	0

Description: Selects the faults for which the acknowledge mode is to be changed

Dependency: Selects the faults and sets the required acknowledge mode realized under the same index
Refer to: p2127

Notice: It is not possible to re-parameterize the acknowledge mode of a fault in the following cases:
- if there is no existing fault number.
- the message type is not "fault" (F).
- when a fault is present.

p2127[0...19] Sets acknowledgement mode / Acknowledge mode

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: U, T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min 1	**Max** 2	**Factory setting** 1

Description: Sets the acknowledge mode for selected fault.

Value:
1: Acknowledgment only using POWER ON
2: Ack IMMEDIATELY after the fault cause has been removed

Dependency: Selects the faults and sets the required acknowledge mode realized under the same index
Refer to: p2126

Notice: It is not possible to re-parameterize the acknowledge mode of a fault in the following cases:
- if there is no existing fault number.
- the message type is not "fault" (F).
- when a fault is present.

Note: The acknowledge mode can only be changed for faults with the appropriate identification.
Example:
F12345 and acknowledge mode = IMMEDIATE (POWER ON)
--> The acknowledge mode can be changed from IMMEDIATELY to POWER ON.

p2128[0...15] Selecting fault/alarm code for trigger / Message trigger

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min 0	**Max** 65535	**Factory setting** 0

Description: Selects faults or alarms which can be used as trigger.

Dependency: Refer to: r2129

r2129.0...15 CO/BO: Trigger word for faults and alarms / Trigger word

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min -	**Max** -	**Factory setting** -

Description: Trigger signal for the selected faults and alarms

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Trigger signal p2128[0]	ON	OFF	-
01	Trigger signal p2128[1]	ON	OFF	-
02	Trigger signal p2128[2]	ON	OFF	-
03	Trigger signal p2128[3]	ON	OFF	-
04	Trigger signal p2128[4]	ON	OFF	-
05	Trigger signal p2128[5]	ON	OFF	-
06	Trigger signal p2128[6]	ON	OFF	-
07	Trigger signal p2128[7]	ON	OFF	-
08	Trigger signal p2128[8]	ON	OFF	-
09	Trigger signal p2128[9]	ON	OFF	-
10	Trigger signal p2128[10]	ON	OFF	-
11	Trigger signal p2128[11]	ON	OFF	-
12	Trigger signal p2128[12]	ON	OFF	-
13	Trigger signal p2128[13]	ON	OFF	-
14	Trigger signal p2128[14]	ON	OFF	-
15	Trigger signal p2128[15]	ON	OFF	-

Dependency: If one of the faults or alarms selected in p2128[n] occurs, then the particular bit of this binector output is set.
Refer to: p2128

Note: CO: r2129 = 0 --> None of the selected messages has occurred.
CO: r2129 > 0 --> At least one of the selected messages has occurred.

r2130[0...63] Fault time received in days / t_fault recv days

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the system runtime in days when the fault occurred.

Dependency: Refer to: r0945, r0947, r0948, r0949, r2109, r2133, r2136

Notice: The time comprises r2130 (days) and r0948 (milliseconds).

The value displayed in p2130 refers to 01.01.1970.

Note: The buffer parameters are cyclically updated in the background (refer to status signal in r2139).

r2131 CO: Actual fault code / Actual fault code

Access level: 2	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the code of the oldest active fault.

Dependency: Refer to: r3131, r3132

Note: 0: No fault present.

r2132 CO: Actual alarm code / Actual alarm code

Access level: 2	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

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

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays additional information about the fault that occurred for float values.

Dependency: Refer to: 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

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays additional information about the active alarm for float values.

Dependency: Refer to: r2110, r2122, r2123, r2124, r2125, r2145, r2146

Note: The buffer parameters are cyclically updated in the background (refer to status signal in r2139).

r2135.12...15 CO/BO: Status word faults/alarms 2 / ZSW fault/alarm 2

Access level: 2 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the second status word of faults and alarms.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
12	Fault motor overtemperature	Yes	No	-
13	Fault power unit thermal overload	Yes	No	-
14	Alarm motor overtemperature	Yes	No	-
15	Alarm power unit thermal overload	Yes	No	-

r2136[0...63] Fault time removed in days / t_flt resolv. days

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the system runtime in days when the fault was removed.

Dependency: Refer to: r0945, r0947, r0948, r0949, r2109, r2130, r2133

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).

r2138.7...15 CO/BO: Control word faults/alarms / STW fault/alarm

Access level: 2 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the control word of the faults and alarms.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
07	Acknowledge fault	Yes	No	-
10	External alarm 1 (A07850) effective	Yes	No	-
11	External alarm 2 (A07851) effective	Yes	No	-
12	External alarm 3 (A07852) effective	Yes	No	-
13	External fault 1 (F07860) effective	Yes	No	-
14	External fault 2 (F07861) effective	Yes	No	-
15	External fault 3 (F07862) effective	Yes	No	-

Dependency: Refer to: p2103, p2104, p2105, p2106, p2107, p2108, p2112, p2116, p2117, p3110, p3111, p3112

r2139.0...12 CO/BO: Status word faults/alarms 1 / ZSW fault/alarm 1

Access level: 2	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the first status word of faults and alarms.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Being acknowledged	Yes	No	-
01	Acknowledgment required	Yes	No	-
03	Fault present	Yes	No	-
06	Internal message 1 present	Yes	No	-
07	Alarm present	Yes	No	-
08	Internal message 2 present	Yes	No	-
11	Alarm class bit 0	High	Low	-
12	Alarm class bit 1	High	Low	-

Note: Re bit 03, 07:

These bits are set if at least one fault/alarm occurs. Data is entered into the fault/alarm buffer with delay. This is the reason that the fault/alarm buffer should only be read if, after "fault present"/"alarm present" has occurred, a change in the buffer was also detected (r0944, r9744, r2121).

Re bit 06, 08:

These status bits are used for internal diagnostic purposes only.

Re bit 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

Access level: 3	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: 3_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
0.00 [rpm]	300.00 [rpm]	90.00 [rpm]

Description: Sets the hysteresis speed (bandwidth) for the following signals:
"|n_act| < = speed threshold value 2" (BO: r2197.1)
"|n_act| > speed threshold value 2" (BO: r2197.2)

Dependency: Refer to: p2155, r2197

p2141[0...n] Speed threshold 1 / n_thresh val 1

Access level: 3	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: 3_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	5.00 [rpm]

Description: Sets the speed threshold value for the signal "f or n comparison value reached or exceeded" (BO: r2199.1).

Dependency: Refer to: p2142, r2199

p2142[0...n] Hysteresis speed 1 / n_hysteresis 1

Access level: 3 | **Calculated:** p0340 = 1,3,5 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: 3_1 | **Unit selection:** p0505

Min	Max	Factory setting
0.00 [rpm]	300.00 [rpm]	2.00 [rpm]

Description: Sets the hysteresis speed (bandwidth) for the signal "f or n / v comparison value reached or exceeded" (BO: r2199.1).

Dependency: Refer to: p2141, r2199

p2144[0...n] BI: Motor stall monitoring enable (negated) / Mot stall enab neg

Access level: 4 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: U, T | **Scaling:** - | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source for the negated enable (0 = enable) of the motor stall monitoring.

Dependency: Refer to: p2163, p2164, p2166, r2197, r2198
Refer to: F07900

Note: If the enable signal is connected to r2197.7 then the stall signal is suppressed if there is no speed setpoint - actual value deviation.

r2145[0...63] Alarm time received in days / t_alarm recv days

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the system runtime in days when the alarm occurred.

Dependency: Refer to: r2110, r2122, r2123, r2124, r2125, r2134, r2146

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 res days

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the system runtime in days when the alarm was cleared.

Dependency: Refer to: r2110, r2122, r2123, r2124, r2125, r2134, r2145

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).

p2148[0...n] BI: RFG active / RFG active

Access level: 3 | **Calculated:** p0340 = 1,3,5 | **Data type:** U32 / Binary
Can be changed: U, T | **Scaling:** - | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source for the signal "ramp-function generator active" for the following signals/messages:

"Speed setpoint - actual value deviation within tolerance t_on" (BO: r2199.4)

"Ramp-up/ramp-down completed" (BO: r2199.5)

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: The binector input is automatically interconnected to r1199.2 as a default setting.

p2149[0...n] Monitoring configuration / Monit config

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	1001 bin

Description: Sets the configuration for messages and monitoring functions.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Enable alarm A07903	Yes	No	8010
01	Load monitoring only in the 1st quadrant	Yes	No	8013
03	n_act > p2155 own hysteresis	Yes	No	8010

Dependency: Refer to: r2197

Refer to: A07903

Note: Re bit 00:

Alarm A07903 is output when the bit is set with r2197.7 = 0 (n_set <> n_act).

Re bit 01:

When the bit is set, load monitoring is only carried out in the 1st quadrant as a result of the positive characteristic parameters (p2182 ... p2190).

Re bit 03:

When the bit is set, r2197 bit 1 and bit 2 are determined via separate hystereses.

p2150[0...n] Hysteresis speed 3 / n_hysteresis 3

Access level: 3 | **Calculated:** p0340 = 1,3,5 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: 3_1 | **Unit selection:** p0505

Min	Max	Factory setting
0.00 [rpm]	300.00 [rpm]	2.00 [rpm]

Description: Sets the hysteresis speed (bandwidth) for the following signals:

"|n_act| < speed threshold value 3" (BO: r2199.0)

"n_set >= 0" (BO: r2198.5)

"n_act >= 0" (BO: r2197.3)

Dependency: Refer to: p2161, r2197, r2199

p2151[0...n] CI: Speed setpoint for messages/signals / n_set for msg

Access level: 3 | **Calculated:** - | **Data type:** U32 / FloatingPoint32
Can be changed: T | **Scaling:** p2000 | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	1170[0]

Description: Sets the signal source for the speed setpoint for the following messages:
"Speed setpoint - actual value deviation within tolerance t_off" (BO: r2197.7)
"Ramp-up/ramp-down completed" (BO: r2199.5)
"|n_set| < p2161" (BO: r2198.4)
"n_set > 0" (BO: r2198.5)

Dependency: Refer to: r2197, r2198, r2199

p2152[0...n] Delay for comparison n > n_max / Del n > n_max

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0 [ms]	10000 [ms]	200 [ms]

Description: Delay time for the comparison of the speed with the maximum speed.

Dependency: Refer to: p1082, r1084, r1087, p2162

p2153[0...n] Speed actual value filter time constant / n_act_filt T

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units 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: Refer to: r2169

p2155[0...n] Speed threshold 2 / n_thresh val 2

Access level: 3 | **Calculated:** p0340 = 1,3,5 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: 3_1 | **Unit selection:** p0505

Min	Max	Factory setting
0.00 [rpm]	210000.00 [rpm]	900.00 [rpm]

Description: Sets the speed threshold value for the following messages:
"|n_act| < = speed threshold value 2" (BO: r2197.1)
"|n_act| > speed threshold value 2" (BO: r2197.2)

Dependency: Refer to: p2140, r2197

p2156[0...n] On delay, comparison value reached / t_on cmpr val rchd

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.0 [ms]	10000.0 [ms]	0.0 [ms]

Description: Sets the switch-in delay time for the signal "comparison value reached" (BO: r2199.1).

Dependency: Refer to: p2141, p2142, r2199

p2157[0...n] Speed threshold 5 / n_thresh val 5

Access level: 3 | **Calculated:** p0340 = 1,3,5 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: 3_1 | **Unit selection:** p0505

Min	Max	Factory setting
0.00 [rpm]	210000.00 [rpm]	900.00 [rpm]

Description: Sets the speed threshold value for the following messages:
"|n_act| < = speed threshold value 5" (BO: r2198.0)
"|n_act| > speed threshold value 5" (BO: r2198.1)

Dependency: Refer to: p2150, p2158

p2158[0...n] Delay for n_act comparison with speed threshold value 5 / Del compar n_5

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0 [ms]	10000 [ms]	10 [ms]

Description: Delay time for the comparison of the speed with the speed threshold value 5 (P2157).

Dependency: Refer to: p2150, p2157

p2159[0...n] Speed threshold 6 / n_thresh val 6

Access level: 3 | **Calculated:** p0340 = 1,3,5 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: 3_1 | **Unit selection:** p0505

Min	Max	Factory setting
0.00 [rpm]	210000.00 [rpm]	900.00 [rpm]

Description: Sets the speed threshold value for the following messages:
"|n_act| < = speed threshold value 6" (BO: r2198.2)
"|n_act| > speed threshold value 6" (BO: r2198.3)

Dependency: Refer to: p2150, p2160

p2160[0...n] Delay for n_act comparison with speed threshold value 6 / Del compar n_6

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units 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: Refer to: p2150, p2159

p2161[0...n] Speed threshold 3 / n_thresh val 3

Access level: 3 | **Calculated:** p0340 = 1,3,5 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: 3_1 | **Unit selection:** p0505

Min	Max	Factory setting
0.00 [rpm]	210000.00 [rpm]	5.00 [rpm]

Description: Sets the speed threshold value for the signal "|n_act| < speed threshold value 3" (BO: r2199.0).

Dependency: Refer to: p2150, r2199

p2162[0...n] Hysteresis speed n_act > n_max / Hyst n_act>n_max

Access level: 3 | **Calculated:** p0340 = 1,3,5 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: 3_1 | **Unit selection:** p0505

Min	Max	Factory setting
0.00 [rpm]	60000.00 [rpm]	0.00 [rpm]

Description: Sets the hysteresis speed (bandwidth) for the signal "n_act > n_max" (BO: r2197.6).

Dependency: Refer to: r1084, r1087, r2197

Notice: For p0322 = 0, the following applies: p2162 <= 0.1 * p0311

For p0322 > 0, the following applies: p2162 <= 1.02 * p0322 - p1082

If one of the conditions is violated, p2162 is appropriately and automatically reduced when exiting the commissioning mode.

Note: For a negative speed limit (r1087) the hysteresis is effective below the limit value and for a positive speed limit (r1084) 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_thresh val 4

Access level: 3 | **Calculated:** p0340 = 1,3,5 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: 3_1 | **Unit selection:** p0505

Min	Max	Factory setting
0.00 [rpm]	210000.00 [rpm]	90.00 [rpm]

Description: Sets the speed threshold value for the "speed setpoint - actual value deviation in tolerance t_off" signal/message (BO: r2197.7).

Dependency: Refer to: p2164, p2166, r2197

p2164[0...n] Hysteresis speed 4 / n_hysteresis 4

Access level: 3 | **Calculated:** p0340 = 1,3,5 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: 3_1 | **Unit selection:** p0505

Min	Max	Factory setting
0.00 [rpm]	200.00 [rpm]	2.00 [rpm]

Description: Sets the hysteresis speed (bandwidth) for the "speed setpoint - actual value deviation in tolerance t_off" signal/message (BO: r2197.7).

Dependency: Refer to: p2163, p2166, r2197

p2166[0...n] Off delay n_act = n_set / t_del_off n_i=n_so

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0.0 [ms]	10000.0 [ms]	200.0 [ms]

Description: Sets the switch-off delay time for the "speed setpoint - actual value deviation in tolerance t_off" signal/message (BO: r2197.7).

Dependency: Refer to: p2163, p2164, r2197

p2167[0...n] Switch-on delay n_act = n_set / t_on n_act=n_set

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0.0 [ms]	10000.0 [ms]	200.0 [ms]

Description: Sets the switch-on delay for the "speed setpoint - actual value deviation in tolerance t_on" signal/message (BO: r2199.4).

r2169 CO: Actual speed smoothed signals / n_act smth message

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2000	**Data set:** -
Units group: 3_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the smoothed actual speed for messages/signals.

Dependency: Refer to: p2153

p2170[0...n] Current threshold value / I_thres

Access level: 3	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** p2002	**Data set:** DDS, p0180
Units group: 6_2	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
0.00 [Arms]	10000.00 [Arms]	0.00 [Arms]

Description: Sets the absolute current threshold for the messages.

"I_act >= I_threshold p2170" (BO: r2197.8)

"I_act < I_threshold p2170" (BO: r2198.8)

Dependency: Refer to: p2171

p2171[0...n] Current threshold value reached delay time / t_del I_thresh rch

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units 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: Refer to: p2170

p2172[0...n] DC link voltage, threshold value / Vdc thresh val

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** p2001	**Data set:** DDS, p0180
Units group: 5_2	**Unit selection:** p0505	
Min 0 [V]	**Max** 2000 [V]	**Factory setting** 800 [V]

Description: Sets the DC link voltage threshold value for the following messages:
"Vdc_act <= Vdc_threshold p2172" (BO: r2197.9)
"Vdc_act > Vdc_threshold p2172" (BO: r2197.10)

Dependency: Refer to: p2173

p2173[0...n] DC link voltage comparison delay time / t_del Vdc

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min 0 [ms]	**Max** 10000 [ms]	**Factory setting** 10 [ms]

Description: Sets the delay time for the comparison of the DC link voltage r0070 with the threshold value p2172.

Dependency: Refer to: p2172

p2174[0...n] Torque threshold value 1 / M_thresh val 1

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: 7_1	**Unit selection:** p0505	
Min 0.00 [Nm]	**Max** 20000000.00 [Nm]	**Factory setting** 5.13 [Nm]

Description: Sets the torque threshold value for the messages:
"Torque setpoint < torque threshold value 1 and n_set reached" (BO: r2198.9)
"Torque setpoint < torque threshold value 1" (BO: r2198.10)
"Torque setpoint > torque threshold value 1" (BO: r2198.13)

Dependency: Refer to: p2195, r2198

p2175[0...n] Motor locked speed threshold / Mot lock n_thresh

Access level: 3	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: 3_1	**Unit selection:** p0505	
Min 0.00 [rpm]	**Max** 210000.00 [rpm]	**Factory setting** 120.00 [rpm]

Description: Sets the speed threshold for the message "Motor locked" (BO: r2198.6).

Dependency: Refer to: p0500, p2177, r2198

Note: The following applies for sensorless vector control:
At low speeds in open-loop speed controlled operation (see p1755, p1756), a locked motor cannot be detected.

p2176[0...n] Torque threshold value comparison delay time / M_thrsh comp T_del

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min 0 [ms]	**Max** 10000 [ms]	**Factory setting** 200 [ms]

Description: Sets the delay time for the comparison of the torque actual value (r0080) with torque threshold value 1 (p2174).

Dependency: Refer to: p2174

p2177[0...n] Motor locked delay time / Mot lock t_del

Access level: 3 | **Calculated:** p0340 = 1,3,5 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.000 [s]	65.000 [s]	3.000 [s]

Description: Sets the delay time for the message "Motor locked" (BO: r2198.6).

Dependency: Refer to: p0500, p2175, r2198

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 before time p2177 has elapsed in order to detect the locked state reliably.

p2178[0...n] Motor stalled delay time / Mot stall t_del

Access level: 3 | **Calculated:** p0340 = 1,3 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units 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" (BO: r2198.7).

Dependency: Refer to: r2198

Note: In the open-loop speed controlled operating range (see p1755, p1756), vector control stall monitoring depends on threshold p1745.

At higher speeds, the difference between flux setpoint r0083 and flux actual value r0084 is monitored.

p2179[0...n] Output load identification current limit / Outp_ld iden I_lim

Access level: 3 | **Calculated:** p0340 = 1,3,5 | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** p2002 | **Data set:** DDS, p0180
Units group: 6_2 | **Unit selection:** p0505

Min	Max	Factory setting
0.00 [Arms]	1000.00 [Arms]	0.00 [Arms]

Description: Sets the current limit for output load identification.

Dependency: Refer to: p2180

Notice: For synchronous motors the output current can be almost zero under no load conditions.

Note: A missing output load condition exists if the motor is either not connected or a phase has failed.

p2180[0...n] Missing output load delay time / No load t_delay

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0 [ms]	10000 [ms]	2000 [ms]

Description: Sets the delay time to detect a missing output load.

Dependency: Refer to: p2179

p2181[0...n] Load monitoring response / Load monit resp

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	6	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

Dependency: Refer to: p2182, p2183, p2184, p2185, p2186, p2187, p2188, p2189, p2190, p2192, p2193, r2198, p3230, p3231

Refer to: A07920, A07921, A07922, F07923, F07924, F07925

Note: The response to the faults F07923 ... F07925 can be set. F07926 is evaluated only if p2181 is not zero.

This parameter setting has no effect on the production of fault F07936.

p2182[0...n] Load monitoring speed threshold value 1 / n_thresh 1

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: 3_1 | **Unit selection:** p0505

Min	Max	Factory setting
0.00 [rpm]	210000.00 [rpm]	150.00 [rpm]

Description: Sets the speed/torque envelope curve for load monitoring.

The envelope curve (upper and lower envelope curve) is defined as follows based on 3 speed thresholds:

p2182 (n_threshold 1) --> p2185 (M_threshold 1, upper), p2186 (M_threshold 1, lower)

p2183 (n_threshold 2) --> p2187 (M_threshold 2, upper), p2188 (M_threshold 2, lower)

p2184 (n_threshold 3) --> p2189 (M_threshold 3, upper), p2190 (M_threshold 3, lower)

Dependency: The following applies: p2182 < p2183 < p2184

Refer to: p2183, p2184, p2185, p2186

p2183[0...n] Load monitoring speed threshold value 2 / n_thresh 2

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: 3_1 | **Unit selection:** p0505

Min	Max	Factory setting
0.00 [rpm]	210000.00 [rpm]	900.00 [rpm]

Description: Sets the speed/torque envelope curve for load monitoring.

The envelope curve (upper and lower envelope curve) is defined as follows based on 3 speed thresholds:

p2182 (n_threshold 1) --> p2185 (M_threshold 1, upper), p2186 (M_threshold 1, lower)

p2183 (n_threshold 2) --> p2187 (M_threshold 2, upper), p2188 (M_threshold 2, lower)

p2184 (n_threshold 3) --> p2189 (M_threshold 3, upper), p2190 (M_threshold 3, lower)

Dependency: The following applies: p2182 < p2183 < p2184

Refer to: p2182, p2184, p2187, p2188

p2184[0...n] Load monitoring speed threshold value 3 / n_thresh 3

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: 3_1 | **Unit selection:** p0505

Min	Max	Factory setting
0.00 [rpm]	210000.00 [rpm]	1500.00 [rpm]

Description: Sets the speed/torque envelope curve for load monitoring.
The envelope curve (upper and lower envelope curve) is defined as follows based on 3 speed thresholds:
p2182 (n_threshold 1) --> p2185 (M_threshold 1, upper), p2186 (M_threshold 1, lower)
p2183 (n_threshold 2) --> p2187 (M_threshold 2, upper), p2188 (M_threshold 2, lower)
p2184 (n_threshold 3) --> p2189 (M_threshold 3, upper), p2190 (M_threshold 3, lower)

Dependency: The following applies: p2182 < p2183 < p2184
Refer to: p2182, p2183, p2189, p2190

p2185[0...n] Load monitoring torque threshold 1, upper / M_thresh 1 upper

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: 7_1 | **Unit selection:** p0505

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
Refer to: p2182, p2186

Note: The upper envelope curve is defined by p2185, p2187 and p2189.

p2186[0...n] Load monitoring torque threshold 1, lower / M_thresh 1 lower

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: 7_1 | **Unit selection:** p0505

Min	Max	Factory setting
0.00 [Nm]	20000000.00 [Nm]	0.00 [Nm]

Description: Sets the speed/torque envelope curve for load monitoring.

Dependency: The following applies: p2186 < p2185
Refer to: p2182, p2185

Note: The lower envelope curve is defined by p2186, p2188 and p2190.

p2187[0...n] Load monitoring torque threshold 2, upper / M_thresh 2 upper

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: 7_1 | **Unit selection:** p0505

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: p2187 > p2188
Refer to: p2183, p2188

Note: The upper envelope curve is defined by p2185, p2187 and p2189.

p2188[0...n] Load monitoring torque threshold 2, lower / M_thresh 2 lower

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: U, T **Scaling:** - **Data set:** DDS, p0180
Units group: 7_1 **Unit selection:** p0505

Min	Max	Factory setting
0.00 [Nm]	20000000.00 [Nm]	0.00 [Nm]

Description: Sets the speed/torque envelope curve for load monitoring.
Dependency: The following applies: p2188 < p2187
Refer to: p2183, p2187
Note: The lower envelope curve is defined by p2186, p2188 and p2190.

p2189[0...n] Load monitoring torque threshold 3, upper / M_thresh 3 upper

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: U, T **Scaling:** - **Data set:** DDS, p0180
Units group: 7_1 **Unit selection:** p0505

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: p2189 > p2190
Refer to: p2184, p2190
Note: The upper envelope curve is defined by p2185, p2187 and p2189.

p2190[0...n] Load monitoring torque threshold 3, lower / M_thresh 3 lower

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: U, T **Scaling:** - **Data set:** DDS, p0180
Units group: 7_1 **Unit selection:** p0505

Min	Max	Factory setting
0.00 [Nm]	20000000.00 [Nm]	0.00 [Nm]

Description: Sets the speed/torque envelope curve for load monitoring.
Dependency: The following applies: p2190 < p2189
Refer to: p2184, p2189
Note: The lower envelope curve is defined by p2186, p2188 and p2190.

p2192[0...n] Load monitoring delay time / Load monit t_del

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: U, T **Scaling:** - **Data set:** DDS, p0180
Units 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 monit config

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	3	1

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

Dependency: Refer to: p2182, p2183, p2184, p2185, p2186, p2187, p2188, p2189, p2190, p2192, r2198, p3230, p3231, p3232

Refer to: A07920, A07921, A07922, F07923, F07924, F07925, F07936

p2194[0...n] Torque threshold value 2 / M_thresh val 2

Access level: 3	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0.00 [%]	100.00 [%]	90.00 [%]

Description: Sets the torque threshold value for the message "Torque utilization < torque threshold value 2" (BO: r2199.11).

The message "torque setpoint < p2174" (BO: r2198.10) and "torque utilization < p2194" (BO: r2199.11) are only evaluated after the run-up and the delay time has expired.

Dependency: Refer to: r0033, p2195, r2199

p2195[0...n] Torque utilization switch-off delay / M_util t_off

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0.0 [ms]	1000.0 [ms]	800.0 [ms]

Description: Sets the switch-off delay time for the negated signal "run-up completed".

The message "torque setpoint < p2174" (BO: r2198.10) and "torque utilization < p2194" (BO: r2199.11) are only evaluated after the run-up and the delay time has expired.

Dependency: Refer to: p2174, p2194

p2196[0...n] Torque utilization scaling / M_util scal

Access level: 1	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(1, 3), U, T	**Scaling:** -	**Data set:** DDS, p0180
Units 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 CO/BO: Status word monitoring 1 / ZSW monitor 1

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the first status word for monitoring functions.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	|n_act| <= n_min p1080	Yes	No	8020
01				-
02				-
03	n_act >= 0	Yes	No	8011
04	|n_act| >= n_set	Yes	No	8020
05	|n_act| <= n_standstill p1226	Yes	No	8020
06	|n_act| > n_max	Yes	No	8010
07	Speed setp - act val deviation in tolerance t_off	Yes	No	8011
08	I_act >= I_threshold value p2170	Yes	No	8020
09	Vdc_act <= Vdc_threshold value p2172	Yes	No	8020
10	Vdc_act > Vdc_threshold value p2172	Yes	No	8020
11	Output load is not present	Yes	No	8020
12	|n_act| > n_max (delayed)	Yes	No	8021
13	|n_act| > n_max error	Yes	No	-

Notice: Re 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: Re bit 00:

The threshold value is set in p1080 and the hysteresis in p2150.

Re bit 01, 02:

The threshold value is set in p2155 and the hysteresis in p2140.

Re bit 03:

1 signal direction of rotation positive.

0 signal: direction of rotation negative.

The hysteresis is set in p2150.

Re bit 04:

The threshold value is set in r1119 and the hysteresis in p2150.

Re bit 05:

The threshold value is set in p1266 and the delay time in p1228.

Re bit 06:

The hysteresis is set in p2162.

Re bit 07:

The threshold value is set in p2163 and the hysteresis is set in p2164.

Re bit 08:

The threshold value is set in p2170 and the delay time in p2171.

Re bit 09, 10:

The threshold value is set in p2172 and the delay time in p2173.

Re bit 11:

The threshold value is set in p2179 and the delay time in p2180.

Re bit 12:

The threshold value is set in p2182, the hysteresis in p2162, and the delay time (for canceling the signal) in p2152.

r2198.0...13 CO/BO: Status word monitoring 2 / ZSW monitor 2

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the second status word for monitoring functions.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	|n_act| <= speed threshold value 5	Yes	No	8021
01	|n_act| > speed threshold value 5	Yes	No	8021
02	|n_act| <= speed threshold value 6	Yes	No	8021
03	|n_act| > speed threshold value 6	Yes	No	8021
04	|n_set| < p2161	Yes	No	8011
05	n_set > 0	Yes	No	8011
06	Motor blocked	Yes	No	8012
07	Motor stalled	Yes	No	8012
08	|I_act| < I_threshold value p2170	Yes	No	8020
09	|M_act| > torque threshold value 1 and n_set reached	Yes	No	8021
10	|M_set| < torque threshold value 1	Yes	No	8012
11	Load monitoring signals an alarm	Yes	No	8013
12	Load monitoring signals a fault condition	Yes	No	8013
13	|M_act| > torque threshold value 1	Yes	No	8021

Note: Re bit 10:

The torque threshold value 1 is set in p2174.

Re bit 12:

This bit is reset after the fault cause disappears, even if the fault itself is still present.

r2199.0...11 CO/BO: Status word monitoring 3 / ZSW monitor 3

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the third status word for monitoring functions.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	|n_act| < speed threshold value 3	Yes	No	8010
01	f or n comparison value reached or exceeded	Yes	No	8010
04	Speed setp - act val deviation in tolerance t_on	Yes	No	8011
05	Ramp-up/ramp-down completed	Yes	No	8011
11	Torque utilization < torque threshold value 2	Yes	No	8012

Note: Re bit 00:

The speed threshold value 3 is set in p2161.

Re 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 will never be reset.

Re bit 11:

The torque threshold value 2 is set in p2194.

p2200[0...n] BI: Technology controller enable / Tec_ctrl enable

Access level: 2 **Calculated:** - **Data type:** U32 / Binary
Can be changed: T **Scaling:** - **Data set:** CDS, p0170
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source to switch in/switch out the technology controller.
The technology controller is switched in with a 1 signal.

p2201[0...n] CO: Technology controller, fixed value 1 / Tec_ctr fix val 1

Access level: 2 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: U, T **Scaling:** PERCENT **Data set:** DDS, p0180
Units group: 9_1 **Unit selection:** p0595

Min	Max	Factory setting
-200.00 [%]	200.00 [%]	10.00 [%]

Description: Sets the value for fixed value 1 of the technology controller.
Dependency: Refer to: p2220, p2221, p2222, p2223, r2224, r2229
Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p2202[0...n] CO: Technology controller, fixed value 2 / Tec_ctr fix val 2

Access level: 2 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: U, T **Scaling:** PERCENT **Data set:** DDS, p0180
Units group: 9_1 **Unit selection:** p0595

Min	Max	Factory setting
-200.00 [%]	200.00 [%]	20.00 [%]

Description: Sets the value for fixed value 2 of the technology controller.
Dependency: Refer to: p2220, p2221, p2222, p2223, r2224, r2229
Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p2203[0...n] CO: Technology controller, fixed value 3 / Tec_ctr fix val 3

Access level: 2 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: U, T **Scaling:** PERCENT **Data set:** DDS, p0180
Units group: 9_1 **Unit selection:** p0595

Min	Max	Factory setting
-200.00 [%]	200.00 [%]	30.00 [%]

Description: Sets the value for fixed value 3 of the technology controller.
Dependency: Refer to: p2220, p2221, p2222, p2223, r2224, r2229
Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p2204[0...n] CO: Technology controller, fixed value 4 / Tec_ctr fix val 4

Access level: 2 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: U, T **Scaling:** PERCENT **Data set:** DDS, p0180
Units group: 9_1 **Unit selection:** p0595

Min	Max	Factory setting
-200.00 [%]	200.00 [%]	40.00 [%]

Description: Sets the value for fixed value 4 of the technology controller.
Dependency: Refer to: p2220, p2221, p2222, p2223, r2224, r2229
Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p2205[0...n] CO: Technology controller, fixed value 5 / Tec_ctr fix val 5

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** PERCENT | **Data set:** DDS, p0180
Units group: 9_1 | **Unit selection:** p0595

Min	Max	Factory setting
-200.00 [%]	200.00 [%]	50.00 [%]

Description: Sets the value for fixed value 5 of the technology controller.
Dependency: Refer to: p2220, p2221, p2222, p2223, r2224, r2229
Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p2206[0...n] CO: Technology controller, fixed value 6 / Tec_ctr fix val 6

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** PERCENT | **Data set:** DDS, p0180
Units group: 9_1 | **Unit selection:** p0595

Min	Max	Factory setting
-200.00 [%]	200.00 [%]	60.00 [%]

Description: Sets the value for fixed value 6 of the technology controller.
Dependency: Refer to: p2220, p2221, p2222, p2223, r2224, r2229
Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p2207[0...n] CO: Technology controller, fixed value 7 / Tec_ctr fix val 7

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** PERCENT | **Data set:** DDS, p0180
Units group: 9_1 | **Unit selection:** p0595

Min	Max	Factory setting
-200.00 [%]	200.00 [%]	70.00 [%]

Description: Sets the value for fixed value 7 of the technology controller.
Dependency: Refer to: p2220, p2221, p2222, p2223, r2224, r2229
Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p2208[0...n] CO: Technology controller, fixed value 8 / Tec_ctr fix val 8

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** PERCENT | **Data set:** DDS, p0180
Units group: 9_1 | **Unit selection:** p0595

Min	Max	Factory setting
-200.00 [%]	200.00 [%]	80.00 [%]

Description: Sets the value for fixed value 8 of the technology controller.
Dependency: Refer to: p2220, p2221, p2222, p2223, r2224, r2229
Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p2209[0...n] CO: Technology controller, fixed value 9 / Tec_ctr fix val 9

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** PERCENT | **Data set:** DDS, p0180
Units group: 9_1 | **Unit selection:** p0595

Min	Max	Factory setting
-200.00 [%]	200.00 [%]	90.00 [%]

Description: Sets the value for fixed value 9 of the technology controller.
Dependency: Refer to: p2220, p2221, p2222, p2223, r2224, r2229
Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p2210[0...n] CO: Technology controller, fixed value 10 / Tec_ctr fix val 10

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** PERCENT | **Data set:** DDS, p0180
Units group: 9_1 | **Unit selection:** p0595

Min	Max	Factory setting
-200.00 [%]	200.00 [%]	100.00 [%]

Description: Sets the value for fixed value 10 of the technology controller.
Dependency: Refer to: p2220, p2221, p2222, p2223, r2224, r2229
Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p2211[0...n] CO: Technology controller, fixed value 11 / Tec_ctr fix val 11

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** PERCENT | **Data set:** DDS, p0180
Units group: 9_1 | **Unit selection:** p0595

Min	Max	Factory setting
-200.00 [%]	200.00 [%]	110.00 [%]

Description: Sets the value for fixed value 11 of the technology controller.
Dependency: Refer to: p2220, p2221, p2222, p2223, r2224, r2229
Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p2212[0...n] CO: Technology controller, fixed value 12 / Tec_ctr fix val 12

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** PERCENT | **Data set:** DDS, p0180
Units group: 9_1 | **Unit selection:** p0595

Min	Max	Factory setting
-200.00 [%]	200.00 [%]	120.00 [%]

Description: Sets the value for fixed value 12 of the technology controller.
Dependency: Refer to: p2220, p2221, p2222, p2223, r2224, r2229
Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p2213[0...n] CO: Technology controller, fixed value 13 / Tec_ctr fix val 13

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** PERCENT | **Data set:** DDS, p0180
Units group: 9_1 | **Unit selection:** p0595

Min	Max	Factory setting
-200.00 [%]	200.00 [%]	130.00 [%]

Description: Sets the value for fixed value 13 of the technology controller.
Dependency: Refer to: p2220, p2221, p2222, p2223, r2224, r2229
Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p2214[0...n] CO: Technology controller, fixed value 14 / Tec_ctr fix val 14

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** PERCENT | **Data set:** DDS, p0180
Units group: 9_1 | **Unit selection:** p0595

Min	Max	Factory setting
-200.00 [%]	200.00 [%]	140.00 [%]

Description: Sets the value for fixed value 14 of the technology controller.
Dependency: Refer to: p2220, p2221, p2222, p2223, r2224, r2229
Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p2215[0...n] CO: Technology controller, fixed value 15 / Tec_ctr fix val 15

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** PERCENT | **Data set:** DDS, p0180
Units group: 9_1 | **Unit selection:** p0595

Min	Max	Factory setting
-200.00 [%]	200.00 [%]	150.00 [%]

Description: Sets the value for fixed value 15 of the technology controller.
Dependency: Refer to: p2220, p2221, p2222, p2223, r2224, r2229
Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p2216[0...n] Technology controller fixed value selection method / Tec_ctr FixVal sel

Access level: 2 | **Calculated:** - | **Data type:** Integer16
Can be changed: T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
1	2	1

Description: Selects the method that can be used to select the fixed setpoints.
Value:
1: Fixed value selection direct
2: Fixed value selection binary

p2220[0...n] BI: Technology controller fixed value selection bit 0 / Tec_ctrl sel bit 0

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: T | **Scaling:** - | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source to select the fixed value of the technology controller.
Dependency: Refer to: p2221, p2222, p2223

p2221[0...n] BI: Technology controller fixed value selection bit 1 / Tec_ctrl sel bit 1

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: T | **Scaling:** - | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source to select the fixed value of the technology controller.
Dependency: Refer to: p2220, p2222, p2223

p2222[0...n] BI: Technology controller fixed value selection bit 2 / Tec_ctrl sel bit 2

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: T | **Scaling:** - | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source to select the fixed value of the technology controller.
Dependency: Refer to: p2220, p2221, p2223

p2223[0...n] BI: Technology controller fixed value selection bit 3 / Tec_ctrl sel bit 3

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: T | **Scaling:** - | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source to select the fixed value of the technology controller.

Dependency: Refer to: p2220, p2221, p2222

r2224 CO: Technology controller, fixed value effective / Tec_ctr FixVal eff

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** PERCENT | **Data set:** -
Units group: 9_1 | **Unit selection:** p0595

Min	Max	Factory setting
- [%]	- [%]	- [%]

Description: Displays the selected and effective fixed value of the technology controller.

Dependency: Refer to: r2229

r2225.0 CO/BO: Technology controller fixed value selection status word / Tec_ctr FixVal ZSW

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the status word for the fixed value selection of the technology controller.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Technology controller fixed value selected	Yes	No	7950, 7951

r2229 Technology controller number actual / Tec_ctrl No. act

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the number of the selected fixed setpoint of the technology controller.

Dependency: Refer to: r2224

p2230[0...n] Technology controller motorized potentiometer configuration / Tec_ctr mop config

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0000 0100 bin

Description: Sets the configuration for the motorized potentiometer of the technology controller.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
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: Refer to: r2231, p2240

Notice: For p0014 = 1, the following applies:

After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

Note: Re 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.

Re bit 02:

0: Without initial rounding-off

1: With initial rounding-off.

The selected ramp-up/down time is correspondingly exceeded. The initial rounding-off is a sensitive way of specifying small changes (progressive reaction when keys are pressed). The jerk for initial rounding is independent of the ramp-up time and only depends on the selected maximum value (p2237).

It is calculated as follows:

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

The jerk is effective until the maximum acceleration is reached (a_max = p2237 [%] / p2247 [s] or a_max = p2238 [%] / p2248 [s]), after which the drive continues to run linearly with constant 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.

Re bit 03:

0: Non-volatile data save de-activated.

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

Re 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

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: 9_1 | **Unit selection:** p0595

Min	Max	Factory setting
- [%]	- [%]	- [%]

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: Refer to: p2230

p2235[0...n] BI: Technology controller motorized potentiometer raise setpoint / Tec_ctrl mop raise

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to continually increase the setpoint for the motorized potentiometer of the technology controller.

The setpoint change (CO: r2250) depends on the set ramp-up time (p2247) and the duration of the signal that is present (BI: p2235).

Dependency: Refer to: p2236

p2236[0...n] BI: Technology controller motorized potentiometer lower setpoint / Tec_ctrl mop lower

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to continually reduce the setpoint for the motorized potentiometer of the technology controller.

The setpoint change (CO: r2250) depends on the set ramp-down time (p2248) and the duration of the signal that is present (BI: p2236).

Dependency: Refer to: p2235

p2237[0...n] Technology controller motorized potentiometer maximum value / Tec_ctrl mop max

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: 9_1	**Unit selection:** p0595	
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	100.00 [%]

Description: Sets the maximum value for the motorized potentiometer of the technology controller.

Dependency: Refer to: p2238

p2238[0...n] Technology controller motorized potentiometer minimum value / Tec_ctrl mop min

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: 9_1	**Unit selection:** p0595	
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	-100.00 [%]

Description: Sets the minimum value for the motorized potentiometer of the technology controller.

Dependency: Refer to: p2237

p2240[0...n] Technology controller motorized potentiometer starting value / Tec_ctrl mop start

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units group: 9_1	**Unit selection:** p0595	
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	0.00 [%]

Description: Sets the starting value for the motorized potentiometer of the technology controller.

For p2230.0 = 0, this setpoint is entered after ON.

Dependency: Refer to: p2230

r2245 CO: Technology controller mot. potentiometer setpoint before RFG / Tec_ctr mop befRFG

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Data set:** -
Units group: 9_1	**Unit selection:** p0595	
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Sets the effective setpoint in front of the internal motorized potentiometer ramp-function generator of the technology controller.

Dependency: Refer to: r2250

p2247[0...n] Technology controller motorized potentiometer ramp-up time / Tec_ctr mop t_r-up

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units 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: Refer to: 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

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** DDS, p0180
Units 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: Refer to: 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 CO: Technology controller motorized potentiometer setpoint after RFG / Tec_ctr mop aftRFG

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Data set:** -
Units group: 9_1	**Unit selection:** p0595	
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the effective setpoint after the internal ramp-function generator for the motorized potentiometer of the technology controller.

Dependency: Refer to: r2245

p2251 Technology controller mode / Tec_ctrl mode

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min 0	**Max** 1	**Factory setting** 0

Description: Sets the mode for using the technology controller output.

Value:
0: Technology controller as main speed setpoint
1: Technology controller as supplementary speed setpoint

Dependency: p2251 = 0, 1 is only effective if the enable signal of the technology controller is interconnected (p2200 > 0).

p2253[0...n] CI: Technology controller setpoint 1 / Tec_ctrl setp 1

Access level: 2	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min -	**Max** -	**Factory setting** 0

Description: Sets the signal source for the setpoint 1 of the technology controller.

Dependency: Refer to: p2254, p2255

p2254[0...n] CI: Technology controller setpoint 2 / Tec_ctrl setp 2

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min -	**Max** -	**Factory setting** 0

Description: Sets the signal source for the setpoint 2 of the technology controller.

Dependency: Refer to: p2253, p2256

p2255 Technology controller setpoint 1 scaling / Tec_ctrl set1 scal

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min 0.00 [%]	**Max** 100.00 [%]	**Factory setting** 100.00 [%]

Description: Sets the scaling for the setpoint 1 of the technology controller.

Dependency: Refer to: p2253

p2256 Technology controller setpoint 2 scaling / Tec_ctrl set2 scal

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min 0.00 [%]	**Max** 100.00 [%]	**Factory setting** 100.00 [%]

Description: Sets the scaling for the setpoint 2 of the technology controller.

Dependency: Refer to: p2254

p2257 Technology controller, ramp-up time / Tec_ctrl t_ramp-up

Access level: 2 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: U, T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	**Max**	**Factory setting**
0.00 [s]	650.00 [s]	1.00 [s]

Description: Sets the ramp-up time of the technology controller.
Dependency: Refer to: p2258
Note: The ramp-up time is referred to 100 %.

p2258 Technology controller ramp-down time / Tec_ctrl t_ramp-dn

Access level: 2 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: U, T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	**Max**	**Factory setting**
0.00 [s]	650.00 [s]	1.00 [s]

Description: Sets the ramp-down time of the technology controller.
Dependency: Refer to: p2257
Note: The ramp-down time is referred to 100 %.

r2260 CO: Technology controller setpoint after ramp-function generator / Tec_ctr set aftRFG

Access level: 2 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: - **Scaling:** PERCENT **Data set:** -
Units group: 9_1 **Unit selection:** p0595

Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Sets the setpoint after the ramp-function generator of the technology controller.

p2261 Technology controller setpoint filter time constant / Tec_ctrl set T

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: U, T **Scaling:** - **Data set:** -
Units 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 CO: Technology controller setpoint after filter / Tec_ctr set aftFlt

Access level: 4 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: - **Scaling:** PERCENT **Data set:** -
Units group: 9_1 **Unit selection:** p0595

Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the smoothed setpoint after the setpoint filter (PT1) of the technology controller.

p2263 Technology controller type / Tec_ctrl type

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	1	0

Description: Sets the technology controller type.

Value:
0: D component in the actual value signal
1: D component in the fault signal

p2264[0...n] CI: Technology controller actual value / Tec_ctrl act val

Access level: 2 | **Calculated:** - | **Data type:** U32 / FloatingPoint32
Can be changed: U, T | **Scaling:** PERCENT | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source for the actual value of the technology controller.

p2265 Technology controller actual value filter time constant / Tec_ctrl act T

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units 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 CO: Technology controller actual value after filter / Tec_ctr act aftFlt

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** PERCENT | **Data set:** -
Units group: 9_1 | **Unit selection:** p0595

Min	Max	Factory setting
- [%]	- [%]	- [%]

Description: Displays the smoothed actual value after the filter (PT1) of the technology controller

p2267 Technology controller upper limit actual value / Tec_ctrl u_lim act

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** PERCENT | **Data set:** -
Units group: 9_1 | **Unit selection:** p0595

Min	Max	Factory setting
-200.00 [%]	200.00 [%]	100.00 [%]

Description: Sets the upper limit for the actual value signal of the technology controller.

Dependency: Refer to: p2264, p2265, p2271
Refer to: F07426

Notice: If the actual value exceeds this upper limit, this results in fault F07426.

p2268 Technology controller lower limit actual value / Tec_ctrl l_lim act

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** PERCENT | **Data set:** -
Units group: 9_1 | **Unit selection:** p0595

Min	Max	Factory setting
-200.00 [%]	200.00 [%]	-100.00 [%]

Description: Sets the lower limit for the actual value signal of the technology controller.

Dependency: Refer to: p2264, p2265, p2271
Refer to: F07426

Notice: If the actual value falls below this lower limit, this results in fault F07426.

p2269 Technology controller gain actual value / Tech_ctrl gain act

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.00 [%]	500.00 [%]	100.00 [%]

Description: Scaling factor for the actual value of the technology controller.

Dependency: Refer to: p2264, p2265, p2267, p2268, p2271

Note: For 100%, the actual value is not changed.

p2270 Technology controller actual value function / Tec_ctr ActVal fct

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units 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: No function
1: Root function (root from x)
2: Square function (x * x)
3: Cube function (x * x * x)

Dependency: Refer to: p2264, p2265, p2267, p2268, p2269, p2271

p2271 Technology controller actual value inversion (sensor type) / Tech_ctrl act inv

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: T | **Scaling:** - | **Data set:** -
Units 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 actual value signal

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 the technology controller (p2200 = 0).
- increase the motor speed and in so doing, measure the actual value signal of the technology controller.
--> If the actual value increases as the motor speed increases, then p2271 should be set to 0 (no inversion).
--> If the actual value decreases as the motor speed increases, then p2271 should be set to 1 (the actual value signal is inverted).

r2272 CO: Technology controller actual value scaled / Tech_ctrl act scal

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** PERCENT | **Data set:** -
Units group: 9_1 | **Unit selection:** p0595

Min	Max	Factory setting
- [%]	- [%]	- [%]

Description: Displays the scaled actual value signal of the technology controller.
Dependency: Refer to: p2264, p2265, r2266, p2267, p2268, p2269, p2270, p2271

r2273 CO: Technology controller error / Tec_ctrl error

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** PERCENT | **Data set:** -
Units group: 9_1 | **Unit selection:** p0595

Min	Max	Factory setting
- [%]	- [%]	- [%]

Description: Displays the error (system deviation) between the setpoint and actual value of the technology controller.
Dependency: Refer to: p2263

p2274 Technology controller differentiation, time constant / Tec_ctrl D comp T

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units 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 disabled.

p2280 Technology controller proportional gain / Tec_ctrl Kp

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.000	1000.000	1.000

Description: Sets the proportional gain (P component) of the technology controller.
Note: p2280 = 0: The proportional gain is disabled.

p2285 Technology controller integral time / Tec_ctrl Tn

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.000 [s]	10000.000 [s]	30.000 [s]

Description: Sets the integral time (I component, integrating time constant) of the technology controller.
Notice: The following applies for p2251 = 0:

If the output of the technology controller lies within the range of a suppression (skip) bandwidth (p1091 ... p1094, p1101) or below the minimum speed (p1080), the integral component of the controller is held so that the controller temporarily works as a P controller. This is necessary in order to prevent the controller from behaving in an unstable manner, as the ramp-function generator switches to the parameterized up and down ramps (p1120, p1121) at the same time in order to avoid setpoint steps. This state can be exited or avoided by changing the controller setpoint or by using the start speed (= minimum speed).

Note: When the controller output reaches the limit, the I component of the controller is held.

p2285 = 0:

The integral time is disabled and the I component of the controller is reset.

p2286[0...n] BI: Hold technology controller integrator / Tec_ctr integ stop

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	56.13

Description: Sets the signal source to hold the integrator for the technology controller.

p2289[0...n] CI: Technology controller pre-control signal / Tec_ctrl prectrl

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Data set:** CDS, p0170
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the pre-control signal of the technology controller.

p2291 CO: Technology controller maximum limiting / Tec_ctrl max_limit

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	100.00 [%]

Description: Sets the maximum limit of the technology controller.

Dependency: Refer to: p2292

Caution: The maximum limit must always be greater than the minimum limit (p2291 > p2292).

p2292 CO: Technology controller minimum limiting / Tec_ctrl min_lim

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	0.00 [%]

Description: Sets the minimum limit of the technology controller.

Dependency: Refer to: 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 ramp up/dn

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0.00 [s]	100.00 [s]	1.00 [s]

Description: Sets the ramping time for the output signal of the technology controller.

Dependency: Refer to: p2291, p2292

Note: The time refers to the set maximum and minimum limits (p2291, p2292).

r2294 CO: Technology controller output signal / Tec_ctrl outp_sig

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** PERCENT | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [%]	- [%]	- [%]

Description: Displays the output signal of the technology controller.

Dependency: Refer to: p2295

p2295 CO: Technology controller output scaling / Tec_ctrl outp scal

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** PERCENT | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-100.00 [%]	100.00 [%]	100.00 [%]

Description: Sets the scaling for the output signal of the technology controller.

p2296[0...n] CI: Technology controller output scaling / Tec_ctrl outp scal

Access level: 3 | **Calculated:** - | **Data type:** U32 / FloatingPoint32
Can be changed: U, T | **Scaling:** PERCENT | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	2295[0]

Description: Sets the signal source for the scaling value of the technology controller.

Dependency: Refer to: p2295

p2297[0...n] CI: Technology controller maximum limit signal source / Tec_ctrl m_lm s_sc

Access level: 3 | **Calculated:** - | **Data type:** U32 / FloatingPoint32
Can be changed: U, T | **Scaling:** PERCENT | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	1084[0]

Description: Sets the signal source for the maximum limiting of the technology controller.

Dependency: Refer to: p2291

Note: In order that the output of the technology controller does not exceed the maximum speed limit, its upper limit p2297 should be connected to the actual maximum speed r1084.

In mode p2251 = 1, p2299 must also be connected to the output of the ramp-function generator r1150.

p2298[0...n] CI: Technology controller minimum limit signal source / Tec_ctrl min_l s_s

Access level: 3 | **Calculated:** - | **Data type:** U32 / FloatingPoint32
Can be changed: U, T | **Scaling:** PERCENT | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	1087[0]

Description: Sets the signal source for the minimum limiting of the technology controller.

Dependency: Refer to: p2292

Note: If the technology controller is rotated in a negative direction in mode p2251 = 0, its lower limit p2298 should be connected to the actual minimum speed r1087.

In mode p2251 = 1, p2299 must also be connected to the output of the ramp-function generator r1150.

p2299[0...n] CI: Technology controller limit offset / Tech_ctrl lim offs

Access level: 3 | **Calculated:** - | **Data type:** U32 / FloatingPoint32
Can be changed: U, T | **Scaling:** PERCENT | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source for the offset of the output limiting of the technology controller.

Note: In mode p2251 = 1, p2299 must be connected to the output of ramp-function generator r1150 so that the technology controller stops when the speed limits are reached (see also p2297, p2298).

p2302 Technology controller output signal starting value / Tec_ctr start val

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units 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.

When the technology controller is enabled (refer to p2200 and r0056.3) then its output signal (r2294) starts to run from this starting value.

Dependency: The starting value is only effective in the mode "technology controller as main speed setpoint" (p2251 = 0).

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, is connected to the output of the technology controller (r2294).

If fault F07426 "technology controller actual value limited" occurs while ramping up to the starting value and if the associated reaction has been set to "NONE" (see p2100, p2101), the starting value is kept as the speed setpoint instead of a switch to closed-loop control operation.

p2306 Technology controller fault signal inversion / Tec_ctrl fault inv

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	1	0

Description: Setting to invert the fault signal 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 the technology controller (p2200 = 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.

If value = 0:

The drive reduces the output speed when the actual value rises (e.g. for heating fans, intake pump, compressor).

If value = 1:

The drive increases the output speed when the actual value increases (e.g. for cooling fans, discharge pumps).

r2344 CO: Technology controller last speed setpoint (smoothed) / Tec_ctrl n_setp_sm

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** PERCENT | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [%]	- [%]	- [%]

Description: Displays the smoothed speed setpoint of the technology controller prior to switching to operation with fault response (see p2345).

Dependency: Refer to: p2345

Note: The smoothing time is 10 s.

p2345 Technology controller fault response / Tech_ctrl flt resp

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	2	0

Description: Sets the response of the technology controller to the occurrence of a fault F07426 (technology controller actual value limited). The fault response is executed if status bits 8 or 9 in technology controller status word r2349 are 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).

Refer to: p2267, p2268, r2344

Refer to: 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 suitable fault response or a different fixed setpoint 15 for the fault response p2345 = 2 should be selected.

Note: The parameterized fault response can only be achieved if the default fault response of the technology controller fault F07426 is set to "NONE" (see p2100, p2101). If a fault response other than "NONE" is entered in p2101 for F07426, p2345 must be set to zero.

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...12 CO/BO: Technology controller status word / Tec_ctrl status

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the status word of the technology controller.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Technology controller de-activated	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	-
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	-

p2900[0...n] CO: Fixed value 1 [%] / Fixed value 1 [%]

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** PERCENT | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-10000.00 [%]	10000.00 [%]	0.00 [%]

Description: Sets a fixed percentage.

Dependency: Refer to: p2901, p2930

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

Note: The value can be used to interconnect a scaling function (e.g. scaling of the main setpoint)

p2901[0...n] CO: Fixed value 2 [%] / Fixed value 2 [%]

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** PERCENT | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-10000.00 [%]	10000.00 [%]	0.00 [%]

Description: Sets a fixed percentage.

Dependency: Refer to: p2900, p2930

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

Note: The value can be used to interconnect a scaling function (e.g. scaling of the supplementary setpoint)

r2902[0...14] CO: Fixed values [%] / Fixed values [%]

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: - **Scaling:** PERCENT **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
- [%]	- [%]	- [%]

Description: Signal sources for frequently used percentage values.

Index:
[0] = Fixed value +0 %
[1] = Fixed value +5 %
[2] = Fixed value +10 %
[3] = Fixed value +20 %
[4] = Fixed value +50 %
[5] = Fixed value +100 %
[6] = Fixed value +150 %
[7] = Fixed value +200 %
[8] = Fixed value -5 %
[9] = Fixed value -10 %
[10] = Fixed value -20 %
[11] = Fixed value -50 %
[12] = Fixed value -100 %
[13] = Fixed value -150%
[14] = Fixed value -200 %

Dependency: Refer to: p2900, p2901, p2930

Note: The signal sources can, for example, be used to interconnect scalings.

p2930[0...n] CO: Fixed value M [Nm] / Fixed value M [Nm]

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: U, T **Scaling:** p2003 **Data set:** DDS, p0180
Units group: - **Unit selection:** -

Min	Max	Factory setting
-100000.00 [Nm]	100000.00 [Nm]	0.00 [Nm]

Description: Sets a fixed value for torque.

Dependency: Refer to: p2900, p2901

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

Note: The value can, for example, be used to interconnect a supplementary torque.

p3110 External fault 3, power-up delay / Ext fault 3 t_on

Access level: 3 **Calculated:** - **Data type:** Unsigned16
Can be changed: U, T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
0 [ms]	1000 [ms]	0 [ms]

Description: Sets the delay time for external fault 3.

Dependency: Refer to: p2108, p3111, p3112
Refer to: F07862

p3111[0...n] BI: External fault 3, enable / Ext fault 3 enab

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: U, T | **Scaling:** - | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	1

Description: Sets the signal source for the enable signal of external fault 3.

External fault 3 is initiated by the following AND logic operation:

- BI: p2108 negated
- BI: p3111
- BI: p3112 negated

Dependency: Refer to: p2108, p3110, p3112

Refer to: F07862

p3112[0...n] BI: External fault 3 enable negated / Ext flt 3 enab neg

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: U, T | **Scaling:** - | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source for the negated enable signal of external fault 3.

External fault 3 is initiated by the following AND logic operation:

- BI: p2108 negated
- BI: p3111
- BI: p3112 negated

Dependency: Refer to: p2108, p3110, p3111

Refer to: F07862

r3113.0...15 CO/BO: NAMUR message bit bar / NAMUR bit bar

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the status of NAMUR signal bit bar.

The faults or alarms are assigned to the appropriate signaling/message classes and influence a specific message bit.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Fault drive converter data electronics / software error	Yes	No	-
01	Line supply fault	Yes	No	-
02	DC link overvoltage	Yes	No	-
03	Fault drive converter power electronics	Yes	No	-
04	Drive converter overtemperature	Yes	No	-
05	Ground fault	Yes	No	-
06	Motor overload	Yes	No	-
07	Bus error	Yes	No	-
08	External safety-relevant shutdown	Yes	No	-
10	Error communication internal	Yes	No	-
11	Fault infeed	Yes	No	-
15	Other faults	Yes	No	-

r3131 CO: Current flt value / Current flt value

Access level: 3 | **Calculated:** - | **Data type:** Integer32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the fault value of the oldest active fault.
Dependency: Refer to: r2131, r3132

r3132 CO: Actual component number / Act comp_no.

Access level: 3 | **Calculated:** - | **Data type:** Integer32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the component number of the oldest fault that is still active.
Dependency: Refer to: r2131, r3131

p3230[0...n] CI: Load monitoring, speed actual value / Load monit n_act

Access level: 3 | **Calculated:** - | **Data type:** U32 / FloatingPoint32
Can be changed: T | **Scaling:** p2000 | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source for the speed actual value of the load monitoring.
Dependency: Refer to: r2169, p2181, p2192, p2193, p3231
Refer to: A07920, A07921, A07922, F07923, F07924, F07925
Note: The parameter is only effective for p2193 = 2.

p3231[0...n] Load monitoring speed deviation / Load monit n_dev

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: 3_1 | **Unit selection:** p0505

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: Refer to: r2169, p2181, p2193, p3230
Refer to: A07920, A07921, A07922, F07923, F07924, F07925

p3232[0...n] BI: Load monitoring failure detection / Load_moni fail_det

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: U, T | **Scaling:** - | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	1

Description: Sets the signal source for detecting a failure.
Dependency: Refer to: p2192, p2193
Refer to: 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 T

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0 [ms]	1000000 [ms]	100 [ms]

Description: Sets the time constant of the PT1 element to smooth the torque actual value.

The smoothed actual torque is compared with the threshold values and is only used for messages and signals.

p3235 Phase failure signal motor monitoring time / Ph_fail t_monit

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units 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.

Notice: After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

Note: For p3235 = 0 the function is deactivated.

The monitoring is automatically de-activated during the flying restart operation for a motor that is still rotating.

3-phase phase failures cannot be detected and are indicated by other messages (e.g. F07902).

p3320[0...n] Fluid flow machine P = f(n), Y coordinate: P flow1 %, point 1 / Fluid flow mach Y1

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.00	100.00	25.00

Description: The power (P) for point 1 on the Y coordinate of the flow characteristic is saved in p3320. Unit: %

Dependency: Refer to: p3321

Note: The reference value for power and speed is the rated power/rated speed.

The energy saved is displayed in r0041.

p3321[0...n] Fluid flow machine P = f(n), X coordinate: n flow1 %, point 1 / Fluid flow mach X1

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.00	100.00	0.00

Description: The speed (n) for point 1 on the X coordinate of the flow characteristic is saved in p3321. Unit: %

Dependency: Refer to: p3320

Note: The reference value for power and speed is the rated power/rated speed.

The energy saved is displayed in r0041.

p3322[0...n] Fluid flow machine P = f(n), Y coordinate: P flow2 %, point 2 / Fluid flow mach Y2

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.00	100.00	50.00

Description: The power (P) for point 2 on the Y coordinate of the flow characteristic is saved in p3322. Unit: %

Dependency: Refer to: p3323

Note: The reference value for power and speed is the rated power/rated speed.
The energy saved is displayed in r0041.

p3323[0...n] Fluid flow machine P = f(n), X coordinate: n flow2 %, point 2 / Fluid flow mach X2

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.00	100.00	25.00

Description: The speed (n) for point 2 on the X coordinate of the flow characteristic is saved in p3323. Unit: %

Dependency: Refer to: p3322

Note: The reference value for power and speed is the rated power/rated speed.
The energy saved is displayed in r0041.

p3324[0...n] Fluid flow machine P = f(n), Y coordinate: P flow3 %, point 3 / Fluid flow mach Y3

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.00	100.00	77.00

Description: The power (P) for point 3 on the Y coordinate of the flow characteristic is saved in p3324. Unit: %

Dependency: Refer to: p3325

Note: The reference value for power and speed is the rated power/rated speed.
The energy saved is displayed in r0041.

p3325[0...n] Fluid flow machine P = f(n), X coordinate: n flow3 %, point 3 / Fluid flow mach X3

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.00	100.00	50.00

Description: The speed (n) for point 3 on the X coordinate of the flow characteristic is saved in p3325. Unit: %

Dependency: Refer to: p3324

Note: The reference value for power and speed is the rated power/rated speed.
The energy saved is displayed in r0041.

p3326[0...n] Fluid flow machine P = f(n), Y coordinate: P flow4 %, point 4 / Fluid flow mach Y4

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.00	100.00	92.00

Description: The power (P) for point 4 on the Y coordinate of the flow characteristic is saved in p3326. Unit: %

Dependency: Refer to: p3327

Note: The reference value for power and speed is the rated power/rated speed.
The energy saved is displayed in r0041.

p3327[0...n] Fluid flow machine P = f(n), X coordinate: n flow4 %, point 4 / Fluid flow mach X4

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.00	100.00	75.00

Description: The speed (n) for point 4 on the X coordinate of the flow characteristic is saved in p3327. Unit: %

Dependency: Refer to: p3326

Note: The reference value for power and speed is the rated power/rated speed.
The energy saved is displayed in r0041.

p3328[0...n] Fluid flow machine P = f(n), Y coordinate: P flow5 %, point 5 / Fluid flow mach Y5

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.00	100.00	100.00

Description: The power (P) for point 5 on the Y coordinate of the flow characteristic is saved in p3328. Unit: %

Dependency: Refer to: p3329

Note: The reference value for power and speed is the rated power/rated speed.
The energy saved is displayed in r0041.

p3329[0...n] Fluid flow machine P = f(n), X coordinate: n flow5 %, point 5 / Fluid flow mach X5

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.00	100.00	100.00

Description: The speed (n) for point 5 on the X coordinate of the flow characteristic is saved in p3329. Unit: %

Dependency: Refer to: p3328

Note: The reference value for power and speed is the rated power/rated speed.
The energy saved is displayed in r0041.

p3330[0...n] BI: 2-3-WIRE Control Command 1 / 2-3-WIRE CC_1

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: U, T | **Scaling:** - | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: The function of the 2-3-WIRE Control Command 1 depends on the selected 2-3-WIRE type. It shall be predefined by p0015

p3331[0...n] BI: 2-3-WIRE Control Command 2 / 2-3-WIRE CC_2

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: U, T | **Scaling:** - | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: The function of the 2-3-WIRE Control Command 2 depends on the selected 2-3-WIRE type. It shall be predefined by p0015

p3332[0...n] BI: 2-3-WIRE Control Command 3 / 2-3-WIRE CC_3

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: U, T | **Scaling:** - | **Data set:** CDS, p0170
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: The function of the 2-3-WIRE Control Command 3 depends on the selected 2-3-WIRE type. It shall be predefined by p0015

r3333.0...3 CO/BO: 2-3-WIRE Output / 2-3-WIRE OUT

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: The output values of the 2-3-WIRE Control Command depends on the selected 2-3-WIRE type and the control command inputs. Type shall be predefined by p0015

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	2-3-Wire On	Yes	No	-
01	2-3-Wire Reverse	Yes	No	-
02	2-3-Wire On/Inverse	Yes	No	-
03	2-3-Wire Reverse/Inverse	Yes	No	-

p3334 2-3-WIRE Selection / 2-3-WIRE Sel

Access level: 4 | **Calculated:** - | **Data type:** Integer16
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	4	0

Description: Determines the 2/3-Wire type using the terminals. It shall be predefined by p0015.

Value:
0: No 2/3-Wire control
1: 2-Wire Forward-Backward 1
2: 2-Wire Forward-Backward 2
3: 3-Wire Enable-Forward-Backward
4: 3-Wire Enable-On-Reverse

p3856[0...n] Compound braking current / Compound I_brake

PM240

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** PERCENT | **Data set:** DDS, p0180
Units 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 operation to further increase the DC brake function.

Compound braking is a superimposition of the DC brake 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:

- when DC braking is active (refer to p1230, r1239)
- as long as the motor is not magnetized (e.g. for flying restart)
- for vector control (p1300 >= 20)
- for synchronous motors (p0300 = 2xx)

Caution: Generally, increasing the braking current improves the braking effect when stopping the motor. However, if the value is set too high, then the drive can be tripped (shut down) as a result of overcurrent or ground fault.

Recommendation: p3856 < 100 % x (r0209 - r0331) / p0305 / 2

Compound braking generates a current in the motor with a ripple manifesting the rotational frequency. The higher the braking current is set, the higher the resulting ripple, especially when the Vdc(max) control is simultaneously active (refer to to p1280).

Note: The parameter value is entered relative to the rated motor current (p0305). Compound braking is deactivated with p3856 = 0%.

r3859.0 CO/BO: Compound braking status word / Compound Br ZSW

PM240

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the status word of the compound braking.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Compound braking active	Yes	No	-

Dependency: Refer to: p3856

p3900 Completion of quick commissioning / Compl quick_comm

Access level: 1 | **Calculated:** - | **Data type:** Integer16

Can be changed: C(1) | **Scaling:** - | **Data set:** -

Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	3	0

Description: Exits quick commissioning (p0010 = 1) with automatic calculation of all parameters of all existing drive data sets that depend on the entries made during quick commissioning.

p3900 = 1 initially includes a parameter reset (factory setting, the same as p0970 = 1) for all parameters of the drive object; however, without overwriting the entries made during the quick commissioning.

The interconnections of PROFIBUS PZD telegram selection (p0922) and the interconnections via p15 and p1500 are re-established and all of the dependent motor, open-loop and control-loop control parameters are calculated (corresponding to p0340 = 1).

p3900 = 2 includes the restoration of the interconnections of PROFIBUS PZD telegram selection (p0922) and the interconnections via p15 and p1500 and the calculations corresponding to p0340 = 1.

p3900 = 3 only includes the calculations associated with the motor, open-loop and closed-loop control parameters corresponding to p0340 = 1.

Value:
0: No quick parameterization
1: Quick parameterization after parameter reset
2: Quick parameterization (only) for BICO and motor parameters
3: Quick parameterization for motor parameters (only)

Notice: After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

Note: When the calculations have been completed, p3900 and p0010 are automatically reset to a value of 0.

When calculating motor, open-loop and closed-loop control parameters (such as for p0340 = 1) parameters associated with a selected Siemens catalog motor are not overwritten.

If a catalog motor has not been selected (see p0300), then the following parameters are reset with p3900 > 0 in order to restore the situation that applied when commissioning the drive for the first time:

for induction motors p0320, p0352, p0362 ... p0369, p0604, p0605, p0626 ... p0628.

for synchronous motors p0326, p0327, p0352, p0604, p0605.

r3925[0...n] Identification final display / Ident final_disp

Access level: 3 | **Calculated:** p0340 = 1 | **Data type:** Unsigned32

Can be changed: - | **Scaling:** - | **Data set:** DDS, p0180

Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the commissioning steps that have been carried out.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Motor/control parameters calculated (p0340 = 1, p3900 > 0)	Yes	No	-
02	Motor data identification carried out at standstill (p1910 = 1)	Yes	No	-
03	Rotating measurement carried out (p1960 = 1, 2)	Yes	No	-
15	Motor equivalent circuit diagram parameters changed	Changed	Not changed	-

Note: The individual bits are only set if the appropriate action has been initiated and successfully completed.

When motor rating plate parameters are changed, the final display is reset.

When setting the individual bits, all of the most significant bits are reset.

r3926[0...n] Alternating voltage generation base voltage amplitude / Alt U_gen U_base

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Data set:** MDS
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [V]	- [V]	- [V]

Description: Displays the base voltage of the alternating voltage for the last motor data identification.
0: No alternating voltages, function de-activated.
Otherwise: Base voltage for alternating current generation in volts.

r3927[0...n] Motor data identification control word / MotID STW

Access level: 3 | **Calculated:** p0340 = 1 | **Data type:** Unsigned16
Can be changed: - | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Successfully completed component of the last motor data identification carried out.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
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	De-activate vibration detection	Yes	No	-
11	De-activate pulse measurement Lq Ld	Yes	No	-
12	De-activate rotor resistance Rr measurement	Yes	No	-
14	De-activate valve interlocking time measurement	Yes	No	-
15	Determine only stator resistance, valve voltage fault, dead time	Yes	No	-

Dependency: Refer to: r3925

Note: The parameter is a copy of p1909.

r3928[0...n] Rotating measurement configuration / Rot meas config

Access level: 3 | **Calculated:** p0340 = 1 | **Data type:** Unsigned16
Can be changed: - | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Successfully completed component of the last rotating measurement carried out.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
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	-

Dependency: Refer to: r3925

Note: The parameter is a copy of p1959.

r3929[0...n] Motor data identification modulated voltage generation / MotID U_gen mod

Access level: 4 | **Calculated:** p0340 = 1 | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** DDS, p0180
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Configuration of voltage generation for the various MotID sections in the case of the most recent successful MotID.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Wobble U_generate to determine dead-time correction	Yes	No	-
01	Wobble U_generate to determine stator resistance	Yes	No	-
02	Wobble U_generate to determine rotor time constant	Yes	No	-
03	Wobble U_generate to determine leakage inductance	Yes	No	-
04	Wobble U_generate to determine dyn. leakage inductance	Yes	No	-
05	Wobble U_generate to determine magnetizing inductance	Yes	No	-
08	Alternating U_generate to determine dead-time correction	Yes	No	-
09	Alternating U_generate to determine stator resistance	Yes	No	-
10	Alternating U_generate to determine rotor time constant	Yes	No	-
11	Alternating U_generate to determine leakage inductance	Yes	No	-
12	Alternating U_generate to determine dyn. leakage inductance	Yes	No	-
13	Alternating U_generate to determine magnetizing inductance	Yes	No	-

r3930[0...4] Power unit EEPROM characteristics / PU characteristics

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the characteristics (A5E number and versions) of the power unit.

[0]: A5E number xxxx (A5Exxxxyyyy)

[1]: A5E number yyyy (A5Exxxxyyyy)

[2]: File version (logistic)

[3]: File version (fixed data)

[4]: File version (calib data)

p3950 Service parameter / Serv. par.

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: C, U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: For service personnel only.

r3960[0...1] Control Unit temperature measured / CU temp measured

CU240E-2
CU240E-2 DP
CU240E-2 DP F
CU240E-2 F

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2006	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Displays the measured Control Unit temperature.

An appropriate message is output when 87 °C is exceeded.

Index: [0] = Temperature actual
[1] = Temperature maximum

Dependency: Refer to: A01009

Note: The value of -200 indicates that there is no measuring signal.

Re r3960[0]:

Displays the currently measured Control Unit temperature.

Re r3960[1]:

Displays the highest measured Control Unit temperature. This value is saved on the module in a non-volatile fashion.

r3974 Drive unit status word / Drv_unit ZSW

Access level: 1	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status word for the drive unit.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Software reset active	Yes	No	-
01	Writing of parameters disabled as parameter save in progress	Yes	No	-
02	Writing of parameters disabled as macro is running	Yes	No	-

r3978 BICO CounterDevice / BICO CounterDevice

Access level: 4	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the counter reading for modified BICO interconnections on this device.

The counter is incremented by one for each modified BICO interconnection.

p3981 Faults, acknowledge drive object / Faults ackn DO

Access level: 3	**Calculated:** -	**Data type:** Unsigned8
Can be changed: U, T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	1	0

Description: Setting to acknowledge all active faults of a drive object.

Note: Parameter should be set from 0 to 1 to acknowledge.

After acknowledgement, the parameter is automatically reset to 0.

p3985 Master control mode selection / PcCtrl mode select

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: U, T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min 0	**Max** 1	**Factory setting** 0

Description: Sets the mode to change over the master control / LOCAL mode.

Value:
0: Change master control for STW1.0 = 0
1: Change master control in operation

Danger: When changing the master control in operation, the drive can manifest undesirable behavior - e.g. it can accelerate up to another setpoint.

r3986 Parameter count / Parameter No.

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min -	**Max** -	**Factory setting** -

Description: Displays the number of parameters for this drive unit.

The number comprises the device-specific and the drive-specific parameters.

Dependency: Refer to: r0980, r0981, r0989

r3988[0...1] Boot state / Boot_state

Access level: 4	**Calculated:** -	**Data type:** Integer16
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	800	-

Description: Index 0:

Displays the boot state.

Index 1:

Displays the partial boot state

Value:

0: Not active
1: Fatal fault
10: Fault
20: Reset all parameters
30: Drive object modified
40: Download using commissioning software
50: Parameter download using commissioning software
90: Reset Control Unit
100: Start initialization
101: Only for internal Siemens use
110: Instantiate Control Unit basis
111: Insert drive object
112: Only for internal Siemens use
113: Only for internal Siemens use
114: Only for internal Siemens use
115: Parameter download using commissioning software
117: Only for internal Siemens use
150: Wait until Power Module is determined
160: Evaluate Power Module
170: Instantiate Control Unit reset
180: Only for internal Siemens use
200: First commissioning
210: Create drive packages
250: Wait for fault acknowledge
325: Wait for input of drive type
350: Determine drive type
360: Only for internal Siemens use
370: Wait until p0010 is set to 0
380: Only for internal Siemens use
550: Call conversion functions for parameter
625: Wait for non-cyclic start
650: Start cyclic operation
660: Evaluate drive commissioning status
670: Only for internal Siemens use
680: Only for internal Siemens use
690: Wait for non-cyclic start
700: Save parameters
725: Wait for cyclic
740: Check the ability to operate
745: Start cyclic calculations
750: Interrupt enable
800: Initialization finished

Index:

[0] = System
[1] = Partial boot

r3996 Parameter write inhibit status / Par_write inhib st

Access level: 3	**Calculated:** -	**Data type:** Unsigned8
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays whether writing to parameters is inhibited.
r3996 = 0:
Parameter write not inhibited.
0 < r3996 < 100:
Parameter write inhibited. The value shows how the calculations are progressing.

r7760 Write protection status / Write prot stat

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status for write protection of adjustable parameters.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Write protection active			-

Note: Write protection can be activated/deactivated via p7760 on the Control Unit.

p7761 Write protection / Write protection

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: U, T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	1	0

Description: Setting for activating/de-activating the write protection for adjustable parameters.

Value:
0: Inactive
1: Active

Note: The following parameters are excluded from the write protection:
- p0003 (BOP access level)
- p0971 (drive object save parameters)
- p0977 (save all parameters)
- p3950 (service parameters)
- p3981 (acknowledge fault, drive object)
- p7760 (adjustable parameters write protection)

r7841[0...15] Power Module serial number / PM serial no.

Access level: 4	**Calculated:** -	**Data type:** Unsigned8
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the actual serial number of the Power Module.
The individual characters of the serial number are displayed in the ASCII code in the indices.

Notice: An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.

r7843[0...20] Memory card serial number / Mem_card ser.no

Access level: 4	**Calculated:** -	**Data type:** Unsigned8
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the actual serial number of the memory card.
The individual characters of the serial number are displayed in the ASCII code in the indices.

Notice: An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.

Note: Example: displaying the serial number for a memory card:
r7843[0] = 49 dec --> ASCII characters = "1" --> serial number, character 1
r7843[1] = 49 dec --> ASCII characters = "1" --> serial number, character 2
r7843[2] = 49 dec --> ASCII characters = "1" --> serial number, character 3
r7843[3] = 57 dec --> ASCII characters = "9" --> serial number, character 4
r7843[4] = 50 dec --> ASCII characters = "2" --> serial number, character 5
r7843[5] = 51 dec --> ASCII characters = "3" --> serial number, character 6
r7843[6] = 69 dec --> ASCII characters = "E" --> serial number, character 7
r7843[7] = 0 dec --> ASCII characters = " " --> serial number, character 8
...
r7843[19] = 0 dec --> ASCII characters = " " --> serial number, character 20
r7843[20] = 0 dec
Serial number = 111923E

r7901[0...43] Sampling times / t_sample

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
- [µs]	- [µs]	- [µs]

Description: Displays the sampling times currently present on the drive unit.
For r7901[x] = 0, the following applies: The time slice is not active.

r7903 Hardware sampling times still cannot be assigned / HW t_samp free

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the number of hardware sampling times that can still be assigned.
These free sampling times can be used by OA applications such as DCC (Drive Control Chart) or FBLOCKS (free function blocks).

Note: OA: Open Architecture

r8570[0...39] Macro drive object / Macro DO

Access level: 1	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the macro file saved in the appropriate directory on the memory card/device memory.

Dependency: Refer to: p0015

Note: For a value = 9999999, the following applies: The read operation is still running.

r8571[0...39] Macro Binector Input (BI) / Macro BI

Access level: 4 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the ACX file saved in the appropriate directory in the non-volatile memory.

Dependency: Refer to: p0700

Note: For a value = 9999999, the following applies: The read operation is still running.

r8572[0...39] Macro Connector Inputs (CI) for speed setpoints / Macro CI n_set

Access level: 4 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the ACX file saved in the appropriate directory in the non-volatile memory.

Dependency: Refer to: p1000

Note: For a value = 9999999, the following applies: The read operation is still running.

r8573[0...39] Macro Connector Inputs (CI) for torque setpoints / Macro CI M_set

Access level: 4 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the ACX file saved in the appropriate directory in the non-volatile memory.

Dependency: Refer to: p1500

Note: For a value = 9999999, the following applies: The read operation is still running.

r8585 Macro execution actual / Macro executed

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the macro currently being executed on the drive object.

Dependency: Refer to: p0015, p0700, p1000, p1500, r8570, r8571, r8572, r8573

p8991 USB memory access / USB memory

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
1	2	1

Description: Selects the storage medium for access via the USB mass storage.

Value:
1: Memory card
2: Flash r/w internal

Note: A change only becomes effective after a POWER ON.

The parameter is not influenced by setting the factory setting.

p8999 USB functionality / USB functionality

Access level: 4 | **Calculated:** - | **Data type:** Integer16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
1	3	3

Description: Selecting the USB functionality.

Value:
1: USS commissioning via the virtual COM port
2: Only memory access
3: USB commissioning and memory access

Note: COMM: Commissioning.

A change only becomes effective after a POWER ON.

The parameter is not influenced by setting the factory setting.

p9301 SI Motion enable safety functions (processor 2) / SI Mtn enable P2

PM240
PM250
PM260
CU240E-2 DP F

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: C(95) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin

Description: Sets the enable signals for the safe motion monitoring.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Enable SLS	Enable	Inhibit	-
16	Enable SSM hysteresis and filtering	Enable	Inhibit	2860
17	Enable SDI	Enable	Inhibit	2861
30	Enable F-DI in PROFIsafe telegram 900	Enable	Inhibit	-

Dependency: Refer to: p9501

Refer to: F01682, F01683

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: For bit 30 = 1, PROFIsafe telegram 900 must be configured in the F host.

A change only becomes effective after a POWER ON.

F-DI: Failsafe Digital Input

SDI: Safe Direction (safe motion direction)

SLS: Safely-Limited Speed

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

p9301 SI Motion enable safety functions (processor 2) / SI Mtn enable P2

PM240
PM250
PM260
CU240E-2 F

Access level: 3 **Calculated:** - **Data type:** Unsigned32
Can be changed: C(95) **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin

Description: Sets the enable signals for the safe motion monitoring.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Enable SLS	Enable	Inhibit	-
17	Enable SDI	Enable	Inhibit	2861

Dependency: Refer to: p9501
Refer to: F01682, F01683

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: For bit 30 = 1, PROFIsafe telegram 900 must be configured in the F host.
A change only becomes effective after a POWER ON.
F-DI: Failsafe Digital Input
SDI: Safe Direction (safe motion direction)
SLS: Safely-Limited Speed
SSM: Safe Speed Monitor (safety-relevant feedback signal from the velocity monitoring)

p9306 SI Motion function specification (processor 2) / SI Mtn fct spec P2

CU240E-2 DP F
CU240E-2 F

Access level: 3 **Calculated:** - **Data type:** Integer16
Can be changed: C(95) **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
1	3	1

Description: Sets the function specification for the safe motion monitoring.

Value:
1: Safety without encoder
3: Safety without encoder with accel_monitoring/delay time

Dependency: Refer to: C30711

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

p9307 SI Motion function configuration (processor 2) / SI Mtn config P2

PM240
PM250
PM260
CU240E-2 DP F
CU240E-2 F

Access level: 3 **Calculated:** - **Data type:** Unsigned32
Can be changed: C(95) **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	0011 bin

Description: Sets the function configuration for safe motion monitoring.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Extended message acknowledgement	Yes	No	-
01	Setpoint velocity limit for STOP F	No	Yes	-

Dependency: Refer to: C01711

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: Re bit 00:
When the function is activated, a safety-relevant acknowledgement (internal event acknowledge) can be performed by selecting/deselecting STO.
Re bit 01:
When the function is activated, the active setpoint velocity limit (CO: r9733) is set to zero when STOP F is active.

p9309 SI Motion behavior during pulse suppression (processor 2) / SI Mtn behav IL P2

PM240	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned32
PM250	**Can be changed:** C(95)	**Scaling:** -	**Data set:** -
PM260	**Units group:** -	**Unit selection:** -	
CU240E-2 DP F			
	Min	**Max**	**Factory setting**
	-	-	0000 0000 1111 1111 bin

Description: Sets the behavior of safety functions and their feedback during pulse suppression in encoderless operation.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	SSM during pulse suppression and sensor-less	Becomes inactive	Remains active	-
08	SDI during pulse suppression and sensor-less	Becomes inactive	Remains active	-

Dependency: Refer to: C01711

Note: SDI: Safe Direction (safe motion direction)

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

Re bit 00:

For bit = 1 and with the SSM safety function activated, the following applies:

- During pulse suppression, monitoring is switched off and the feedback signal has a 0 signal level.

For bit = 0 and with the SSM safety function activated, the following applies:

- Monitoring continues during pulse suppression. The feedback signal last displayed before pulse suppression is kept and the system goes into the STO state.

Re bit 08:

For bit = 1 and with the SDI safety function activated, the following applies:

- During pulse suppression, monitoring is switched off and the status signal indicates inactive.

For bit = 0 and with the SDI safety function activated, the following applies:

- Monitoring continues during pulse suppression. The status signal indicates active and the system goes into the STO state.

p9309 SI Motion behavior during pulse suppression (processor 2) / SI Mtn behav IL P2

PM240	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned32
PM250	**Can be changed:** C(95)	**Scaling:** -	**Data set:** -
PM260	**Units group:** -	**Unit selection:** -	
CU240E-2 F			
	Min	**Max**	**Factory setting**
	-	-	0000 0000 1111 1111 bin

Description: Sets the behavior of safety functions and their feedback during pulse suppression in encoderless operation.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
08	SDI during pulse suppression and sensor-less	Becomes inactive	Remains active	-

Dependency: Refer to: C01711

Note: SDI: Safe Direction (safe motion direction)

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

Re bit 00:

For bit = 1 and with the SSM safety function activated, the following applies:

- During pulse suppression, monitoring is switched off and the feedback signal has a 0 signal level.

For bit = 0 and with the SSM safety function activated, the following applies:

- Monitoring continues during pulse suppression. The feedback signal last displayed before pulse suppression is kept and the system goes into the STO state.

Re bit 08:

For bit = 1 and with the SDI safety function activated, the following applies:

- During pulse suppression, monitoring is switched off and the status signal indicates inactive.

For bit = 0 and with the SDI safety function activated, the following applies:

- Monitoring continues during pulse suppression. The status signal indicates active and the system goes into the STO state.

p9321[0...7] SI Motion gearbox motor/load denominator (processor 2) / SI Mtn gear den P2

CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: C(95) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
1	2147000000	1

Description: Sets the denominator for the gearbox between the motor and the load.

Index:
[0] = Gearbox 1
[1] = Gearbox 2
[2] = Gearbox 3
[3] = Gearbox 4
[4] = Gearbox 5
[5] = Gearbox 6
[6] = Gearbox 7
[7] = Gearbox 8

Dependency: Refer to: p9322

Notice: It is not possible to change over the gearbox stages. Gearbox 1 (index 0) is always active.

p9322[0...7] SI Motion gearbox motor/load numerator (processor 2) / SI Mtn gear num P2

CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: C(95) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
1	2147000000	1

Description: Sets the numerator for the gearbox between the motor and the load.

Index:
[0] = Gearbox 1
[1] = Gearbox 2
[2] = Gearbox 3
[3] = Gearbox 4
[4] = Gearbox 5
[5] = Gearbox 6
[6] = Gearbox 7
[7] = Gearbox 8

Dependency: Refer to: p9321

Notice: It is not possible to change over the gearbox stages. Gearbox 1 (index 0) is always active.

Note: In the case of encoderless monitoring functions, the pole pair number must be multiplied by the numerator of the gearbox ratio.

Example:

Gearbox ratio 1:4, pole pair number (r0313) = 2

--> p9321 = 1, p9322 = 8 (4 x 2)

p9331[0...3] SI Motion SLS limit values (processor 2) / SI Mtn SLS lim P2

CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: C(95) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.01 [rpm]	100000.00 [rpm]	2000.00 [rpm]

Description: Sets the limit values for the function "Safely-Limited Speed" (SLS).

Index:
[0] = Limit value SLS1
[1] = Limit value SLS2
[2] = Limit value SLS3
[3] = Limit value SLP4

Dependency: Refer to: p9363, p9531

Refer to: C01714

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: SLS: Safely-Limited Speed

p9342 SI Motion act. val. comparison tolerance (crossw.) (processor 2) / SI Mtn actV tol P2

CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: C(95) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.0010 [°]	360.0000 [°]	12.0000 [°]

Description: Sets the tolerance for the cross-check of the actual position between processor 1 and processor 2.

Dependency: Refer to: p9542
Refer to: C01711

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

p9345 SI Motion SSM filter time (processor 2) / SI Mtn SSM filt P2

PM240
PM250
PM260
CU240E-2 DP F

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: C(95) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.00 [µs]	100000.00 [µs]	0.00 [µs]

Description: Sets the filter time for the SSM feedback signal to detect standstill.

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: The filter time is effective only if the function is enabled (p9301.16 = p9501.16 = 1).
The parameter is included in the crosswise data comparison of the two monitoring channels.
SSM: Safe Speed Monitor (safety-relevant feedback signal from the velocity monitoring)

p9346 SI Motion SSM velocity limit (processor 2) / SI Mtn SSM v_limP2

CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: C(95) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.00 [rpm]	100000.00 [rpm]	20.00 [rpm]

Description: Sets the velocity limit for the SSM feedback signal to detect standstill (n < nx).
When this limit value is undershot, the signal "SSM feedback signal active" is set.

Dependency: Refer to: p9546

Caution: The following applies for p9306 = 3:
The "SAM" function is switched out if the selected threshold value is undershot.

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: SAM: Safe Acceleration Monitor (safe acceleration monitoring)
SSM: Safe Speed Monitor (safety-relevant feedback signal from the velocity monitoring)

p9347 SI Motion SSM velocity hysteresis (processor 2) / SI Mtn SSM Hyst P2

CU240E-2 DP F

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: C(95) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.0010 [rpm]	500.0000 [rpm]	10.0000 [rpm]

Description: Sets the velocity hysteresis for the SSM feedback signal to detect standstill (n < nx).

Dependency: Refer to: C01711

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: The velocity hysteresis is effective only if the function is enabled (p9301.16 = p9501.16 = 1).
The parameter is included in the crosswise data comparison of the two monitoring channels.
SSM: Safe Speed Monitor (safety-relevant feedback signal from the velocity monitoring)

p9348 SI Motion SAM actual velocity tolerance (Motor Module) / SI Mtn SAM tol MM

CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: C(95) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.00 [rpm]	120000.00 [rpm]	300.00 [rpm]

Description: Sets the velocity tolerance for the "SAM" function.

Dependency: Refer to: p9548
Refer to: C01706

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: SAM: Safe Acceleration Monitor (safe acceleration monitoring)

p9351 SI Motion SLS changeover delay time (processor 2) / SI Mtn SLS t P2

CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: C(95) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.00 [µs]	600000000.00 [µs]	100000.00 [µs]

Description: Sets the delay time for the SLS changeover for the function "safely limited speed" (SLS).
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 non safety-related operation, then this delay is still applied.

Dependency: Refer to: p9551

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: SLS: Safely-Limited Speed

p9356 SI Motion pulse suppression delay time (processor 2) / SI Mtn IL t_del P2

CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: C(95) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.00 [µs]	600000000.00 [µs]	600000000.00 [µs]

Description: Sets the delay time for the safe pulse suppression after STOP B / SS1.
In the case of encoderless motion monitoring functions with brake ramp monitoring (p9306 = 1), the parameter has no effect.

Dependency: Refer to: p9360, p9556
Refer to: C01701

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: SS1: Safe Stop 1

p9358 SI Motion acceptance test mode time limit (processor 2) / SI Mtn acc t P2

CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: C(95) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
5000000.00 [µs]	100000000.00 [µs]	40000000.00 [µs]

Description: Sets the maximum time for the acceptance test mode.
If the acceptance test mode takes longer than the selected time limit, then the mode is automatically terminated.

Dependency: Refer to: p9558
Refer to: C01799

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

p9360 SI Motion pulse suppression shutdown speed (processor 2) / SI Mtn IL n_sh P2

CU240E-2 DP F
CU240E-2 F

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(95)	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min 10.00 [rpm]	**Max** 6000.00 [rpm]	**Factory setting** 10.00 [rpm]

Description: Sets the shutdown speed for the pulse suppression.

Below this speed "standstill" is assumed and for STOP B / SS1, the pulses are suppressed (by changing to STOP A).

Dependency: Refer to: p9356, p9560

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: SS1: Safe Stop 1

p9363[0...3] SI Motion SLS stop response (processor 2) / SI Mtn SLS stop P2

CU240E-2 DP F
CU240E-2 F

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: C(95)	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min 0	**Max** 1	**Factory setting** 0

Description: Sets the stop response for the function "Safely-Limited Speed" (SLS).

These settings apply to the individual limit values for SLS.

Value:
0: STOP A
1: STOP B

Index:
[0] = Limit value SLS1
[1] = Limit value SLS2
[2] = Limit value SLS3
[3] = Limit value SLP4

Dependency: Refer to: p9331, p9563

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: SLS: Safely-Limited Speed

p9364 SI Motion SDI tolerance (processor 2) / SI Mtn SDI tol P2

CU240E-2 DP F
CU240E-2 F

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(95)	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min 0.001 [°]	**Max** 360.000 [°]	**Factory setting** 12.000 [°]

Description: Sets the tolerance for the function "Safe motion direction" (SDI). This motion in the monitored direction is still permissible before an alarm is initiated.

Dependency: Refer to: p9365, p9366

Refer to: C30716

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive. Sets the tolerance for the function "Safe motion direction" (SDI).

Note: SDI: Safe Direction (safe motion direction)

p9365 SI Motion SDI delay time (processor 2) / SI Mtn SDI t P2

CU240E-2 DP F
CU240E-2 F

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: C(95) **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
0.00 [µs]	600000000.00 [µs]	100000.00 [µs]

Description: Sets the delay time for the function "Safe motion direction" (SDI). When selecting the SDI function, motion in the monitored direction is permissible as a maximum for this time; this means that this time can be used for braking existing motion.

Dependency: Refer to: p9364, p9366

Refer to: C30716

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: SDI: Safe Direction (safe motion direction)

p9366 SI Motion SDI stop response (processor 2) / SI Mtn SDI Stop P2

CU240E-2 DP F
CU240E-2 F

Access level: 3 **Calculated:** - **Data type:** Integer16
Can be changed: C(95) **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
0	1	1

Description: Sets the stop response for the function "Safe motion direction" (SDI).

This setting applies to both directions of motion.

Value:
0: STOP A
1: STOP B

Dependency: Refer to: p9364, p9365

Refer to: C30716

Note: SDI: Safe Direction (safe motion direction)

p9368 SI Motion SAM velocity limit (processor 2) / SI Mtn SAM v_limP2

CU240E-2 DP F
CU240E-2 F

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: C(95) **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
0.00 [rpm]	1000.00 [rpm]	0.00 [rpm]

Description: Sets the velocity tolerance limit for the "SAM" function.

SAM is de-activated once the set velocity limit has been undershot.

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: SAM: Safe Acceleration Monitor (safe acceleration monitoring)

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

For p9568 = p9368 = 0, the following applies:

The value in p9546/p9346 (SSM) is applied as the velocity limit for SAM.

p9370 SI Motion acceptance test mode (processor 2) / SI Mtn acc_mod P2

CU240E-2 DP F
CU240E-2 F

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: U, T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0000 hex	00AC hex	0000 hex

Description: Setting to select and de-select the acceptance test mode.

Value:
0: [00 hex] De-select the acceptance test mode
172: [AC hex] Select the acceptance test mode

Dependency: Refer to: p9358, r9371

Refer to: C01799

Note: Acceptance test mode can only be selected if the motion monitoring functions, which are integrated in the drives, are enabled (p9601.2/p9801.2).

r9371 SI Motion acceptance test status (processor 2) / SI Mtn acc_stat P2

CU240E-2 DP F
CU240E-2 F

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0000 hex	00AC hex	-

Description: Displays the status of the acceptance test mode.

Value:
0: [00 hex] Acc_mode inactive
12: [0C hex] Acc_mode not possible due to POWER ON fault
13: [0D hex] Acc_mode not possible due to incorrect ID in p9370
15: [0F hex] Acc_mode not possible due to expired Acc_timer
172: [AC hex] Acc_mode active

Dependency: Refer to: p9358, p9370

Refer to: C01799

p9381 SI Motion brake ramp reference value (processor 2) / SI Mtn ramp ref P2

CU240E-2 DP F
CU240E-2 F

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(95)	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
600.0000 [rpm]	24000.0000 [rpm]	1500.0000 [rpm]

Description: Sets the reference value to define the brake ramp.

The rate of rise of the brake ramp depends upon p9381 (reference value) and p9383 (monitoring time).

Dependency: Refer to: p9382, p9383

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

p9382 SI Motion brake ramp delay time (processor 2) / SI Mtn rp t_del P2

CU240E-2 DP F
CU240E-2 F

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(95)	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
10000.00 [µs]	99000000.00 [µs]	250000.00 [µs]

Description: Sets the delay time for monitoring the brake ramp.

Monitoring of the brake ramp starts once the delay time has elapsed.

Dependency: Refer to: p9381, p9383

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

p9383 SI Motion brake ramp monitoring time (processor 2) / SI Mtn rp t_mon P2

CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: C(95) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
500.00 [ms]	1000000.00 [ms]	10000.00 [ms]

Description: Sets the monitoring time to define the brake ramp.
The rate of rise of the brake ramp depends upon p9381 (reference value) and p9383 (monitoring time).

Dependency: Refer to: p9381, p9382

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

p9386 SI Motion delay time of the evaluation sensorless (processor 2) / SI Mtn t_del SL MM

CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: C(95) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
5.00 [ms]	1000.00 [ms]	100.00 [ms]

Description: Sets the evaluation delay for encoderless actual value sensing after pulse enable.
The value should be greater than or equal to the motor magnetizing time.

Dependency: Refer to: C01711

p9387 SI Motion encoderless act val sensing filter time (processor 2) / SI Mtn SL filt P2

CU240E-2 DP F
CU240E-2 F

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: C(95) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.00 [µs]	100000.00 [µs]	25000.00 [µs]

Description: Sets the filter time for smoothing the actual value with sensorless actual value sensing.

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

p9388 SI Motion actual value sensing minimum current (processor 2) / SI Mtn SL I_min P2

CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: C(95) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.00 [%]	1000.00 [%]	10.00 [%]

Description: Sets the minimum current for encoderless actual value sensing in reference to 10 mA (i.e. when 1 % = 10 mA).
- The value must be increased if C30711 has occurred with message value 1042.
- The value must be decreased if C30711 has occurred with message value 1041.

Dependency: Refer to: C30711

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.
Reducing this percentage value can adversely affect actual value sensing.

p9389 SI Motion voltage tolerance acceleration (processor 2) / SI Mtn U tol P2

CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: C(95) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
10.00 [%]	1000.00 [%]	100.00 [%]

Description: Sets the voltage tolerance for suppressing acceleration peaks.

Increasing this percentage value means that voltage peaks will need to have a higher amplitude during acceleration procedures if they are not to affect actual value sensing.

- The value must be increased if C30711 has occurred with message value 1042.
- The value must be lowered if acceleration procedures have led to an excessive Safety actual velocity.

Dependency: Refer to: C30711

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

r9398[0...1] SI Motion actual checksum SI parameters (processor 2) / SI Mtn act CRC P2

CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the checksum over the checked Safety Integrated parameters of the motion monitoring functions (actual checksum) on processor 2.

Index: [0] = Checksum over SI parameters for motion monitoring
[1] = Checksum over SI parameters with hardware reference

Dependency: Refer to: p9399

p9399[0...1] SI Motion setpoint checksum SI parameters (processor 2) / SI Mtn setp CRC P2

CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: C(95) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the checksum over the checked Safety Integrated parameters of the motion monitoring functions (actual checksum) on processor 2.

Index: [0] = Checksum over SI parameters for motion monitoring
[1] = Checksum over SI parameters with hardware reference

Dependency: Refer to: r9398

p9400 Safely remove memory card / Mem_card rem

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	100	0

Description: Setting and display when memory card is "removed safely".

Procedure:

Setting p9400 = 2 results in a value of 3

--> The memory card can be removed safely. After removal the value sets itself to 0 automatically.

Setting p9400 = 2 results in a value of 100

--> The memory card cannot be removed safely. Removal may destroy the file system on the memory card. It may be necessary to set p9400 = 2 again.

Value:
0: No memory card inserted
1: Memory card inserted
2: Request "safe removal" of the memory card
3: "Safe removal" possible
100: "Safe removal" not possible due to access

Dependency: Refer to: r9401

Caution: Removing the memory card without a request (p9400 = 2) and confirmation (p9400 = 3) may destroy the file system on the memory card. The memory card will then no longer work properly and must be repaired.

Note: The status when the memory card is being "removed safely" is shown in r9401.

Re value = 0, 1, 3, 100:

These values can only be displayed, not set.

r9401 Safely remove memory card status / Mem_card rem stat

Access level: 2	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status of the memory card.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Memory card inserted	Yes	No	-
01	Memory card activated	Yes	No	-

Dependency: Refer to: p9400

Note: Re bit 00 and bit 01:

Bit 1/0 = 0/0: No memory card inserted (corresponds to p9400 = 0).

Bit 1/0 = 0/1: "Safe removal" possible (corresponds to p9400 = 3).

Bit 1/0 = 1/0: Status not possible.

Bit 1/0 = 1/1: Memory card inserted (corresponds to p9400 = 1, 2, 100).

r9406[0...19] PS file parameter number parameter not transferred / PS par_no n transf

Access level: 4	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the parameters that were not able to be transferred when reading the parameter back-up files (PS files) from the non-volatile memory (e.g. memory card).

r9406[0] = 0

--> All of the parameter values were able to be transferred error-free.

r9406[0...x] > 0

--> indicates the parameter number in the following cases:

- parameter, whose value was not able to be completely accepted.
- indexed parameter, where at least 1 index was not able to be accepted. The first index that is not transferred is displayed in r9407.

Dependency: Refer to: r9407, r9408

Note: All indices from r9406 to r9408 designate the same parameter.

r9406[x] parameter number, parameter not accepted

r9407[x] parameter index, parameter not accepted

r9408[x] fault code, parameter not accepted

r9407[0...19] PS file parameter index parameter not transferred / PS parameter index

Access level: 4	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the first index of the parameters that could not be transferred when the parameter backup files (PS files) were read from the non-volatile memory (e.g. memory card).

If, from an indexed parameter, at least one index was not able to be transferred, then the parameter number is displayed in r9406[n] and the first index that was not transferred is displayed in r9407[n].

r9406[0] = 0

--> All of the parameter values were able to be transferred error-free.

r9406[n] > 0

--> Displays r9407[n] the first index of the parameter number r9406[n] that was not transferred.

Dependency: Refer to: r9406, r9408

Note: All indices from r9406 to r9408 designate the same parameter.

r9406[x] parameter number, parameter not accepted

r9407[x] parameter index, parameter not accepted

r9408[x] fault code, parameter not accepted

r9408[0...19] PS file fault code parameter not transferred / PS fault code

Access level: 4	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Only for internal Siemens service purposes.

Dependency: Refer to: r9406, r9407

Note: All indices from r9406 to r9408 designate the same parameter.

r9406[x] parameter number, parameter not accepted

r9407[x] parameter index, parameter not accepted

r9408[x] fault code, parameter not accepted

r9409 Number of parameters to be saved / Qty par to save

Access level: 4	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the number of modified parameters and those that have still not be saved for this drive object.

Dependency: Refer to: p0971

Note: The modified parameters that still need to be saved are internally listed in r9410 ... r9419.

r9451[0...29] Units changeover adapted parameters / Unit_chngov par

Access level: 4	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the parameters whose parameter would have to be changed during a units changeover.

Dependency: Refer to: F07088

r9463 Set valid macro /

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	999999	-

Description: Displays the valid macro.

A value of 0 is displayed if a parameter set by a macro is changed.

p9484 BICO interconnections search signal source / BICO S_src srch

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: U, T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	4294967295	0

Description: Sets the signal source (BO/CO parameter, BICO coded) to search in the signal sinks.

The signal source to be searched for is set in p9484 (BICO-coded) and the search result is specified using the number (r9485) and the first index (r9486).

Dependency: Refer to: r9485, r9486

r9485 BICO interconnections signal source search count / BICO S_src srchQty

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the number of BICO interconnections to the signal sink being searched for.

Dependency: Refer to: p9484, r9486

Note: The signal source to be searched is set in p9484 (BICO-coded).

The search result is contained in r9482 and r9483 and is specified by the count (r9485) and the first index (r9486).

r9486 BICO interconnections signal source search first index / BICO S_src srchIdx

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the first index of the signal source being searched for.

The signal source to be searched for is set in p9484 (BICO-coded) and the search result is specified using the number (r9485) and the first index (r9486).

Dependency: Refer to: p9484, r9485

Note: The signal source to be searched is set in p9484 (BICO-coded).

The search result is contained in r9482 and r9483 and is specified by the count (r9485) and the first index (r9486).

p9501 SI Motion enable safety functions (processor 1) / SI Mtn enable P1

PM240
PM250
PM260
CU240E-2 DP F

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: C(95) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin

Description: Sets the enable signals for the safe motion monitoring.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Enable SLS	Enable	Inhibit	-
16	Enable SSM hysteresis and filtering	Enable	Inhibit	2860
17	Enable SDI	Enable	Inhibit	2861
30	Enable F-DI in PROFIsafe telegram 900	Enable	Inhibit	-

Dependency: Refer to: F01682, F01683

Note: For bit 30 = 1, PROFIsafe telegram 900 must be configured in the F host.

A change only becomes effective after a POWER ON.

F-DI: Failsafe Digital Input

SDI: Safe Direction (safe motion direction)

SLS: Safely-Limited Speed

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

p9501 SI Motion enable safety functions (processor 1) / SI Mtn enable P1

PM240
PM250
PM260
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: C(95) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin

Description: Sets the enable signals for the safe motion monitoring.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Enable SLS	Enable	Inhibit	-
17	Enable SDI	Enable	Inhibit	2861

Dependency: Refer to: F01682, F01683

Note: For bit 30 = 1, PROFIsafe telegram 900 must be configured in the F host.

A change only becomes effective after a POWER ON.

F-DI: Failsafe Digital Input

SDI: Safe Direction (safe motion direction)

SLS: Safely-Limited Speed

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

p9506 SI Motion function specification (processor 1) / SI Mtn fct_spc P1

CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: C(95) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
1	3	1

Description: Sets the function specification for the safe motion monitoring.

Value:
1: Safety without encoder
3: Safety without encoder with accel_monitoring/delay time

Dependency: Refer to: C01711

p9507 SI Motion function configuration (processor 1) / SI Mtn config P1

PM240
PM250
PM260
CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: C(95) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0011 bin

Description: Sets the function configuration for safe motion monitoring.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Extended message acknowledgement	Yes	No	-
01	Setpoint velocity limit for STOP F	No	Yes	-

Dependency: Refer to: C01711

Note: Re bit 00:

When the function is activated, a safety-relevant acknowledgement (internal event acknowledge) can be performed by selecting/deselecting STO.

Re bit 01:

When the function is activated, the active setpoint velocity limit (CO: r9733) is set to zero when STOP F is active.

p9509 SI Motion behavior during pulse suppression (processor 1) / SI Mtn behav IL P1

PM240	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned32
PM250	**Can be changed:** C(95)	**Scaling:** -	**Data set:** -
PM260	**Units group:** -	**Unit selection:** -	
CU240E-2 DP F			
	Min	**Max**	**Factory setting**
	-	-	0000 0000 1111 1111 bin

Description: Sets the behavior of safety functions and their feedback during pulse suppression in encoderless operation.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	SSM during pulse suppression and sensorless	Becomes inactive	Remains active	-
08	SDI during pulse suppression and sensorless	Becomes inactive	Remains active	-

Dependency: Refer to: C01711

Note: SDI: Safe Direction (safe motion direction)

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

Re bit 00:

For bit = 1 and with the SSM safety function activated, the following applies:

- During pulse suppression, monitoring is switched off and the feedback signal has a 0 signal level.

For bit = 0 and with the SSM safety function activated, the following applies:

- Monitoring continues during pulse suppression. The feedback signal last displayed before pulse suppression is kept and the system goes into the STO state.

Re bit 08:

For bit = 1 and with the SDI safety function activated, the following applies:

- During pulse suppression, monitoring is switched off and the status signal indicates inactive.

For bit = 0 and with the SDI safety function activated, the following applies:

- Monitoring continues during pulse suppression. The status signal indicates active and the system goes into the STO state.

p9509 SI Motion behavior during pulse suppression (processor 1) / SI Mtn behav IL P1

PM240	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned32
PM250	**Can be changed:** C(95)	**Scaling:** -	**Data set:** -
PM260	**Units group:** -	**Unit selection:** -	
CU240E-2 F			
	Min	**Max**	**Factory setting**
	-	-	0000 0000 1111 1111 bin

Description: Sets the behavior of safety functions and their feedback during pulse suppression in encoderless operation.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
08	SDI during pulse suppression and sensorless	Becomes inactive	Remains active	-

Dependency: Refer to: C01711

Note: SDI: Safe Direction (safe motion direction)

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

Re bit 00:

For bit = 1 and with the SSM safety function activated, the following applies:

- During pulse suppression, monitoring is switched off and the feedback signal has a 0 signal level.

For bit = 0 and with the SSM safety function activated, the following applies:

- Monitoring continues during pulse suppression. The feedback signal last displayed before pulse suppression is kept and the system goes into the STO state.

Re bit 08:

For bit = 1 and with the SDI safety function activated, the following applies:

- During pulse suppression, monitoring is switched off and the status signal indicates inactive.

For bit = 0 and with the SDI safety function activated, the following applies:

- Monitoring continues during pulse suppression. The status signal indicates active and the system goes into the STO state.

p9521[0...7] SI Motion gearbox motor/load denominator (processor 1) / SI Mtn gear den P1

CU240E-2 DP F
CU240E-2 F

Access level: 3 **Calculated:** - **Data type:** Unsigned32
Can be changed: C(95) **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
1	2147000000	1

Description: Sets the denominator for the gearbox between the motor and the load.

Index:
[0] = Gearbox 1
[1] = Gearbox 2
[2] = Gearbox 3
[3] = Gearbox 4
[4] = Gearbox 5
[5] = Gearbox 6
[6] = Gearbox 7
[7] = Gearbox 8

Dependency: Refer to: p9522

Notice: It is not possible to change over the gearbox stages. Gearbox 1 (index 0) is always active.

p9522[0...7] SI Motion gearbox motor/load numerator (processor 1) / SI Mtn gear num P1

CU240E-2 DP F
CU240E-2 F

Access level: 3 **Calculated:** - **Data type:** Unsigned32
Can be changed: C(95) **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
1	2147000000	1

Description: Sets the numerator for the gearbox between the motor and the load.

Index:
[0] = Gearbox 1
[1] = Gearbox 2
[2] = Gearbox 3
[3] = Gearbox 4
[4] = Gearbox 5
[5] = Gearbox 6
[6] = Gearbox 7
[7] = Gearbox 8

Dependency: Refer to: p9521

Notice: It is not possible to change over the gearbox stages. Gearbox 1 (index 0) is always active.

Note: In the case of encoderless monitoring functions, the pole pair number must be multiplied by the numerator of the gearbox ratio.

Example:

Gearbox ratio 1:4, pole pair number (r0313) = 2

--> p9521 = 1, p9522 = 8 (4 x 2)

p9531[0...3] SI Motion SLS limit values (processor 1) / SI Mtn SLS lim P1

CU240E-2 DP F
CU240E-2 F

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: C(95) **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
0.01 [rpm]	100000.00 [rpm]	2000.00 [rpm]

Description: Sets the limit values for the function "Safely-Limited Speed" (SLS).

Index:
[0] = Limit value SLS1
[1] = Limit value SLS2
[2] = Limit value SLS3
[3] = Limit value SLP4

Dependency: Refer to: p9563
Refer to: C01714

Note: SLS: Safely-Limited Speed

p9533 SI Motion SLS setpoint speed limit (processor 1) / SI Mtn SLS set_lim

CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.000 [%]	100.000 [%]	80.000 [%]

Description: This is an evaluation factor to define the setpoint limit from the selected actual speed limit.

The active SLS limit value is evaluated with this factor and is made available as setpoint limit in r9733.

Dependency: This parameter only has to be parameterized for the motion monitoring functions integrated in the drive (p9601.2 = 1)

r9733[0] = p9531[x] x p9533 (converted from the load side to the motor side)

r9733[1] = - p9531[x] x p9533 (converted from the load side to the motor side)

[x] = Selected SLS stage

Conversion factor from the motor side to the load side:

- motor type = rotary and axis type = linear: p9522 / (p9521 x p9520)
- otherwise: p9522 / p9521

Refer to: p9501, p9531, p9601

Note: The active actual speed limit is selected via PROFIsafe.

With STOP A, B, setpoint 0 is specified in r9733.

If p9533 = 0 is set, the setpoint speed limit is de-activated, and r9733[0] = p1082 and r9733[1] = -p1082 are set

SLS: Safely-Limited Speed

p9542 SI Motion act. val. comparison tolerance (crossw.) (processor 1) / SI Mtn act tol P1

CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: C(95) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.0010 [°]	360.0000 [°]	12.0000 [°]

Description: Sets the tolerance for the cross-check of the actual position between processor 1 and processor 2.

Dependency: Refer to: C01711

p9545 SI Motion SSM filter time (processor 1) / SI Mtn SSM filt P1

PM240
PM250
PM260
CU240E-2 DP F

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: C(95) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.00 [ms]	100.00 [ms]	0.00 [ms]

Description: Sets the filter time for the SSM feedback signal to detect standstill.

Note: The filter time is effective only if the function is enabled (p9501.16 = 1).

The parameter is included in the crosswise data comparison of the two monitoring channels.

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

p9546 SI Motion SSM velocity limit (processor 1) / SI Mtn SSM v_limP1

CU240E-2 DP F
CU240E-2 F

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(95)	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0.00 [rpm]	100000.00 [rpm]	20.00 [rpm]

Description: Sets the velocity limit for the SSM feedback signal to detect standstill (n < nx).

When this limit value is undershot, the signal "SSM feedback signal active" is set.

Caution: The following applies for p9506 = 3:

The "SAM" function is switched out if the selected threshold value is undershot.

Note: SAM: Safe Acceleration Monitor (safe acceleration monitoring)

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

p9547 SI Motion SSM velocity hysteresis (processor 1) / SI Mtn SSM hyst P1

CU240E-2 DP F

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(95)	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0.0010 [rpm]	500.0000 [rpm]	10.0000 [rpm]

Description: Sets the velocity hysteresis for the SSM feedback signal to detect standstill (n < nx).

Dependency: Refer to: C01711

Note: The velocity hysteresis is effective only if the function is enabled (p9501.16 = 1).

The parameter is included in the crosswise data comparison of the two monitoring channels.

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

p9548 SI Motion SAM actual velocity tolerance (Control Unit) / SI Mtn SAM tol CU

CU240E-2 DP F
CU240E-2 F

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(95)	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0.00 [rpm]	120000.00 [rpm]	300.00 [rpm]

Description: Sets the velocity tolerance for the "SAM" function.

Dependency: Refer to: C01706

Note: SAM: Safe Acceleration Monitor (safe acceleration monitoring)

p9551 SI Motion SLS changeover delay time (processor 1) / SI Mtn SLS t P1

CU240E-2 DP F
CU240E-2 F

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(95)	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0.00 [ms]	600000.00 [ms]	100.00 [ms]

Description: Sets the delay time for the SLS changeover for the function "safely limited speed" (SLS).

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 non safety-related operation, then this delay is still applied.

Note: SLS: Safely-Limited Speed

p9556 SI Motion pulse suppression delay time (processor 1) / SI Mtn IL t_del P1

CU240E-2 DP F
CU240E-2 F

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: C(95) **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
0.00 [ms]	600000.00 [ms]	600000.00 [ms]

Description: Sets the delay time for the safe pulse suppression after STOP B.

In the case of encoderless motion monitoring functions with brake ramp monitoring (p9506 = 1), the parameter has no effect.

Dependency: Refer to: p9560

Refer to: C01701

p9558 SI Motion acceptance test mode time limit (processor 1) / SI Mtn acc t P1

CU240E-2 DP F
CU240E-2 F

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: C(95) **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
5000.00 [ms]	100000.00 [ms]	40000.00 [ms]

Description: Sets the maximum time for the acceptance test mode.

If the acceptance test mode takes longer than the selected time limit, then the mode is automatically terminated.

Dependency: Refer to: C01799

p9559 SI Motion forced checking procedure timer (processor 1) / SI Mtn dyn timer

CU240E-2 DP F
CU240E-2 F

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: C(95) **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
0.00 [h]	9000.00 [h]	8.00 [h]

Description: Sets the time interval for carrying out the forced checking procedure and testing the safety motion monitoring functions integrated in the drives.

Within the parameterized time, the safety functions must have been tested at least once (including de-selection of the "STO" function).

This monitoring time is reset each time the test is carried out.

The signal source to initiate the forced checking procedure is set in p9705.

Dependency: Refer to: p9705

Refer to: A01697, C01798

Note: STO: Safe Torque Off

p9560 SI Motion pulse suppression shutdown speed (processor 1) / SI Mtn IL v_sh P1

CU240E-2 DP F
CU240E-2 F

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: C(95) **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
10.00 [rpm]	6000.00 [rpm]	10.00 [rpm]

Description: Sets the shutdown speed for the pulse suppression.

Below this speed "standstill" is assumed and for STOP B, the pulses are suppressed by changing to STOP A).

Dependency: Refer to: p9556

p9563[0...3] SI Motion SLS-specific stop response (processor 1) / SI Mtn SLS stop P1

CU240E-2 DP F
CU240E-2 F

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: C(95)	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the SLS-specific stop response for the function "Safely-Limited Speed" (SLS).
These settings apply to the individual limit values for SLS.

Value:
0: STOP A
1: STOP B

Index:
[0] = Limit value SLS1
[1] = Limit value SLS2
[2] = Limit value SLS3
[3] = Limit value SLP4

Dependency: Refer to: p9531

Note: SLS: Safely-Limited Speed

p9564 SI Motion SDI tolerance (processor 1) / SI Mtn SDI tol P1

CU240E-2 DP F
CU240E-2 F

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(95)	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0.001 [°]	360.000 [°]	12.000 [°]

Description: Sets the tolerance for the function "Safe motion direction" (SDI). This motion in the monitored direction is still permissible before an alarm is initiated.

Dependency: Refer to: p9565, p9566
Refer to: C01716

Note: SDI: Safe Direction (safe motion direction)

p9565 SI Motion SDI delay time (processor 1) / SI Mtn SDI t P1

CU240E-2 DP F
CU240E-2 F

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(95)	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0.00 [ms]	600000.00 [ms]	100.00 [ms]

Description: Sets the delay time for the function "Safe motion direction" (SDI). When selecting the SDI function, motion in the monitored direction is permissible as a maximum for this time; this means that this time can be used for braking existing motion.

Dependency: Refer to: p9564, p9566
Refer to: C01716

Note: SDI: Safe Direction (safe motion direction)

p9566 SI Motion SDI stop response (processor 1) / SI Mtn SDI Stop P1

CU240E-2 DP F
CU240E-2 F

Access level: 3 **Calculated:** - **Data type:** Integer16

Can be changed: C(95) **Scaling:** - **Data set:** -

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

Min	Max	Factory setting
0	1	1

Description: Sets the stop response for the function "Safe motion direction" (SDI).

This setting applies to both directions of motion.

Value:
0: STOP A
1: STOP B

Dependency: Refer to: p9564, p9565

Refer to: C01716

Note: SDI: Safe Direction (safe motion direction)

p9568 SI Motion SAM velocity limit (processor 1) / SI Mtn SAM v_limP1

CU240E-2 DP F
CU240E-2 F

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32

Can be changed: C(95) **Scaling:** - **Data set:** -

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

Min	Max	Factory setting
0.00 [rpm]	1000.00 [rpm]	0.00 [rpm]

Description: Sets the velocity tolerance limit for the "SAM" function.

SAM is de-activated once the set velocity limit has been undershot.

Note: SAM: Safe Acceleration Monitor (safe acceleration monitoring)

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

For p9568 = p9368 = 0, the following applies:

The value in p9546/p9346 (SSM) is applied as the velocity limit for SAM.

p9570 SI Motion acceptance test mode (processor 1) / SI Mtn acc_mod P1

CU240E-2 DP F
CU240E-2 F

Access level: 3 **Calculated:** - **Data type:** Integer16

Can be changed: U, T **Scaling:** - **Data set:** -

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

Min	Max	Factory setting
0000 hex	00AC hex	0000 hex

Description: Setting to select and de-select the acceptance test mode.

Value:
0: [00 hex] De-select the acceptance test mode
172: [AC hex] Select the acceptance test mode

Dependency: Refer to: p9558, r9571, p9601

Refer to: C01799

Note: Acceptance test mode can only be selected if the motion monitoring functions, which are integrated in the drives, are enabled (p9601.2/p9801.2).

r9571 SI Motion acceptance test status (processor 1) / SI Mtn acc_status

CU240E-2 DP F
CU240E-2 F

Access level: 3 **Calculated:** - **Data type:** Integer16
Can be changed: - **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
0000 hex	00AC hex	-

Description: Displays the status of the acceptance test mode.

Value:
0: [00 hex] Acc_mode inactive
12: [0C hex] Acc_mode not possible due to POWER ON fault
13: [0D hex] Acc_mode not possible due to incorrect ID in p9570
15: [0F hex] Acc_mode not possible due to expired Acc_timer
172: [AC hex] Acc_mode active

Dependency: Refer to: p9558, p9570
Refer to: C01799

p9581 SI Motion brake ramp reference value (processor 1) / SI Mtn ramp ref P1

CU240E-2 DP F
CU240E-2 F

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: C(95) **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
600.0000 [rpm]	24000.0000 [rpm]	1500.0000 [rpm]

Description: Sets the reference value to define the brake ramp.
The rate of rise of the brake ramp depends upon p9581 (reference value) and p9583 (monitoring time).

Dependency: Refer to: p9582, p9583

p9582 SI Motion brake ramp delay time (processor 1) / SI Mtn ramp t P1

CU240E-2 DP F
CU240E-2 F

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: C(95) **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
10.00 [ms]	99000.00 [ms]	250.00 [ms]

Description: Sets the delay time for monitoring the brake ramp.
Monitoring of the brake ramp starts once the delay time has elapsed.

Dependency: Refer to: p9581, p9583

p9583 SI Motion brake ramp monitoring time (processor 1) / SI Mtn rp t_mon P1

CU240E-2 DP F
CU240E-2 F

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: C(95) **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
0.50 [s]	1000.00 [s]	10.00 [s]

Description: Sets the monitoring time to define the brake ramp.
The rate of rise of the brake ramp depends upon p9581 (reference value) and p9583 (monitoring time).

Dependency: Refer to: p9581, p9582

p9586 SI Motion delay time of the evaluation sensorless (CU) / SI Mtn t_del SL CU

CU240E-2 DP F	**Access level:** 3	**Calculated:** -	**Data type:** FloatingPoint32
CU240E-2 F	**Can be changed:** C(95)	**Scaling:** -	**Data set:** -
	Units group: -	**Unit selection:** -	
	Min 5.00 [ms]	**Max** 1000.00 [ms]	**Factory setting** 100.00 [ms]

Description: Sets the evaluation delay for encoderless actual value sensing after pulse enable. The value should be greater than or equal to the motor magnetizing time. Shortening the time can result in Alarm 1711 with fault value 1041 or1042.

Dependency: Refer to: C01711

Notice: Reducing this value can adversely affect the actual value sensing and the plausibility check.

When the value is increased, this results in a longer evaluation delay.

Note: This parameter is only effective for encoderless actual value sensing (p9306/p9506 = 1).

p9587 SI Motion encoderless act val sensing filter time (processor 1) / SI Mtn SL filt P1

CU240E-2 DP F	**Access level:** 4	**Calculated:** -	**Data type:** FloatingPoint32
CU240E-2 F	**Can be changed:** C(95)	**Scaling:** -	**Data set:** -
	Units group: -	**Unit selection:** -	
	Min 0.00 [ms]	**Max** 100.00 [ms]	**Factory setting** 25.00 [ms]

Description: Sets the filter time for smoothing the actual value with sensorless actual value sensing.

p9588 SI Motion act val sensing sensorless min current (processor 1) / SI Mtn SL I_min P1

CU240E-2 DP F	**Access level:** 3	**Calculated:** -	**Data type:** FloatingPoint32
CU240E-2 F	**Can be changed:** C(95)	**Scaling:** -	**Data set:** -
	Units group: -	**Unit selection:** -	
	Min 0.00 [%]	**Max** 1000.00 [%]	**Factory setting** 10.00 [%]

Description: Sets the minimum current for encoderless actual value sensing in reference to 10 mA (i.e. when 1 % = 10 mA).

- The value must be increased if C01711 has occurred with message value 1042.
- The value must be decreased if C01711 has occurred with message value 1041.

Dependency: Refer to: C01711

Notice: Reducing this percentage value can adversely affect actual value sensing.

p9589 SI Motion voltage tolerance acceleration (processor 1) / SI Mtn U tol P1

CU240E-2 DP F	**Access level:** 3	**Calculated:** -	**Data type:** FloatingPoint32
CU240E-2 F	**Can be changed:** C(95)	**Scaling:** -	**Data set:** -
	Units group: -	**Unit selection:** -	
	Min 10.00 [%]	**Max** 1000.00 [%]	**Factory setting** 100.00 [%]

Description: Sets the voltage tolerance for suppressing acceleration peaks.

Increasing this percentage value means that voltage peaks will need to have a higher amplitude during acceleration procedures if they are not to affect actual value sensing.

- The value must be increased if C01711 has occurred with message value 1043.
- The value must be lowered if acceleration procedures have led to an excessive Safety actual velocity.

Dependency: Refer to: C01711

r9590[0...3] SI Motion version safety motion monitoring (processor 1) / SI Mtn version P1

CU240E-2 DP F	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned16
CU240E-2 F	**Can be changed:** -	**Scaling:** -	**Data set:** -
	Units group: -	**Unit selection:** -	
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the Safety Integrated version for the safe monitoring functions.

Index:
[0] = Safety Version (major release)
[1] = Safety Version (minor release)
[2] = Safety Version (baselevel or patch)
[3] = Safety Version (hotfix)

Dependency: Refer to: r9770

Note: Example:

r9590[0] = 2, r9590[1] = 60, r9590[2] = 1, r9590[3] = 0 --> SI Motion version V02.60.01.00

p9601 SI enable, functions integrated in the drive (processor 1) / SI enable fct P1

PM240	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned32
PM250	**Can be changed:** C(95)	**Scaling:** -	**Data set:** -
PM260	**Units group:** -	**Unit selection:** -	
CU240E-2			
	Min	**Max**	**Factory setting**
	-	-	0000 bin

Description: Sets the enable signals for safety functions on processor 1 that are integrated in the drive.

Not all of the settings listed below will be permissible, depending on the Control Unit being used:

- p9601 = 0: Safety functions integrated in the drive disabled.
- p9601 = 1: STO enabled via terminals. Permissible if r9771.0 = 1.
- p9601 = 4: Motion monitoring functions integrated in the drive enabled via an integrated F-DI. Permissible if r9771.5 = 1.
- p9601 = 8: STO enabled via PROFIsafe. Permissible if r9771.6 = 1.
- p9601 = 9: STO enabled via PROFIsafe and STO via terminals. Permissible if r9771.6 = 1.
- p9601 = 12: Motion monitoring functions integrated in the drive enabled via PROFIsafe. Permissible if r9771.4 = 1.
- p9601 = 13: Motion monitoring functions integrated in the drive enabled via PROFIsafe and STO via terminals. Permissible if r9771.4 = 1.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Enable STO via terminals (processor 1)	Enable	Inhibit	2810

Dependency: Refer to: r9771, p9801

Note: A change only becomes effective after a POWER ON.

F-DI: Failsafe Digital Input.

STO: Safe Torque Off

p9601 SI enable, functions integrated in the drive (processor 1) / SI enable fct P1

PM240
PM250
PM260
CU240E-2 DP

Access level: 3 **Calculated:** - **Data type:** Unsigned32
Can be changed: C(95) **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	0000 bin

Description: Sets the enable signals for safety functions on processor 1 that are integrated in the drive.

Not all of the settings listed below will be permissible, depending on the Control Unit being used:

- p9601 = 0: Safety functions integrated in the drive disabled.
- p9601 = 1: STO enabled via terminals. Permissible if r9771.0 = 1.
- p9601 = 4: Motion monitoring functions integrated in the drive enabled via an integrated F-DI. Permissible if r9771.5 = 1.
- p9601 = 8: STO enabled via PROFIsafe. Permissible if r9771.6 = 1.
- p9601 = 9: STO enabled via PROFIsafe and STO via terminals. Permissible if r9771.6 = 1.
- p9601 = 12: Motion monitoring functions integrated in the drive enabled via PROFIsafe. Permissible if r9771.4 = 1.
- p9601 = 13: Motion monitoring functions integrated in the drive enabled via PROFIsafe and STO via terminals. Permissible if r9771.4 = 1.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Enable STO via terminals (processor 1)	Enable	Inhibit	2810
03	Enable PROFIsafe (processor 1)	Enable	Inhibit	-

Dependency: Refer to: r9771, p9801

Note: A change only becomes effective after a POWER ON.

F-DI: Failsafe Digital Input.

STO: Safe Torque Off

p9601 SI enable, functions integrated in the drive (processor 1) / SI enable fct P1

PM240
PM250
PM260
CU240E-2 DP F

Access level: 3 **Calculated:** - **Data type:** Unsigned32
Can be changed: C(95) **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	0000 bin

Description: Sets the enable signals for safety functions on processor 1 that are integrated in the drive.

Not all of the settings listed below will be permissible, depending on the Control Unit being used:

- p9601 = 0: Safety functions integrated in the drive disabled.
- p9601 = 1: STO enabled via terminals. Permissible if r9771.0 = 1.
- p9601 = 4: Motion monitoring functions integrated in the drive enabled via an integrated F-DI. Permissible if r9771.5 = 1.
- p9601 = 8: STO enabled via PROFIsafe. Permissible if r9771.6 = 1.
- p9601 = 9: STO enabled via PROFIsafe and STO via terminals. Permissible if r9771.6 = 1.
- p9601 = 12: Motion monitoring functions integrated in the drive enabled via PROFIsafe. Permissible if r9771.4 = 1.
- p9601 = 13: Motion monitoring functions integrated in the drive enabled via PROFIsafe and STO via terminals. Permissible if r9771.4 = 1.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Enable STO via terminals (processor 1)	Enable	Inhibit	2810
02	Motion monitoring functions integr. in the drive (processor 1)	Enable	Inhibit	-
03	Enable PROFIsafe (processor 1)	Enable	Inhibit	-

Dependency: Refer to: r9771, p9801

Note: A change only becomes effective after a POWER ON.

F-DI: Failsafe Digital Input.

STO: Safe Torque Off

p9601 SI enable, functions integrated in the drive (processor 1) / SI enable fct P1

PM240
PM250
PM260
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: C(95) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0000 bin

Description: Sets the enable signals for safety functions on processor 1 that are integrated in the drive.

Not all of the settings listed below will be permissible, depending on the Control Unit being used:

- p9601 = 0: Safety functions integrated in the drive disabled.
- p9601 = 1: STO enabled via terminals. Permissible if r9771.0 = 1.
- p9601 = 4: Motion monitoring functions integrated in the drive enabled via an integrated F-DI. Permissible if r9771.5 = 1.
- p9601 = 8: STO enabled via PROFIsafe. Permissible if r9771.6 = 1.
- p9601 = 9: STO enabled via PROFIsafe and STO via terminals. Permissible if r9771.6 = 1.
- p9601 = 12: Motion monitoring functions integrated in the drive enabled via PROFIsafe. Permissible if r9771.4 = 1.
- p9601 = 13: Motion monitoring functions integrated in the drive enabled via PROFIsafe and STO via terminals. Permissible if r9771.4 = 1.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Enable STO via terminals (processor 1)	Enable	Inhibit	2810
02	Motion monitoring functions integr. in the drive (processor 1)	Enable	Inhibit	-

Dependency: Refer to: r9771, p9801

Note: A change only becomes effective after a POWER ON.

F-DI: Failsafe Digital Input.

STO: Safe Torque Off

p9610 SI PROFIsafe address (processor 1) / SI PROFIsafe P1

CU240E-2 DP
CU240E-2 DP F

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: C(95) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0000 hex	FFFE hex	0000 hex

Description: Sets the PROFIsafe address for processor 1.

Dependency: Refer to: p9810

p9650 SI F-DI changeover tolerance time (processor 1) / SI F-DI_chg tol P1

CU240E-2
CU240E-2 DP
CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: C(95) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.00 [ms]	2000.00 [ms]	500.00 [ms]

Description: Sets the tolerance time for the changeover of the failsafe digital input for STO on processor 1.

An F-DI changeover is not effective simultaneously due to the different runtimes in the two monitoring channels. After an F-DI changeover, dynamic data is not subject to a crosswise data comparison during this tolerance time.

Dependency: Refer to: p9850

Note: For a crosswise data comparison between p9650 and p9850, a difference of one Safety monitoring clock cycle is tolerated.

The parameterized time is internally rounded-off to an integer multiple of the monitoring clock cycle.

F-DI: Failsafe Digital Input

p9651 SI STO debounce time (processor 1) / SI STO t_debou P1

CU240E-2	**Access level:** 3	**Calculated:** -	**Data type:** FloatingPoint32
CU240E-2 DP	**Can be changed:** C(95)	**Scaling:** -	**Data set:** -
CU240E-2 DP F	**Units group:** -	**Unit selection:** -	
CU240E-2 F			
	Min	**Max**	**Factory setting**
	0.00 [ms]	100.00 [ms]	1.00 [ms]

Description: Sets the debounce time for the failsafe digital inputs used to control the "STO" function.

The debounce time is rounded to whole milliseconds.

Note: The debounce time is rounded to whole milliseconds. It specifies the maximum duration of a fault pulse at the fail-safe digital inputs with no reaction/influence on the selection or deselection of the Safety Basic Functions.

Example:

Debounce time = 1 ms: Fault pulses of 1 ms are filtered; only pulses longer than 2 ms are processed.

Debounce time = 3 ms: Fault pulses of 3 ms are filtered; only pulses longer than 4 ms are processed.

p9659 SI forced checking procedure timer / SI FrcdCkProcTimer

CU240E-2	**Access level:** 3	**Calculated:** -	**Data type:** FloatingPoint32
CU240E-2 DP	**Can be changed:** C(95)	**Scaling:** -	**Data set:** -
CU240E-2 DP F	**Units group:** -	**Unit selection:** -	
CU240E-2 F			
	Min	**Max**	**Factory setting**
	0.00 [h]	9000.00 [h]	8.00 [h]

Description: Sets the time interval for carrying out the forced checking procedure and testing the Safety shutdown paths.

Within the parameterized time, STO must have been de-selected at least once. The monitoring time is reset each time that STO is de-selected.

Dependency: Refer to: A01699

Note: STO: Safe Torque Off

r9660 SI forced checking procedure remaining time / SI frc chk remain

CU240E-2	**Access level:** 3	**Calculated:** -	**Data type:** FloatingPoint32
CU240E-2 DP	**Can be changed:** -	**Scaling:** -	**Data set:** -
CU240E-2 DP F	**Units group:** -	**Unit selection:** -	
CU240E-2 F			
	Min	**Max**	**Factory setting**
	- [h]	- [h]	- [h]

Description: Displays the time remaining before dynamization and testing of the safety shutdown paths (forced checking procedure).

Dependency: Refer to: A01699

p9700 SI copy function / SI copy function

CU240E-2
CU240E-2 DP
CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: C(95), U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0000 hex	00D0 hex	0000 hex

Description: Setting to start the required copy function.

After starting, the corresponding parameters are copied from processor 1 to processor 2.

Once copying is complete, the parameter is automatically reset to zero.

Value:
0: [00 hex] Copy function ended
29: [1D hex] Start copy function node identifier
87: [57 hex] Start copy function SI parameters
208: [D0 hex] Start copy function SI basic parameters

Dependency: Refer to: r3996

Notice: When the parameters are copied, short-term communication interruptions may occur.

Note: Re value = 57 hex and D0 hex:

The value can only be set if the safety commissioning mode is set and the Safety Integrated password was entered.

Re value = D0 hex:

The following parameters are copied after starting the copy function:

p9601 --> p9801, p9610 --> 9810, p9650 --> p9850, p9651 --> p9851

p9701 Acknowledge SI data change / Ackn SI data

CU240E-2
CU240E-2 DP
CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: C(95), U, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0000 hex	00EC hex	0000 hex

Description: Setting to transfer the reference checksums from the associated actual checksums after changes (SI parameters, hardware).

After transferring the reference checksums, parameters are automatically reset to zero.

Value:
0: [00 hex] Data unchanged
172: [AC hex] Acknowledge data change complete
220: [DC hex] Acknowledge SI basic parameter change
236: [EC hex] Acknowledge hardware CRC

Dependency: Refer to: r9398, p9399, r9728, p9729, r9798, p9799, r9898, p9899

Note: Re value = AC and DC hex:

These values can only be set if the safety commissioning mode is set and the Safety Integrated password was entered.

p9705 BI: SI Motion: Test stop signal source / SI Mtn test stop

CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: C(95) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source for the test stop of the safety-relevant motion monitoring functions.

r9710[0...1] SI Motion diagnostics result list 1 / SI Mtn res_list 1

CU240E-2 DP F
CU240E-2 F

Access level: 3 **Calculated:** - **Data type:** Unsigned32
Can be changed: - **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays result list 1 that, for the crosswise data comparison between the monitoring channels, led to the fault.

Index:
[0] = Result list processor 2
[1] = Result list processor 1

Bit field:

Bit	Signal name	1 signal	0 signal	FP
06	Actual value > upper limit, SLS1	Yes	No	-
07	Actual value > lower limit, SLS1	Yes	No	-
08	Actual value > upper limit, SLS2	Yes	No	-
09	Actual value > lower limit, SLS2	Yes	No	-
10	Actual value > upper limit, SLS3	Yes	No	-
11	Actual value > lower limit, SLS3	Yes	No	-
12	Actual value > upper limit, SLS4	Yes	No	-
13	Actual value > lower limit, SLS4	Yes	No	-
16	Actual value > upper limit, SAM/SBR	Yes	No	-
17	Actual value > lower limit, SAM/SBR	Yes	No	-
18	Actual value > upper limit SDI positive	Yes	No	-
19	Actual value > lower limit SDI positive	Yes	No	-
20	Actual value > upper limit SDI negative	Yes	No	-
21	Actual value > lower limit SDI negative	Yes	No	-

Dependency: Refer to: C01711

Note: SAM: Safe Acceleration Monitor (safe acceleration monitoring)

SBR: Safe Brake Ramp (safe brake ramp monitoring)

SLS: Safely-Limited Speed

r9712 SI Motion diagnostics pos. act. val. motor side (processor 1) / SI Mtn s_act motP1

CU240E-2 DP F
CU240E-2 F

Access level: 3 **Calculated:** - **Data type:** Unsigned32
Can be changed: - **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the current motor-side position actual value for the motion monitoring functions on processor 1.

r9713[0...3] SI Motion diagnostics position actual value load side / SI Mtn s_act load

CU240E-2 DP F	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned32
CU240E-2 F	**Can be changed:** -	**Scaling:** -	**Data set:** -
	Units group: -	**Unit selection:** -	
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the actual load-side actual values of both monitoring channels and their difference.

Index:
[0] = Load-side actual value on processor 1 (P1)
[1] = Load-side actual value on processor 2 (P2)
[2] = Load-side actual value difference P1 - P2
[3] = Load-side maximum actual value difference P1 - P2

Dependency: Refer to: r9724

Note: Re index 0:

The display of the load-side position actual value on processor 1 is updated in the monitoring clock cycle.

Re index 1:

The display of the load-side position actual value on processor 2 is updated in the CDC clock cycle (r9724) and delayed by one CDC clock cycle.

Re index 2:

The difference between the load-side position actual value on processor 1 and load-side position actual value on processor 2 is updated in the CDC clock cycle (r9724) and delayed by one CDC clock cycle.

Re index 3:

The maximum difference between the load-side position actual value on processor 1 and the load-side position actual value on processor 2.

CDC: Crosswise Data Check

r9714[0...1] SI Motion diagnostics velocity (processor 1) / SI Mtn diag v P1

CU240E-2 DP F	**Access level:** 3	**Calculated:** -	**Data type:** FloatingPoint32
CU240E-2 F	**Can be changed:** -	**Scaling:** -	**Data set:** -
	Units group: -	**Unit selection:** -	
	Min	**Max**	**Factory setting**
	- [rpm]	- [rpm]	- [rpm]

Description: Displays the actual velocity values for the motion monitoring functions on processor 1.

Index:
[0] = Load-side velocity actual value on processor 1
[1] = Actual SAM/SBR velocity limit on processor 1

r9720.0...13 CO/BO: SI Motion control signals integrated in the drive / SI Mtn integ STW

CU240E-2 DP F	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned32
CU240E-2 F	**Can be changed:** -	**Scaling:** -	**Data set:** -
	Units group: -	**Unit selection:** -	
	Min	**Max**	**Factory setting**
	-	-	-

Description: Control signals for safety-relevant motion monitoring functions integrated in the drive.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	De-select STO	Yes	No	-
01	De-select SS1	Yes	No	-
04	De-select SLS	Yes	No	-
07	Acknowledgement	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	2861
13	Deselect SDI negative	Yes	No	2861

Note: This parameter is only supplied with actual values if SI Motion functions are active. For Safety Integrated Basic Functions (STO), the value is equal to zero.

r9722.0...15 CO/BO: SI Motion status signals integrated in the drive / SI Mtn integ stat

CU240E-2 DP F

Access level: 3 **Calculated:** - **Data type:** Unsigned32
Can be changed: - **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Status signal for safety-relevant motion monitoring functions integrated in the drive.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	STO active	Yes	No	-
01	SS1 active	Yes	No	-
04	SLS active	Yes	No	-
07	Internal event	No	Yes	-
09	Active SLS stage bit 0	Set	Not set	-
10	Active SLS stage bit 1	Set	Not set	-
12	SDI pos active	Yes	No	2861
13	SDI neg active	Yes	No	2861
15	SSM (speed below limit value)	Yes	No	2860

Notice: Re bit 07:

An internal event is displayed if a STOP A ... F is active.

The signal state behaves in an opposite way to the PROFIsafe Standard.

Note: This parameter is only supplied with actual values if SI Motion functions are active. For Safety Integrated Basic Functions (STO), the value is equal to zero.

r9722.0...13 CO/BO: SI Motion status signals integrated in the drive / SI Mtn integ stat

CU240E-2 F

Access level: 3 **Calculated:** - **Data type:** Unsigned32
Can be changed: - **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Status signal for safety-relevant motion monitoring functions integrated in the drive.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	STO active	Yes	No	-
01	SS1 active	Yes	No	-
04	SLS active	Yes	No	-
07	Internal event	No	Yes	-
09	Active SLS stage bit 0	Set	Not set	-
10	Active SLS stage bit 1	Set	Not set	-
12	SDI pos active	Yes	No	2861
13	SDI neg active	Yes	No	2861

Notice: Re bit 07:

An internal event is displayed if a STOP A ... F is active.

The signal state behaves in an opposite way to the PROFIsafe Standard.

Note: This parameter is only supplied with actual values if SI Motion functions are active. For Safety Integrated Basic Functions (STO), the value is equal to zero.

r9723.0...16 CO/BO: SI Motion diagnostic signals integrated in the drive / SI Mtn integ diag

CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the diagnostic signals for safety-relevant motion monitoring functions integrated in the drive.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Forced checking procedure required	Yes	No	-
01	For ESR, STOP F and subsequent stop B is active	Yes	No	-
02	Communication failure	Yes	No	-
03	Actual value sensing supplies valid value	Yes	No	-
04	Encoderless act val sensing acc to technique for U/f control	Yes	No	-
16	SAM/SBR active	Yes	No	-

Note: ESR: Extended Stop and Retract
SAM: Safe Acceleration Monitor (safe acceleration monitoring)
SBR: Safe Brake Ramp (safe brake ramp monitoring)

r9724 SI Motion crosswise comparison clock cycle / SI Mtn CDC clk cyc

CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [ms]	- [ms]	- [ms]

Description: Displays the crosswise comparison clock cycle.

The value indicates the clock cycle time with which each individual CDC value is compared between the two monitoring channels.

Note: CDC: Crosswise Data Check

r9725[0...2] SI Motion, diagnostics STOP F / SI Mtn Diag STOP F

CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Re index 0:

Displays the message value that resulted in the STOP F on the drive.

Value = 0:

Processor 1 signaled a STOP F.

Value = 1 ... 999:

Number of the incorrect date in the crosswise data comparison between the monitoring channels.

Value >= 1000:

Additional diagnostic values of the drive.

Re index 1:

Displays the value from processor 1 that resulted in the STOP F.

Re index 2:

Displays the value from processor 2 that resulted in the STOP F.

Index: [0] = Message value for CDC
[1] = Processor 1 CDC actual value
[2] = Processor 2 CDC actual value

Dependency: Refer to: C01711

Note: The significance of the individual message values is described in message C01711.

CDC: Crosswise Data Check

r9728[0...2] SI Motion actual checksum SI parameters (processor 1) / SI Mtn act CRC P1

CU240E-2 DP F	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned32
CU240E-2 F	**Can be changed:** -	**Scaling:** -	**Data set:** -
	Units group: -	**Unit selection:** -	
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the checksum over the checked Safety Integrated parameters of the motion monitoring functions (actual checksum).

Index: [0] = Checksum over SI parameters for motion monitoring
[1] = Checksum over SI parameters for actual values
[2] = Checksum over SI parameters for hardware

Dependency: Refer to: p9729
Refer to: F01680

p9729[0...2] SI Motion setpoint checksum SI parameters (processor 1) / SI Mtn setp CRC P1

CU240E-2 DP F	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned32
CU240E-2 F	**Can be changed:** C(95)	**Scaling:** -	**Data set:** -
	Units group: -	**Unit selection:** -	
	Min	**Max**	**Factory setting**
	0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the checksum using the checksum-tested Safety Integrated parameters for motion monitoring functions (reference checksum).

Index: [0] = Checksum over SI parameters for motion monitoring
[1] = Checksum over SI parameters for actual values
[2] = Checksum over SI parameters for hardware

Dependency: Refer to: r9728
Refer to: F01680

r9732 SI Motion velocity resolution / SI Mtn v_res

	Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
CU240E-2 DP F	**Can be changed:** -	**Scaling:** -	**Data set:** -
CU240E-2 F	**Units group:** -	**Unit selection:** -	
	Min	**Max**	**Factory setting**
	- [rpm]	- [rpm]	- [rpm]

Description: Displays the safe velocity resolution (load side).

Setpoints for velocity limits or parameter changes for velocities below this threshold have no effect.

Note: 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.

r9733[0...2] CO: SI Motion setpoint speed limit effective / SI Mtn setp_lim

CU240E-2 DP F
CU240E-2 F

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2000	**Data set:** -
Units group: 3_1	**Unit selection:** p0505	
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the necessary setpoint speed 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.

Index:
[0] = Setpoint limiting positive
[1] = Setpoint limiting negative
[2] = Setpoint limit absolute

Dependency: For SLS: r9733[0] = p9531[x] x p9533 (converted from the load side to the motor side)

For SDI negative: r9733[0] = 0

For SLS: r9733[1] = - p9531[x] x p9533 (converted from the load side to the motor side)

For SDI positive: r9733[1] = 0

[x] = Selected SLS stage

Conversion factor from the motor side to the load side:

- motor type = rotary and axis type = linear: p9522 / (p9521 x p9520)

- otherwise: p9522 / p9521

Refer to: p9531, p9533

Notice: If p1051 = r9733[0] is interconnected, p1052 = r9733[1] must also be interconnected.

If only the absolute value of the setpoint velocity limiting is required, r9733[2] must be interconnected.

Note: If the "SLS" function is not selected, r9733[0] shows p1082 and r9733[1] shows -p1082.

The display in r9733 can be delayed by up to one Safety monitoring clock cycle as compared to the display in r9720 and r9722.

r9734.0...14 CO/BO: SI Motion Safety Info Channel status word / SI Mtn info ch ZSW

CU240E-2 DP F
CU240E-2 F

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status word for the Safety information channel.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	STO active	Yes	No	-
01	SS1 active	Yes	No	-
04	SLS active	Yes	No	-
06	SLS selected	Yes	No	-
07	Internal event	Yes	No	-
12	SDI positive selected	Yes	No	-
13	SDI neg selected	Yes	No	-
14	ESR retract requested	Yes	No	-

Notice: Re bit 07:

An internal event is displayed if a STOP A ... F is active.

The signal state behaves in an opposite way to the PROFIsafe Standard.

Note: This parameter is only supplied with actual values if SI Motion functions are active. For Safety Integrated Basic Functions (STO), the value is equal to zero.

r9742.0...15 CO/BO: SI Motion drive-integrated status signals (processor 2) / SI Mtn int stat P2

CU240E-2 DP F
CU240E-2 F

Access level: 4 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Status signal for safety-relevant motion monitoring functions integrated in the drive.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	STO active	Yes	No	-
01	SS1 active	Yes	No	-
04	SLS active	Yes	No	-
07	Internal event	No	Yes	-
09	Active SLS stage bit 0	Set	Not set	-
10	Active SLS stage bit 1	Set	Not set	-
15	SSM (speed below limit value)	Yes	No	2860

Notice: Re bit 07:

An internal event is displayed if a STOP A ... F is active.

The signal state behaves in an opposite way to the PROFIsafe Standard.

Note: This parameter is only supplied with actual values if SI Motion functions are active. For Safety Integrated Basic Functions (STO), the value is equal to zero.

p9761 SI password input / SI password inp

CU240E-2
CU240E-2 DP
CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: C, T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0000 hex	FFFF FFFF hex	0000 hex

Description: Enters the Safety Integrated password.

Dependency: Refer to: F01659

Note: It is not possible to change Safety Integrated parameters until the Safety Integrated password has been entered.

p9762 SI password new / SI password new

CU240E-2
CU240E-2 DP
CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: C(95) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0000 hex	FFFF FFFF hex	0000 hex

Description: Enters a new Safety Integrated password.

Dependency: A change made to the Safety Integrated password must be acknowledged in the following parameter:

Refer to: p9763

p9763 SI password acknowledgement / SI ackn password

CU240E-2	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned32
CU240E-2 DP	**Can be changed:** C(95)	**Scaling:** -	**Data set:** -
CU240E-2 DP F	**Units group:** -	**Unit selection:** -	
CU240E-2 F			
	Min	**Max**	**Factory setting**
	0000 hex	FFFF FFFF hex	0000 hex

Description: Acknowledges the new Safety Integrated password.

Dependency: Refer to: p9762

Note: The new password entered into p9762 must be re-entered in order to acknowledge.

p9762 = p9763 = 0 is automatically set after the new Safety Integrated password has been successfully acknowledged.

r9765 SI Motion forced checking procedure remaining time (processor 1) / SI Mtn dyn rem P1

CU240E-2 DP F	**Access level:** 3	**Calculated:** -	**Data type:** FloatingPoint32
CU240E-2 F	**Can be changed:** -	**Scaling:** -	**Data set:** -
	Units group: -	**Unit selection:** -	
	Min	**Max**	**Factory setting**
	- [h]	- [h]	- [h]

Description: Displays the time remaining until the next dynamization and testing of the safety motion monitoring functions integrated in the drives.

The signal source to initiate the forced checking procedure is parameterized in p9705.

Dependency: Refer to: p9705

Refer to: C01798

r9770[0...3] SI version drive-integrated safety function (processor 1) / SI version Drv P1

CU240E-2	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned16
CU240E-2 DP	**Can be changed:** -	**Scaling:** -	**Data set:** -
CU240E-2 DP F	**Units group:** -	**Unit selection:** -	
CU240E-2 F			
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the Safety Integrated version for the drive-integrated safety functions on processor 1.

Index:
[0] = Safety Version (major release)
[1] = Safety Version (minor release)
[2] = Safety Version (baselevel or patch)
[3] = Safety Version (hotfix)

Note: Example:

r9770[0] = 2, r9770[1] = 60, r9770[2] = 1, r9770[3] = 0 --> Safety version V02.60.01.00

r9771 SI common functions (processor 1) / SI general fct P1

CU240E-2	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned32
	Can be changed: -	**Scaling:** -	**Data set:** -
	Units group: -	**Unit selection:** -	
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the supported Safety Integrated monitoring functions.

Processor 1 determines this display.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	STO supported via terminals	Yes	No	2804

Dependency: Refer to: r9871

Note: STO: Safe Torque Off

r9771 SI common functions (processor 1) / SI general fct P1

CU240E-2 DP

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the supported Safety Integrated monitoring functions.
Processor 1 determines this display.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	STO supported via terminals	Yes	No	2804
06	Basic Functions PROFIsafe supported	Yes	No	-

Dependency: Refer to: r9871

Note: STO: Safe Torque Off

r9771 SI common functions (processor 1) / SI general fct P1

CU240E-2 DP F

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the supported Safety Integrated monitoring functions.
Processor 1 determines this display.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	STO supported via terminals	Yes	No	2804
02	Extended Functions supported (p9501 > 0)	Yes	No	2804
04	Extended Functions PROFIsafe supported	Yes	No	-
05	Extended Functions integrated in drive supported (p9601.2 = 1)	Yes	No	-
06	Basic Functions PROFIsafe supported	Yes	No	-
07	Extended Functions encoderless supported	Yes	No	-
11	Extended Functions SDI supported	Yes	No	-
12	Extended Functions SSM encoderless supported	Yes	No	-

Dependency: Refer to: r9871

Note: STO: Safe Torque Off

r9771 SI common functions (processor 1) / SI general fct P1

CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the supported Safety Integrated monitoring functions.
Processor 1 determines this display.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	STO supported via terminals	Yes	No	2804
02	Extended Functions supported (p9501 > 0)	Yes	No	2804
05	Extended Functions integrated in drive supported (p9601.2 = 1)	Yes	No	-
07	Extended Functions encoderless supported	Yes	No	-
11	Extended Functions SDI supported	Yes	No	-
12	Extended Functions SSM encoderless supported	Yes	No	-

Dependency: Refer to: r9871

Note: STO: Safe Torque Off

r9772.0...20 CO/BO: SI status (processor 1) / SI status P1

CU240E-2
CU240E-2 DP
CU240E-2 DP F
CU240E-2 F

Access level: 2 **Calculated:** - **Data type:** Unsigned32
Can be changed: - **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the Safety Integrated status on processor 1.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	STO selected on processor 1	Yes	No	2810
01	STO active on processor 1	Yes	No	2810
09	STOP A cannot be acknowledged, active	Yes	No	2802
10	STOP A active	Yes	No	2802
15	STOP F active	Yes	No	2802
16	STO cse: Safety comm. mode	Yes	No	-
17	STO cause selection via terminal (Basic Functions)	Yes	No	-
18	STO cause: Selection via motion monitoring functions	Yes	No	-
19	STO cause actual value missing	Yes	No	-
20	STO cause selection PROFIsafe (Basic Functions)	Yes	No	-

Dependency: Refer to: r9872

Note: Re bit 00:

When STO is selected, the cause is displayed in bits 16 ... 20.

Re bit 18:

When the bit is set, STO is selected via PROFIsafe.

Re bit 19:

For the drive-integrated motion monitoring functions, due to OFF2, no actual value sensing possible.

r9773.0...31 CO/BO: SI status (processor 1 + processor 2) / SI status P1+P2

CU240E-2
CU240E-2 DP
CU240E-2 DP F
CU240E-2 F

Access level: 2 **Calculated:** - **Data type:** Unsigned32
Can be changed: - **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the Safety Integrated status on the drive (processor 1 + processor 2).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	STO selected in drive	Yes	No	2804
01	STO active in drive	Yes	No	2804
31	Shutdown paths must be tested	Yes	No	2810

Note: This status is formed from the AND operation of the relevant status of the two monitoring channels.

r9776 SI diagnostics / SI diagnostics

CU240E-2
CU240E-2 DP
CU240E-2 DP F
CU240E-2 F

Access level: 4 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: The parameter is used for diagnostics.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Safety parameter changed POWER ON required	Yes	No	-

Note: Re bit 00 = 1:
At least one Safety parameter has been changed that will only take effect after a POWER ON.

r9780 SI monitoring clock cycle (processor 1) / SI mon_clk cyc P1

CU240E-2
CU240E-2 DP
CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [ms]	- [ms]	- [ms]

Description: Displays the clock cycle time for the Safety Integrated Basic Functions on processor 1.

r9781[0...1] SI checksum to check changes (processor 1) / SI chg chksm P1

CU240E-2
CU240E-2 DP
CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the checksum for tracking 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: Refer to: p9601, p9729, p9799
Refer to: F01690

r9782[0...1] SI time stamp to check changes (processor 1) / SI chg t P1

CU240E-2
CU240E-2 DP
CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
- [h]	- [h]	- [h]

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 p9781[0] and p9781[1].

Index: [0] = SI time stamp for checksum to track functional changes
[1] = SI time stamp for checksum to track hardware-specific changes

Dependency: Refer to: p9601, p9729, p9799
Refer to: F01690

r9794[0...19] SI crosswise comparison list (processor 1) / SI CDC_list P1

CU240E-2	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned16
CU240E-2 DP	**Can be changed:** -	**Scaling:** -	**Data set:** -
CU240E-2 DP F	**Units group:** -	**Unit selection:** -	
CU240E-2 F			
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the numbers of the data items that are currently being compared crosswise on processor 1.

The content of the list of crosswise-compared data is dependent upon the particular application.

Note: Example:

r9794[0] = 1 (monitoring clock cycle)

r9794[1] = 2 (enable safety functions)

r9794[2] = 3 (F-DI changeover, tolerance time)

...

A complete list of numbers for crosswise-compared data items appears in fault F01611.

r9795 SI diagnostics STOP F (processor 1) / SI diag STOP F P1

CU240E-2	**Access level:** 2	**Calculated:** -	**Data type:** Unsigned32
CU240E-2 DP	**Can be changed:** -	**Scaling:** -	**Data set:** -
CU240E-2 DP F	**Units group:** -	**Unit selection:** -	
CU240E-2 F			
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the number of the cross-checked data item which caused STOP F on processor 1.

Dependency: Refer to: F01611

Note: A complete list of numbers for crosswise-compared data items appears in fault F01611.

r9798 SI actual checksum SI parameters (processor 1) / SI act chksm P1

CU240E-2	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned32
CU240E-2 DP	**Can be changed:** -	**Scaling:** -	**Data set:** -
CU240E-2 DP F	**Units group:** -	**Unit selection:** -	
CU240E-2 F			
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the checksum for the Safety Integrated parameters checked using checksums on processor 1 (actual checksum).

Dependency: Refer to: p9799, r9898

p9799 SI setpoint checksum SI parameters (processor 1) / SI setp_chksm P1

CU240E-2	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned32
CU240E-2 DP	**Can be changed:** C(95)	**Scaling:** -	**Data set:** -
CU240E-2 DP F	**Units group:** -	**Unit selection:** -	
CU240E-2 F			
	Min	**Max**	**Factory setting**
	0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the checksum for the Safety Integrated parameters checked using checksums on processor 1 (setpoint checksum).

Dependency: Refer to: r9798, p9899

p9801 SI enable, functions integrated in the drive (processor 2) / SI enable fct P2

PM240	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned16
PM250	**Can be changed:** C(95)	**Scaling:** -	**Data set:** -
PM260	**Units group:** -	**Unit selection:** -	
CU240E-2			
	Min	**Max**	**Factory setting**
	-	-	0000 bin

Description: Sets the enable signals for safety functions on processor 2 that are integrated in the drive.

Not all of the settings listed below will be permissible, depending on the Control Unit being used:

- p9801 = 0: Safety functions integrated in the drive disabled.
- p9801 = 1: STO enabled via terminals. Permissible if r9871.0 = 1.
- p9801 = 4: Motion monitoring functions integrated in the drive enabled via an integrated F-DI. Permissible if r9871.5 = 1.
- p9801 = 8: STO enabled via PROFIsafe. Permissible if r9871.6 = 1.
- p9801 = 9: STO enabled via PROFIsafe and STO via terminals. Permissible if r9871.6 = 1.
- p9801 = 12: Motion monitoring functions integrated in the drive enabled via PROFIsafe. Permissible if r9871.4 = 1.
- p9801 = 13: Motion monitoring functions integrated in the drive enabled via PROFIsafe and STO via terminals. Permissible if r9871.4 = 1.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Enable STO via terminals (processor 2)	Enable	Inhibit	2810

Dependency: Refer to: p9601, r9871

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: A change only becomes effective after a POWER ON.

F-DI: Failsafe Digital Input.

STO: Safe Torque Off

p9801 SI enable, functions integrated in the drive (processor 2) / SI enable fct P2

PM240	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned16
PM250	**Can be changed:** C(95)	**Scaling:** -	**Data set:** -
PM260	**Units group:** -	**Unit selection:** -	
CU240E-2 DP			
	Min	**Max**	**Factory setting**
	-	-	0000 bin

Description: Sets the enable signals for safety functions on processor 2 that are integrated in the drive.

Not all of the settings listed below will be permissible, depending on the Control Unit being used:

- p9801 = 0: Safety functions integrated in the drive disabled.
- p9801 = 1: STO enabled via terminals. Permissible if r9871.0 = 1.
- p9801 = 4: Motion monitoring functions integrated in the drive enabled via an integrated F-DI. Permissible if r9871.5 = 1.
- p9801 = 8: STO enabled via PROFIsafe. Permissible if r9871.6 = 1.
- p9801 = 9: STO enabled via PROFIsafe and STO via terminals. Permissible if r9871.6 = 1.
- p9801 = 12: Motion monitoring functions integrated in the drive enabled via PROFIsafe. Permissible if r9871.4 = 1.
- p9801 = 13: Motion monitoring functions integrated in the drive enabled via PROFIsafe and STO via terminals. Permissible if r9871.4 = 1.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Enable STO via terminals (processor 2)	Enable	Inhibit	2810
03	Enable PROFIsafe (processor 2)	Enable	Inhibit	-

Dependency: Refer to: p9601, r9871

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: A change only becomes effective after a POWER ON.

F-DI: Failsafe Digital Input.

STO: Safe Torque Off

p9801 SI enable, functions integrated in the drive (processor 2) / SI enable fct P2

PM240	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned16
PM250	**Can be changed:** C(95)	**Scaling:** -	**Data set:** -
PM260	**Units group:** -	**Unit selection:** -	
CU240E-2 DP F			
	Min	**Max**	**Factory setting**
	-	-	0000 bin

Description: Sets the enable signals for safety functions on processor 2 that are integrated in the drive.

Not all of the settings listed below will be permissible, depending on the Control Unit being used:

- p9801 = 0: Safety functions integrated in the drive disabled.
- p9801 = 1: STO enabled via terminals. Permissible if r9871.0 = 1.
- p9801 = 4: Motion monitoring functions integrated in the drive enabled via an integrated F-DI. Permissible if r9871.5 = 1.
- p9801 = 8: STO enabled via PROFIsafe. Permissible if r9871.6 = 1.
- p9801 = 9: STO enabled via PROFIsafe and STO via terminals. Permissible if r9871.6 = 1.
- p9801 = 12: Motion monitoring functions integrated in the drive enabled via PROFIsafe. Permissible if r9871.4 = 1.
- p9801 = 13: Motion monitoring functions integrated in the drive enabled via PROFIsafe and STO via terminals. Permissible if r9871.4 = 1.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Enable STO via terminals (processor 2)	Enable	Inhibit	2810
02	Motion monitoring functions integr. in the drive (processor 2)	Enable	Inhibit	-
03	Enable PROFIsafe (processor 2)	Enable	Inhibit	-

Dependency: Refer to: p9601, r9871

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: A change only becomes effective after a POWER ON.

F-DI: Failsafe Digital Input.

STO: Safe Torque Off

p9801 SI enable, functions integrated in the drive (processor 2) / SI enable fct P2

PM240
PM250
PM260
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: C(95) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0000 bin

Description: Sets the enable signals for safety functions on processor 2 that are integrated in the drive.

Not all of the settings listed below will be permissible, depending on the Control Unit being used:

- p9801 = 0: Safety functions integrated in the drive disabled.
- p9801 = 1: STO enabled via terminals. Permissible if r9871.0 = 1.
- p9801 = 4: Motion monitoring functions integrated in the drive enabled via an integrated F-DI. Permissible if r9871.5 = 1.
- p9801 = 8: STO enabled via PROFIsafe. Permissible if r9871.6 = 1.
- p9801 = 9: STO enabled via PROFIsafe and STO via terminals. Permissible if r9871.6 = 1.
- p9801 = 12: Motion monitoring functions integrated in the drive enabled via PROFIsafe. Permissible if r9871.4 = 1.
- p9801 = 13: Motion monitoring functions integrated in the drive enabled via PROFIsafe and STO via terminals. Permissible if r9871.4 = 1.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Enable STO via terminals (processor 2)	Enable	Inhibit	2810
02	Motion monitoring functions integr. in the drive (processor 2)	Enable	Inhibit	-

Dependency: Refer to: p9601, r9871

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: A change only becomes effective after a POWER ON.

F-DI: Failsafe Digital Input.

STO: Safe Torque Off

p9810 SI PROFIsafe address (processor 2) / SI PROFIsafe P2

CU240E-2 DP
CU240E-2 DP F

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: C(95) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0000 hex	FFFE hex	0000 hex

Description: Sets the PROFIsafe address on processor 2.

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

p9850 SI F-DI changeover tolerance time (processor 2) / SI F-DI_chg tol P2

CU240E-2
CU240E-2 DP
CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: C(95) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.00 [µs]	2000000.00 [µs]	500000.00 [µs]

Description: Sets the tolerance time for the changeover of the failsafe digital input for STO on processor 2.

An F-DI changeover is not effective simultaneously due to the different runtimes in the two monitoring channels. After an F-DI changeover, dynamic data is not subject to a crosswise data comparison during this tolerance time.

Dependency: Refer to: p9650

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: For a crosswise data comparison between p9650 and p9850, a difference of one Safety monitoring clock cycle is tolerated.

The parameterized time is internally rounded-off to an integer multiple of the monitoring clock cycle.

F-DI: Failsafe Digital Input

p9851 SI STO debounce time (processor 2) / SI STO t_debou P2

CU240E-2
CU240E-2 DP
CU240E-2 DP F
CU240E-2 F

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: C(95) **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
0.00 [µs]	100000.00 [µs]	0.00 [µs]

Description: Sets the debounce time for the failsafe digital inputs used to control the "STO" function.
The debounce time is rounded to whole milliseconds.

Dependency: Refer to: p9651

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: The debounce time is rounded to whole milliseconds. It specifies the maximum duration of a fault pulse at the fail-safe digital inputs with no reaction/influence on the selection or deselection of the Safety Basic Functions.
Example:
Debounce time = 1 ms: Fault pulses of 1 ms are filtered; only pulses longer than 2 ms are processed.
Debounce time = 3 ms: Fault pulses of 3 ms are filtered; only pulses longer than 4 ms are processed.

r9871 SI common functions (processor 2) / SI common fct P2

CU240E-2

Access level: 3 **Calculated:** - **Data type:** Unsigned32
Can be changed: - **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the supported Safety Integrated monitoring functions.
Processor 2 determines this display.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	STO supported via terminals	Yes	No	2804

Dependency: Refer to: r9771

Note: STO: Safe Torque Off

r9871 SI common functions (processor 2) / SI common fct P2

CU240E-2 DP

Access level: 3 **Calculated:** - **Data type:** Unsigned32
Can be changed: - **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the supported Safety Integrated monitoring functions.
Processor 2 determines this display.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	STO supported via terminals	Yes	No	2804
06	Basic Functions PROFIsafe supported	Yes	No	-

Dependency: Refer to: r9771

Note: STO: Safe Torque Off

r9871 SI common functions (processor 2) / SI common fct P2

CU240E-2 DP F

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the supported Safety Integrated monitoring functions.

Processor 2 determines this display.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	STO supported via terminals	Yes	No	2804
02	Extended Functions supported (p9501 > 0)	Yes	No	2804
04	Extended Functions PROFIsafe supported	Yes	No	-
05	Extended Functions integrated in drive supported (p9601.2 = 1)	Yes	No	-
06	Basic Functions PROFIsafe supported	Yes	No	-
07	Extended Functions encoderless supported	Yes	No	-
11	Extended Functions SDI supported	Yes	No	-
12	Extended Functions SSM encoderless supported	Yes	No	-

Dependency: Refer to: r9771

Note: STO: Safe Torque Off

r9871 SI common functions (processor 2) / SI common fct P2

CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the supported Safety Integrated monitoring functions.

Processor 2 determines this display.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	STO supported via terminals	Yes	No	2804
02	Extended Functions supported (p9501 > 0)	Yes	No	2804
05	Extended Functions integrated in drive supported (p9601.2 = 1)	Yes	No	-
07	Extended Functions encoderless supported	Yes	No	-
11	Extended Functions SDI supported	Yes	No	-
12	Extended Functions SSM encoderless supported	Yes	No	-

Dependency: Refer to: r9771

Note: STO: Safe Torque Off

r9872.0...20 CO/BO: SI status (processor 2) / SI Status P2

CU240E-2	**Access level:** 2	**Calculated:** -	**Data type:** Unsigned32
CU240E-2 DP	**Can be changed:** -	**Scaling:** -	**Data set:** -
CU240E-2 DP F	**Units group:** -	**Unit selection:** -	
CU240E-2 F			
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the Safety Integrated status on processor 2.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	STO selected on processor 2	Yes	No	2810
01	STO active on processor 2	Yes	No	2810
09	STOP A cannot be acknowledged, active	Yes	No	2802
10	STOP A active	Yes	No	2802
15	STOP F active	Yes	No	2802
16	STO cse: Safety comm. mode	Yes	No	-
17	STO cause selection via terminal (Basic Functions)	Yes	No	-
18	STO cause: Selection via motion monitoring functions	Yes	No	-
20	STO cause selection PROFIsafe (Basic Functions)	Yes	No	-

Dependency: Refer to: r9772

Note: Re bit 00:

When STO is selected, the cause is displayed in bits 16 ... 20.

Re bit 18:

When the bit is set, STO is selected via PROFIsafe.

r9898 SI actual checksum SI parameters (processor 2) / SI act_chksm P2

CU240E-2	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned32
CU240E-2 DP	**Can be changed:** -	**Scaling:** -	**Data set:** -
CU240E-2 DP F	**Units group:** -	**Unit selection:** -	
CU240E-2 F			
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the checksum for the Safety Integrated parameters checked using checksums on processor 2 (actual checksum).

Dependency: Refer to: r9798, p9899

p9899 SI setpoint checksum SI parameters (processor 2) / SI setp_chksm P2

CU240E-2	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned32
CU240E-2 DP	**Can be changed:** C(95)	**Scaling:** -	**Data set:** -
CU240E-2 DP F	**Units group:** -	**Unit selection:** -	
CU240E-2 F			
	Min	**Max**	**Factory setting**
	0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the checksum for the Safety Integrated parameters checked using checksums on processor 2 (setpoint checksum).

Dependency: Refer to: p9799, r9898

r9925[0...99] Firmware file incorrect / FW file incorr

Access level: 3	**Calculated:** -	**Data type:** Unsigned8
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the directory and name of the file whose status as shipped from the factory was identified as impermissible.

Dependency: Refer to: r9926

Refer to: A01016

Note: The directory and name of the file is displayed in the ASCII code.

r9926 Firmware check status / FW check status

Access level: 3	**Calculated:** -	**Data type:** Unsigned8
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status when the firmware is checked when the system is booted.

0: Firmware not yet checked.

1: Check running.

2: Check successfully completed.

3: Check indicates an error.

Dependency: Refer to: r9925

Refer to: A01016

p9930[0...8] System logbook activation / SYSLOG activation

Access level: 4	**Calculated:** -	**Data type:** Unsigned8
Can be changed: U, T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	255	0

Description: Only for service purposes.

Index:
[0] = System logbook stage (0: Not active)
[1] = COM2/COM1 (0: COM2, 1: COM1)
[2] = Activate file write (0: Not active)
[3] = Display time stamp (0: Not displayed)
[4] = Reserved
[5] = Reserved
[6] = Reserved
[7] = Reserved
[8] = System logbook file size (stages, each 10 kB)

Notice: Before powering down the Control Unit, ensure that the system logbook is switched out (p9930[0] = 0).

If writing to the file is activated (p9930[2] = 1), writing to the file must be de-activated again before switching off the Control Unit (p9930[2] = 0) in order to ensure that the system logbook has been completely written to the file.

p9931[0...129] System logbook module selection / SYSLOG mod select.

Access level: 4	**Calculated:** -	**Data type:** Unsigned32
Can be changed: U, T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Only for service purposes.

p9932 Save system logbook EEPROM / SYSLOG EEPROM save

Access level: 4	**Calculated:** -	**Data type:** Unsigned8
Can be changed: U, T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	255	0

Description: Only for service purposes.

r9935.0 BO: POWER ON delay signal / POWER ON t_delay

Access level: 4	**Calculated:** -	**Data type:** Unsigned8
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: After power-on, binector output r9935.0 is set with the start of the first sampling time and is again reset after approx. 100 ms.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	POWER ON delay signal	High	Low	-

r9975[0...7] System utilization measured / Sys util meas

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the measured system utilization.

The higher the value displayed, the higher the system utilization.

Index:
[0] = Computing time utilization (min)
[1] = Computing time utilization (averaged)
[2] = Computing time utilization (max)
[3] = Largest total utilization (min)
[4] = Largest total utilization (averaged)
[5] = Largest total utilization (max)
[6] = Reserved
[7] = Reserved

Dependency: Refer to: r9976

Refer to: F01205

Note: Re index 3 ... 5:

The total utilizations are determined using all sampling times used. The largest total utilizations are mapped here. The sampling time with the largest total utilization is displayed in r9979.

Total utilization:

Computing time load of sampling time involved including load from higher-priority sampling times (interrupts).

r9976[0...7] System utilization / Sys util

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the system utilization.

If the utilization is greater than 100%, fault F01054 is output.

Index:
[0] = Reserved
[1] = Computing time utilization
[2] = Reserved
[3] = Reserved
[4] = Reserved
[5] = Largest total utilization
[6] = Reserved
[7] = Reserved

Dependency: Refer to: F01205

Note: Re index 1:

The value shows the total computing time load of the system.

Re index 5:

The total utilization is determined using all sampling times used. The largest total utilization is mapped here. The sampling time with the largest total utilization is displayed in r9979.

Total utilization:

Computing time load of sampling time involved including load from higher-priority sampling times (interrupts).

r9999[0...99] Software error internal supplementary diagnostics / SW_err int diag

Access level: 4	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Diagnostics parameter to display additional information for internal software errors.

Note: Only for internal Siemens troubleshooting.

p10002 SI discrepancy monitoring time (processor 1) / SI discrp t_mon P1

CU240E-2 DP F
CU240E-2 F

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(95)	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
1.00 [ms]	2000.00 [ms]	500.00 [ms]

Description: Sets the monitoring time for the discrepancy for the digital inputs.

The signal states at the two associated digital inputs (F-DI) must assume the same state within this monitoring time.

Dependency: Refer to: p10102

Note: F-DI: Failsafe Digital Input

p10006 SI acknowledgement internal event F-DI (processor 1) / SI ackn int evt P1

CU240E-2 DP F
CU240E-2 F

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: C(95)	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	255	0

Description: Select a safety-relevant digital input for the signal "acknowledge internal event" (internal fault).

The falling edge at this input resets the status "internal event" in the drive.

Value:
0: Statically active
1: F-DI 0
2: F-DI 1
3: F-DI 2
255: Statically inact

Dependency: Refer to: p10106

Refer to: A01666, A30666

Note: F-DI: Failsafe Digital Input

If value = 0:

No terminal assigned, acknowledge input has a static zero value.

p10017 SI digital inputs debounce time (processor 1) / SI DI t_debounceP1

CU240E-2 DP F
CU240E-2 F

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(95)	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0.00 [ms]	100.00 [ms]	1.00 [ms]

Description: Sets the debounce time for digital inputs.

The debounce time is accepted rounded off to whole milliseconds.

The debounce time acts on the following digital inputs:

- Fail-safe digital inputs (F-DI).
- Single-channel digital inputs (DI).
- Single-channel digital input 2 (DI 2, read back input for the forced checking procedure).

Dependency: Refer to: p10117

Note: Example:

Debounce time = 1 ms: Fault pulses of 1 ms are filtered; only pulses longer than 2 ms are processed.

Debounce time = 3 ms: Fault pulses of 3 ms are filtered; only pulses longer than 4 ms are processed.

The debounce result can be read in r10051.

p10022 SI STO input terminal (processor 1) / SI STO F-DI P1

CU240E-2 DP F	**Access level:** 3	**Calculated:** -	**Data type:** Integer16
CU240E-2 F	**Can be changed:** C(95)	**Scaling:** -	**Data set:** -
	Units group: -	**Unit selection:** -	
	Min 0	**Max** 255	**Factory setting** 0

Description: Sets the fail-safe digital input (F-DI) for the "STO" function.

Value:
0: Statically active
1: F-DI 0
2: F-DI 1
3: F-DI 2
255: Statically inact

Dependency: Refer to: p10122

Note: If value = 0:

No terminal assigned, safety function always active.

If value = 255:

No terminal assigned, safety function always inactive.

F-DI: Failsafe Digital Input

STO: Safe Torque Off

p10023 SI SS1 input terminal (processor 1) / SI SS1 F-DI P1

CU240E-2 DP F	**Access level:** 3	**Calculated:** -	**Data type:** Integer16
CU240E-2 F	**Can be changed:** C(95)	**Scaling:** -	**Data set:** -
	Units group: -	**Unit selection:** -	
	Min 0	**Max** 255	**Factory setting** 0

Description: Sets the fail-safe digital input (F-DI) for the "SS1" function.

Value:
0: Statically active
1: F-DI 0
2: F-DI 1
3: F-DI 2
255: Statically inact

Dependency: Refer to: p10123

Note: If value = 0:

No terminal assigned, safety function always active.

If value = 255:

No terminal assigned, safety function always inactive.

F-DI: Failsafe Digital Input

SS1: Safe Stop 1

p10026 SI SLS input terminal (processor 1) / SI SLS F-DI P1

CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: C(95) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	255	0

Description: Sets the fail-safe digital input (F-DI) for the "SLS" function.

Value:
0: Statically active
1: F-DI 0
2: F-DI 1
3: F-DI 2
255: Statically inact

Dependency: Refer to: p10126

Note: If value = 0:
No terminal assigned, safety function always active.
If value = 255:
No terminal assigned, safety function always inactive.
F-DI: Failsafe Digital Input
SLS: Safely-Limited Speed

p10030 SI SDI positive input terminal (processor 1) / SI SDI pos F-DI P1

CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: C(95) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	255	0

Description: Sets the fail-safe digital input (F-DI) for the "SDI positive" function.

Value:
0: Statically active
1: F-DI 0
2: F-DI 1
3: F-DI 2
255: Statically inact

Note: If value = 0:
No terminal assigned, safety function always active.
If value = 255:
No terminal assigned, safety function always inactive.
F-DI: Failsafe Digital Input
SDI: Safe Direction (safe motion direction)

p10031 SI SDI negative input terminal (processor 1) / SI SDI neg F-DI P1

CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: C(95) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	255	0

Description: Sets the fail-safe digital input (F-DI) for the "SDI negative" function.

Value:
0: Statically active
1: F-DI 0
2: F-DI 1
3: F-DI 2
255: Statically inact

Note: If value = 0:
No terminal assigned, safety function always active.
If value = 255:
No terminal assigned, safety function always inactive.
F-DI: Failsafe Digital Input
SDI: Safe Direction (safe motion direction)

r10049 SI F-DI monitoring status (processor 1) / SI F-DI status P1

CU240E-2 DP F	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned32
CU240E-2 F	**Can be changed:** -	**Scaling:** -	**Data set:** -
	Units group: -	**Unit selection:** -	
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the monitoring status of the fail-safe digital inputs (F-DI).

The F-DIs that are being used by the Safety Integrated functions are displayed.

If the module used has fewer than 3 F-DIs, "Freely available" is displayed for the F-DIs which are not in use.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	F-DI 0	Safety monitored	Freely available	-
01	F-DI 1	Safety monitored	Freely available	-
02	F-DI 2	Safety monitored	Freely available	-

Dependency: p10006 / p10106

p10022 / p10122

p10023 / p10123

p10026 / p10126

p10030 / p10130

p10031 / p10131

p10050 / p10150

Refer to: r10149

p10050 SI PROFIsafe F-DI transfer (processor 1) / SI Ps F-DI tran P1

CU240E-2 DP F	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned32
	Can be changed: C(95)	**Scaling:** -	**Data set:** -
	Units group: -	**Unit selection:** -	
	Min	**Max**	**Factory setting**
	-	-	0000 bin

Description: Setting for the transfer and evaluation of failsafe digital inputs (F-DI) via PROFIsafe.

The safe state of the selected F-DIs is transferred to the F-control via PROFIsafe. The F-DIs are monitored for discrepancies. Discrepancy faults can be acknowledged via PROFIsafe.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	F-DI 0	Transfer	No transfer	-
01	F-DI 1	Transfer	No transfer	-
02	F-DI 2	Transfer	No transfer	-

Dependency: Refer to: p10150

Note: F-DI: Failsafe Digital Input

r10051.0...2 CO/BO: SI digital inputs status (processor 1) / SI DI status P1

CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the single-channel, logical, and debounced status of the fail-safe digital inputs (F-DI).

The parameter is updated in the SI Motion monitoring clock cycle.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	F-DI 0	High	Low	-
01	F-DI 1	High	Low	-
02	F-DI 2	High	Low	-

Dependency: Refer to: p9501, p9601, p10017, p10050, r10151

Note: If a safety function is assigned to an input (e.g. via p10022), then the following applies:

- logical "0": Safety function is selected
- logical "1": Safety function is de-selected

The interrelationship between the logical level and the external voltage level at the input depends on the parameterization (refer to p10040) of the input as either NC 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 selects the safety function, for 24 V at both inputs, de-selects the safety function.

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 selects the safety function, the level 24 V/0 V de-selects the safety function.

F-DI: Failsafe Digital Input

The state of parameter r10151 is delayed by one monitoring clock cycle in relation to r10051.

The parameter is only updated in the following cases:

- If the Safety Extended Functions are enabled by means of activation via F-DI.
- If transfer of the F-DIs via PROFIsafe is enabled (see p9501).

In this case only the F-DIs transferred for PROFIsafe are displayed and updated (see p10050/p10150). All F-DIs which have not been transferred have a static zero value.

p10102 SI discrepancy monitoring time (processor 2) / SI discr t_mon P2

CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: C(95) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
1.00 [ms]	2000.00 [ms]	500.00 [ms]

Description: Sets the monitoring time for the discrepancy for the digital inputs.

The signal states at the two associated digital inputs (F-DI) must assume the same state within this monitoring time.

Dependency: Refer to: p10002

Note: F-DI: Failsafe Digital Input

p10106 SI acknowledgement internal event F-DI (processor 2) / SI ackn int evt P2

CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: C(95) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	255	0

Description: Select a safety-relevant digital input for the signal "acknowledge internal event" (internal fault).

The falling edge at this input resets the status "internal event" in the drive.

Value:
0: Statically active
1: F-DI 0
2: F-DI 1
3: F-DI 2
255: Statically inact

Dependency: Refer to: p10006

Note: If value = 0:

No terminal assigned, acknowledge input has a static zero value.

p10117 SI digital inputs debounce time (processor 2) / SI DI t_debounceP2

CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: C(95) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.00 [ms]	100.00 [ms]	1.00 [ms]

Description: Sets the debounce time for digital inputs.

The debounce time acts on the following digital inputs:

- Fail-safe digital inputs (F-DI).
- Single-channel digital input 2 (DI 2, read back input for the forced checking procedure).

The debounce time is accepted rounded off to whole milliseconds.

Dependency: Refer to: p10017

Note: Example:

Debounce time = 1 ms: Fault pulses of 1 ms are filtered; only pulses longer than 2 ms are processed.

Debounce time = 3 ms: Fault pulses of 3 ms are filtered; only pulses longer than 4 ms are processed.

The debounce result can be read in r10151.

p10122 SI STO input terminal (processor 2) / SI STO F-DI P2

CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: C(95) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	255	0

Description: Sets the fail-safe digital input (F-DI) for the "STO" function.

Value:
0: Statically active
1: F-DI 0
2: F-DI 1
3: F-DI 2
255: Statically inact

Dependency: Refer to: p10022

Note: If value = 0:

No terminal assigned, safety function always active.

If value = 255:

No terminal assigned, safety function always inactive.

F-DI: Failsafe Digital Input

STO: Safe Torque Off

p10123 SI SS1 input terminal (processor 2) / SI SS1 F-DI P2

CU240E-2 DP F	**Access level:** 3	**Calculated:** -	**Data type:** Integer16
CU240E-2 F	**Can be changed:** C(95)	**Scaling:** -	**Data set:** -
	Units group: -	**Unit selection:** -	
	Min 0	**Max** 255	**Factory setting** 0

Description: Sets the fail-safe digital input (F-DI) for the "SS1" function.

Value:
0: Statically active
1: F-DI 0
2: F-DI 1
3: F-DI 2
255: Statically inact

Dependency: Refer to: p10023

Note: If value = 0:

No terminal assigned, safety function always active.

If value = 255:

No terminal assigned, safety function always inactive.

F-DI: Failsafe Digital Input

SS1: Safe Stop 1

p10126 SI SLS input terminal (processor 2) / SI SLS F-DI P2

CU240E-2 DP F	**Access level:** 3	**Calculated:** -	**Data type:** Integer16
CU240E-2 F	**Can be changed:** C(95)	**Scaling:** -	**Data set:** -
	Units group: -	**Unit selection:** -	
	Min 0	**Max** 255	**Factory setting** 0

Description: Sets the fail-safe digital input (F-DI) for the "SLS" function.

Value:
0: Statically active
1: F-DI 0
2: F-DI 1
3: F-DI 2
255: Statically inact

Dependency: Refer to: p10026

Note: If value = 0:

No terminal assigned, safety function always active.

If value = 255:

No terminal assigned, safety function always inactive.

F-DI: Failsafe Digital Input

SLS: Safely-Limited Speed

p10130 SI SDI positive input terminal (processor 2) / SI SDI pos DI P2

CU240E-2 DP F
CU240E-2 F

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: C(95)	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min 0	**Max** 255	**Factory setting** 0

Description: Sets the fail-safe digital input (F-DI) for the "SDI positive" function.

Value:
0: Statically active
1: F-DI 0
2: F-DI 1
3: F-DI 2
255: Statically inact

Note: If value = 0:

No terminal assigned, safety function always active.

If value = 255:

No terminal assigned, safety function always inactive.

F-DI: Failsafe Digital Input

SDI: Safe Direction (safe motion direction)

p10131 SI SDI negative input terminal (processor 2) / SI SDI neg DI P2

CU240E-2 DP F
CU240E-2 F

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: C(95)	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min 0	**Max** 255	**Factory setting** 0

Description: Sets the fail-safe digital input (F-DI) for the "SDI negative" function.

Value:
0: Statically active
1: F-DI 0
2: F-DI 1
3: F-DI 2
255: Statically inact

Note: If value = 0:

No terminal assigned, safety function always active.

If value = 255:

No terminal assigned, safety function always inactive.

F-DI: Failsafe Digital Input

SDI: Safe Direction (safe motion direction)

r10149 SI F-DI monitoring status (processor 2) / SI F-DI status P2

CU240E-2 DP F
CU240E-2 F

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the monitoring status of the fail-safe digital inputs (F-DI).

The F-DIs that are being used by the Safety Integrated functions are displayed.

If the module used has fewer than 3 F-DIs, "Freely available" is displayed for the F-DIs which are not in use.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	F-DI 0	Safety monitored	Freely available	-
01	F-DI 1	Safety monitored	Freely available	-
02	F-DI 2	Safety monitored	Freely available	-

Dependency: p10006 / p10106

p10022 / p10122

p10023 / p10123

p10026 / p10126

p10030 / p10130

p10031 / p10131

p10050 / p10150

Refer to: r10049

p10150 SI PROFIsafe F-DI transfer (processor 2) / SI Ps F-DI tran P2

CU240E-2 DP F

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: C(95) | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0000 bin

Description: Setting for the transfer and evaluation of failsafe digital inputs (F-DI) via PROFIsafe.

The safe state of the selected F-DIs is transferred to the F-control via PROFIsafe. The F-DIs are monitored for discrepancies. Discrepancy faults can be acknowledged via PROFIsafe.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	F-DI 0	Transfer	No transfer	-
01	F-DI 1	Transfer	No transfer	-
02	F-DI 2	Transfer	No transfer	-

Dependency: Refer to: p10050

Note: F-DI: Failsafe Digital Input

r10151.0...2 CO/BO: SI digital inputs status (processor 2) / SI DI status P2

CU240E-2 DP F
CU240E-2 F

Access level: 3 **Calculated:** - **Data type:** Unsigned32
Can be changed: - **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Displays the single-channel, logical, and debounced status of the fail-safe digital inputs (F-DI).

The parameter is updated in the SI Motion monitoring clock cycle.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	F-DI 0	High	Low	-
01	F-DI 1	High	Low	-
02	F-DI 2	High	Low	-

Dependency: Refer to: p9501, p9601, p10117, p10150

Note: F-DI: Failsafe Digital Input

If a safety function is assigned to an input (e.g. via p10122), then the following applies:

- logical "0": Safety function is selected
- logical "1": Safety function is de-selected

The interrelationship between the logical level and the external voltage level at the input depends on the parameterization (refer to p10140) of the input as either NC 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 selects the safety function, for 24 V at both inputs, de-selects the safety function.

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 selects the safety function, the level 24 V/0 V de-selects the safety function.

The state of parameter r10151 is delayed by one monitoring clock cycle in relation to r10051.

The parameter is only updated in the following cases:

- If the Safety Extended Functions are enabled by means of activation via F-DI.
- If transfer of the F-DIs via PROFIsafe is enabled (see p9501).

In this case only the F-DIs transferred for PROFIsafe are displayed and updated (see p10050/p10150). All F-DIs which have not been transferred have a static zero value.

r20001[0...9] Run-time group sampling time / RTG sampling time

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: - **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
- [ms]	- [ms]	- [ms]

Description: Displays the current sampling time of the run-time group 0 to 9.

Index:
[0] = Run-time group 0
[1] = Run-time group 1
[2] = Run-time group 2
[3] = Run-time group 3
[4] = Run-time group 4
[5] = Run-time group 5
[6] = Run-time group 6
[7] = Run-time group 7
[8] = Run-time group 8
[9] = Run-time group 9

p20030[0...3] BI: AND 0 inputs / AND 0 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantities I0, I1, I2, I3 of instance AND 0 of the AND function block.

Index:
[0] = Input I0
[1] = Input I1
[2] = Input I2
[3] = Input I3

r20031 BO: AND 0 output Q / AND 0 output Q

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for binary quantity Q = I0 & I1 & I2 & I3 of instance AND 0 of the AND function block.

p20032 AND 0 run-time group / AND 0 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
1	9999	9999

Description: Setting parameter for the run-time group in which the instance AND 0 of the AND function block is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20033 AND 0 run sequence / AND 0 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	32000	10

Description: Setting parameter for the run sequence of instance AND 0 within the run-time group set in p20032.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20034[0...3] BI: AND 1 inputs / AND 1 inputs

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source of input quantities I0, I1, I2, I3 of instance AND 1 of the AND function block.

Index:
[0] = Input I0
[1] = Input I1
[2] = Input I2
[3] = Input I3

r20035 BO: AND 1 output Q / AND 1 output Q

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter for binary quantity Q = I0 & I1 & I2 & I3 of instance AND 1 of the AND function block.

p20036 AND 1 run-time group / AND 1 RTG

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
1	9999	9999

Description: Setting parameter for the run-time group in which the instance AND 1 of the AND function block is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20037 AND 1 run sequence / AND 1 RunSeq

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	32000	20

Description: Setting parameter for the run sequence of instance AND 1 within the run-time group set in p20036.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20038[0...3] BI: AND 2 inputs / AND 2 inputs

Access level: 3 **Calculated:** - **Data type:** U32 / Binary
Can be changed: T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source of input quantities I0, I1, I2, I3 of instance AND 2 of the AND function block.

Index:
[0] = Input I0
[1] = Input I1
[2] = Input I2
[3] = Input I3

r20039 BO: AND 2 output Q / AND 2 output Q

Access level: 3 **Calculated:** - **Data type:** Unsigned32
Can be changed: - **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter for binary quantity Q = I0 & I1 & I2 & I3 of instance AND 2 of the AND function block.

p20040 AND 2 run-time group / AND 2 RTG

Access level: 3 **Calculated:** - **Data type:** Integer16
Can be changed: T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
1	9999	9999

Description: Setting parameter for the run-time group in which the instance AND 2 of the AND function block is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20041 AND 2 run sequence / AND 2 RunSeq

Access level: 3 **Calculated:** - **Data type:** Unsigned16
Can be changed: T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
0	32000	30

Description: Setting parameter for the run sequence of instance AND 2 within the run-time group set in p20040.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20042[0...3] BI: AND 3 inputs / AND 3 inputs

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source of input quantities I0, I1, I2, I3 of instance AND 3 of the AND function block.

Index:
[0] = Input I0
[1] = Input I1
[2] = Input I2
[3] = Input I3

r20043 BO: AND 3 output Q / AND 3 output Q

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter for binary quantity Q = I0 & I1 & I2 & I3 of instance AND 3 of the AND function block.

p20044 AND 3 run-time group / AND 3 RTG

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
1	9999	9999

Description: Setting parameter for the run-time group in which the instance AND 3 of the AND function block is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20045 AND 3 run sequence / AND 3 RunSeq

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	32000	40

Description: Setting parameter for the run sequence of instance AND 3 within the run-time group set in p20044.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20046[0...3] BI: OR 0 inputs / OR 0 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantities I0, I1, I2, I3 of instance OR 0 of the OR function block.

Index:
[0] = Input I0
[1] = Input I1
[2] = Input I2
[3] = Input I3

r20047 BO: OR 0 output Q / OR 0 output Q

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for binary quantity Q = I0 | I1 | I2 | I3 of instance OR 0 of the OR function block.

p20048 OR 0 run-time group / OR 0 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
1	9999	9999

Description: Setting parameter for the run-time group in which the instance OR 0 of the OR function block is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20049 OR 0 run sequence / OR 0 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	32000	60

Description: Setting parameter for the run sequence of instance OR 0 within the run-time group set in p20048.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20050[0...3] BI: OR 1 inputs / OR 1 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantities I0, I1, I2, I3 of instance OR 1 of the OR function block.

Index:
[0] = Input I0
[1] = Input I1
[2] = Input I2
[3] = Input I3

r20051 BO: OR 1 output Q / OR 1 output Q

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for binary quantity Q = I0 | I1 | I2 | I3 of instance OR 1 of the OR function block.

p20052 OR 1 run-time group / OR 1 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
1	9999	9999

Description: Setting parameter for the run-time group in which the instance OR 1 of the OR function block is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20053 OR 1 run sequence / OR 1 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	32000	70

Description: Setting parameter for the run sequence of instance OR 1 within the run-time group set in p20052.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20054[0...3] BI: OR 2 inputs / OR 2 inputs

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source of input quantities I0, I1, I2, I3 of instance OR 2 of the OR function block.

Index:
[0] = Input I0
[1] = Input I1
[2] = Input I2
[3] = Input I3

r20055 BO: OR 2 output Q / OR 2 output Q

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter for binary quantity Q = I0 | I1 | I2 | I3 of instance OR 2 of the OR function block.

p20056 OR 2 run-time group / OR 2 RTG

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
1	9999	9999

Description: Setting parameter for the run-time group in which the instance OR 2 of the OR function block is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20057 OR 2 run sequence / OR 2 RunSeq

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	32000	80

Description: Setting parameter for the run sequence of instance OR 2 within the run-time group set in p20056.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20058[0...3] BI: OR 3 inputs / OR 3 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantities I0, I1, I2, I3 of instance OR 3 of the OR function block.

Index:
[0] = Input I0
[1] = Input I1
[2] = Input I2
[3] = Input I3

r20059 BO: OR 3 output Q / OR 3 output Q

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for binary quantity Q = I0 | I1 | I2 | I3 of instance OR 3 of the OR function block.

p20060 OR 3 run-time group / OR 3 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
1	9999	9999

Description: Setting parameter for the run-time group in which the instance OR 3 of the OR function block is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20061 OR 3 run sequence / OR 3 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	32000	90

Description: Setting parameter for the run sequence of instance OR 3 within the run-time group set in p20060.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20062[0...3] BI: XOR 0 inputs / XOR 0 inputs

Access level: 3 **Calculated:** - **Data type:** U32 / Binary
Can be changed: T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source of input quantities I0, I1, I2, I3 of instance XOR 0 of the XOR function block.

Index:
[0] = Input I0
[1] = Input I1
[2] = Input I2
[3] = Input I3

r20063 BO: XOR 0 output Q / XOR 0 output Q

Access level: 3 **Calculated:** - **Data type:** Unsigned32
Can be changed: - **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter for binary quantity Q of instance XOR 0 of the XOR function block.

p20064 XOR 0 run-time group / XOR 0 RTG

Access level: 3 **Calculated:** - **Data type:** Integer16
Can be changed: T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
1	9999	9999

Description: Setting parameter for the run-time group in which the instance XOR 0 of the XOR function block is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20065 XOR 0 run sequence / XOR 0 RunSeq

Access level: 3 **Calculated:** - **Data type:** Unsigned16
Can be changed: T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
0	32000	110

Description: Setting parameter for the run sequence of instance XOR 0 within the run-time group set in p20064.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20066[0...3] BI: XOR 1 inputs / XOR 1 inputs

Access level: 3 **Calculated:** - **Data type:** U32 / Binary
Can be changed: T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source of input quantities I0, I1, I2, I3 of instance XOR 1 of the XOR function block.

Index:
[0] = Input I0
[1] = Input I1
[2] = Input I2
[3] = Input I3

r20067 BO: XOR 1 output Q / XOR 1 output Q

Access level: 3 **Calculated:** - **Data type:** Unsigned32
Can be changed: - **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter for binary quantity Q of instance XOR 1 of the XOR function block.

p20068 XOR 1 run-time group / XOR 1 RTG

Access level: 3 **Calculated:** - **Data type:** Integer16
Can be changed: T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
1	9999	9999

Description: Setting parameter for the run-time group in which the instance XOR 1 of the XOR function block is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20069 XOR 1 run sequence / XOR 1 RunSeq

Access level: 3 **Calculated:** - **Data type:** Unsigned16
Can be changed: T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
0	32000	120

Description: Setting parameter for the run sequence of instance XOR 1 within the run-time group set in p20068.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20070[0...3] BI: XOR 2 inputs / XOR 2 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantities I0, I1, I2, I3 of instance XOR 2 of the XOR function block.

Index:
[0] = Input I0
[1] = Input I1
[2] = Input I2
[3] = Input I3

r20071 BO: XOR 2 output Q / XOR 2 output Q

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for binary quantity Q of instance XOR 2 of the XOR function block.

p20072 XOR 2 run-time group / XOR 2 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
1	9999	9999

Description: Setting parameter for the run-time group in which the instance XOR 2 of the XOR function block is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20073 XOR 2 run sequence / XOR 2 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	32000	130

Description: Setting parameter for the run sequence of instance XOR 2 within the run-time group set in p20072.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20074[0...3] BI: XOR 3 inputs / XOR 3 inputs

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source of input quantities I0, I1, I2, I3 of instance XOR 3 of the XOR function block.

Index:
[0] = Input I0
[1] = Input I1
[2] = Input I2
[3] = Input I3

r20075 BO: XOR 3 output Q / XOR 3 output Q

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter for binary quantity Q of instance XOR 3 of the XOR function block.

p20076 XOR 3 run-time group / XOR 3 RTG

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
1	9999	9999

Description: Setting parameter for the run-time group in which the instance XOR 3 of the XOR function block is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20077 XOR 3 run sequence / XOR 3 RunSeq

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	32000	140

Description: Setting parameter for the run sequence of instance XOR 3 within the run-time group set in p20076.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20078 BI: NOT 0 input I / NOT 0 input I

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source of input quantity I of instance NOT 0 of the inverter.

r20079 BO: NOT 0 inverted output / NOT 0 inv output

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for the inverted output of instance NOT 0 of the inverter.

p20080 NOT 0 run-time group / NOT 0 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
1	9999	9999

Description: Setting parameter for the run-time group in which the instance NOT 0 of the inverter is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20081 NOT 0 run sequence / NOT 0 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	32000	160

Description: Setting parameter for the run sequence of instance NOT 0 within the run-time group set in p20080.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20082 BI: NOT 1 input I / NOT 1 input I

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantity I of instance NOT 1 of the inverter.

r20083 BO: NOT 1 inverted output / NOT 1 inv output

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for the inverted output of instance NOT 1 of the inverter.

p20084 NOT 1 run-time group / NOT 1 RTG

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
1	9999	9999

Description: Setting parameter for the run-time group in which the instance NOT 1 of the inverter is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20085 NOT 1 run sequence / NOT 1 RunSeq

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	32000	170

Description: Setting parameter for the run sequence of instance NOT 1 within the run-time group set in p20084.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20086 BI: NOT 2 input I / NOT 2 input I

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source of input quantity I of instance NOT 2 of the inverter.

r20087 BO: NOT 2 inverted output / NOT 2 inv output

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter for the inverted output of instance NOT 2 of the inverter.

p20088 NOT 2 run-time group / NOT 2 RTG

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
1	9999	9999

Description: Setting parameter for the run-time group in which the instance NOT 2 of the inverter is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20089 NOT 2 run sequence / NOT 2 RunSeq

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	**Max**	**Factory setting**
0	32000	180

Description: Setting parameter for the run sequence of instance NOT 2 within the run-time group set in p20088.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20090 BI: NOT 3 input I / NOT 3 input I

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantity I of instance NOT 3 of the inverter.

r20091 BO: NOT 3 inverted output / NOT 3 inv output

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for the inverted output of instance NOT 3 of the inverter.

p20092 NOT 3 run-time group / NOT 3 RTG

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	**Max**	**Factory setting**
1	9999	9999

Description: Setting parameter for the run-time group in which the instance NOT 3 of the inverter is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20093 NOT 3 run sequence / NOT 3 RunSeq

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	**Max**	**Factory setting**
0	32000	190

Description: Setting parameter for the run sequence of instance NOT 3 within the run-time group set in p20092.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20094[0...3] CI: ADD 0 inputs / ADD 0 inputs

Access level: 3 **Calculated:** - **Data type:** U32 / FloatingPoint32
Can be changed: T **Scaling:** PERCENT **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source of input quantities X0, X1, X2, X3 of instance ADD 0 of the adder.

Index:
[0] = Input X0
[1] = Input X1
[2] = Input X2
[3] = Input X3

r20095 CO: ADD 0 output Y / ADD 0 output Y

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: - **Scaling:** PERCENT **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter for the output quantity Y = X0 + X1 + X2 + X3 of instance ADD 0 of the adder.

p20096 ADD 0 run-time group / ADD 0 RTG

Access level: 3 **Calculated:** - **Data type:** Integer16
Can be changed: T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
5	9999	9999

Description: Setting parameter for the run-time group in which the instance ADD 0 of the adder is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20097 ADD 0 run sequence / ADD 0 RunSeq

Access level: 3 **Calculated:** - **Data type:** Unsigned16
Can be changed: T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
0	32000	210

Description: Setting parameter for the run sequence of instance ADD 0 within the run-time group set in p20096.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20098[0...3] CI: ADD 1 inputs / ADD 1 inputs

Access level: 3 **Calculated:** - **Data type:** U32 / FloatingPoint32
Can be changed: T **Scaling:** PERCENT **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source of input quantities X0, X1, X2, X3 of instance ADD 1 of the adder.

Index:
[0] = Input X0
[1] = Input X1
[2] = Input X2
[3] = Input X3

r20099	CO: ADD 1 output Y / ADD 1 output Y		
	Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: -	**Scaling:** PERCENT	**Data set:** -
	Units group: -	**Unit selection:** -	
	Min -	**Max** -	**Factory setting** -
Description:	Display parameter for the output quantity Y = X0 + X1 + X2 + X3 of instance ADD 1 of the adder.		

p20100	ADD 1 run-time group / ADD 1 RTG		
	Access level: 3	**Calculated:** -	**Data type:** Integer16
	Can be changed: T	**Scaling:** -	**Data set:** -
	Units group: -	**Unit selection:** -	
	Min 5	**Max** 9999	**Factory setting** 9999
Description:	Setting parameter for the run-time group in which the instance ADD 1 of the adder is to be called.		
Value:	5: Run-time group 5 6: Run-time group 6 9999: Do not calculate		

p20101	ADD 1 run sequence / ADD 1 RunSeq		
	Access level: 3	**Calculated:** -	**Data type:** Unsigned16
	Can be changed: T	**Scaling:** -	**Data set:** -
	Units group: -	**Unit selection:** -	
	Min 0	**Max** 32000	**Factory setting** 220
Description:	Setting parameter for the run sequence of instance ADD 1 within the run-time group set in p20100.		
Note:	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		

p20102[0...1]	CI: SUB 0 inputs / SUB 0 inputs		
	Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
	Can be changed: T	**Scaling:** PERCENT	**Data set:** -
	Units group: -	**Unit selection:** -	
	Min -	**Max** -	**Factory setting** 0
Description:	Sets the signal source of minuend X1 and subtrahend X2 of instance SUB 0 of the subtractor.		
Index:	[0] = Minuend X1 [1] = Subtrahend X2		

r20103	CO: SUB 0 difference Y / SUB 0 difference Y		
	Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: -	**Scaling:** PERCENT	**Data set:** -
	Units group: -	**Unit selection:** -	
	Min -	**Max** -	**Factory setting** -
Description:	Display parameter for the difference Y = X1 - X2 of instance SUB 0 of the subtractor.		

p20104 SUB 0 run-time group / SUB 0 RTG

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
5	9999	9999

Description: Setting parameter for the run-time group in which instance SUB 0 of the subtractor is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20105 SUB 0 run sequence / SUB 0 RunSeq

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	32000	240

Description: Setting parameter for the run sequence of instance SUB 0 within the run-time group set in p20104.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20106[0...1] CI: SUB 1 inputs / SUB 1 inputs

Access level: 3 | **Calculated:** - | **Data type:** U32 / FloatingPoint32
Can be changed: T | **Scaling:** PERCENT | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source of minuend X1 and subtrahend X2 of instance SUB 1 of the subtractor.

Index:
[0] = Minuend X1
[1] = Subtrahend X2

r20107 CO: SUB 1 difference Y / SUB 1 difference Y

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** PERCENT | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter for the difference Y = X1 - X2 of instance SUB 1 of the subtractor.

p20108 SUB 1 run-time group / SUB 1 RTG

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
5	9999	9999

Description: Setting parameter for the run-time group in which instance SUB 1 of the subtractor is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20109 SUB 1 run sequence / SUB 1 RunSeq

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	32000	250

Description: Setting parameter for the run sequence of instance SUB 1 within the run-time group set in p20108.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20110[0...3] CI: MUL 0 inputs / MUL 0 inputs

Access level: 3 | **Calculated:** - | **Data type:** U32 / FloatingPoint32
Can be changed: T | **Scaling:** PERCENT | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source of the factors X0, X1, X2, X3 of instance MUL 0 of the multiplier.

Index:
[0] = Factor X0
[1] = Factor X1
[2] = Factor X2
[3] = Factor X3

r20111 CO: MUL 0 product Y / MUL 0 product Y

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** PERCENT | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter for the product Y = X0 * X1 * X2 * X3 of instance MUL 0 of the multiplier.

p20112 MUL 0 run-time group / MUL 0 RTG

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
5	9999	9999

Description: Setting parameter for the run-time group in which instance MUL 0 of the multiplier is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20113 MUL 0 run sequence / MUL 0 RunSeq

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	32000	270

Description: Setting parameter for the run sequence of instance MUL 0 within the run-time group set in p20112.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20114[0...3] CI: MUL 1 inputs / MUL 1 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of the factors X0, X1, X2, X3 of instance MUL 1 of the multiplier.

Index:
[0] = Factor X0
[1] = Factor X1
[2] = Factor X2
[3] = Factor X3

r20115 CO: MUL 1 product Y / MUL 1 product Y

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for the product Y = X0 * X1 * X2 * X3 of instance MUL 1 of the multiplier.

p20116 MUL 1 run-time group / MUL 1 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which instance MUL 1 of the multiplier is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20117 MUL 1 run sequence / MUL 1 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	32000	280

Description: Setting parameter for the run sequence of instance MUL 1 within the run-time group set in p20116.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20118[0...1] CI: DIV 0 inputs / DIV 0 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of dividend X1 and divisor X2 of instance DIV 0 of the divider.

Index:
[0] = Dividend X0
[1] = Divisor X1

r20119[0...2] CO: DIV 0 quotient / DIV 0 quotient

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** PERCENT | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter for quotients Y = X1/X2, integer number quotients YIN, and division remainder MOD = (Y - YIN) x X2 of instance DIV 0 of the divider.

Index:
[0] = Quotient Y
[1] = Integer number quotient YIN
[2] = Div remainder MOD

r20120 BO: DIV 0 divisor is zero QF / DIV 0 divisor=0 QF

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter for the signal QF that the divisor X2 of instance DIV 0 of the divider is zero.
X2 = 0.0 => QF = 1

p20121 DIV 0 run-time group / DIV 0 RTG

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
5	9999	9999

Description: Setting parameter for the run-time group in which instance DIV 0 of the divider is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20122 DIV 0 run sequence / DIV 0 RunSeq

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	32000	300

Description: Setting parameter for the run sequence of instance DIV 0 within the run-time group set in p20121.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20123[0...1] CI: DIV 1 inputs / DIV 1 inputs

Access level: 3 | **Calculated:** - | **Data type:** U32 / FloatingPoint32
Can be changed: T | **Scaling:** PERCENT | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source of dividend X1 and divisor X2 of instance DIV 1 of the divider.

Index:
[0] = Dividend X0
[1] = Divisor X1

r20124[0...2] CO: DIV 1 quotient / DIV 1 quotient

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** PERCENT | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter for quotients Y = X1/X2, integer number quotients YIN, and division remainder MOD = (Y - YIN) x X2 of instance DIV 1 of the divider.

Index:
[0] = Quotient Y
[1] = Integer number quotient YIN
[2] = Div remainder MOD

r20125 BO: DIV 1 divisor is zero QF / DIV 1 divisor=0 QF

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter for the signal QF that the divisor X2 of instance DIV 1 of the divider is zero.
X2 = 0.0 => QF = 1

p20126 DIV 1 run-time group / DIV 1 RTG

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
5	9999	9999

Description: Setting parameter for the run-time group in which instance DIV 1 of the divider is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20127 DIV 1 run sequence / DIV 1 RunSeq

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	32000	310

Description: Setting parameter for the run sequence of instance DIV 1 within the run-time group set in p20126.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20128 CI: AVA 0 input X / AVA 0 input X

Access level: 3 | **Calculated:** - | **Data type:** U32 / FloatingPoint32
Can be changed: T | **Scaling:** PERCENT | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source of the input quantity X of instance AVA 0 of the absolute value generator with sign evaluation.

r20129 CO: AVA 0 output Y / AVA 0 output Y

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for output quantity Y of instance AVA 0 of the absolute value generator with sign evaluation.

r20130 BO: AVA 0 input negative SN / AVA 0 input neg SN

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for signal SN that the input quantity X of instance AVA 0 of the absolute value generator with sign evaluation is negative.

X < 0.0 => SN = 1

p20131 AVA 0 run-time group / AVA 0 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which instance AVA 0 of the absolute value generator with sign evaluation is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20132 AVA 0 run sequence / AVA 0 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	32000	340

Description: Setting parameter for the run sequence of instance AVA 0 within the run-time group set in p20131.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20133 CI: AVA 1 input X / AVA 1 input X

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of the input quantity X of instance AVA 1 of the absolute value generator with sign evaluation.

r20134 CO: AVA 1 output Y / AVA 1 output Y

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for output quantity Y of instance AVA 1 of the absolute value generator with sign evaluation.

r20135 BO: AVA 1 input negative SN / AVA 1 input neg SN

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for signal SN that the input quantity X of instance AVA 1 of the absolute value generator with sign evaluation is negative.

X < 0.0 => SN = 1

p20136 AVA 1 run-time group / AVA 1 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which instance AVA 1 of the absolute value generator with sign evaluation is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20137 AVA 1 run sequence / AVA 1 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	32000	350

Description: Setting parameter for the run sequence of instance AVA 1 within the run-time group set in p20136.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20138 BI: MFP 0 input pulse I / MFP 0 inp_pulse I

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the input pulse I of instance MFP 0 of the pulse generator.

p20139	**MFP 0 pulse duration in ms / MFP 0 pulse_dur ms**		
	Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: T	**Scaling:** -	**Data set:** -
	Units group: -	**Unit selection:** -	
	Min 0.00	**Max** 60000.00	**Factory setting** 0.00

Description: Setting parameter for pulse duration T in milliseconds of instance MFP 0 of the pulse generator.

r20140	**BO: MFP 0 output Q / MFP 0 output Q**		
	Access level: 3	**Calculated:** -	**Data type:** Unsigned32
	Can be changed: -	**Scaling:** -	**Data set:** -
	Units group: -	**Unit selection:** -	
	Min -	**Max** -	**Factory setting** -

Description: Display parameter for output pulse Q of instance MFP 0 of the pulse generator.

p20141	**MFP 0 run-time group / MFP 0 RTG**		
	Access level: 3	**Calculated:** -	**Data type:** Integer16
	Can be changed: T	**Scaling:** -	**Data set:** -
	Units group: -	**Unit selection:** -	
	Min 5	**Max** 9999	**Factory setting** 9999

Description: Setting parameter for the run-time group in which the instance MFP 0 of the pulse generator is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20142	**MFP 0 run sequence / MFP 0 RunSeq**		
	Access level: 3	**Calculated:** -	**Data type:** Unsigned16
	Can be changed: T	**Scaling:** -	**Data set:** -
	Units group: -	**Unit selection:** -	
	Min 0	**Max** 32000	**Factory setting** 370

Description: Setting parameter for the run sequence of instance MFP 0 within the run-time group set in p20141.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20143	**BI: MFP 1 input pulse I / MFP 1 inp_pulse I**		
	Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
	Can be changed: T	**Scaling:** -	**Data set:** -
	Units group: -	**Unit selection:** -	
	Min -	**Max** -	**Factory setting** 0

Description: Sets the signal source for the input pulse I of instance MFP 1 of the pulse generator.

p20144 MFP 1 pulse duration in ms / MFP 1 pulse_dur ms

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
0.00	60000.00	0.00

Description: Setting parameter for pulse duration T in milliseconds of instance MFP 1 of the pulse generator.

r20145 BO: MFP 1 output Q / MFP 1 output Q

Access level: 3 **Calculated:** - **Data type:** Unsigned32
Can be changed: - **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter for output pulse Q of instance MFP 1 of the pulse generator.

p20146 MFP 1 run-time group / MFP 1 RTG

Access level: 3 **Calculated:** - **Data type:** Integer16
Can be changed: T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
5	9999	9999

Description: Setting parameter for the run-time group in which the instance MFP 1 of the pulse generator is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20147 MFP 1 run sequence / MFP 1 RunSeq

Access level: 3 **Calculated:** - **Data type:** Unsigned16
Can be changed: T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
0	32000	380

Description: Setting parameter for the run sequence of instance MFP 1 within the run-time group set in p20146.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20148 BI: PCL 0 input pulse I / PCL 0 inp_pulse I

Access level: 3 **Calculated:** - **Data type:** U32 / Binary
Can be changed: T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source for the input pulse I of instance PCL 0 of the pulse shortener.

p20149 PCL 0 pulse duration in ms / PCL 0 pulse_dur ms

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	**Max**	**Factory setting**
0.00	60000.00	0.00

Description: Setting parameter for pulse duration T in milliseconds of instance PCL 0 of the pulse shortener.

r20150 BO: PCL 0 output Q / PCL 0 output Q

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for output pulse Q of instance PCL 0 of the pulse shortener.

p20151 PCL 0 run-time group / PCL 0 RTG

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which the instance PCL 0 of the pulse shortener is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20152 PCL 0 run sequence / PCL 0 RunSeq

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	**Max**	**Factory setting**
0	32000	400

Description: Setting parameter for the run sequence of instance PCL 0 within the run-time group set in p20151.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20153 BI: PCL 1 input pulse I / PCL 1 inp_pulse I

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the input pulse I of instance PCL 1 of the pulse shortener.

p20154 PCL 1 pulse duration in ms / PCL 1 pulse_dur ms

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
0.00	60000.00	0.00

Description: Setting parameter for pulse duration T in milliseconds of instance PCL 1 of the pulse shortener.

r20155 BO: PCL 1 output Q / PCL 1 output Q

Access level: 3 **Calculated:** - **Data type:** Unsigned32
Can be changed: - **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter for output pulse Q of instance PCL 1 of the pulse shortener.

p20156 PCL 1 run-time group / PCL 1 RTG

Access level: 3 **Calculated:** - **Data type:** Integer16
Can be changed: T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
5	9999	9999

Description: Setting parameter for the run-time group in which the instance PCL 1 of the pulse shortener is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20157 PCL 1 run sequence / PCL 1 RunSeq

Access level: 3 **Calculated:** - **Data type:** Unsigned16
Can be changed: T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
0	32000	410

Description: Setting parameter for the run sequence of instance PCL 1 within the run-time group set in p20156.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20158 BI: PDE 0 input pulse I / PDE 0 inp_pulse I

Access level: 3 **Calculated:** - **Data type:** U32 / Binary
Can be changed: T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source for the input pulse I of instance PDE 0 of the closing delay device.

p20159 PDE 0 pulse delay time in ms / PDE 0 t_del ms

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.00	60000.00	0.00

Description: Setting parameter for pulse delay time T in milliseconds of instance PDE 0 of the closing delay device.

r20160 BO: PDE 0 output Q / PDE 0 output Q

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter for output pulse Q of instance PDE 0 of the closing delay device.

p20161 PDE 0 run-time group / PDE 0 RTG

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
5	9999	9999

Description: Setting parameter for the run-time group in which instance PDE 0 of the closing delay device is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20162 PDE 0 run sequence / PDE 0 RunSeq

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	32000	430

Description: Setting parameter for the run sequence of instance PDE 0 within the run-time group set in p20161.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20163 BI: PDE 1 input pulse I / PDE 1 inp_pulse I

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source for the input pulse I of instance PDE 1 of the closing delay device.

p20164 PDE 1 pulse delay time in ms / PDE 1 t_del ms

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.00	60000.00	0.00

Description: Setting parameter for pulse delay time T in milliseconds of instance PDE 1 of the closing delay device.

r20165 BO: PDE 1 output Q / PDE 1 output Q

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter for output pulse Q of instance PDE 1 of the closing delay device.

p20166 PDE 1 run-time group / PDE 1 RTG

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
5	9999	9999

Description: Setting parameter for the run-time group in which instance PDE 1 of the closing delay device is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20167 PDE 1 run sequence / PDE 1 RunSeq

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	32000	440

Description: Setting parameter for the run sequence of instance PDE 1 within the run-time group set in p20166.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20168 BI: PDF 0 input pulse I / PDF 0 inp_pulse I

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source for the input pulse I of instance PDF 0 of the breaking delay device.

p20169 PDF 0 pulse extension time in ms / PDF 0 t_ext ms

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
0.00	60000.00	0.00

Description: Setting parameter for pulse extension time T in milliseconds of instance PDF 0 of the breaking delay device.

r20170 BO: PDF 0 output Q / PDF 0 output Q

Access level: 3 **Calculated:** - **Data type:** Unsigned32
Can be changed: - **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter for output pulse Q of instance PDF 0 of the breaking delay device.

p20171 PDF 0 run-time group / PDF 0 RTG

Access level: 3 **Calculated:** - **Data type:** Integer16
Can be changed: T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
5	9999	9999

Description: Setting parameter for the run-time group in which the instance PDF 0 of the breaking delay device is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20172 PDF 0 run sequence / PDF 0 RunSeq

Access level: 3 **Calculated:** - **Data type:** Unsigned16
Can be changed: T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
0	32000	460

Description: Setting parameter for the run sequence of instance PDF 0 within the run-time group set in p20171.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20173 BI: PDF 1 input pulse I / PDF 1 inp_pulse I

Access level: 3 **Calculated:** - **Data type:** U32 / Binary
Can be changed: T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source for the input pulse I of instance PDF 1 of the breaking delay device.

p20174 PDF 1 pulse extension time in ms / PDF 1 t_ext ms

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.00	60000.00	0.00

Description: Setting parameter for pulse extension time T in milliseconds of instance PDF 1 of the breaking delay device.

r20175 BO: PDF 1 output Q / PDF 1 output Q

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter for output pulse Q of instance PDF 1 of the breaking delay device.

p20176 PDF 1 run-time group / PDF 1 RTG

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
5	9999	9999

Description: Setting parameter for the run-time group in which the instance PDF 1 of the breaking delay device is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20177 PDF 1 run sequence / PDF 1 RunSeq

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	32000	470

Description: Setting parameter for the run sequence of instance PDF 1 within the run-time group set in p20176.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20178[0...1] BI: PST 0 inputs / PST 0 inputs

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source for input pulse I and the reset input R of instance PST 0 of the pulse extension element.

Index:
[0] = Input pulse I
[1] = Reset input R

p20179 PST 0 pulse duration in ms / PST 0 pulse_dur ms

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.00	60000.00	0.00

Description: Setting parameter for pulse duration T in milliseconds of instance PST 0 of the pulse extension element.

r20180 BO: PST 0 output Q / PST 0 output Q

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter for output pulse Q of instance PST 0 of the pulse extension element.

p20181 PST 0 run-time group / PST 0 RTG

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
5	9999	9999

Description: Setting parameter for the run-time group in which the instance PST 0 of the pulse extension element is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20182 PST 0 run sequence / PST 0 RunSeq

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	7999	490

Description: Setting parameter for the run sequence of instance PST 0 within the run-time group set in p20181.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20183[0...1] BI: PST 1 inputs / PST 1 inputs

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source for input pulse I and the reset input R of instance PST 1 of the pulse extension element.

Index:
[0] = Input pulse I
[1] = Reset input R

p20184 PST 1 pulse duration in ms / PST 1 pulse_dur ms

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0.00	60000.00	0.00

Description: Setting parameter for pulse duration T in milliseconds of instance PST 1 of the pulse extension element.

r20185 BO: PST 1 output Q / PST 1 output Q

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for output pulse Q of instance PST 1 of the pulse extension element.

p20186 PST 1 run-time group / PST 1 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which the instance PST 1 of the pulse extension element is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20187 PST 1 run sequence / PST 1 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	7999	500

Description: Setting parameter for the run sequence of instance PST 1 within the run-time group set in p20186.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20188[0...1] BI: RSR 0 inputs / RSR 0 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for set input S and reset input R of instance RSR 0 of the RS flipflop.

Index:
[0] = Set S
[1] = Reset R

r20189 BO: RSR 0 output Q / RSR 0 output Q

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter for output Q of instance RSR 0 of the RS flipflop

r20190 BO: RSR 0 inverted output QN / RSR 0 inv outp QN

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter for inverted output QN of instance RSR 0 of the RS flipflop.

p20191 RSR 0 run-time group / RSR 0 RTG

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
1	9999	9999

Description: Setting parameter for the run-time group in which instance RSR 0 of the RS flipflop is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20192 RSR 0 run sequence / RSR 0 RunSeq

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	7999	520

Description: Setting parameter for the run sequence of instance RSR 0 within the run-time group set in p20191.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20193[0...1] BI: RSR 1 inputs / RSR 1 inputs

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source for set input S and reset input R of instance RSR 1 of the RS flipflop.

Index:
[0] = Set S
[1] = Reset R

r20194 BO: RSR 1 output Q / RSR 1 output Q

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for output Q of instance RSR 1 of the RS flipflop

r20195 BO: RSR 1 inverted output QN / RSR 1 inv outp QN

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for inverted output QN of instance RSR 1 of the RS flipflop.

p20196 RSR 1 run-time group / RSR 1 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
1	9999	9999

Description: Setting parameter for the run-time group in which instance RSR 1 of the RS flipflop is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20197 RSR 1 run sequence / RSR 1 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	7999	530

Description: Setting parameter for the run sequence of instance RSR 1 within the run-time group set in p20196.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20198[0...3] BI: DFR 0 inputs / DFR 0 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for trigger input I, D input D, set input S, and reset input R of instance DFR 0 of the D flipflop.

Index:
[0] = Trigger input I
[1] = D input D
[2] = Set S
[3] = Reset R

r20199 BO: DFR 0 output Q / DFR 0 output Q

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter for output Q of instance DFR 0 of the D flipflop.

r20200 BO: DFR 0 inverted output QN / DFR 0 inv outp QN

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter for the inverted output QN of instance DFR 0 of the D flipflop.

p20201 DFR 0 run-time group / DFR 0 RTG

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
1	9999	9999

Description: Setting parameter for the run-time group in which instance DFR 0 of the D flipflop is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20202 DFR 0 run sequence / DFR 0 RunSeq

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	32000	550

Description: Setting parameter for the run sequence of instance DFR 0 within the run-time group set in p20201.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20203[0...3] BI: DFR 1 inputs / DFR 1 inputs

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source for trigger input I, D input D, set input S, and reset input R of instance DFR 1 of the D flipflop.

Index:
[0] = Trigger input I
[1] = D input D
[2] = Set S
[3] = Reset R

r20204 BO: DFR 1 output Q / DFR 1 output Q

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter for output Q of instance DFR 1 of the D flipflop.

r20205 BO: DFR 1 inverted output QN / DFR 1 inv outp QN

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter for the inverted output QN of instance DFR 1 of the D flipflop.

p20206 DFR 1 run-time group / DFR 1 RTG

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
1	9999	9999

Description: Setting parameter for the run-time group in which instance DFR 1 of the D flipflop is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20207 DFR 1 run sequence / DFR 1 RunSeq

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	32000	560

Description: Setting parameter for the run-time group of instance DFR 1 within the run-time group set in p20206.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20208[0...1] BI: BSW 0 inputs / BSW 0 inputs

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source of input quantities I0 and I1 of instance BSW 0 of the binary changeover switch.

Index:
[0] = Input I0
[1] = Input I1

p20209 BI: BSW 0 switch setting I / BSW 0 sw_setting

Access level: 3 **Calculated:** - **Data type:** U32 / Binary
Can be changed: T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source of the switch setting I of instance BSW 0 of the binary changeover switch.

r20210 BO: BSW 0 output Q / BSW 0 output Q

Access level: 3 **Calculated:** - **Data type:** Unsigned32
Can be changed: - **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter for output quantity Q of instance BSW 0 of the binary changeover switch.

p20211 BSW 0 run-time group / BSW 0 RTG

Access level: 3 **Calculated:** - **Data type:** Integer16
Can be changed: T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
1	9999	9999

Description: Setting parameter for the run-time group in which the instance BSW 0 of the binary changeover switch is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20212 BSW 0 run sequence / BSW 0 RunSeq

Access level: 3 **Calculated:** - **Data type:** Unsigned16
Can be changed: T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
0	7999	580

Description: Setting parameter for the run sequence of instance BSW 0 within the run-time group set in p20211.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20213[0...1] BI: BSW 1 inputs / BSW 1 inputs

Access level: 3 **Calculated:** - **Data type:** U32 / Binary
Can be changed: T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source of input quantities I0 and I1 of instance BSW 1 of the binary changeover switch.

Index:
[0] = Input I0
[1] = Input I1

p20214 BI: BSW 1 switch setting I / BSW 1 sw_setting

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source of the switch setting I of instance BSW 1 of the binary changeover switch.

r20215 BO: BSW 1 output Q / BSW 1 output Q

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter for output quantity Q of instance BSW 1 of the binary changeover switch.

p20216 BSW 1 run-time group / BSW 1 RTG

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
1	9999	9999

Description: Setting parameter for the run-time group in which the instance BSW 1 of the binary changeover switch is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20217 BSW 1 run sequence / BSW 1 RunSeq

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	7999	590

Description: Setting parameter for the run sequence of instance BSW 1 within the run-time group set in p20216.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20218[0...1] CI: NSW 0 inputs / NSW 0 inputs

Access level: 3 | **Calculated:** - | **Data type:** U32 / FloatingPoint32
Can be changed: T | **Scaling:** PERCENT | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source of input quantities X0 and X1 of instance NSW 0 of the numeric changeover switch.

Index:
[0] = Input X0
[1] = Input X1

p20219 BI: NSW 0 switch setting I / NSW 0 sw_setting

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of the switch setting I of instance NSW 0 of the numeric changeover switch.

r20220 CO: NSW 0 output Y / NSW 0 output Y

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for output quantity Y of instance NSW 0 of the numeric changeover switch.

p20221 NSW 0 run-time group / NSW 0 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which the instance NSW 0 of the numeric changeover switch is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20222 NSW 0 run sequence / NSW 0 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	32000	610

Description: Setting parameter for the run sequence of instance NSW 0 within the run-time group set in p20221.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20223[0...1] CI: NSW 1 inputs / NSW 1 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantities X0 and X1 of instance NSW 1 of the numeric changeover switch.

Index:
[0] = Input X0
[1] = Input X1

p20224 BI: NSW 1 switch setting I / NSW 1 sw_setting

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of the switch setting I of instance NSW 1 of the numeric changeover switch.

r20225 CO: NSW 1 output Y / NSW 1 output Y

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for output quantity Y of instance NSW 1 of the numeric changeover switch.

p20226 NSW 1 run-time group / NSW 1 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which the instance NSW 1 of the numeric changeover switch is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20227 NSW 1 run sequence / NSW 1 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	32000	620

Description: Setting parameter for the run sequence of instance NSW 1 within the run-time group set in p20226.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20228 CI: LIM 0 input X / LIM 0 input X

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantity X of instance LIM 0 of the limiter.

p20229 LIM 0 upper limit value LU / LIM 0 upper lim LU

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-340.28235E36	340.28235E36	0.0000

Description: Setting parameter for the upper limit value LU of instance LIM 0 of the limiter.

p20230 LIM 0 lower limit value LL / LIM 0 lower lim LL

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-340.28235E36	340.28235E36	0.0000

Description: Setting parameter for the lower limit value LL of instance LIM 0 of the limiter.

r20231 CO: LIM 0 output Y / LIM 0 output Y

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** PERCENT | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter for the limited output quantity Y of instance LIM 0 of the limiter.

r20232 BO: LIM 0 input quantity at the upper limit QU / LIM 0 QU

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter of instance LIM 0 of limiter QU (upper limit reached), i.e. QU = 1 for X >= LU.

r20233 BO: LIM 0 input quantity at the lower limit QL / LIM 0 QL

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter of instance LIM 0 of limiter QL (lower limit reached), i.e. QL = 1 for X <= LL.

p20234 LIM 0 run-time group / LIM 0 RTG

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
5	9999	9999

Description: Setting parameter for the run-time group in which instance LIM 0 of the limiter is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20235 LIM 0 run sequence / LIM 0 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min 0	**Max** 32000	**Factory setting** 640

Description: Setting parameter for the run sequence of instance LIM 0 within the run-time group set in p20234.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20236 CI: LIM 1 input X / LIM 1 input X

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Data set:** -
Units group: -	**Unit selection:** -	
Min -	**Max** -	**Factory setting** 0

Description: Sets the signal source of input quantity X of instance LIM 1 of the limiter.

p20237 LIM 1 upper limit value LU / LIM 1 upper lim LU

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min -340.28235E36	**Max** 340.28235E36	**Factory setting** 0.0000

Description: Setting parameter for the upper limit value LU of instance LIM 1 of the limiter.

p20238 LIM 1 lower limit value LL / LIM 1 lower lim LL

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min -340.28235E36	**Max** 340.28235E36	**Factory setting** 0.0000

Description: Setting parameter for the lower limit value LL of instance LIM 1 of the limiter.

r20239 CO: LIM 1 output Y / LIM 1 output Y

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Data set:** -
Units group: -	**Unit selection:** -	
Min -	**Max** -	**Factory setting** -

Description: Display parameter for the limited output quantity Y of instance LIM 1 of the limiter.

r20240 BO: LIM 1 input quantity at the upper limit QU / LIM 1 QU

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min -	**Max** -	**Factory setting** -

Description: Display parameter of instance LIM 1 of limiter QU (upper limit reached), i.e. QU = 1 for X >= LU.

r20241 BO: LIM 1 input quantity at the lower limit QL / LIM 1 QL

Access level: 3 **Calculated:** - **Data type:** Unsigned32
Can be changed: - **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter of instance LIM 1 of limiter QL (lower limit reached), i.e. QL = 1 for X <= LL.

p20242 LIM 1 run-time group / LIM 1 RTG

Access level: 3 **Calculated:** - **Data type:** Integer16
Can be changed: T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
5	9999	9999

Description: Setting parameter for the run-time group in which instance LIM 1 of the limiter is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20243 LIM 1 run sequence / LIM 1 RunSeq

Access level: 3 **Calculated:** - **Data type:** Unsigned16
Can be changed: T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
0	32000	650

Description: Setting parameter for the run sequence of instance LIM 1 within the run-time group set in p20242.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20244[0...1] CI: PT1 0 inputs / PT1 0 inputs

Access level: 3 **Calculated:** - **Data type:** U32 / FloatingPoint32
Can be changed: T **Scaling:** PERCENT **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source of input quantity X and of setting value SV of instance PT1 0 of the smoothing element.

Index:
[0] = Input X
[1] = Setting value SV

p20245 BI: PT1 0 accept setting value S / PT1 0 acc set val

Access level: 3 **Calculated:** - **Data type:** U32 / Binary
Can be changed: T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source for the "accept setting value" signal of instant PT1 0 of the smoothing element.

p20246 PT1 0 smoothing time constant in ms / PT1 0 T_smooth ms

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0.00	340.28235E36	0.00

Description: Sets the smoothing time constant T in milliseconds of instance PT1 0 of the smoothing element.

r20247 CO: PT1 0 output Y / PT1 0 output Y

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for the smoothed output quantity Y of instance PT1 0 of the smoothing element.

p20248 PT1 0 run-time group / PT1 0 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which instance PT1 0 of the smoothing element is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20249 PT1 0 run sequence / PT1 0 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	32000	670

Description: Setting parameter for the run sequence of instance PT1 0 within the run-time group set in p20248.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20250[0...1] CI: PT1 1 inputs / PT1 1 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantity X and of setting value SV of instance PT1 1 of the smoothing element.

Index:
[0] = Input X
[1] = Setting value SV

p20251 BI: PT1 1 accept setting value S / PT1 1 acc set val

Access level: 3 | **Calculated:** - | **Data type:** U32 / Binary
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source for the "accept setting value" signal of instant PT1 1 of the smoothing element.

p20252 PT1 1 smoothing time constant in ms / PT1 1 T_smooth ms

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0.00	340.28235E36	0.00

Description: Sets the smoothing time constant T in milliseconds of instance PT1 1 of the smoothing element.

r20253 CO: PT1 1 output Y / PT1 1 output Y

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** PERCENT | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter for the smoothed output quantity Y of instance PT1 1 of the smoothing element.

p20254 PT1 1 run-time group / PT1 1 RTG

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
5	9999	9999

Description: Setting parameter for the run-time group in which instance PT1 1 of the smoothing element is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20255 PT1 1 run sequence / PT1 1 RunSeq

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	32000	680

Description: Setting parameter for the run sequence of instance PT1 1 within the run-time group set in p20254.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20256[0...1] CI: INT 0 inputs / INT 0 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantity X and of setting value SV of instance INT 0 of the integrator.

Index: [0] = Input X
[1] = Setting value SV

p20257 INT 0 upper limit value LU / INT 0 upper lim LU

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-340.28235E36	340.28235E36	0.0000

Description: Sets the upper limit value LU of instance INT 0 of the integrator.

p20258 INT 0 lower limit value LL / INT 0 lower lim LL

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-340.28235E36	340.28235E36	0.0000

Description: Sets the lower limit value LL of instance INT 0 of the integrator.

p20259 INT 0 integrating time constant in ms / INT 0 T_Integr ms

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0.00	340.28235E36	0.00

Description: Sets the integrating time constant Ti in milliseconds of instance INT 0 of the integrator.

p20260 BI: INT 0 accept setting value S / INT 0 acc set val

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the "accept setting value" signal of instant INT 0 of the integrator.

r20261 CO: INT 0 output Y / INT 0 output Y

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for output quantity Y of instance INT 0 of the integrator.
If LL>= LU, then the output quantity Y = LU.

r20262 BO: INT 0 integrator at the upper limit QU / INT 0 QU

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter for the signal QU that output quantity Y of instance INT 0 of the integrator has reached the upper limit value LU.

r20263 BO: INT 0 integrator at the lower limit QL / INT 0 QL

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter for the signal QL that output quantity Y of instance INT 0 of the integrator has reached the lower limit value LL.

p20264 INT 0 run-time group / INT 0 RTG

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
5	9999	9999

Description: Setting parameter for the run-time group in which instance INT 0 of the integrator is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20265 INT 0 run sequence / INT 0 RunSeq

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	32000	700

Description: Setting parameter for the run sequence of instance INT 0 within the run-time group set in p20264.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20266 CI: LVM 0 input X / LVM 0 input X

Access level: 3 | **Calculated:** - | **Data type:** U32 / FloatingPoint32
Can be changed: T | **Scaling:** PERCENT | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source of input quantity X of instance LVM 0 of the double-sided limiter.

p20267 LVM 0 interval average value M / LVM 0 avg value M

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-340.28235E36	340.28235E36	0.0000

Description: Setting parameter for the interval average M of instance LVM 0 of the double-sided limiter.

p20268 LVM 0 interval limit L / LVM 0 limit L

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-340.28235E36	340.28235E36	0.0000

Description: Setting parameter for the interval limit L of instance LVM 0 of the double-sided limiter.

p20269 LVM 0 hyst HY / LVM 0 hyst HY

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-340.28235E36	340.28235E36	0.0000

Description: Setting parameter for hysteresis HY of instance LVM 0 of the double-sided limiter.

r20270 BO: LVM 0 input quantity above interval QU / LVM 0 X above QU

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter of instance LVM 0 of the double-sided limiter that input quantity X was at least once X > M + L and X is >= M + L - HY.

r20271 BO: LVM 0 input quantity within interval QM / LVM 0 X within QM

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter of instance LVM 0 of the double-sided limiter that the input quantity X lies within the interval.

r20272 BO: LVM 0 input quantity below interval QL / LVM 0 X below QL

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter of instance LVM 0 of the double-sided limiter that input quantity X was at least once X < M - L and X is <= M - L + HY.

p20273 LVM 0 run-time group / LVM 0 RTG

Access level: 3 | **Calculated:** - | **Data type:** Integer16

Can be changed: T | **Scaling:** - | **Data set:** -

Units group: - | **Unit selection:** -

Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which instance LVM 0 of the double-sided limiter is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20274 LVM 0 run sequence / LVM 0 RunSeq

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16

Can be changed: T | **Scaling:** - | **Data set:** -

Units group: - | **Unit selection:** -

Min	**Max**	**Factory setting**
0	7999	720

Description: Setting parameter for the run sequence of instance LVM 0 within the run-time group set in p20273.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20275 CI: LVM 1 input X / LVM 1 input X

Access level: 3 | **Calculated:** - | **Data type:** U32 / FloatingPoint32

Can be changed: T | **Scaling:** PERCENT | **Data set:** -

Units group: - | **Unit selection:** -

Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantity X of instance LVM 1 of the double-sided limiter.

p20276 LVM 1 interval average value M / LVM 1 avg value M

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32

Can be changed: T | **Scaling:** - | **Data set:** -

Units group: - | **Unit selection:** -

Min	**Max**	**Factory setting**
-340.28235E36	340.28235E36	0.0000

Description: Setting parameter for the interval average M of instance LVM 1 of the double-sided limiter.

p20277 LVM 1 interval limit L / LVM 1 limit L

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32

Can be changed: T | **Scaling:** - | **Data set:** -

Units group: - | **Unit selection:** -

Min	**Max**	**Factory setting**
-340.28235E36	340.28235E36	0.0000

Description: Setting parameter for the interval limit L of instance LVM 1 of the double-sided limiter.

p20278 LVM 1 hyst HY / LVM 1 hyst HY

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-340.28235E36	340.28235E36	0.0000

Description: Setting parameter for hysteresis HY of instance LVM 1 of the double-sided limiter.

r20279 BO: LVM 1 input quantity above interval QU / LVM 1 X above QU

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter of instance LVM 1 of the double-sided limiter that input quantity X was at least once X > M + L and X is >= M + L - HY.

r20280 BO: LVM 1 input quantity within interval QM / LVM 1 X within QM

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter of instance LVM 1 of the double-sided limiter that the input quantity X lies within the interval.

r20281 BO: LVM 1 input quantity below interval QL / LVM 1 X below QL

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter of instance LVM 1 of the double-sided limiter that input quantity X was at least once X < M - L and X is <= M - L + HY.

p20282 LVM 1 run-time group / LVM 1 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which instance LVM 1 of the double-sided limiter is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20283 LVM 1 run sequence / LVM 1 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min 0	**Max** 7999	**Factory setting** 730

Description: Setting parameter for the run sequence of instance LVM within the run-time group set in p20282.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20284 CI: DIF 0 input X / DIF 0 input X

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Data set:** -
Units group: -	**Unit selection:** -	
Min -	**Max** -	**Factory setting** 0

Description: Sets the signal source of input quantity X of instance DIF 0 of the differentiating element.

p20285 DIF 0 differentiating time constant in ms / DIF 0 T_diff ms

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min 0.00	**Max** 340.28235E36	**Factory setting** 0.00

Description: Sets the differentiating time constant Td in milliseconds of instance DIF 0 of the differentiating element.

r20286 CO: DIF 0 output Y / DIF 0 output Y

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Data set:** -
Units group: -	**Unit selection:** -	
Min -	**Max** -	**Factory setting** -

Description: Display parameter for output quantity Y of instance DIF 0 of the differentiating element.

p20287 DIF 0 run-time group / DIF 0 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min 5	**Max** 9999	**Factory setting** 9999

Description: Setting parameter for the run-time group in which instance DIF 0 of the differentiating element is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20288 DIF 0 run sequence / DIF 0 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	32000	750

Description: Setting parameter for the run sequence of instance DIF 0 within the run-time group set in p20287.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20300 BI: NOT 4 input I / NOT 4 input I

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantity I of instance NOT 4 of the inverter.

r20301 BO: NOT 4 inverted output / NOT 4 inv output

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for the inverted output of instance NOT 4 of the inverter.

p20302 NOT 4 run-time group / NOT 4 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
1	9999	9999

Description: Setting parameter for the run-time group in which the instance NOT 4 of the inverter is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20303 NOT 4 run sequence / NOT 4 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	32000	770

Description: Setting parameter for the run sequence of instance NOT 4 within the run-time group set in p20302.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20304 BI: NOT 5 input I / NOT 5 input I

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantity I of instance NOT 5 of the inverter.

r20305 BO: NOT 5 inverted output / NOT 5 inv output

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for the inverted output of instance NOT 5 of the inverter.

p20306 NOT 5 run-time group / NOT 5 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
1	9999	9999

Description: Setting parameter for the run-time group in which the instance NOT 5 of the inverter is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20307 NOT 5 run sequence / NOT 5 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	32000	780

Description: Setting parameter for the run sequence of instance NOT 5 within the run-time group set in p20306.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20308[0...3] CI: ADD 2 inputs / ADD 2 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantities X0, X1, X2, X3 of instance ADD 2 of the adder.

Index:
[0] = Input X0
[1] = Input X1
[2] = Input X2
[3] = Input X3

r20309 CO: ADD 2 output Y / ADD 2 output Y

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for the output quantity Y = X0 + X1 + X2 + X3 of instance ADD 2 of the adder.

p20310 ADD 2 run-time group / ADD 2 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which the instance ADD 2 of the adder is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20311 ADD 2 run sequence / ADD 2 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	32000	800

Description: Setting parameter for the run sequence of instance ADD 2 within the run-time group set in p20310.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20312[0...1] CI: NCM 0 inputs / NCM 0 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantities X0 and X1 of instance NCM 0 of the numeric comparator.

Index:
[0] = Input X0
[1] = Input X1

r20313 BO: NCM 0 output QU / NCM 0 output QU

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for binary quantity QU of instance NCM 0 of the numeric comparator.
QU is only set if X0 > X1.

r20314 BO: NCM 0 output QE / NCM 0 output QE

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for binary quantity QE of instance NCM 0 of the numeric comparator.
QE is only set if X0 = X1.

r20315 BO: NCM 0 output QL / NCM 0 output QL

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for binary quantity QL of instance NCM 0 of the numeric comparator.
QL is only set if X0 < X1.

p20316 NCM 0 run-time group / NCM 0 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which the instance NCM 0 of the numeric comparator is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20317 NCM 0 run sequence / NCM 0 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	32000	820

Description: Setting parameter for the run sequence of instance NCM 0 within the run-time group set in p20316.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20318[0...1] CI: NCM 1 inputs / NCM 1 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantities X0 and X1 of instance NCM 1 of the numeric comparator.

Index:
[0] = Input X0
[1] = Input X1

r20319 BO: NCM 1 output QU / NCM 1 output QU

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter for binary quantity QU of instance NCM 1 of the numeric comparator.
QU is only set if X0 > X1.

r20320 BO: NCM 1 output QE / NCM 1 output QE

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter for binary quantity QE of instance NCM 1 of the numeric comparator.
QE is only set if X0 = X1.

r20321 BO: NCM 1 output QL / NCM 1 output QL

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter for binary quantity QL of instance NCM 1 of the numeric comparator.
QL is only set if X0 < X1.

p20322 NCM 1 run-time group / NCM 1 RTG

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
5	9999	9999

Description: Setting parameter for the run-time group in which the instance NCM 1 of the numeric comparator is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20323 NCM 1 run sequence / NCM 1 RunSeq

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	32000	830

Description: Setting parameter for the run sequence of instance NCM 1 within the run-time group set in p20322.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20324[0...1] BI: RSR 2 inputs / RSR 2 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for set input S and reset input R of instance RSR 2 of the RS flipflop.

Index:
[0] = Set S
[1] = Reset R

r20325 BO: RSR 2 output Q / RSR 2 output Q

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for output Q of instance RSR 2 of the RS flipflop

r20326 BO: RSR 2 inverted output QN / RSR 2 inv outp QN

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for inverted output QN of instance RSR 2 of the RS flipflop.

p20327 RSR 2 run-time group / RSR 2 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
1	9999	9999

Description: Setting parameter for the run-time group in which instance RSR 2 of the RS flipflop is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20328 RSR 2 run sequence / RSR 2 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	7999	850

Description: Setting parameter for the run sequence of instance RSR 2 within the run-time group set in p20327.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20329[0...3] BI: DFR 2 inputs / DFR 2 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for trigger input I, D input D, set input S, and reset input R of instance DFR 2 of the D flipflop.

Index:
[0] = Trigger input I
[1] = D input D
[2] = Set S
[3] = Reset R

r20330 BO: DFR 2 output Q / DFR 2 output Q

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for output Q of instance DFR 2 of the D flipflop.

r20331 BO: DFR 2 inverted output QN / DFR 2 inv outp QN

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for the inverted output QN of instance DFR 2 of the D flipflop.

p20332 DFR 2 run-time group / DFR 2 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
1	9999	9999

Description: Setting parameter for the run-time group in which instance DFR 2 of the D flipflop is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20333 DFR 2 run sequence / DFR 2 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	32000	870

Description: Setting parameter for the run-time group of instance DFR 2 within the run-time group set in p20332.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20334 BI: PDE 2 input pulse I / PDE 2 inp_pulse I

Access level: 3 **Calculated:** - **Data type:** U32 / Binary
Can be changed: T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source for the input pulse I of instance PDE 2 of the closing delay device.

p20335 PDE 2 pulse delay time in ms / PDE 2 t_del ms

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
0.00	60000.00	0.00

Description: Setting parameter for pulse delay time T in milliseconds of instance PDE 2 of the closing delay device.

r20336 BO: PDE 2 output Q / PDE 2 output Q

Access level: 3 **Calculated:** - **Data type:** Unsigned32
Can be changed: - **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter for output pulse Q of instance PDE 2 of the closing delay device.

p20337 PDE 2 run-time group / PDE 2 RTG

Access level: 3 **Calculated:** - **Data type:** Integer16
Can be changed: T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
5	9999	9999

Description: Setting parameter for the run-time group in which instance PDE 2 of the closing delay device is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20338 PDE 2 run sequence / PDE 2 RunSeq

Access level: 3 **Calculated:** - **Data type:** Unsigned16
Can be changed: T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
0	32000	890

Description: Setting parameter for the run sequence of instance PDE 2 within the run-time group set in p20337.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20339 BI: PDE 3 input pulse I / PDE 3 inp_pulse I

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the input pulse I of instance PDE 3 of the closing delay device.

p20340 PDE 3 pulse delay time in ms / PDE 3 t_del ms

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0.00	60000.00	0.00

Description: Setting parameter for pulse delay time T in milliseconds of instance PDE 3 of the closing delay device.

r20341 BO: PDE 3 output Q / PDE 3 output Q

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for output pulse Q of instance PDE 3 of the closing delay device.

p20342 PDE 3 run-time group / PDE 3 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which instance PDE 3 of the closing delay device is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20343 PDE 3 run sequence / PDE 3 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	32000	900

Description: Setting parameter for the run sequence of instance PDE 3 within the run-time group set in p20342.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20344 BI: PDF 2 input pulse I / PDF 2 inp_pulse I

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the input pulse I of instance PDF 2 of the breaking delay device.

p20345 PDF 2 pulse extension time in ms / PDF 2 t_ext ms

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0.00	60000.00	0.00

Description: Setting parameter for pulse extension time T in milliseconds of instance PDF 2 of the breaking delay device.

r20346 BO: PDF 2 output Q / PDF 2 output Q

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for output pulse Q of instance PDF 2 of the breaking delay device.

p20347 PDF 2 run-time group / PDF 2 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which the instance PDF 2 of the breaking delay device is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20348 PDF 2 run sequence / PDF 2 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	32000	920

Description: Setting parameter for the run sequence of instance PDE 2 within the run-time group set in p20347.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20349 BI: PDF 3 input pulse I / PDF 3 inp_pulse I

Access level: 3 **Calculated:** - **Data type:** U32 / Binary
Can be changed: T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source for the input pulse I of instance PDF 3 of the breaking delay device.

p20350 PDF 3 pulse extension time in ms / PDF 3 t_ext ms

Access level: 3 **Calculated:** - **Data type:** FloatingPoint32
Can be changed: T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
0.00	60000.00	0.00

Description: Setting parameter for pulse extension time T in milliseconds of instance PDF 3 of the breaking delay device.

r20351 BO: PDF 3 output Q / PDF 3 output Q

Access level: 3 **Calculated:** - **Data type:** Unsigned32
Can be changed: - **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter for output pulse Q of instance PDF 3 of the breaking delay device.

p20352 PDF 3 run-time group / PDF 3 RTG

Access level: 3 **Calculated:** - **Data type:** Integer16
Can be changed: T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
5	9999	9999

Description: Setting parameter for the run-time group in which the instance PDF 3 of the breaking delay device is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20353 PDF 3 run sequence / PDF 3 RunSeq

Access level: 3 **Calculated:** - **Data type:** Unsigned16
Can be changed: T **Scaling:** - **Data set:** -
Units group: - **Unit selection:** -

Min	Max	Factory setting
0	32000	930

Description: Setting parameter for the run sequence of instance PDE 3 within the run-time group set in p20352.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20354 BI: MFP 2 input pulse I / MFP 2 inp_pulse I

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the input pulse I of instance MFP 2 of the pulse generator.

p20355 MFP 2 pulse duration in ms / MFP 2 pulse_dur ms

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0.00	60000.00	0.00

Description: Setting parameter for pulse duration T in milliseconds of instance MFP 2 of the pulse generator.

r20356 BO: MFP 2 output Q / MFP 2 output Q

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for output pulse Q of instance MFP 2 of the pulse generator.

p20357 MFP 2 run-time group / MFP 2 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which the instance MFP 2 of the pulse generator is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20358 MFP 2 run sequence / MFP 2 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	32000	950

Description: Setting parameter for the run sequence of instance MFP 2 within the run-time group set in p20357.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20359 BI: MFP 3 input pulse I / MFP 3 inp_pulse I

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the input pulse I of instance MFP 3 of the pulse generator.

p20360 MFP 3 pulse duration in ms / MFP 3 pulse_dur ms

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0.00	60000.00	0.00

Description: Setting parameter for pulse duration T in milliseconds of instance MFP 3 of the pulse generator.

r20361 BO: MFP 3 output Q / MFP 3 output Q

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for output pulse Q of instance MFP 3 of the pulse generator.

p20362 MFP 3 run-time group / MFP 3 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which the instance MFP 3 of the pulse generator is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20363 MFP 3 run sequence / MFP 3 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	32000	960

Description: Setting parameter for the run sequence of instance MFP 3 within the run-time group set in p20362.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20372 CI: PLI 0 input X / PLI 0 input X

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for input X of the polyline (20 breakpoints) of instance PLI 0.

r20373 CO: PLI 0 output Y / PLI 0 output Y

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for the output quantity Y of the polyline (20 breakpoints) of instance PLI 0

p20374[0...19] PLI 0 X-coordinate, A breakpoint / PLI 0 X-coordinate

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-340.28235E36	340.28235E36	0.0000

Description: Sets the x-coordinates for the breakpoints (A0...A19) of the polyline (20 breakpoints) of instance PLI 0.

Index:
[0] = Breakpoint 0
[1] = Breakpoint 1
[2] = Breakpoint 2
[3] = Breakpoint 3
[4] = Breakpoint 4
[5] = Breakpoint 5
[6] = Breakpoint 6
[7] = Breakpoint 7
[8] = Breakpoint 8
[9] = Breakpoint 9
[10] = Breakpoint 10
[11] = Breakpoint 11
[12] = Breakpoint 12
[13] = Breakpoint 13
[14] = Breakpoint 14
[15] = Breakpoint 15
[16] = Breakpoint 16
[17] = Breakpoint 17
[18] = Breakpoint 18
[19] = Breakpoint 19

p20375[0...19] PLI 0 Y-coordinate, B breakpoint / PLI 0 Y-coordinate

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
-340.28235E36	340.28235E36	0.0000

Description: Sets the y-coordinates for the breakpoints (B0...B19) of the polyline (20 breakpoints) of instance PLI 0.

Index:
[0] = Breakpoint 0
[1] = Breakpoint 1
[2] = Breakpoint 2
[3] = Breakpoint 3
[4] = Breakpoint 4
[5] = Breakpoint 5
[6] = Breakpoint 6
[7] = Breakpoint 7
[8] = Breakpoint 8
[9] = Breakpoint 9
[10] = Breakpoint 10
[11] = Breakpoint 11
[12] = Breakpoint 12
[13] = Breakpoint 13
[14] = Breakpoint 14
[15] = Breakpoint 15
[16] = Breakpoint 16
[17] = Breakpoint 17
[18] = Breakpoint 18
[19] = Breakpoint 19

p20376 PLI 0 run-time group / PLI 0 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which instance PLI 0 of the polyline is to be called

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20377 PLI 0 run sequence / PLI 0 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Data set:** -
Units group: -	**Unit selection:** -	
Min	**Max**	**Factory setting**
0	32000	980

Description: Setting parameter for the run sequence of instance PLI 0 within the run-time group set in p20376.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20378 CI: PLI 1 input X / PLI 1 input X

Access level: 3 | **Calculated:** - | **Data type:** U32 / FloatingPoint32
Can be changed: T | **Scaling:** PERCENT | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	0

Description: Sets the signal source for input X of the polyline (20 breakpoints) of instance PLI 1.

r20379 CO: PLI 1 output Y / PLI 1 output Y

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** PERCENT | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-	-	-

Description: Display parameter for the output quantity Y of the polyline (20 breakpoints) of instance PLI 1

p20380[0...19] PLI 1 X-coordinate, A breakpoint / PLI 1 X-coordinate

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: T | **Scaling:** PERCENT | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-340.28235E36	340.28235E36	0.0000

Description: Sets the x-coordinates for the breakpoints (A0...A19) of the polyline (20 breakpoints) of instance PLI 1.

Index:
[0] = Breakpoint 0
[1] = Breakpoint 1
[2] = Breakpoint 2
[3] = Breakpoint 3
[4] = Breakpoint 4
[5] = Breakpoint 5
[6] = Breakpoint 6
[7] = Breakpoint 7
[8] = Breakpoint 8
[9] = Breakpoint 9
[10] = Breakpoint 10
[11] = Breakpoint 11
[12] = Breakpoint 12
[13] = Breakpoint 13
[14] = Breakpoint 14
[15] = Breakpoint 15
[16] = Breakpoint 16
[17] = Breakpoint 17
[18] = Breakpoint 18
[19] = Breakpoint 19

p20381[0...19] PLI 1 Y-coordinate, B breakpoint / PLI 1 Y-coordinate

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: T | **Scaling:** PERCENT | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
-340.28235E36	340.28235E36	0.0000

Description: Sets the y-coordinates for the breakpoints (B0...B19) of the polyline (20 breakpoints) of instance PLI 1.

Index:
[0] = Breakpoint 0
[1] = Breakpoint 1
[2] = Breakpoint 2
[3] = Breakpoint 3
[4] = Breakpoint 4
[5] = Breakpoint 5
[6] = Breakpoint 6
[7] = Breakpoint 7
[8] = Breakpoint 8
[9] = Breakpoint 9
[10] = Breakpoint 10
[11] = Breakpoint 11
[12] = Breakpoint 12
[13] = Breakpoint 13
[14] = Breakpoint 14
[15] = Breakpoint 15
[16] = Breakpoint 16
[17] = Breakpoint 17
[18] = Breakpoint 18
[19] = Breakpoint 19

p20382 PLI 1 run-time group / PLI 1 RTG

Access level: 3 | **Calculated:** - | **Data type:** Integer16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
5	9999	9999

Description: Setting parameter for the run-time group in which instance PLI 1 of the polyline is to be called

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20383 PLI 1 run sequence / PLI 1 RunSeq

Access level: 3 | **Calculated:** - | **Data type:** Unsigned16
Can be changed: T | **Scaling:** - | **Data set:** -
Units group: - | **Unit selection:** -

Min	Max	Factory setting
0	32000	990

Description: Setting parameter for the run sequence of instance PLI 1 within the run-time group set in p20382.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

1.3 Command and Drive Data Sets – Overview

1.3.1 Command Data Sets (CDS)

Product: SINAMICS G120 CU240, Version: 4402100, Language: eng, Type: CDS

p0641[0...n]	CI: Current limit, variable / Curr lim var
p0700[0...n]	Command source selection / Cmd src sel
p0820[0...n]	BI: Drive Data Set selection DDS bit 0 / DDS select., bit 0
p0821[0...n]	BI: Drive Data Set selection DDS bit 1 / DDS select., bit 1
p0840[0...n]	BI: ON / OFF (OFF1) / ON / OFF (OFF1)
p0844[0...n]	BI: No coast-down / coast-down (OFF2) signal source 1 / OFF2 S_src 1
p0845[0...n]	BI: No coast-down / coast-down (OFF2) signal source 2 / OFF2 S_src 2
p0848[0...n]	BI: No Quick Stop / Quick Stop (OFF3) signal source 1 / OFF3 S_src 1
p0849[0...n]	BI: No Quick Stop / Quick Stop (OFF3) signal source 2 / OFF3 S_src 2
p0852[0...n]	BI: Enable operation/inhibit operation / Operation enable
p0854[0...n]	BI: Control by PLC/no control by PLC / Master ctrl by PLC
p0855[0...n]	BI: Unconditionally release holding brake / Uncond open brake
p0856[0...n]	BI: Speed controller enable / n_ctrl enable
p0858[0...n]	BI: Unconditionally close holding brake / Uncond close brake
p1000[0...n]	Speed setpoint selection / n_set sel
p1020[0...n]	BI: Fixed speed setpoint selection Bit 0 / n_set_fixed Bit 0
p1021[0...n]	BI: Fixed speed setpoint selection Bit 1 / n_set_fixed Bit 1
p1022[0...n]	BI: Fixed speed setpoint selection Bit 2 / n_set_fixed Bit 2
p1023[0...n]	BI: Fixed speed setpoint selection Bit 3 / n_set_fixed Bit 3
p1035[0...n]	BI: Motorized potentiometer setpoint raise / Mop raise
p1036[0...n]	BI: Motorized potentiometer lower setpoint / Mop lower
p1039[0...n]	BI: Motorized potentiometer inversion / MotP inv
p1041[0...n]	BI: Motorized potentiometer manual/automatic / Mop manual/auto
p1042[0...n]	CI: Motorized potentiometer automatic setpoint / Mop auto setpoint
p1043[0...n]	BI: Motorized potentiometer accept setting value / MotP acc set val
p1044[0...n]	CI: Motorized potentiometer setting value / Mop set val
p1051[0...n]	CI: Speed limit RFG positive direction of rotation / n_limit RFG pos
p1052[0...n]	CI: Speed limit RFG negative direction of rotation / n_limit RFG neg
p1055[0...n]	BI: Jog bit 0 / Jog bit 0
p1056[0...n]	BI: Jog bit 1 / Jog bit 1
p1070[0...n]	CI: Main setpoint / Main setpoint
p1071[0...n]	CI: Main setpoint scaling / Main setp scal
p1075[0...n]	CI: Suppl setpoint / Suppl setpoint
p1076[0...n]	CI: Supplementary setpoint scaling / Suppl setp scal
p1085[0...n]	CI: Speed limit in positive direction of rotation / n_limit pos
p1088[0...n]	CI: Speed limit in negative direction of rotation / n_limit neg
p1108[0...n]	BI: Total setpoint selection / Total setp sel
p1109[0...n]	CI: Total setpoint / Total setp
p1110[0...n]	BI: Inhibit negative direction / Inhib neg dir
p1111[0...n]	BI: Inhibit positive direction / Inhib pos dir
p1113[0...n]	BI: Setpoint inversion / Setp inv
p1122[0...n]	BI: Bypass ramp-function generator / Bypass RFG
p1140[0...n]	BI: Enable ramp-function generator/inhibit ramp-function generator / RFG enable
p1141[0...n]	BI: Continue ramp-function generator/freeze ramp-function generator / Continue RFG
p1142[0...n]	BI: Enable setpoint/inhibit setpoint / Setpoint enable

p1143[0...n]	BI: Ramp-function generator, accept setting value / RFG accept set v
p1144[0...n]	CI: Ramp-function generator setting value / RFG setting value
p1155[0...n]	CI: Speed controller speed setpoint 1 / n_ctrl n_set 1
p1160[0...n]	CI: Speed controller speed setpoint 2 / n_ctrl n_set 2
p1201[0...n]	BI: Flying restart enable signal source / Fly_res enab S_src
p1230[0...n]	BI: DC braking activation / DC brake act
p1330[0...n]	CI: U/f control independent voltage setpoint / Uf U_set independ.
p1352[0...n]	CI: Motor holding brake starting frequency signal source / Brake f_start
p1455[0...n]	CI: Speed controller P gain adaptation signal / n_ctrl Adpt_sig Kp
p1466[0...n]	CI: Speed controller P-gain scaling / n_ctrl Kp scal
p1475[0...n]	CI: Speed controller torque setting value for motor holding brake / n_ctrl M_sv MHB
p1476[0...n]	BI: Speed controller hold integrator / n_ctrl integ stop
p1477[0...n]	BI: Speed controller set integrator value / n_ctrl integ set
p1478[0...n]	CI: Speed controller integrator setting value / n_ctr integ_setVal
p1479[0...n]	CI: Speed controller integrator setting value scaling / n_ctrl I_val scal
p1486[0...n]	CI: Droop compensation torque / Droop M_comp
p1492[0...n]	BI: Droop feedback enable / Droop enable
p1500[0...n]	Torque setpoint selection / M_set sel
p1501[0...n]	BI: Change over between closed-loop speed/torque control / Changeov n/M_ctrl
p1503[0...n]	CI: Torque setpoint / M_set
p1511[0...n]	CI: Supplementary torque 1 / M_suppl 1
p1512[0...n]	CI: Supplementary torque 1 scaling / M_suppl 1 scal
p1513[0...n]	CI: Supplementary torque 2 / M_suppl 2
p1522[0...n]	CI: Torque limit upper / M_max upper
p1523[0...n]	CI: Torque limit lower / M_max lower
p1528[0...n]	CI: Torque limit upper scaling / M_max upper scal
p1529[0...n]	CI: Torque limit lower scaling / M_max lower scal
p1552[0...n]	CI: Torque limit upper scaling without offset / M_max up w/o offs
p1554[0...n]	CI: Torque limit lower scaling without offset / M_max low w/o offs
p1571[0...n]	CI: Supplementary flux setpoint / Suppl flux setp
p2103[0...n]	BI: 1. Acknowledge faults / 1. Acknowledge
p2104[0...n]	BI: 2. Acknowledge faults / 2. Acknowledge
p2105[0...n]	BI: 3. Acknowledge faults / 3. Acknowledge
p2106[0...n]	BI: External fault 1 / External fault 1
p2107[0...n]	BI: External fault 2 / External fault 2
p2108[0...n]	BI: External fault 3 / External fault 3
p2112[0...n]	BI: External alarm 1 / External alarm 1
p2116[0...n]	BI: External alarm 2 / External alarm 2
p2117[0...n]	BI: External alarm 3 / External alarm 3
p2144[0...n]	BI: Motor stall monitoring enable (negated) / Mot stall enab neg
p2148[0...n]	BI: RFG active / RFG active
p2151[0...n]	CI: Speed setpoint for messages/signals / n_set for msg
p2200[0...n]	BI: Technology controller enable / Tec_ctrl enable
p2220[0...n]	BI: Technology controller fixed value selection bit 0 / Tec_ctrl sel bit 0
p2221[0...n]	BI: Technology controller fixed value selection bit 1 / Tec_ctrl sel bit 1
p2222[0...n]	BI: Technology controller fixed value selection bit 2 / Tec_ctrl sel bit 2
p2223[0...n]	BI: Technology controller fixed value selection bit 3 / Tec_ctrl sel bit 3
p2235[0...n]	BI: Technology controller motorized potentiometer raise setpoint / Tec_ctrl mop raise
p2236[0...n]	BI: Technology controller motorized potentiometer lower setpoint / Tec_ctrl mop lower
p2253[0...n]	CI: Technology controller setpoint 1 / Tec_ctrl setp 1
p2254[0...n]	CI: Technology controller setpoint 2 / Tec_ctrl setp 2
p2264[0...n]	CI: Technology controller actual value / Tec_ctrl act val
p2286[0...n]	BI: Hold technology controller integrator / Tec_ctr integ stop

p2289[0...n]	CI: Technology controller pre-control signal / Tec_ctrl prectrl
p2296[0...n]	CI: Technology controller output scaling / Tec_ctrl outp scal
p2297[0...n]	CI: Technology controller maximum limit signal source / Tec_ctrl m_lm s_sc
p2298[0...n]	CI: Technology controller minimum limit signal source / Tec_ctrl min_l s_s
p2299[0...n]	CI: Technology controller limit offset / Tech_ctrl lim offs
p3111[0...n]	BI: External fault 3, enable / Ext fault 3 enab
p3112[0...n]	BI: External fault 3 enable negated / Ext flt 3 enab neg
p3230[0...n]	CI: Load monitoring, speed actual value / Load monit n_act
p3232[0...n]	BI: Load monitoring failure detection / Load_moni fail_det
p3330[0...n]	BI: 2-3-WIRE Control Command 1 / 2-3-WIRE CC_1
p3331[0...n]	BI: 2-3-WIRE Control Command 2 / 2-3-WIRE CC_2
p3332[0...n]	BI: 2-3-WIRE Control Command 3 / 2-3-WIRE CC_3

1.3.2 Drive Data Sets (DDS)

Product: SINAMICS G120 CU240, Version: 4402100, Language: eng, Type: DDS

p0340[0...n]	Automatic calculation, motor/control parameters / Calc auto par
p0640[0...n]	Current limit / Current limit
p1001[0...n]	CO: Fixed speed setpoint 1 / n_set_fixed 1
p1002[0...n]	CO: Fixed speed setpoint 2 / n_set_fixed 2
p1003[0...n]	CO: Fixed speed setpoint 3 / n_set_fixed 3
p1004[0...n]	CO: Fixed speed setpoint 4 / n_set_fixed 4
p1005[0...n]	CO: Fixed speed setpoint 5 / n_set_fixed 5
p1006[0...n]	CO: Fixed speed setpoint 6 / n_set_fixed 6
p1007[0...n]	CO: Fixed speed setpoint 7 / n_set_fixed 7
p1008[0...n]	CO: Fixed speed setpoint 8 / n_set_fixed 8
p1009[0...n]	CO: Fixed speed setpoint 9 / n_set_fixed 9
p1010[0...n]	CO: Fixed speed setpoint 10 / n_set_fixed 10
p1011[0...n]	CO: Fixed speed setpoint 11 / n_set_fixed 11
p1012[0...n]	CO: Fixed speed setpoint 12 / n_set_fixed 12
p1013[0...n]	CO: Fixed speed setpoint 13 / n_set_fixed 13
p1014[0...n]	CO: Fixed speed setpoint 14 / n_set_fixed 14
p1015[0...n]	CO: Fixed speed setpoint 15 / n_set_fixed 15
p1030[0...n]	Motorized potentiometer configuration / Mop configuration
p1037[0...n]	Motorized potentiometer maximum speed / MotP n_max
p1038[0...n]	Motorized potentiometer minimum speed / MotP n_min
p1040[0...n]	Motorized potentiometer starting value / Mop start value
p1047[0...n]	Motorized potentiometer ramp-up time / Mop ramp-up time
p1048[0...n]	Motorized potentiometer ramp-down time / Mop ramp-down time
p1058[0...n]	Jog 1 speed setpoint / Jog 1 n_set
p1059[0...n]	Jog 2 speed setpoint / Jog 2 n_set
p1063[0...n]	Speed limit setpoint channel / n_limit setp
p1080[0...n]	Minimum speed / n_min
p1082[0...n]	Maximum speed / n_max
p1083[0...n]	CO: Speed limit in positive direction of rotation / n_limit pos
p1086[0...n]	CO: Speed limit in negative direction of rotation / n_limit neg
p1091[0...n]	Skip speed 1 / n_skip 1
p1092[0...n]	Skip speed 2 / n_skip 2
p1093[0...n]	Skip speed 3 / n_skip 3
p1094[0...n]	Skip speed 4 / n_skip 4

p1101[0...n]	Skip speed bandwidth / n_skip bandwidth
p1120[0...n]	Ramp-function generator ramp-up time / RFG ramp-up time
p1121[0...n]	Ramp-function generator ramp-down time / RFG ramp-down time
p1123[0...n]	Ramp-function generator minimum ramp-up time / RFG t_RU min
p1127[0...n]	Ramp-function generator minimum ramp-down time / RFG t_RD min
p1130[0...n]	Ramp-function generator initial rounding-off time / RFG t_start_round
p1131[0...n]	Ramp-function generator final rounding-off time / RFG t_end_delay
p1134[0...n]	Ramp-function generator rounding-off type / RFG round-off type
p1135[0...n]	OFF3 ramp-down time / OFF3 t_RD
p1136[0...n]	OFF3 initial rounding-off time / RFGOFF3 t_strt_rnd
p1137[0...n]	OFF3 final rounding-off time / RFG OFF3 t_end_del
p1145[0...n]	Ramp-function generator tracking intensity. / RFG track intens
p1148[0...n]	Ramp-function gen., tolerance for ramp-up and ramp-down active / RFG tol HL/RL act
p1200[0...n]	FlyRest oper mode / FlyRest op_mode
p1202[0...n]	FlyRest srch curr / FlyRest I_srch
p1203[0...n]	Flying restart search rate factor / FlyRst v_Srch Fact
p1226[0...n]	Threshold for zero speed detection / n_standst n_thresh
p1240[0...n]	Vdc controller or Vdc monitoring configuration (vector control) / Vdc_ctr config vec
p1243[0...n]	Vdc_max controller dynamic factor / Vdc_max dyn_factor
p1245[0...n]	Vdc_min controller switch-in level (kinetic buffering) / Vdc_min on_level
p1247[0...n]	Vdc_min controller dynamic factor (kinetic buffering) / Vdc_min dyn_factor
p1249[0...n]	Vdc_max controller speed threshold / Vdc_max n_thresh
p1250[0...n]	Vdc controller proportional gain / Vdc_ctrl Kp
p1251[0...n]	Vdc controller integral time / Vdc_ctrl Tn
p1252[0...n]	Vdc controller rate time / Vdc_ctrl t_rate
p1255[0...n]	Vdc_min controller time threshold / Vdc_min t_thresh
p1256[0...n]	Vdc_min controller response (kinetic buffering) / Vdc_min response
p1257[0...n]	Vdc_min controller speed threshold / Vdc_min n_thresh
p1280[0...n]	Vdc controller or Vdc monitoring configuration (U/f) / Vdc_ctr config U/f
p1283[0...n]	Vdc_max controller dynamic factor (U/f) / Vdc_max dyn_factor
p1285[0...n]	Vdc_min controller switch-in level (kinetic buffering) (U/f) / Vdc_min on_level
p1287[0...n]	Vdc_min controller dynamic factor (kinetic buffering) (U/f) / Vdc_min dyn_factor
p1288[0...n]	Vdc_max controller feedback coupling factor ramp-fct. gen. (U/f) / Vdc_max factor RFG
p1290[0...n]	Vdc controller proportional gain (U/f) / Vdc_ctrl Kp
p1291[0...n]	Vdc controller integral time (U/f) / Vdc_ctrl Tn
p1292[0...n]	Vdc controller rate time (U/f) / Vdc_ctrl t_rate
p1293[0...n]	Vdc min controller output limit (U/f) / Vdc_min outp_lim
p1295[0...n]	Vdc_min controller time threshold (U/f) / Vdc_min t_thresh
p1296[0...n]	Vdc_min controller response (kinetic buffering) (U/f / Vdc_min response
p1297[0...n]	Vdc_min controller speed threshold (U/f) / Vdc_min n_thresh
p1300[0...n]	Open-loop/closed-loop control operating mode / Op/cl-lp ctrl_mode
p1310[0...n]	Voltage boost permanent / U_boost perm
p1311[0...n]	Voltage boost at acceleration / U_boost accelerate
p1312[0...n]	Voltage boost when starting / U_boost starting
p1320[0...n]	U/f control programmable characteristic frequency 1 / Uf char f1
p1321[0...n]	U/f control programmable characteristic voltage 1 / Uf char U1
p1322[0...n]	U/f control programmable characteristic frequency 2 / Uf char f2
p1323[0...n]	U/f control programmable characteristic voltage 2 / Uf char U2
p1324[0...n]	U/f control programmable characteristic frequency 3 / Uf char f3
p1325[0...n]	U/f control programmable characteristic voltage 3 / Uf char U3
p1326[0...n]	U/f control programmable characteristic frequency 4 / Uf char f4
p1327[0...n]	U/f control programmable characteristic voltage 4 / Uf char U4
p1333[0...n]	U/f control FCC starting frequency / U/f FCC f_start

p1334[0...n]	U/f control slip compensation starting frequency / Slip comp start
p1335[0...n]	Slip compensation, scaling / Slip comp scal
p1336[0...n]	Slip compensation limit value / Slip comp lim val
p1338[0...n]	U/f mode resonance damping gain / Uf Res_damp gain
p1339[0...n]	U/f mode resonance damping filter time constant / Uf Res_damp T
p1340[0...n]	I_max frequency controller proportional gain / I_max_ctrl Kp
p1341[0...n]	I_max frequency controller integral time / I_max_ctrl Tn
p1345[0...n]	I_max voltage controller proportional gain / I_max_U_ctrl Kp
p1346[0...n]	I_max voltage controller integral time / I_max_U_ctrl Tn
p1349[0...n]	U/f mode resonance damping maximum frequency / Uf res_damp f_max
p1350[0...n]	Soft starting / Soft starting
p1351[0...n]	CO: Motor holding brake starting frequency / Brake f_start
p1400[0...n]	Speed control configuration / n_ctrl config
p1401[0...n]	Flux control configuration / Flux ctrl config
p1402[0...n]	Closed-loop current control and motor model configuration / I_ctrl config
p1416[0...n]	Speed setpoint filter 1 time constant / n_set_filt 1 T
p1452[0...n]	Speed controller speed actual value smoothing time (SLVC) / n_C n_act T_s SLVC
p1456[0...n]	Speed controller P gain adaptation lower starting point / n_ctrl AdaptKpLow
p1457[0...n]	Speed controller P gain adaptation upper starting point / n_ctrl AdaptKp up
p1458[0...n]	Adaptation factor, lower / Adapt_factor lower
p1459[0...n]	Adaptation factor, upper / Adapt_factor upper
p1461[0...n]	Speed controller Kp adaptation speed, upper scaling / n_ctrl Kp n upper
p1463[0...n]	Speed controller Tn adaptation speed, upper scaling / n_ctrl Tn n upper
p1464[0...n]	Speed controller adaptation speed, lower / n_ctrl n lower
p1465[0...n]	Speed controller adaptation speed, upper / n_ctrl n upper
p1470[0...n]	Speed controller encoderless operation P-gain / n_ctrl SLVC Kp
p1472[0...n]	Speed controller encoderless operation integral time / n_ctrl SLVC Tn
p1487[0...n]	Droop compensation torque scaling / Droop M_comp scal
p1488[0...n]	Droop input source / Droop input source
p1489[0...n]	Droop feedback scaling / Droop scaling
p1496[0...n]	Acceleration pre-control scaling / a_before scaling
p1499[0...n]	Accelerating for torque control, scaling / a for M_ctrl scal
p1514[0...n]	Supplementary torque 2 scaling / M_suppl 2 scal
p1517[0...n]	Accelerating torque smoothing time constant / M_accel T_smooth
p1520[0...n]	CO: Torque limit upper / M_max upper
p1521[0...n]	CO: Torque limit lower / M_max lower
p1524[0...n]	CO: Torque limit upper/motoring scaling / M_max up/mot scal
p1525[0...n]	CO: Torque limit lower scaling / M_max lower scal
p1530[0...n]	Power limit motoring / P_max mot
p1531[0...n]	Power limit regenerative / P_max gen
p1570[0...n]	CO: Flux setpoint / Flux setpoint
p1573[0...n]	Flux threshold value magnetizing / Flux thresh magnet
p1574[0...n]	Voltage reserve dynamic / U_reserve dyn
p1580[0...n]	Efficiency optimization / Efficiency opt.
p1582[0...n]	Flux setpoint smoothing time / Flux setp T_smth
p1584[0...n]	Field weakening operation, flux setpoint smoothing time / Field weak T_smth
p1594[0...n]	Field-weakening controller, P gain / Field_ctrl Kp
p1596[0...n]	Field weakening controller integral-action time / Field_ctrl Tn
p1610[0...n]	Torque setpoint static (SLVC) / M_set static
p1611[0...n]	Supplementary accelerating torque (SLVC) / M_suppl_accel
p1616[0...n]	Current setpoint smoothing time / I_set T_smooth
p1654[0...n]	Curr. setpoint torque-gen. smoothing time field weakening range / Isq_s T_smth FW
p1702[0...n]	Isd current controller pre-control scaling / Isd_ctr_prectrScal

p1703[0...n]	Isq current controller pre-control scaling / Isq_ctr_prectrScal
p1715[0...n]	Current controller P gain / I_ctrl Kp
p1717[0...n]	Current controller integral-action time / I_ctrl Tn
p1726[0...n]	Quadrature arm decoupling, scaling / Transv_decpl scal
p1727[0...n]	Quadrature arm decoupling at voltage limit scaling / TrnsvDecplVmaxScal
p1730[0...n]	Isd controller integral component shutdown threshold / Isd_ctrl I_thresh
p1740[0...n]	Gain resonance damping for encoderless closed-loop control / Gain res_damp
p1745[0...n]	Motor model error threshold stall detection / MotMod ThreshStall
p1750[0...n]	Motor model configuration / MotMod config
p1755[0...n]	Motor model changeover speed encoderless operation / MotMod n_chgSnsorl
p1758[0...n]	Motor model changeover delay time closed/open-loop control / MotMod t cl_op
p1759[0...n]	Motor model changeover delay time open/closed-loop control / MotMod t op_cl
p1764[0...n]	Motor model without encoder speed adaptation Kp / MotMod woE n_adaKp
p1767[0...n]	Motor model without encoder speed adaptation Tn / MotMod woE n_adaTn
p1774[0...n]	Motor model, offset voltage compensation alpha / MotMod offs comp A
p1775[0...n]	Motor model, offset voltage compensation beta / MotMod offs comp B
p1780[0...n]	Motor model adaptation configuration / MotMod adapt conf
p1784[0...n]	Motor model feedback scaling / Mod_FB_scal
p1785[0...n]	Motor model Lh adaptation Kp / MotMod Lh Kp
p1786[0...n]	Motor model Lh adaptation integral time / MotMod Lh Tn
r1787[0...n]	Motor model Lh adaptation corrective value / MotMod Lh corr
p1795[0...n]	Motor model kT adaptation integral time / MotMod kT Tn
r1797[0...n]	Motor model kT adaptation corrective value / MotMod kT corr
p1800[0...n]	Pulse frequency setpoint / Pulse freq setp
p1802[0...n]	Modulator mode / Modulator mode
p1803[0...n]	Maximum modulation depth / Modulat depth max
p1806[0...n]	Filter time constant Vdc correction / T_filt Vdc_corr
p1820[0...n]	Reverse the output phase sequence / Outp_ph_seq rev
p1959[0...n]	Rotating measurement configuration / Rot meas config
p2140[0...n]	Hysteresis speed 2 / n_hysteresis 2
p2141[0...n]	Speed threshold 1 / n_thresh val 1
p2142[0...n]	Hysteresis speed 1 / n_hysteresis 1
p2149[0...n]	Monitoring configuration / Monit config
p2150[0...n]	Hysteresis speed 3 / n_hysteresis 3
p2152[0...n]	Delay for comparison n > n_max / Del n > n_max
p2153[0...n]	Speed actual value filter time constant / n_act_filt T
p2155[0...n]	Speed threshold 2 / n_thresh val 2
p2156[0...n]	On delay, comparison value reached / t_on cmpr val rchd
p2157[0...n]	Speed threshold 5 / n_thresh val 5
p2158[0...n]	Delay for n_act comparison with speed threshold value 5 / Del compar n_5
p2159[0...n]	Speed threshold 6 / n_thresh val 6
p2160[0...n]	Delay for n_act comparison with speed threshold value 6 / Del compar n_6
p2161[0...n]	Speed threshold 3 / n_thresh val 3
p2162[0...n]	Hysteresis speed n_act > n_max / Hyst n_act>n_max
p2163[0...n]	Speed threshold 4 / n_thresh val 4
p2164[0...n]	Hysteresis speed 4 / n_hysteresis 4
p2166[0...n]	Off delay n_act = n_set / t_del_off n_i=n_so
p2167[0...n]	Switch-on delay n_act = n_set / t_on n_act=n_set
p2170[0...n]	Current threshold value / I_thres
p2171[0...n]	Current threshold value reached delay time / t_del I_thresh rch
p2172[0...n]	DC link voltage, threshold value / Vdc thresh val
p2173[0...n]	DC link voltage comparison delay time / t_del Vdc
p2174[0...n]	Torque threshold value 1 / M_thresh val 1

p2175[0...n]	Motor locked speed threshold / Mot lock n_thresh
p2176[0...n]	Torque threshold value comparison delay time / M_thrsh comp T_del
p2177[0...n]	Motor locked delay time / Mot lock t_del
p2178[0...n]	Motor stalled delay time / Mot stall t_del
p2179[0...n]	Output load identification current limit / Outp_ld iden I_lim
p2180[0...n]	Missing output load delay time / No load t_delay
p2181[0...n]	Load monitoring response / Load monit resp
p2182[0...n]	Load monitoring speed threshold value 1 / n_thresh 1
p2183[0...n]	Load monitoring speed threshold value 2 / n_thresh 2
p2184[0...n]	Load monitoring speed threshold value 3 / n_thresh 3
p2185[0...n]	Load monitoring torque threshold 1, upper / M_thresh 1 upper
p2186[0...n]	Load monitoring torque threshold 1, lower / M_thresh 1 lower
p2187[0...n]	Load monitoring torque threshold 2, upper / M_thresh 2 upper
p2188[0...n]	Load monitoring torque threshold 2, lower / M_thresh 2 lower
p2189[0...n]	Load monitoring torque threshold 3, upper / M_thresh 3 upper
p2190[0...n]	Load monitoring torque threshold 3, lower / M_thresh 3 lower
p2192[0...n]	Load monitoring delay time / Load monit t_del
p2193[0...n]	Load monitoring configuration / Load monit config
p2194[0...n]	Torque threshold value 2 / M_thresh val 2
p2195[0...n]	Torque utilization switch-off delay / M_util t_off
p2196[0...n]	Torque utilization scaling / M_util scal
p2201[0...n]	CO: Technology controller, fixed value 1 / Tec_ctr fix val 1
p2202[0...n]	CO: Technology controller, fixed value 2 / Tec_ctr fix val 2
p2203[0...n]	CO: Technology controller, fixed value 3 / Tec_ctr fix val 3
p2204[0...n]	CO: Technology controller, fixed value 4 / Tec_ctr fix val 4
p2205[0...n]	CO: Technology controller, fixed value 5 / Tec_ctr fix val 5
p2206[0...n]	CO: Technology controller, fixed value 6 / Tec_ctr fix val 6
p2207[0...n]	CO: Technology controller, fixed value 7 / Tec_ctr fix val 7
p2208[0...n]	CO: Technology controller, fixed value 8 / Tec_ctr fix val 8
p2209[0...n]	CO: Technology controller, fixed value 9 / Tec_ctr fix val 9
p2210[0...n]	CO: Technology controller, fixed value 10 / Tec_ctr fix val 10
p2211[0...n]	CO: Technology controller, fixed value 11 / Tec_ctr fix val 11
p2212[0...n]	CO: Technology controller, fixed value 12 / Tec_ctr fix val 12
p2213[0...n]	CO: Technology controller, fixed value 13 / Tec_ctr fix val 13
p2214[0...n]	CO: Technology controller, fixed value 14 / Tec_ctr fix val 14
p2215[0...n]	CO: Technology controller, fixed value 15 / Tec_ctr fix val 15
p2216[0...n]	Technology controller fixed value selection method / Tec_ctr FixVal sel
p2230[0...n]	Technology controller motorized potentiometer configuration / Tec_ctr mop config
p2237[0...n]	Technology controller motorized potentiometer maximum value / Tec_ctrl mop max
p2238[0...n]	Technology controller motorized potentiometer minimum value / Tec_ctrl mop min
p2240[0...n]	Technology controller motorized potentiometer starting value / Tec_ctrl mop start
p2247[0...n]	Technology controller motorized potentiometer ramp-up time / Tec_ctr mop t_r-up
p2248[0...n]	Technology controller motorized potentiometer ramp-down time / Tec_ctrMop t_rdown
p2900[0...n]	CO: Fixed value 1 [%] / Fixed value 1 [%]
p2901[0...n]	CO: Fixed value 2 [%] / Fixed value 2 [%]
p2930[0...n]	CO: Fixed value M [Nm] / Fixed value M [Nm]
p3231[0...n]	Load monitoring speed deviation / Load monit n_dev
p3233[0...n]	Torque actual value filter, time constant / M_act_filt T
p3320[0...n]	Fluid flow machine P = f(n), Y coordinate: P flow1 %, point 1 / Fluid flow mach Y1
p3321[0...n]	Fluid flow machine P = f(n), X coordinate: n flow1 %, point 1 / Fluid flow mach X1
p3322[0...n]	Fluid flow machine P = f(n), Y coordinate: P flow2 %, point 2 / Fluid flow mach Y2
p3323[0...n]	Fluid flow machine P = f(n), X coordinate: n flow2 %, point 2 / Fluid flow mach X2
p3324[0...n]	Fluid flow machine P = f(n), Y coordinate: P flow3 %, point 3 / Fluid flow mach Y3

p3325[0...n]	Fluid flow machine P = f(n), X coordinate: n flow3 %, point 3 / Fluid flow mach X3
p3326[0...n]	Fluid flow machine P = f(n), Y coordinate: P flow4 %, point 4 / Fluid flow mach Y4
p3327[0...n]	Fluid flow machine P = f(n), X coordinate: n flow4 %, point 4 / Fluid flow mach X4
p3328[0...n]	Fluid flow machine P = f(n), Y coordinate: P flow5 %, point 5 / Fluid flow mach Y5
p3329[0...n]	Fluid flow machine P = f(n), X coordinate: n flow5 %, point 5 / Fluid flow mach X5
p3856[0...n]	Compound braking current / Compound I_brake
r3925[0...n]	Identification final display / Ident final_disp
r3927[0...n]	Motor data identification control word / MotID STW
r3928[0...n]	Rotating measurement configuration / Rot meas config
r3929[0...n]	Motor data identification modulated voltage generation / MotID U_gen mod

1.3.3 Motor Data Sets (MDS)

Product: SINAMICS G120 CU240, Version: 4402100, Language: eng, Type: MDS

p0300[0...n]	Motor type selection / Mot type sel
p0301[0...n]	Motor code number selection / Mot code No. sel
p0304[0...n]	Rated motor voltage / Mot U_rated
p0305[0...n]	Rated motor current / Mot I_rated
p0307[0...n]	Rated motor power / Mot P_rated
p0308[0...n]	Rated motor power factor / Mot cos_phi_rated
p0309[0...n]	Rated motor efficiency / Mot eta_rated
p0310[0...n]	Rated motor frequency / Mot f_rated
p0311[0...n]	Rated motor speed / Mot n_rated
r0313[0...n]	Motor pole pair number, actual (or calculated) / Mot PolePairNo act
p0314[0...n]	Motor pole pair number / Mot pole pair No.
p0316[0...n]	Motor torque constant / Mot kT
p0318[0...n]	Motor stall current / Mot I_standstill
p0320[0...n]	Motor rated magnetizing current/short-circuit current / Mot I_mag_rated
p0322[0...n]	Maximum motor speed / Mot n_max
p0323[0...n]	Maximum motor current / Mot I_max
p0325[0...n]	Motor pole position identification current, 1st phase / Mot PolID I 1st ph
p0326[0...n]	Motor stall torque correction factor / Mot M_stall_corr
p0327[0...n]	Optimum motor load angle / Mot phi_load opt
p0328[0...n]	Motor reluctance torque constant / Mot kT_reluctance
p0329[0...n]	Motor pole position identification current / Mot PolID current
r0330[0...n]	Rated motor slip / Mot slip_rated
r0331[0...n]	Actual motor magnetizing current/short-circuit current / Mot I_mag_rtd act
r0332[0...n]	Rated motor power factor / Mot cos_phi_rated
r0333[0...n]	Rated motor torque / Mot M_rated
r0334[0...n]	Actual motor-torque constant / Mot kT act
p0335[0...n]	Motor cooling type / Motor cooling type
r0337[0...n]	Rated motor EMF / Mot EMF_rated
p0341[0...n]	Motor moment of inertia / Mot M_mom of inert
p0342[0...n]	Ratio between the total and motor moment of inertia / Mot MomInert Ratio
r0343[0...n]	Rated motor current identified / Mot I_rated ident
p0344[0...n]	Motor weight (for the thermal motor model) / Mot weight th mod
r0345[0...n]	Nominal motor starting time / Mot t_start_rated
p0346[0...n]	Motor excitation build-up time / Mot t_excitation
p0347[0...n]	Motor de-excitation time / Mot t_de-excitat.
p0350[0...n]	Motor stator resistance, cold / Mot R_stator cold
p0352[0...n]	Cable resistance / Mot R_cable cold

p0354[0...n]	Motor rotor resistance cold / Mot R_r cold
p0356[0...n]	Motor stator leakage inductance / Mot L_stator leak.
p0357[0...n]	Motor stator inductance, d axis / Mot L_stator d
p0358[0...n]	Motor rotor leakage inductance / Mot L_rot leak
p0360[0...n]	Motor magnetizing inductance / Mot Lh
p0362[0...n]	Motor saturation characteristic flux 1 / Mot saturat.flux 1
p0363[0...n]	Motor saturation characteristic flux 2 / Mot saturat.flux 2
p0364[0...n]	Motor saturation characteristic flux 3 / Mot saturat.flux 3
p0365[0...n]	Motor saturation characteristic flux 4 / Mot saturat.flux 4
p0366[0...n]	Motor saturation characteristic I_mag 1 / Mot sat. I_mag 1
p0367[0...n]	Motor saturation characteristic I_mag 2 / Mot sat. I_mag 2
p0368[0...n]	Motor saturation characteristic I_mag 3 / Mot sat. I_mag 3
p0369[0...n]	Motor saturation characteristic I_mag 4 / Mot sat. I_mag 4
r0370[0...n]	Motor stator resistance, cold / Mot R_stator cold
r0372[0...n]	Cable resistance / Mot R_cable
r0373[0...n]	Motor rated stator resistance / Mot R_stator rated
r0374[0...n]	Motor rotor resistance cold / Mot R_r cold
r0376[0...n]	Rated motor rotor resistance / Mot R_rotor rated
r0377[0...n]	Motor leakage inductance, total / Mot L_leak total
r0378[0...n]	Motor stator inductance, d axis / Mot L_stator_d
r0382[0...n]	Motor magnetizing inductance transformed / Mot L_magn transf
r0384[0...n]	Motor rotor time constant / damping time constant d axis / Mot T_rotor/T_Dd
r0386[0...n]	Motor stator leakage time constant / Mot T_stator leak
r0395[0...n]	Actual stator resistance / R_stator act
r0396[0...n]	Actual rotor resistance / R_rotor act
p0601[0...n]	Motor temperature sensor type / Mot_temp_sens type
p0604[0...n]	Motor temperature alarm threshold / Mot_temp al thr
p0605[0...n]	Motor temperature fault threshold / Mot_temp flt thr
p0606[0...n]	Motor temperature timer / Mot_temp timer
p0607[0...n]	Temperature sensor fault timer / Sensor fault time
p0610[0...n]	Motor overtemperature response / Mot temp response
p0611[0...n]	I2t motor model thermal time constant / I2t mot_mod T
p0612[0...n]	Thermal motor model configuration / Therm Mot_mod conf
p0615[0...n]	I2t motor model fault threshold / I2t mot_mod thresh
p0620[0...n]	Thermal adaptation, stator and rotor resistance / Mot therm_adapt R
p0621[0...n]	Identification stator resistance after restart / Rst_ident Restart
p0622[0...n]	Motor excitation time for Rs_ident after powering up again / t_excit Rs_id
p0625[0...n]	Motor ambient temperature / Mot T_ambient
p0626[0...n]	Motor overtemperature, stator core / Mot T_over core
p0627[0...n]	Motor overtemperature, stator winding / Mot T_over stator
p0628[0...n]	Motor overtemperature rotor winding / Mot T_over rotor
r0630[0...n]	Motor temperature model ambient temperature / MotTMod T_amb.
r0631[0...n]	Motor temperature model, stator core temperature / MotTMod T_core
r0632[0...n]	Motor temperature model, stator winding temperature / MotTMod T_copper
r0633[0...n]	Motor temperature model, rotor temperature / MotTMod T_rotor
p0634[0...n]	Q flux flux constant unsaturated / PSIQ KPSI UNSAT
p0635[0...n]	Q flux quadrature axis current constant unsaturated / PSIQ KIQ UNSAT
p0636[0...n]	Q flux direct axis current constant unsaturated / PSIQ KID UNSAT
p0637[0...n]	Q flux flux gradient saturated / PSIQ Grad SAT
p0650[0...n]	Actual motor operating hours / Mot t_oper act
p0651[0...n]	Motor operating hours maintenance interval / Mot t_op maint
p0826[0...n]	Motor changeover, motor number / Mot_chng mot No.
p1231[0...n]	DC braking configuration / DCBRK config

p1232[0...n]	DC braking, braking current / DCBRK I_brake
p1233[0...n]	DC braking time / DCBRK time
p1234[0...n]	Speed at the start of DC braking / DCBRK n_start
p1909[0...n]	Motor data identification control word / MotID STW
p1980[0...n]	PolID technique / PolID technique
p1999[0...n]	Ang. commutation offset calibr. and PolID scaling / Com_ang_offs scal
r3926[0...n]	Alternating voltage generation base voltage amplitude / Alt U_gen U_base

1.3.4 Power unit Data Set (PDS)

Product: SINAMICS G120 CU240, Version: 4402100, Language: eng, Type: PDS

r0200[0...n]	Power unit code number actual / PU code no. act
p0201[0...n]	Power unit code number / PU code no
r0203[0...n]	Actual power unit type / PU actual type
r0204[0...n]	Power unit hardware properties / PU HW property

1.4 Connector/Binector (BICO)-Parameters

1.4.1 Binector Input Parameters

Product: SINAMICS G120 CU240, Version: 4402100, Language: eng, Type: BI

p0730	BI: CU signal source for terminal DO 0 / CU S_src DO 0
p0731	BI: CU signal source for terminal DO 1 / CU S_src DO 1
p0732	BI: CU signal source for terminal DO 2 / CU S_src DO 2
p0782[0...1]	BI: CU analog outputs invert signal source / CU AO inv S_src
p0806	BI: Inhibit master control / PcCtrl inhibit
p0810	BI: Command data set selection CDS bit 0 / CDS select., bit 0
p0811	BI: Command data set selection CDS bit 1 / CDS select., bit 1
p0820[0...n]	BI: Drive Data Set selection DDS bit 0 / DDS select., bit 0
p0821[0...n]	BI: Drive Data Set selection DDS bit 1 / DDS select., bit 1
p0840[0...n]	BI: ON / OFF (OFF1) / ON / OFF (OFF1)
p0844[0...n]	BI: No coast-down / coast-down (OFF2) signal source 1 / OFF2 S_src 1
p0845[0...n]	BI: No coast-down / coast-down (OFF2) signal source 2 / OFF2 S_src 2
p0848[0...n]	BI: No Quick Stop / Quick Stop (OFF3) signal source 1 / OFF3 S_src 1
p0849[0...n]	BI: No Quick Stop / Quick Stop (OFF3) signal source 2 / OFF3 S_src 2
p0852[0...n]	BI: Enable operation/inhibit operation / Operation enable
p0854[0...n]	BI: Control by PLC/no control by PLC / Master ctrl by PLC
p0855[0...n]	BI: Unconditionally release holding brake / Uncond open brake
p0856[0...n]	BI: Speed controller enable / n_ctrl enable
p0858[0...n]	BI: Unconditionally close holding brake / Uncond close brake
p0897	BI: Parking axis selection / Parking axis sel
p1020[0...n]	BI: Fixed speed setpoint selection Bit 0 / n_set_fixed Bit 0
p1021[0...n]	BI: Fixed speed setpoint selection Bit 1 / n_set_fixed Bit 1
p1022[0...n]	BI: Fixed speed setpoint selection Bit 2 / n_set_fixed Bit 2
p1023[0...n]	BI: Fixed speed setpoint selection Bit 3 / n_set_fixed Bit 3
p1035[0...n]	BI: Motorized potentiometer setpoint raise / Mop raise
p1036[0...n]	BI: Motorized potentiometer lower setpoint / Mop lower
p1039[0...n]	BI: Motorized potentiometer inversion / MotP inv
p1041[0...n]	BI: Motorized potentiometer manual/automatic / Mop manual/auto
p1043[0...n]	BI: Motorized potentiometer accept setting value / MotP acc set val
p1055[0...n]	BI: Jog bit 0 / Jog bit 0
p1056[0...n]	BI: Jog bit 1 / Jog bit 1
p1108[0...n]	BI: Total setpoint selection / Total setp sel
p1110[0...n]	BI: Inhibit negative direction / Inhib neg dir
p1111[0...n]	BI: Inhibit positive direction / Inhib pos dir
p1113[0...n]	BI: Setpoint inversion / Setp inv
p1122[0...n]	BI: Bypass ramp-function generator / Bypass RFG
p1140[0...n]	BI: Enable ramp-function generator/inhibit ramp-function generator / RFG enable
p1141[0...n]	BI: Continue ramp-function generator/freeze ramp-function generator / Continue RFG
p1142[0...n]	BI: Enable setpoint/inhibit setpoint / Setpoint enable
p1143[0...n]	BI: Ramp-function generator, accept setting value / RFG accept set v
p1201[0...n]	BI: Flying restart enable signal source / Fly_res enab S_src
p1230[0...n]	BI: DC braking activation / DC brake act
p1476[0...n]	BI: Speed controller hold integrator / n_ctrl integ stop
p1477[0...n]	BI: Speed controller set integrator value / n_ctrl integ set
p1492[0...n]	BI: Droop feedback enable / Droop enable

p1501[0...n]	BI: Change over between closed-loop speed/torque control / Changeov n/M_ctrl
p2080[0...15]	BI: Binector-connector converter status word 1 / Bin/con ZSW1
p2081[0...15]	BI: Binector-connector converter status word 2 / Bin/con ZSW2
p2082[0...15]	BI: Binector-connector converter status word 3 / Bin/con ZSW3
p2083[0...15]	BI: Binector-connector converter status word 4 / Bin/con ZSW4
p2084[0...15]	BI: Binector-connector converter status word 5 / Bin/con ZSW5
p2103[0...n]	BI: 1. Acknowledge faults / 1. Acknowledge
p2104[0...n]	BI: 2. Acknowledge faults / 2. Acknowledge
p2105[0...n]	BI: 3. Acknowledge faults / 3. Acknowledge
p2106[0...n]	BI: External fault 1 / External fault 1
p2107[0...n]	BI: External fault 2 / External fault 2
p2108[0...n]	BI: External fault 3 / External fault 3
p2112[0...n]	BI: External alarm 1 / External alarm 1
p2116[0...n]	BI: External alarm 2 / External alarm 2
p2117[0...n]	BI: External alarm 3 / External alarm 3
p2144[0...n]	BI: Motor stall monitoring enable (negated) / Mot stall enab neg
p2148[0...n]	BI: RFG active / RFG active
p2200[0...n]	BI: Technology controller enable / Tec_ctrl enable
p2220[0...n]	BI: Technology controller fixed value selection bit 0 / Tec_ctrl sel bit 0
p2221[0...n]	BI: Technology controller fixed value selection bit 1 / Tec_ctrl sel bit 1
p2222[0...n]	BI: Technology controller fixed value selection bit 2 / Tec_ctrl sel bit 2
p2223[0...n]	BI: Technology controller fixed value selection bit 3 / Tec_ctrl sel bit 3
p2235[0...n]	BI: Technology controller motorized potentiometer raise setpoint / Tec_ctrl mop raise
p2236[0...n]	BI: Technology controller motorized potentiometer lower setpoint / Tec_ctrl mop lower
p2286[0...n]	BI: Hold technology controller integrator / Tec_ctr integ stop
p3111[0...n]	BI: External fault 3, enable / Ext fault 3 enab
p3112[0...n]	BI: External fault 3 enable negated / Ext flt 3 enab neg
p3232[0...n]	BI: Load monitoring failure detection / Load_moni fail_det
p3330[0...n]	BI: 2-3-WIRE Control Command 1 / 2-3-WIRE CC_1
p3331[0...n]	BI: 2-3-WIRE Control Command 2 / 2-3-WIRE CC_2
p3332[0...n]	BI: 2-3-WIRE Control Command 3 / 2-3-WIRE CC_3
p9705	BI: SI Motion: Test stop signal source / SI Mtn test stop
p20030[0...3]	BI: AND 0 inputs / AND 0 inputs
p20034[0...3]	BI: AND 1 inputs / AND 1 inputs
p20038[0...3]	BI: AND 2 inputs / AND 2 inputs
p20042[0...3]	BI: AND 3 inputs / AND 3 inputs
p20046[0...3]	BI: OR 0 inputs / OR 0 inputs
p20050[0...3]	BI: OR 1 inputs / OR 1 inputs
p20054[0...3]	BI: OR 2 inputs / OR 2 inputs
p20058[0...3]	BI: OR 3 inputs / OR 3 inputs
p20062[0...3]	BI: XOR 0 inputs / XOR 0 inputs
p20066[0...3]	BI: XOR 1 inputs / XOR 1 inputs
p20070[0...3]	BI: XOR 2 inputs / XOR 2 inputs
p20074[0...3]	BI: XOR 3 inputs / XOR 3 inputs
p20078	BI: NOT 0 input I / NOT 0 input I
p20082	BI: NOT 1 input I / NOT 1 input I
p20086	BI: NOT 2 input I / NOT 2 input I
p20090	BI: NOT 3 input I / NOT 3 input I
p20138	BI: MFP 0 input pulse I / MFP 0 inp_pulse I
p20143	BI: MFP 1 input pulse I / MFP 1 inp_pulse I
p20148	BI: PCL 0 input pulse I / PCL 0 inp_pulse I
p20153	BI: PCL 1 input pulse I / PCL 1 inp_pulse I
p20158	BI: PDE 0 input pulse I / PDE 0 inp_pulse I

p20163	BI: PDE 1 input pulse I / PDE 1 inp_pulse I
p20168	BI: PDF 0 input pulse I / PDF 0 inp_pulse I
p20173	BI: PDF 1 input pulse I / PDF 1 inp_pulse I
p20178[0...1]	BI: PST 0 inputs / PST 0 inputs
p20183[0...1]	BI: PST 1 inputs / PST 1 inputs
p20188[0...1]	BI: RSR 0 inputs / RSR 0 inputs
p20193[0...1]	BI: RSR 1 inputs / RSR 1 inputs
p20198[0...3]	BI: DFR 0 inputs / DFR 0 inputs
p20203[0...3]	BI: DFR 1 inputs / DFR 1 inputs
p20208[0...1]	BI: BSW 0 inputs / BSW 0 inputs
p20209	BI: BSW 0 switch setting I / BSW 0 sw_setting
p20213[0...1]	BI: BSW 1 inputs / BSW 1 inputs
p20214	BI: BSW 1 switch setting I / BSW 1 sw_setting
p20219	BI: NSW 0 switch setting I / NSW 0 sw_setting
p20224	BI: NSW 1 switch setting I / NSW 1 sw_setting
p20245	BI: PT1 0 accept setting value S / PT1 0 acc set val
p20251	BI: PT1 1 accept setting value S / PT1 1 acc set val
p20260	BI: INT 0 accept setting value S / INT 0 acc set val
p20300	BI: NOT 4 input I / NOT 4 input I
p20304	BI: NOT 5 input I / NOT 5 input I
p20324[0...1]	BI: RSR 2 inputs / RSR 2 inputs
p20329[0...3]	BI: DFR 2 inputs / DFR 2 inputs
p20334	BI: PDE 2 input pulse I / PDE 2 inp_pulse I
p20339	BI: PDE 3 input pulse I / PDE 3 inp_pulse I
p20344	BI: PDF 2 input pulse I / PDF 2 inp_pulse I
p20349	BI: PDF 3 input pulse I / PDF 3 inp_pulse I
p20354	BI: MFP 2 input pulse I / MFP 2 inp_pulse I
p20359	BI: MFP 3 input pulse I / MFP 3 inp_pulse I

1.4.2 Connector Input Parameters

Product: SINAMICS G120 CU240, Version: 4402100, Language: eng, Type: CI

p0641[0...n]	CI: Current limit, variable / Curr lim var
p0771[0...1]	CI: CU analog outputs signal source / CU AO S_src
p1042[0...n]	CI: Motorized potentiometer automatic setpoint / Mop auto setpoint
p1044[0...n]	CI: Motorized potentiometer setting value / Mop set val
p1051[0...n]	CI: Speed limit RFG positive direction of rotation / n_limit RFG pos
p1052[0...n]	CI: Speed limit RFG negative direction of rotation / n_limit RFG neg
p1070[0...n]	CI: Main setpoint / Main setpoint
p1071[0...n]	CI: Main setpoint scaling / Main setp scal
p1075[0...n]	CI: Suppl setpoint / Suppl setpoint
p1076[0...n]	CI: Supplementary setpoint scaling / Suppl setp scal
p1085[0...n]	CI: Speed limit in positive direction of rotation / n_limit pos
p1088[0...n]	CI: Speed limit in negative direction of rotation / n_limit neg
p1109[0...n]	CI: Total setpoint / Total setp
p1144[0...n]	CI: Ramp-function generator setting value / RFG setting value
p1155[0...n]	CI: Speed controller speed setpoint 1 / n_ctrl n_set 1
p1160[0...n]	CI: Speed controller speed setpoint 2 / n_ctrl n_set 2
p1330[0...n]	CI: U/f control independent voltage setpoint / Uf U_set independ.

p1352[0...n]	CI: Motor holding brake starting frequency signal source / Brake f_start
p1455[0...n]	CI: Speed controller P gain adaptation signal / n_ctrl Adpt_sig Kp
p1466[0...n]	CI: Speed controller P-gain scaling / n_ctrl Kp scal
p1475[0...n]	CI: Speed controller torque setting value for motor holding brake / n_ctrl M_sv MHB
p1478[0...n]	CI: Speed controller integrator setting value / n_ctr integ_setVal
p1479[0...n]	CI: Speed controller integrator setting value scaling / n_ctrl I_val scal
p1486[0...n]	CI: Droop compensation torque / Droop M_comp
p1503[0...n]	CI: Torque setpoint / M_set
p1511[0...n]	CI: Supplementary torque 1 / M_suppl 1
p1512[0...n]	CI: Supplementary torque 1 scaling / M_suppl 1 scal
p1513[0...n]	CI: Supplementary torque 2 / M_suppl 2
p1522[0...n]	CI: Torque limit upper / M_max upper
p1523[0...n]	CI: Torque limit lower / M_max lower
p1528[0...n]	CI: Torque limit upper scaling / M_max upper scal
p1529[0...n]	CI: Torque limit lower scaling / M_max lower scal
p1552[0...n]	CI: Torque limit upper scaling without offset / M_max up w/o offs
p1554[0...n]	CI: Torque limit lower scaling without offset / M_max low w/o offs
p1571[0...n]	CI: Supplementary flux setpoint / Suppl flux setp
p2016[0...3]	CI: Comm IF USS PZD send word / Comm USS send word
p2051[0...7]	CI: PROFIdrive PZD send word / PZD send word
p2099[0...1]	CI: Connector-binector converter signal source / Con/bin S_src
p2151[0...n]	CI: Speed setpoint for messages/signals / n_set for msg
p2253[0...n]	CI: Technology controller setpoint 1 / Tec_ctrl setp 1
p2254[0...n]	CI: Technology controller setpoint 2 / Tec_ctrl setp 2
p2264[0...n]	CI: Technology controller actual value / Tec_ctrl act val
p2289[0...n]	CI: Technology controller pre-control signal / Tec_ctrl prectrl
p2296[0...n]	CI: Technology controller output scaling / Tec_ctrl outp scal
p2297[0...n]	CI: Technology controller maximum limit signal source / Tec_ctrl m_lm s_sc
p2298[0...n]	CI: Technology controller minimum limit signal source / Tec_ctrl min_l s_s
p2299[0...n]	CI: Technology controller limit offset / Tech_ctrl lim offs
p3230[0...n]	CI: Load monitoring, speed actual value / Load monit n_act
p20094[0...3]	CI: ADD 0 inputs / ADD 0 inputs
p20098[0...3]	CI: ADD 1 inputs / ADD 1 inputs
p20102[0...1]	CI: SUB 0 inputs / SUB 0 inputs
p20106[0...1]	CI: SUB 1 inputs / SUB 1 inputs
p20110[0...3]	CI: MUL 0 inputs / MUL 0 inputs
p20114[0...3]	CI: MUL 1 inputs / MUL 1 inputs
p20118[0...1]	CI: DIV 0 inputs / DIV 0 inputs
p20123[0...1]	CI: DIV 1 inputs / DIV 1 inputs
p20128	CI: AVA 0 input X / AVA 0 input X
p20133	CI: AVA 1 input X / AVA 1 input X
p20218[0...1]	CI: NSW 0 inputs / NSW 0 inputs
p20223[0...1]	CI: NSW 1 inputs / NSW 1 inputs
p20228	CI: LIM 0 input X / LIM 0 input X
p20236	CI: LIM 1 input X / LIM 1 input X
p20244[0...1]	CI: PT1 0 inputs / PT1 0 inputs
p20250[0...1]	CI: PT1 1 inputs / PT1 1 inputs
p20256[0...1]	CI: INT 0 inputs / INT 0 inputs
p20266	CI: LVM 0 input X / LVM 0 input X
p20275	CI: LVM 1 input X / LVM 1 input X
p20284	CI: DIF 0 input X / DIF 0 input X
p20308[0...3]	CI: ADD 2 inputs / ADD 2 inputs
p20312[0...1]	CI: NCM 0 inputs / NCM 0 inputs

p20318[0...1]	CI: NCM 1 inputs / NCM 1 inputs
p20372	CI: PLI 0 input X / PLI 0 input X
p20378	CI: PLI 1 input X / PLI 1 input X

1.4.3 Binector Output Parameters

Product: SINAMICS G120 CU240, Version: 4402100, Language: eng, Type: BO

r0751.0...9	BO: CU analog inputs status word / CU AI status word
r0785.0...1	BO: CU analog outputs status word / CU AO ZSW
r0807.0	BO: Master control active / PcCtrl active
r1025.0	BO: Fixed speed setpoint status / n_setp_fix status
r2043.0...2	BO: PROFIdrive PZD state / PD PZD state
r2090.0...15	BO: PROFIdrive PZD1 receive bit-serial / PZD1 recv bitw
r2091.0...15	BO: PROFIdrive PZD2 receive bit-serial / PZD2 recv bitw
r2092.0...15	BO: PROFIdrive PZD3 receive bit-serial / PZD3 recv bitw
r2093.0...15	BO: PROFIdrive PZD4 receive bit-serial / PZD4 recv bitw
r2094.0...15	BO: Connector-binector converter binector output / Con/bin outp
r2095.0...15	BO: Connector-binector converter binector output / Con/bin outp
r9935.0	BO: POWER ON delay signal / POWER ON t_delay
r20031	BO: AND 0 output Q / AND 0 output Q
r20035	BO: AND 1 output Q / AND 1 output Q
r20039	BO: AND 2 output Q / AND 2 output Q
r20043	BO: AND 3 output Q / AND 3 output Q
r20047	BO: OR 0 output Q / OR 0 output Q
r20051	BO: OR 1 output Q / OR 1 output Q
r20055	BO: OR 2 output Q / OR 2 output Q
r20059	BO: OR 3 output Q / OR 3 output Q
r20063	BO: XOR 0 output Q / XOR 0 output Q
r20067	BO: XOR 1 output Q / XOR 1 output Q
r20071	BO: XOR 2 output Q / XOR 2 output Q
r20075	BO: XOR 3 output Q / XOR 3 output Q
r20079	BO: NOT 0 inverted output / NOT 0 inv output
r20083	BO: NOT 1 inverted output / NOT 1 inv output
r20087	BO: NOT 2 inverted output / NOT 2 inv output
r20091	BO: NOT 3 inverted output / NOT 3 inv output
r20120	BO: DIV 0 divisor is zero QF / DIV 0 divisor=0 QF
r20125	BO: DIV 1 divisor is zero QF / DIV 1 divisor=0 QF
r20130	BO: AVA 0 input negative SN / AVA 0 input neg SN
r20135	BO: AVA 1 input negative SN / AVA 1 input neg SN
r20140	BO: MFP 0 output Q / MFP 0 output Q
r20145	BO: MFP 1 output Q / MFP 1 output Q
r20150	BO: PCL 0 output Q / PCL 0 output Q
r20155	BO: PCL 1 output Q / PCL 1 output Q
r20160	BO: PDE 0 output Q / PDE 0 output Q
r20165	BO: PDE 1 output Q / PDE 1 output Q
r20170	BO: PDF 0 output Q / PDF 0 output Q
r20175	BO: PDF 1 output Q / PDF 1 output Q
r20180	BO: PST 0 output Q / PST 0 output Q
r20185	BO: PST 1 output Q / PST 1 output Q

r20189	BO: RSR 0 output Q / RSR 0 output Q
r20190	BO: RSR 0 inverted output QN / RSR 0 inv outp QN
r20194	BO: RSR 1 output Q / RSR 1 output Q
r20195	BO: RSR 1 inverted output QN / RSR 1 inv outp QN
r20199	BO: DFR 0 output Q / DFR 0 output Q
r20200	BO: DFR 0 inverted output QN / DFR 0 inv outp QN
r20204	BO: DFR 1 output Q / DFR 1 output Q
r20205	BO: DFR 1 inverted output QN / DFR 1 inv outp QN
r20210	BO: BSW 0 output Q / BSW 0 output Q
r20215	BO: BSW 1 output Q / BSW 1 output Q
r20232	BO: LIM 0 input quantity at the upper limit QU / LIM 0 QU
r20233	BO: LIM 0 input quantity at the lower limit QL / LIM 0 QL
r20240	BO: LIM 1 input quantity at the upper limit QU / LIM 1 QU
r20241	BO: LIM 1 input quantity at the lower limit QL / LIM 1 QL
r20262	BO: INT 0 integrator at the upper limit QU / INT 0 QU
r20263	BO: INT 0 integrator at the lower limit QL / INT 0 QL
r20270	BO: LVM 0 input quantity above interval QU / LVM 0 X above QU
r20271	BO: LVM 0 input quantity within interval QM / LVM 0 X within QM
r20272	BO: LVM 0 input quantity below interval QL / LVM 0 X below QL
r20279	BO: LVM 1 input quantity above interval QU / LVM 1 X above QU
r20280	BO: LVM 1 input quantity within interval QM / LVM 1 X within QM
r20281	BO: LVM 1 input quantity below interval QL / LVM 1 X below QL
r20301	BO: NOT 4 inverted output / NOT 4 inv output
r20305	BO: NOT 5 inverted output / NOT 5 inv output
r20313	BO: NCM 0 output QU / NCM 0 output QU
r20314	BO: NCM 0 output QE / NCM 0 output QE
r20315	BO: NCM 0 output QL / NCM 0 output QL
r20319	BO: NCM 1 output QU / NCM 1 output QU
r20320	BO: NCM 1 output QE / NCM 1 output QE
r20321	BO: NCM 1 output QL / NCM 1 output QL
r20325	BO: RSR 2 output Q / RSR 2 output Q
r20326	BO: RSR 2 inverted output QN / RSR 2 inv outp QN
r20330	BO: DFR 2 output Q / DFR 2 output Q
r20331	BO: DFR 2 inverted output QN / DFR 2 inv outp QN
r20336	BO: PDE 2 output Q / PDE 2 output Q
r20341	BO: PDE 3 output Q / PDE 3 output Q
r20346	BO: PDF 2 output Q / PDF 2 output Q
r20351	BO: PDF 3 output Q / PDF 3 output Q
r20356	BO: MFP 2 output Q / MFP 2 output Q
r20361	BO: MFP 3 output Q / MFP 3 output Q

1.4.4 Connector Output Parameters

Product: SINAMICS G120 CU240, Version: 4402100, Language: eng, Type: CO

r0021	CO: Actual speed smoothed / n_act smooth
r0025	CO: Output voltage smoothed / U_outp smooth
r0026	CO: DC link voltage smoothed / Vdc smooth
r0027	CO: Absolute actual current smoothed / I_act abs val smth
r0032	CO: Active power actual value smoothed / P_actv_act smth

r0034	CO: Motor utilization / Motor utilization
r0035	CO: Motor temperature / Mot temp
r0036	CO: Power unit overload I2t / PU overload I2t
r0037[0...19]	CO: Power unit temperatures / PU temperatures
r0060	CO: Speed setpoint before the setpoint filter / n_set before filt.
r0062	CO: Speed setpoint after the filter / n_set after filter
r0063[0...2]	CO: Speed actual value / n_act
r0064	CO: Speed controller system deviation / n_ctrl system dev
r0066	CO: Output frequency / f_outp
r0067	CO: Output current, maximum / I_outp max
r0068[0...1]	CO: Absolute current actual value / I_act abs val
r0069[0...6]	CO: Phase current actual value / I_phase act value
r0070	CO: Actual DC link voltage / Vdc act val
r0072	CO: Output voltage / U_output
r0074	CO: Modulat_depth / Modulat_depth
r0075	CO: Current setpoint field-generating / Id_set
r0076	CO: Current actual value field-generating / Id_act
r0077	CO: Current setpoint torque-generating / Iq_set
r0078	CO: Current actual value torque-generating / Iq_act
r0079	CO: Torque setpoint / M_set total
r0080[0...1]	CO: Torque actual value / M_act
r0081	CO: Torque utilization / M_Utilization
r0082[0...2]	CO: Active power actual value / P_act
r0083	CO: Flux setpoint / Flex setp
r0084[0...1]	CO: Flux actual value / Flux act val
r0087	CO: Actual power factor / Cos phi act
r0094	CO: Transformation angle / Transformat_angle
r0289	CO: Maximum power unit output current / PU I_outp max
r0586	CO: Measuring probe, speed actual value / MT n_act
r0587	CO: Measuring probe, measuring time measured / MT t_meas measured
r0588	CO: Measuring probe, pulse counter / MT pulse counter
r0752[0...1]	CO: CU analog inputs input voltage/current actual / CU AI U/I_inp act
r0755[0...1]	CO: CU analog inputs actual value in percent / CU AI value in %
r0944	CO: Counter for fault buffer changes / Fault buff change
p1001[0...n]	CO: Fixed speed setpoint 1 / n_set_fixed 1
p1002[0...n]	CO: Fixed speed setpoint 2 / n_set_fixed 2
p1003[0...n]	CO: Fixed speed setpoint 3 / n_set_fixed 3
p1004[0...n]	CO: Fixed speed setpoint 4 / n_set_fixed 4
p1005[0...n]	CO: Fixed speed setpoint 5 / n_set_fixed 5
p1006[0...n]	CO: Fixed speed setpoint 6 / n_set_fixed 6
p1007[0...n]	CO: Fixed speed setpoint 7 / n_set_fixed 7
p1008[0...n]	CO: Fixed speed setpoint 8 / n_set_fixed 8
p1009[0...n]	CO: Fixed speed setpoint 9 / n_set_fixed 9
p1010[0...n]	CO: Fixed speed setpoint 10 / n_set_fixed 10
p1011[0...n]	CO: Fixed speed setpoint 11 / n_set_fixed 11
p1012[0...n]	CO: Fixed speed setpoint 12 / n_set_fixed 12
p1013[0...n]	CO: Fixed speed setpoint 13 / n_set_fixed 13
p1014[0...n]	CO: Fixed speed setpoint 14 / n_set_fixed 14
p1015[0...n]	CO: Fixed speed setpoint 15 / n_set_fixed 15
r1024	CO: Fixed speed setpoint effective / n_set_fixed eff
r1045	CO: Mot. potentiometer speed setp. in front of ramp-fct. gen. / Mop n_set bef RFG
r1050	CO: Motor. potentiometer setpoint after the ramp-function generator / Mop setp after RFG
r1073	CO: Main setpoint effective / Main setpoint eff

r1077	CO: Supplementary setpoint effective / Suppl setpoint eff
r1078	CO: Total setpoint effective / Total setpoint eff
p1083[0...n]	CO: Speed limit in positive direction of rotation / n_limit pos
r1084	CO: Speed limit positive effective / n_limit pos eff
p1086[0...n]	CO: Speed limit in negative direction of rotation / n_limit neg
r1087	CO: Speed limit negative effective / n_limit neg eff
r1112	CO: Speed setpoint after minimum limiting / n_set n. min_lim
r1114	CO: Setpoint after the direction limiting / Setp after limit
r1119	CO: Ramp-function generator setpoint at the input / RFG setp at inp
r1149	CO: Ramp-function generator, acceleration / RFG acceleration
r1150	CO: Ramp-function generator speed setpoint at the output / RFG n_set at outp
r1169	CO: Speed controller, speed setpoints 1 and 2 / n_ctrl n_set 1/2
r1170	CO: Speed controller, setpoint sum / n_ctrl setp sum
r1258	CO: Vdc controller output / Vdc_ctrl output
r1298	CO: Vdc controller output (U/f) / Vdc_ctrl output
r1337	CO: Actual slip compensation / Slip comp act val
r1343	CO: I_max controller frequency output / I_max_ctrl f_outp
r1348	CO: U/f control Eco factor actual value / U/f Eco fac act v
p1351[0...n]	CO: Motor holding brake starting frequency / Brake f_start
r1438	CO: Speed controller, speed setpoint / n_ctrl n_set
r1445	CO: Actual speed smoothed / n_act smooth
r1454	CO: Speed controller system deviation I component / n_ctrl sys dev Tn
r1468	CO: Speed controller P-gain effective / n_ctr Kp eff
r1482	CO: Speed controller I torque output / n_ctrl I-M_output
r1490	CO: Droop feedback speed reduction / Droop n_reduction
r1493	CO: Moment of inertia, total / M_inertia total
r1508	CO: Torque setpoint before supplementary torque / M_set bef. M_suppl
r1516	CO: Supplementary torque and acceleration torque / M_suppl + M_accel
r1518[0...1]	CO: Accelerating torque / M_accel
p1520[0...n]	CO: Torque limit upper / M_max upper
p1521[0...n]	CO: Torque limit lower / M_max lower
p1524[0...n]	CO: Torque limit upper/motoring scaling / M_max up/mot scal
p1525[0...n]	CO: Torque limit lower scaling / M_max lower scal
r1526	CO: Torque limit upper without offset / M_max up w/o offs
r1527	CO: Torque limit lower without offset / M_max low w/o offs
r1538	CO: Upper effective torque limit / M_max upper eff
r1539	CO: Lower effective torque limit / M_max lower eff
r1547[0...1]	CO: Torque limit for speed controller output / M_max outp n_ctrl
r1548[0...1]	CO: Stall current limit torque-generating maximum / Isq_max stall
p1570[0...n]	CO: Flux setpoint / Flux setpoint
r1593[0...1]	CO: Field weakening controller / flux controller output / Field/Fl_ctrl outp
r1597	CO: Field weakening controller output / Field_ctrl outp
r1598	CO: Total flux setpoint / Flux setp total
r1718	CO: Isq controller output / Isq_ctrl outp
r1723	CO: Isd controller output / Isd_ctrl outp
r1732[0...1]	CO: Direct-axis voltage setpoint / Direct U set
r1733[0...1]	CO: Quadrature-axis voltage setpoint / Quad U set
r1770	CO: Motor model speed adaptation proportional component / MotMod n_adapt Kp
r1771	CO: Motor model speed adaptation I comp. / MotMod n_adapt Tn
r1801[0...1]	CO: Pulse frequency / Pulse frequency
r1809	CO: Modulator mode actual / Modulator mode act
r2050[0...7]	CO: PROFIBUS PZD receive word / PZD recv word
r2089[0...4]	CO: Send binector-connector converter status word / Bin/con ZSW send

r2120	CO: Sum of fault and alarm buffer changes / Sum buffer changed
r2121	CO: Counter, alarm buffer changes / Alrm buff changed
r2131	CO: Actual fault code / Actual fault code
r2132	CO: Actual alarm code / Actual alarm code
r2169	CO: Actual speed smoothed signals / n_act smth message
p2201[0...n]	CO: Technology controller, fixed value 1 / Tec_ctr fix val 1
p2202[0...n]	CO: Technology controller, fixed value 2 / Tec_ctr fix val 2
p2203[0...n]	CO: Technology controller, fixed value 3 / Tec_ctr fix val 3
p2204[0...n]	CO: Technology controller, fixed value 4 / Tec_ctr fix val 4
p2205[0...n]	CO: Technology controller, fixed value 5 / Tec_ctr fix val 5
p2206[0...n]	CO: Technology controller, fixed value 6 / Tec_ctr fix val 6
p2207[0...n]	CO: Technology controller, fixed value 7 / Tec_ctr fix val 7
p2208[0...n]	CO: Technology controller, fixed value 8 / Tec_ctr fix val 8
p2209[0...n]	CO: Technology controller, fixed value 9 / Tec_ctr fix val 9
p2210[0...n]	CO: Technology controller, fixed value 10 / Tec_ctr fix val 10
p2211[0...n]	CO: Technology controller, fixed value 11 / Tec_ctr fix val 11
p2212[0...n]	CO: Technology controller, fixed value 12 / Tec_ctr fix val 12
p2213[0...n]	CO: Technology controller, fixed value 13 / Tec_ctr fix val 13
p2214[0...n]	CO: Technology controller, fixed value 14 / Tec_ctr fix val 14
p2215[0...n]	CO: Technology controller, fixed value 15 / Tec_ctr fix val 15
r2224	CO: Technology controller, fixed value effective / Tec_ctr FixVal eff
r2245	CO: Technology controller mot. potentiometer setpoint before RFG / Tec_ctr mop befRFG
r2250	CO: Technology controller motorized potentiometer setpoint after RFG / Tec_ctr mop aftRFG
r2260	CO: Technology controller setpoint after ramp-function generator / Tec_ctr set aftRFG
r2262	CO: Technology controller setpoint after filter / Tec_ctr set aftFlt
r2266	CO: Technology controller actual value after filter / Tec_ctr act aftFlt
r2272	CO: Technology controller actual value scaled / Tech_ctrl act scal
r2273	CO: Technology controller error / Tec_ctrl error
p2291	CO: Technology controller maximum limiting / Tec_ctrl max_limit
p2292	CO: Technology controller minimum limiting / Tec_ctrl min_lim
r2294	CO: Technology controller output signal / Tec_ctrl outp_sig
p2295	CO: Technology controller output scaling / Tec_ctrl outp scal
r2344	CO: Technology controller last speed setpoint (smoothed) / Tec_ctrl n_setp_sm
p2900[0...n]	CO: Fixed value 1 [%] / Fixed value 1 [%]
p2901[0...n]	CO: Fixed value 2 [%] / Fixed value 2 [%]
r2902[0...14]	CO: Fixed values [%] / Fixed values [%]
p2930[0...n]	CO: Fixed value M [Nm] / Fixed value M [Nm]
r3131	CO: Current flt value / Current flt value
r3132	CO: Actual component number / Act comp_no.
r9733[0...2]	CO: SI Motion setpoint speed limit effective / SI Mtn setp_lim
r20095	CO: ADD 0 output Y / ADD 0 output Y
r20099	CO: ADD 1 output Y / ADD 1 output Y
r20103	CO: SUB 0 difference Y / SUB 0 difference Y
r20107	CO: SUB 1 difference Y / SUB 1 difference Y
r20111	CO: MUL 0 product Y / MUL 0 product Y
r20115	CO: MUL 1 product Y / MUL 1 product Y
r20119[0...2]	CO: DIV 0 quotient / DIV 0 quotient
r20124[0...2]	CO: DIV 1 quotient / DIV 1 quotient
r20129	CO: AVA 0 output Y / AVA 0 output Y
r20134	CO: AVA 1 output Y / AVA 1 output Y
r20220	CO: NSW 0 output Y / NSW 0 output Y
r20225	CO: NSW 1 output Y / NSW 1 output Y
r20231	CO: LIM 0 output Y / LIM 0 output Y

r20239	CO: LIM 1 output Y / LIM 1 output Y
r20247	CO: PT1 0 output Y / PT1 0 output Y
r20253	CO: PT1 1 output Y / PT1 1 output Y
r20261	CO: INT 0 output Y / INT 0 output Y
r20286	CO: DIF 0 output Y / DIF 0 output Y
r20309	CO: ADD 2 output Y / ADD 2 output Y
r20373	CO: PLI 0 output Y / PLI 0 output Y
r20379	CO: PLI 1 output Y / PLI 1 output Y

1.4.5 Connector/Binector Output Parameters

Product: SINAMICS G120 CU240, Version: 4402100, Language: eng, Type: CO/BO

r0046.0...31	CO/BO: Missing enable sig / Missing enable sig
r0050.0...1	CO/BO: Command Data Set CDS effective / CDS effective
r0051.0...1	CO/BO: Drive Data Set DDS effective / DDS effective
r0052.0...15	CO/BO: Status word 1 / ZSW 1
r0053.0...11	CO/BO: Status word 2 / ZSW 2
r0054.0...15	CO/BO: Control word 1 / STW 1
r0055.0...15	CO/BO: Supplementary control word / Suppl STW
r0056.0...15	CO/BO: Status word, closed-loop control / ZSW cl-loop ctrl
r0056.0...13	CO/BO: Status word, closed-loop control / ZSW cl-loop ctrl
r0722.0...11	CO/BO: CU digital inputs, status / CU DI status
r0722.0...12	CO/BO: CU digital inputs, status / CU DI status
r0723.0...11	CO/BO: CU digital inputs, status inverted / CU DI status inv
r0723.0...12	CO/BO: CU digital inputs, status inverted / CU DI status inv
r0835.2...8	CO/BO: Data set changeover status word / DDS_ZSW
r0836.0...1	CO/BO: Command Data Set CDS selected / CDS selected
r0837.0...1	CO/BO: Drive Data Set DDS selected / DDS selected
r0898.0...14	CO/BO: Control word sequence control / STW seq_ctrl
r0899.0...13	CO/BO: Status word sequence control / ZSW seq_ctrl
r1198.0...15	CO/BO: Control word setpoint channel / STW setpoint chan
r1199.0...6	CO/BO: Ramp-function generator status word / RFG ZSW
r1204.0...13	CO/BO: Flying restart, U/f control status / FlyRest Uf st
r1205.0...15	CO/BO: Flying restart, vector control status / FlyRest vector st
r1214.0...15	CO/BO: Automatic restart, status / AR status
r1239.8...13	CO/BO: DC braking status word / DCBRK ZSW
r1406.4...15	CO/BO: Control word speed controller / STW n_ctrl
r1407.0...15	CO/BO: Status word speed controller / ZSW n_ctrl
r1408.0...14	CO/BO: Status word current controller / ZSW I_ctrl
r2129.0...15	CO/BO: Trigger word for faults and alarms / Trigger word
r2135.12...15	CO/BO: Status word faults/alarms 2 / ZSW fault/alarm 2
r2138.7...15	CO/BO: Control word faults/alarms / STW fault/alarm
r2139.0...12	CO/BO: Status word faults/alarms 1 / ZSW fault/alarm 1
r2197.0...13	CO/BO: Status word monitoring 1 / ZSW monitor 1
r2198.0...13	CO/BO: Status word monitoring 2 / ZSW monitor 2
r2199.0...11	CO/BO: Status word monitoring 3 / ZSW monitor 3
r2225.0	CO/BO: Technology controller fixed value selection status word / Tec_ctr FixVal ZSW
r2349.0...12	CO/BO: Technology controller status word / Tec_ctrl status
r3113.0...15	CO/BO: NAMUR message bit bar / NAMUR bit bar
r3333.0...3	CO/BO: 2-3-WIRE Output / 2-3-WIRE OUT
r3859.0	CO/BO: Compound braking status word / Compound Br ZSW

r9720.0...13	CO/BO: SI Motion control signals integrated in the drive / SI Mtn integ STW
r9722.0...15	CO/BO: SI Motion status signals integrated in the drive / SI Mtn integ stat
r9722.0...13	CO/BO: SI Motion status signals integrated in the drive / SI Mtn integ stat
r9723.0...16	CO/BO: SI Motion diagnostic signals integrated in the drive / SI Mtn integ diag
r9734.0...14	CO/BO: SI Motion Safety Info Channel status word / SI Mtn info ch ZSW
r9742.0...15	CO/BO: SI Motion drive-integrated status signals (processor 2) / SI Mtn int stat P2
r9772.0...20	CO/BO: SI status (processor 1) / SI status P1
r9773.0...31	CO/BO: SI status (processor 1 + processor 2) / SI status P1+P2
r9872.0...20	CO/BO: SI status (processor 2) / SI Status P2
r10051.0...2	CO/BO: SI digital inputs status (processor 1) / SI DI status P1
r10151.0...2	CO/BO: SI digital inputs status (processor 2) / SI DI status P2

1.5 Quick commissioning (p0010 = 1)

The following parameters are necessary for quick commissioning (p0010 = 1).

Table 1-7 Quick commissioning (p0010 = 1)

Par.-No.	Name	Access level	Can be changed
p0010	Drive commissioning parameter filter	1	C(1)T
p0015	Macro drive unit	1	C,C(1)
p0100	IEC/NEMA mot stds	1	C(1)
p0205	Power unit application	1	C(1,2)
p0230	Drive filter type, motor side	1	C(1,2)
p0300	Motor type selection	2	C(1,3)
p0301	Motor code number selection	2	C(1,3)
p0304	Rated motor voltage	1	C(1,3)
p0305	Rated motor current	1	C(1,3)
p0307	Rated motor power	2	C(1,3)
p0308	Rated motor power factor	1	C(1,3)
p0309	Rated motor efficiency	1	C(1,3)
p0310	Rated motor frequency	1	C(1,3)
p0311	Rated motor speed	1	C(1,3)
p0314	Motor pole pair number	1	C(1,3)
p0316	Motor torque constant	3	C(1,3)
p0322	Maximum motor speed	3	C(1,3)UT
p0323	Maximum motor current	1	C(1,3)
p0335	Motor cooling type	1	C(1,3)
p0500	Technology application	PM230: 4 PM240: 2	C(1,3)T
p0640	Current limit	2	C(1,5)T
p0700	Command source selection	1	C(1,3)UT
p0922	PROFIdrive telegram selection	1	C(1)T
p0970	Reset drive parameters	1	C(1,30)
p1000	Selecting the speed setpoint	1	C(1)T

Table 1-7 Quick commissioning (p0010 = 1), continued

Par.-No.	Name	Access level	Can be changed
p1080	Minimum speed	1	C(1)T
p1082	Maximum speed	1	C(1)T
p1120	Ramp-function generator ramp-up time	1	C(1)UT
p1121	Ramp-function generator ramp-down time	1	C(1)UT
p1135	OFF3 ramp-down time	2	C(1)UT
p1300	Open-loop/closed-loop control operating mode	2	C(1)T
p1500	Selecting the torque setpoint	2	C(1)T
p1900	Motor data identification and rotating measurement	2	C(1)T
p2196	Torque utilization scaling	1	C(1,3)UT
p3900	Completion of quick commissioning	1	C(1)

When p0010 = 1 is chosen, p0003 (user access level) can be used to select the parameters to be accessed.

At the end of the quick commissioning sequence, set p3900 = 1 to carry out the necessary motor calculations and clear all other parameters (not included in p0010 = 1) to their default settings.

Note

This applies only in Quick Commissioning mode.

Function diagrams 2

Contents

2.1 Contents: function diagrams

2.2 Explanations for the function diagrams

Function diagrams

Parameters

Symbol	Meaning
Parameter name [Unit] rxxxx[y..z]	Monitoring parameter with unit [Unit] and index range [y..z] or data set [C/D]
Parameter name from ... to [Unit] pxxxx[C/D] (Def)	Setting parameter with min/ max value and unit [Unit] data set [C/D] and factory setting (Def) *)

Connectors

Symbol	Meaning
Parameter name pxxxx[y..z] (Def)	Connector input CI with index range [y..z] or data set [C/D] and factory setting (Def) *)
Parameter name [Unit] rxxxx[y..z]	Connector output CO with unit [Unit] and with index range [y..z]

Binectors

Symbol	Meaning
Parameter name pxxxx[y..z] (Def.y)	Binector input BI with with index range [y..z] or data set [C/D] and factory setting.bit number (Def)
Parameter name rxxxx	Binector output BO

Data sets

Symbol	Meaning
pxxxx[C]	Parameter belongs to the Command Data Set (CDS).
pxxxx[D]	Parameter belongs to the Drive Data Set (DDS).

Connectors/binectors

Symbol	Meaning
Parameter name rxxxx rxxxx	Connector/binector output CO/BO

Pre-assigned connectors

Symbol	Meaning
Parameter name from ... to [Unit] pxxxx[D] (Def)	Setting parameter with min/ max value and unit [Unit] data set [D] and factory setting (Def)

Information on parameters, binectors, connectors

Symbol	Meaning
Parameter name	Parameter name (up to 18 characters)
[Unit]	[dimension unit]
rxxxx[y] or rxxxx[y...z] or rxxxx[y].ww or rxxxx.ww	"r" = monitoring parameter. These parameters are read-only "xxxx" stands for the parameter number "[y]" specifies the applicable index, "[y...z]" specifies the index range ".ww" specifies the bit number (e.g. 0...15).
pxxxx[y] or pxxxx[y...z] or pxxxx[y].ww or pxxxx.ww	"p" = setting parameter. These parameters can be changed. "xxxx" stands for the parameter number, "[y]" specifies the applicable index, "[y...z]" specifies the index range ".ww" specifies the bit number (e.g. 0...15).
from ... to	Value range.
(xxxx[y].ww)	Parameter number (xxxx) with Index number [y] and bit number .ww.
(Def)	Factory setting.
(Def.w)	Factory setting with bit number as prefix.
[aaaa.b]	Diagram references for setting parameters that occur a multiple number of times. [Function diagram number, signal path]

Cross references between diagrams

Symbol	Meaning
Signal path	The function diagrams are sub-divided into signal paths 1...8 in order to facilitate orientation.
Text → [aaaa.b]	Text = Unique signal designation aaaa = Signal goes to target diagram aaa b = Signal goes to signal path b
[cccc.d] Text →	Text = Unique signal designation cccc = Signal comes from source diagram cccc d = Signal comes from signal path d

To "function diagram name" [aaaa.b] = binectors.

Cross references for control bits

Symbol	Meaning
pxxxx [aaaa.b]	pxxxx= Original parameter of signal aaaa = Signal comes from source diagram aaaa b = Signal comes from signal path b

*) For some parameters the value for the factory setting is calculated during commissioning for they are dependent on Power Module and motor (see Section 1.1.1 "Calculated").

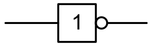
1	2	3	4	5	6	7	8

Explanations for the function diagrams	FP_1020_97_61.vsd	Function diagram	- 1020 -
Explanation of the symbols (Part 1)	13.12.2010 V4.4	G120 CU240B/E-2	

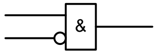
Fig. 2-1 1020 – Explanation of the symbols (Part 1)

Fig. 2-2 1021 – Explanation of the symbols (Part 2)

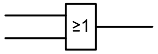
Symbols for logic functions



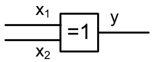
Logical inversion



AND element with logical inversion of an input signal

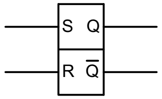


OR element



Exclusiv-OR/XOR

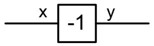
y = 1 when x1 != x2 is.



R/S flip-flop

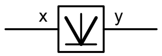
S = setting input
R = reset input
Q = non-inverted output
Q = inverted output

Symbols for computational and closed-loop control functions



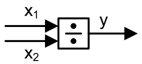
Sign reversal

y = -x



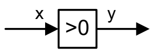
Absolute value generator

y = |x|



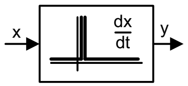
Divider

$y = \frac{x_1}{x_2}$



Comparator

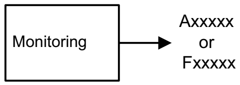
Output y = a logical "1", if the analog signal x > 0, i.e. is positive.



Differentiator

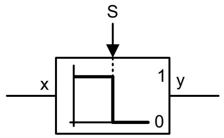
$y = \frac{dx}{dt}$

Symbol for monitoring



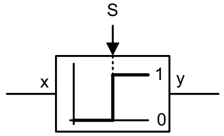
Monitoring

Symbols for computational and closed-loop control functions



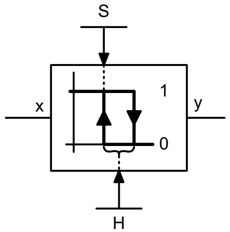
Threshold value switch 1/0

Outputs at y a logical "1" if x < S.



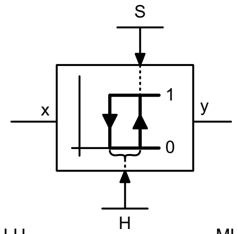
Threshold value switch 0/1

Outputs at y a logical "1" if x > S.



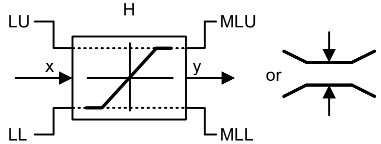
Threshold value 1/0 with hysteresis

Outputs a logical "1" at y if x < S.
If x >= S + H then y returns to 0.



Threshold value 0/1 with hysteresis

Outputs a logical "1" at y if x > S.
If x <= S - H then y returns to 0.



Limiter

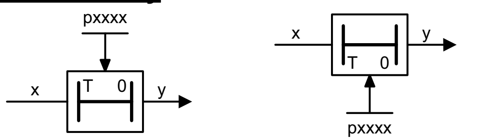
x is limited to the upper limit LU and the lower limit LL and output at y.
The digital signals MLU and MLL have the value "1", if the upper or lower limit is active.

Sample & Hold element

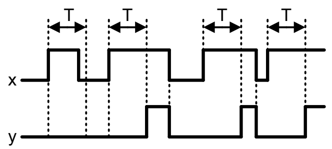
Sample and hold element.
y = x if SET = 1
(not retentively saved at POWER OFF)

1	2	3	4	5	6	7	8
Explanations for the function diagrams					FP_1021_97_61.vsd	Function diagram	- 1021 -
Explanation of the symbols (Part 2)					13.12.2010 V4.4	G120 CU240B/E-2	

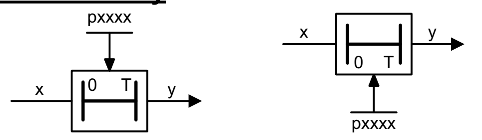
Switch-on delay



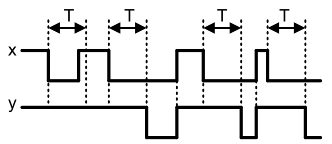
The digital signal x must have the value "1" without any interruption during the time T before output y changes to "1".



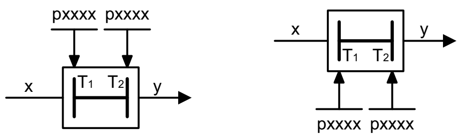
Switch-off delay



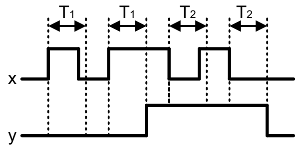
The digital signal x must have the value "0" without interruption during the time T before output y changes to "0".



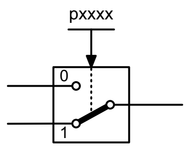
Delay (switch-on and switch-off)



The digital signal x must have the value "1" without interruption during time T1 or must have the value "0" during time T2 before output y changes its signal state.



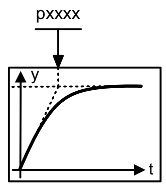
Switch symbol



Simple changeover switch

The switch position is shown according to the factory setting
(in this case, switch position 1 in the default state on delivery).

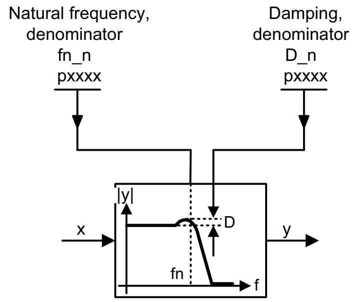
PT1 element



Delay element, first order.

pxxxx = time constant

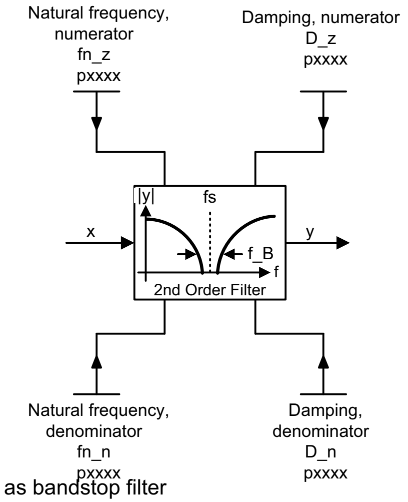
PT2 low pass



Transfer function

$$H(s) = \frac{1}{\left(\frac{s}{2\,\pi\,fn\_n}\right)^2 + \frac{2 \cdot D\_n}{2\,\pi\,fn\_n} \cdot s + 1}$$

2nd-order filter (bandstop/general filter)



Used as bandstop filter

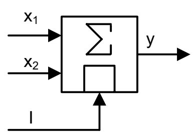
- center frequency fs: fn_z = fs
  fn_n = fs
- bandwidth f_B: D_z = 0

$$D\_n = \frac{f\_B}{2 \cdot fs}$$

Transfer function when used as general filter

$$H(s) = \frac{\left(\frac{s}{2\,\pi\,fn\_z}\right)^2 + \frac{2 \cdot D\_z}{2\,\pi\,fn\_z} \cdot s + 1}{\left(\frac{s}{2\,\pi\,fn\_n}\right)^2 + \frac{2 \cdot D\_n}{2\,\pi\,fn\_n} \cdot s + 1}$$

Analog adder can be activated



The following applies to I = 1 signal: y = x1 + x2

The following applies to I = 0 signal: y = x1

1	2	3	4	5	6	7	8

Explanations for the function diagrams	FP_1022_97_61.vsd	Function diagram	- 1022 -
Explanation of the symbols (Part 3)	13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-3 1022 – Explanation of the symbols (Part 3)

Handling BICO technology

Binector: r0723.15

Connector: r0723

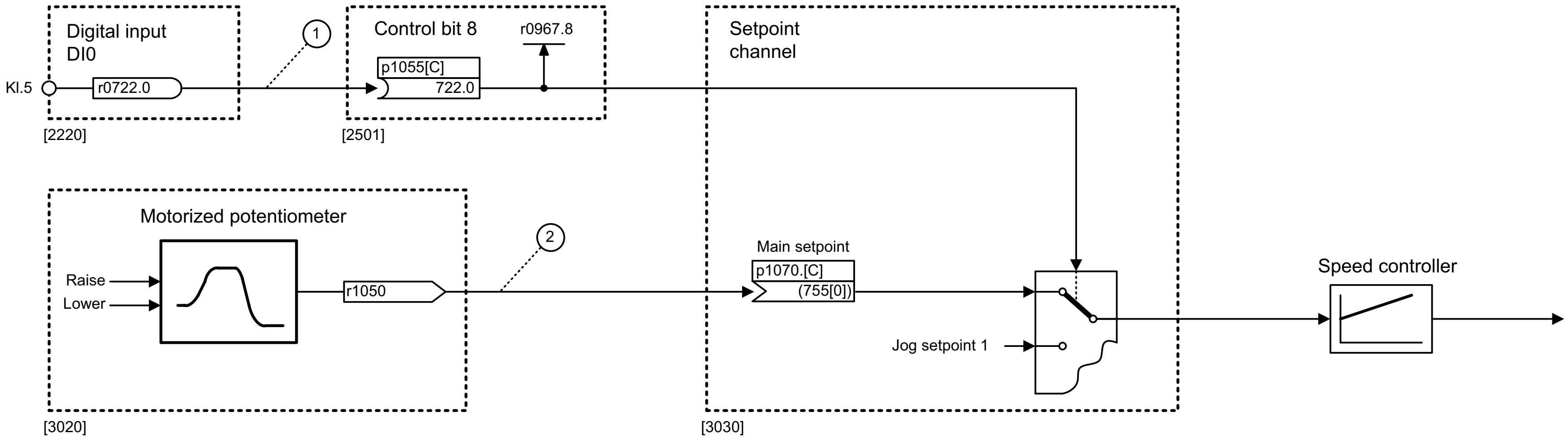
Connectors are "analog signals" that can be freely interconnected (e.g. percentage variables, speeds or torques).
Connectors are also "CO:" display parameters (CO = Connector Output).

Parameterization:

At the signal destination, the required binector or connector is selected using appropriate parameters:
"BI:" parameter for binectors (BI = Binector Input)
or
"CI:" parameter for connectors (CI = Connector Input)

Example:

The main setpoint for the speed controller (CI: p1070) should be received from the output of the motorized potentiometer (CO: r1050) and the "jog" command (BI: p1055) from digital input DI0 (BO: r0722.0, Terminal 5 (Kl.5)) on the CU.



Parameterizing steps:

(1) p1055[0] = 722.0 Terminal 5 (Kl.5) acts as "Jog bit 0".

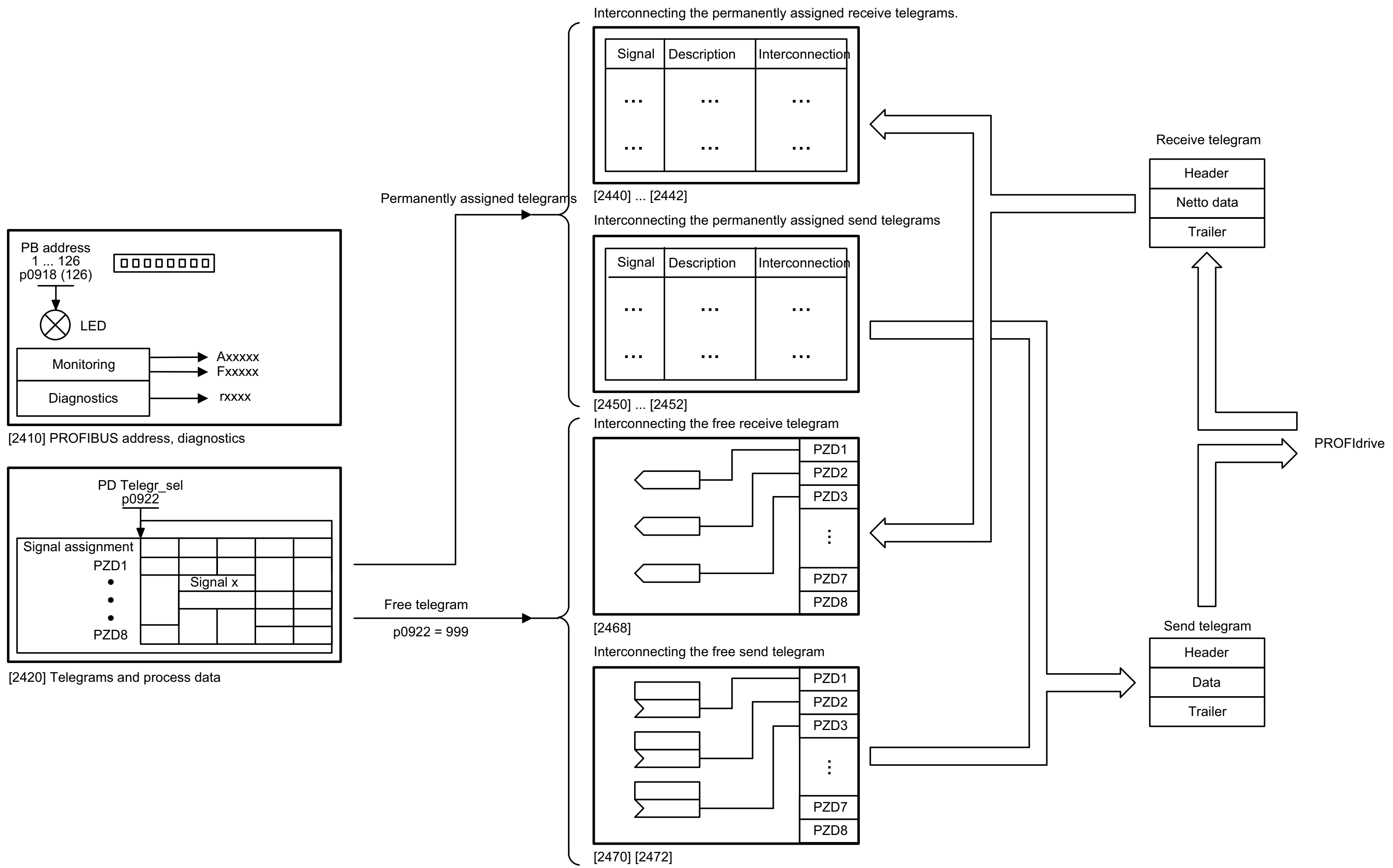
(2) p1070[0] = 1050 The output of the motorized potentiometer acts as main setpoint for the speed controller.

1	2	3	4	5	6	7	8
Explanations for the function diagrams					FP_1030_97_61.vsd	Function diagram	- 1030 -
Handling BICO technology					13.12.2010 V4.4	G120 CU240B/E-2	

2.3 Overview

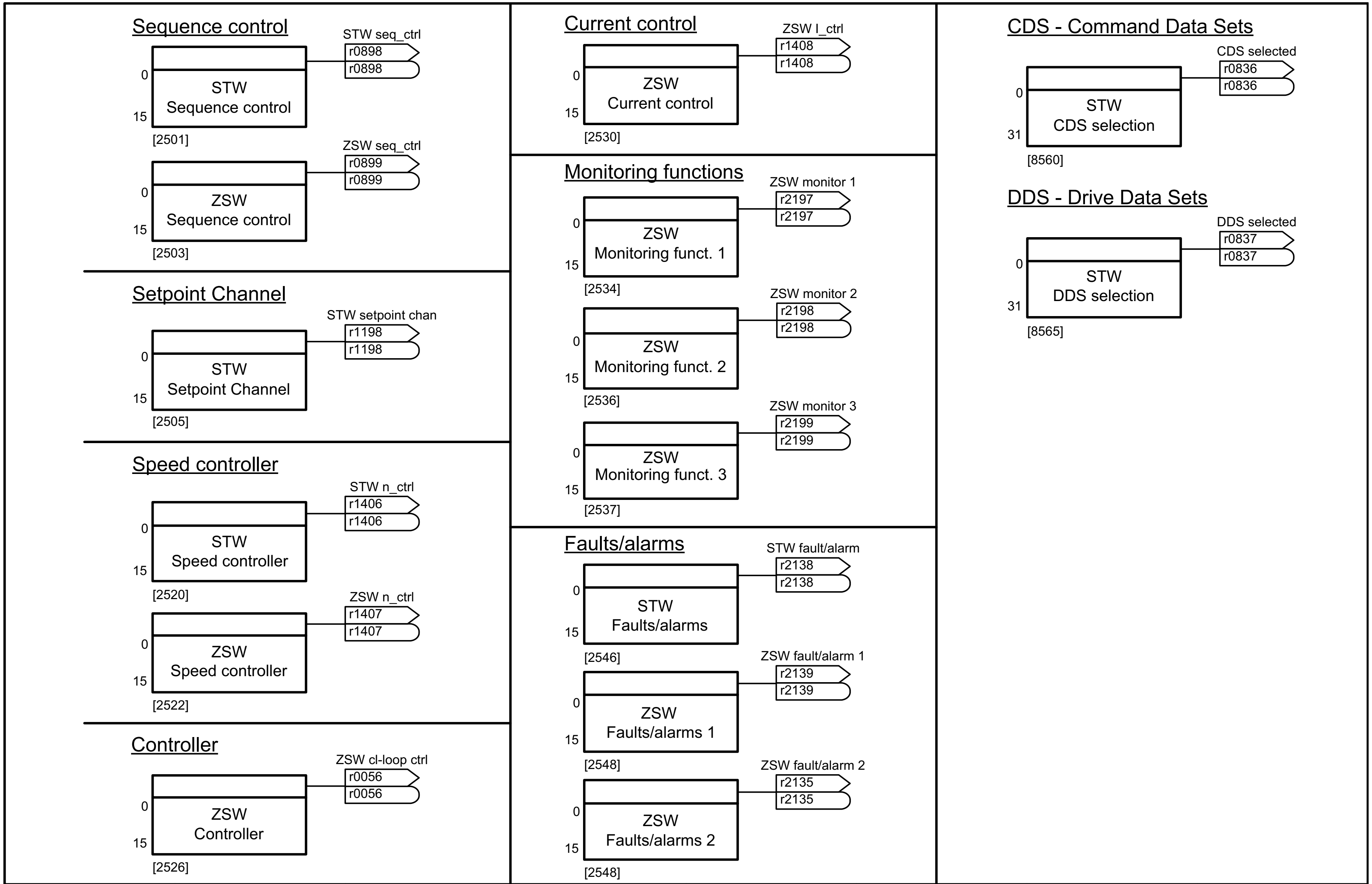
Function diagrams

Fig. 2-5 1520 – PROFIdrive/PROFIBUS



1	2	3	4	5	6	7	8
Overviews					FP_1520_97_61.vsd	Function diagram	- 1520 -
PROFIdrive / PROFIBUS					13.12.2010 V4.4	G120 CU240B/E-2 DP	

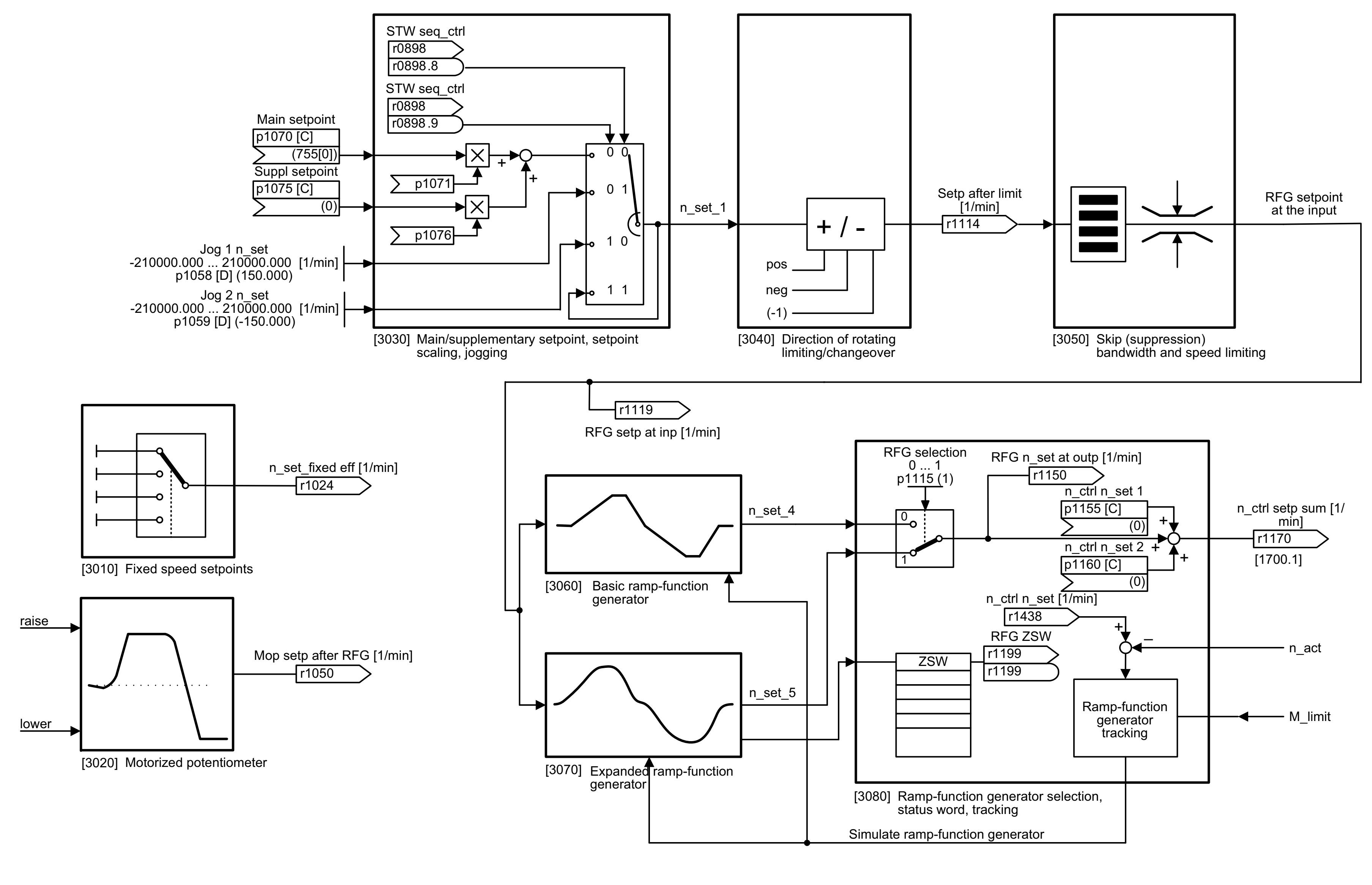
Fig. 2-6 1530 – Internal control/status words, data sets



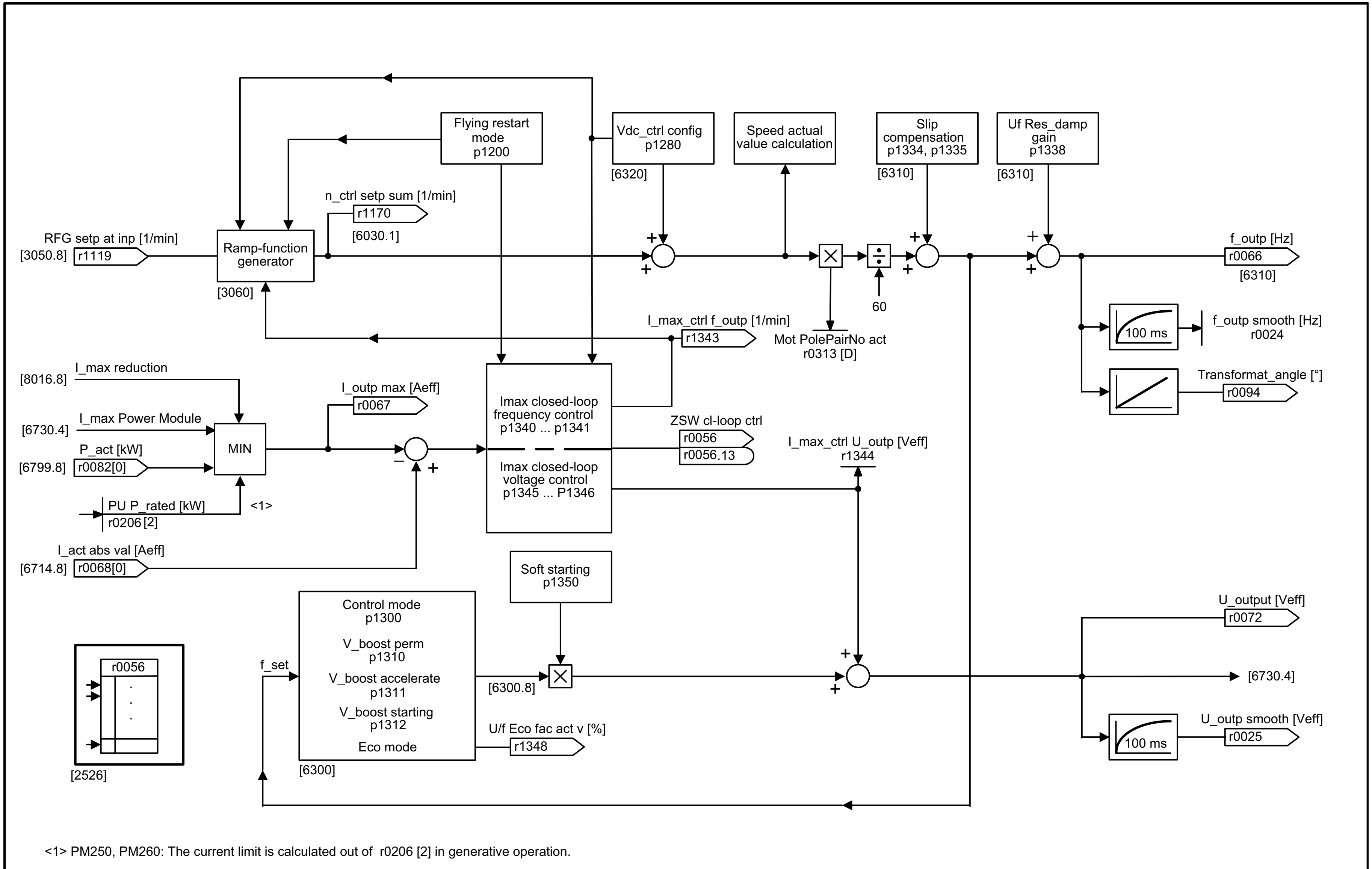
1	2	3	4	5	6	7	8

Overviews	FP_1530_97_51.vsd	Function diagram	- 1530 -
Internal control/status words, data sets	13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-7 1550 – Setpoint channel



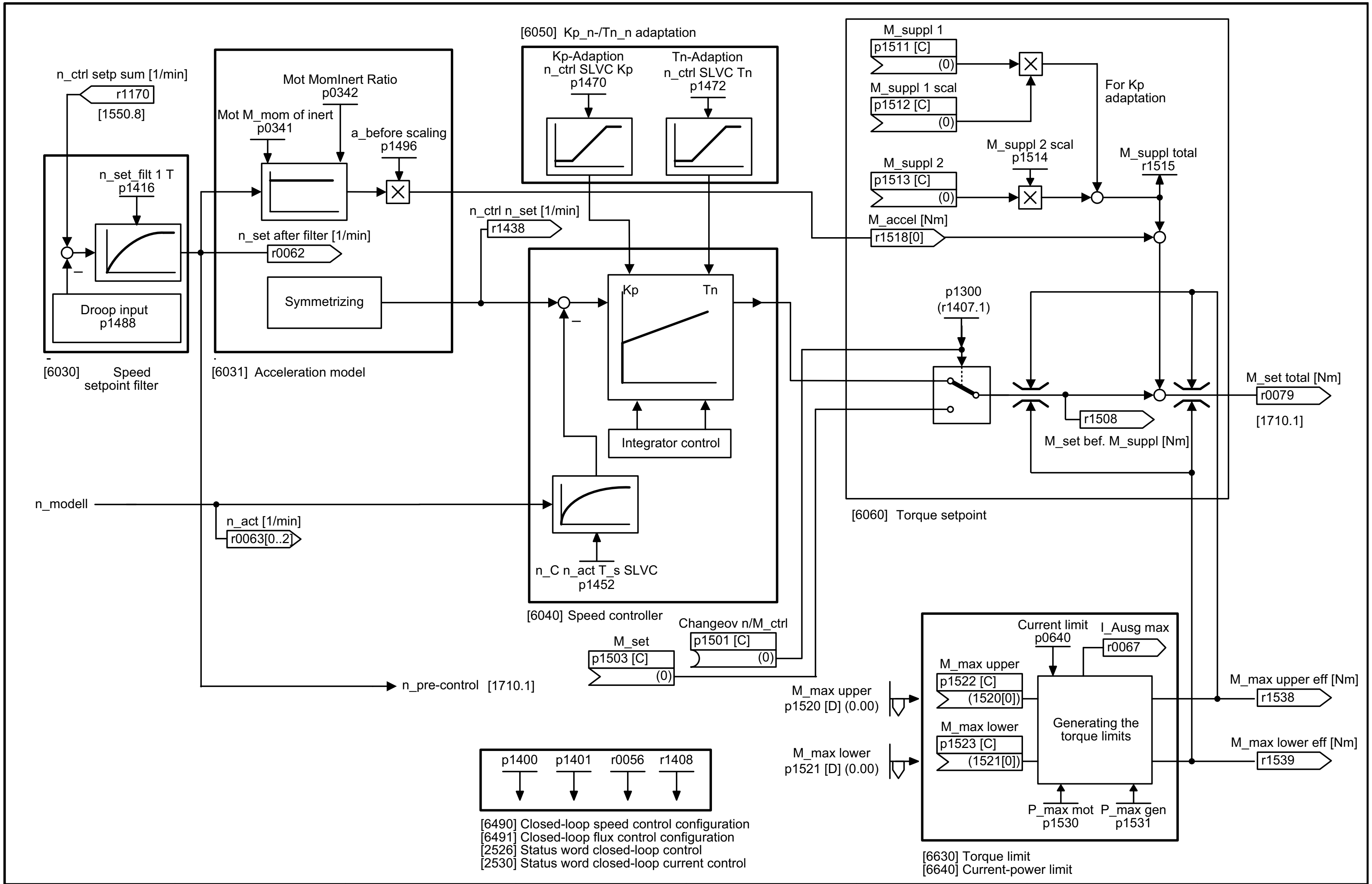
1	2	3	4	5	6	7	8
Overviews					FP_1550_97_51.vsd	Function diagram	- 1550 -
Setpoint channel					13.12.2010 V4.4	G120 CU240B/E-2	



1	2	3	4	5	6	7	8
Overviews					FP_1690_97_51.vsd	Function diagram	- 1690 -
Vector control, V/f control					13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-8 1690 – Vector control, V/f control

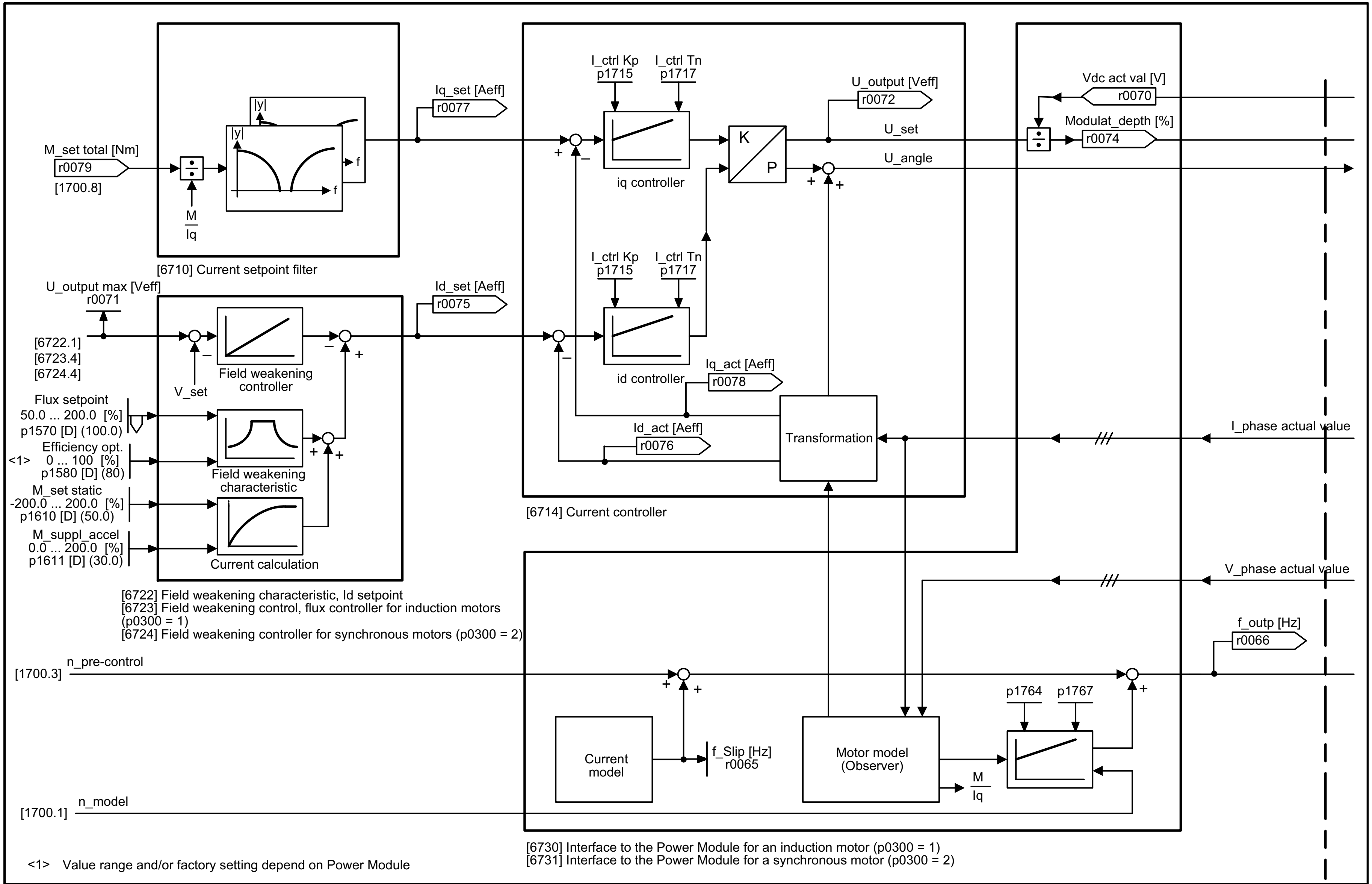
Fig. 2-9 1700 – Vector control, speed control and generation of the torque limits



1	2	3	4	5	6	7	8

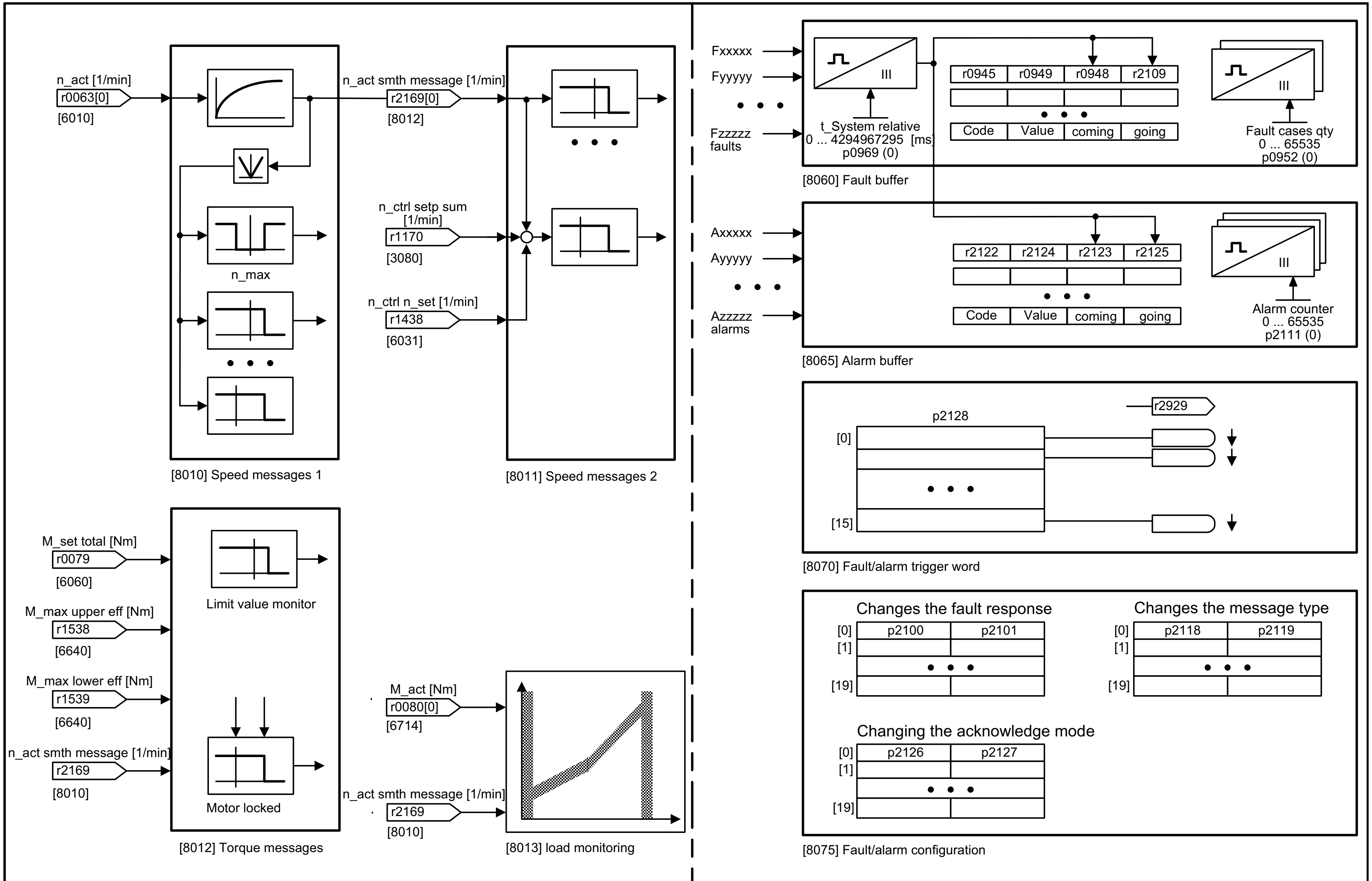
Overviews	FP_1700_97_54.vsd	Function diagram	- 1700 -
Vector control, speed control and generation of the torque limits	13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-10 1710 – Vector control, current control



1	2	3	4	5	6	7	8
Overviews					FP_1710_97_02.vsd	Function diagram	- 1710 -
Vector control, current control					13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-11 1750 – Monitoring functions, faults, alarms



1	2	3	4	5	6	7	8

Overviews	FP_1750_97_51.vsd	Function diagram	- 1750 -
Monitoring functions, faults, alarms	13.12.2010 V4.4	G120 CU240B/E-2	

2.4 Input/Output Terminals

Function diagrams

Fig. 2-12 2221 – CU240B-2: Digital inputs, electrically isolated (DI0 ... DI3)

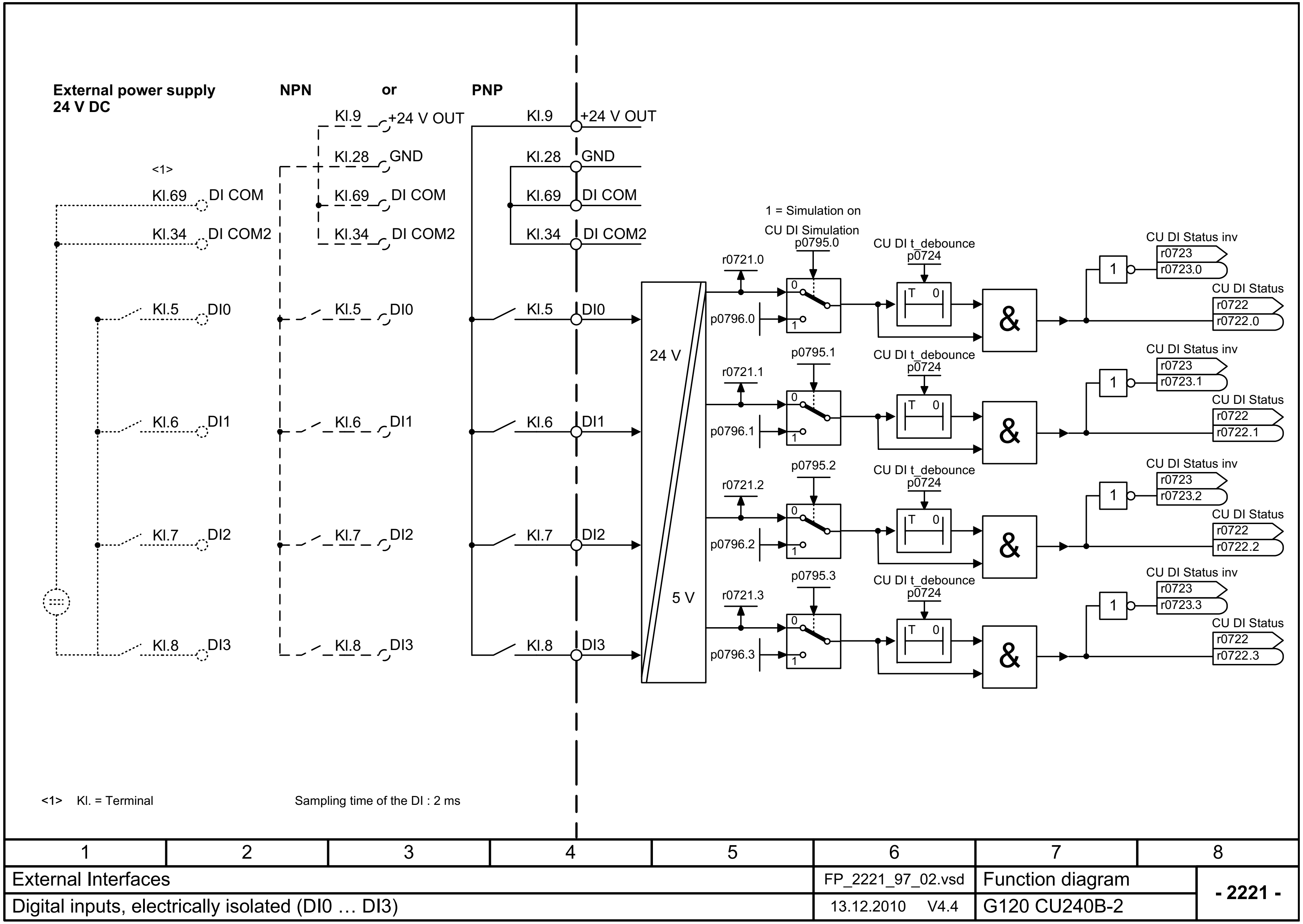
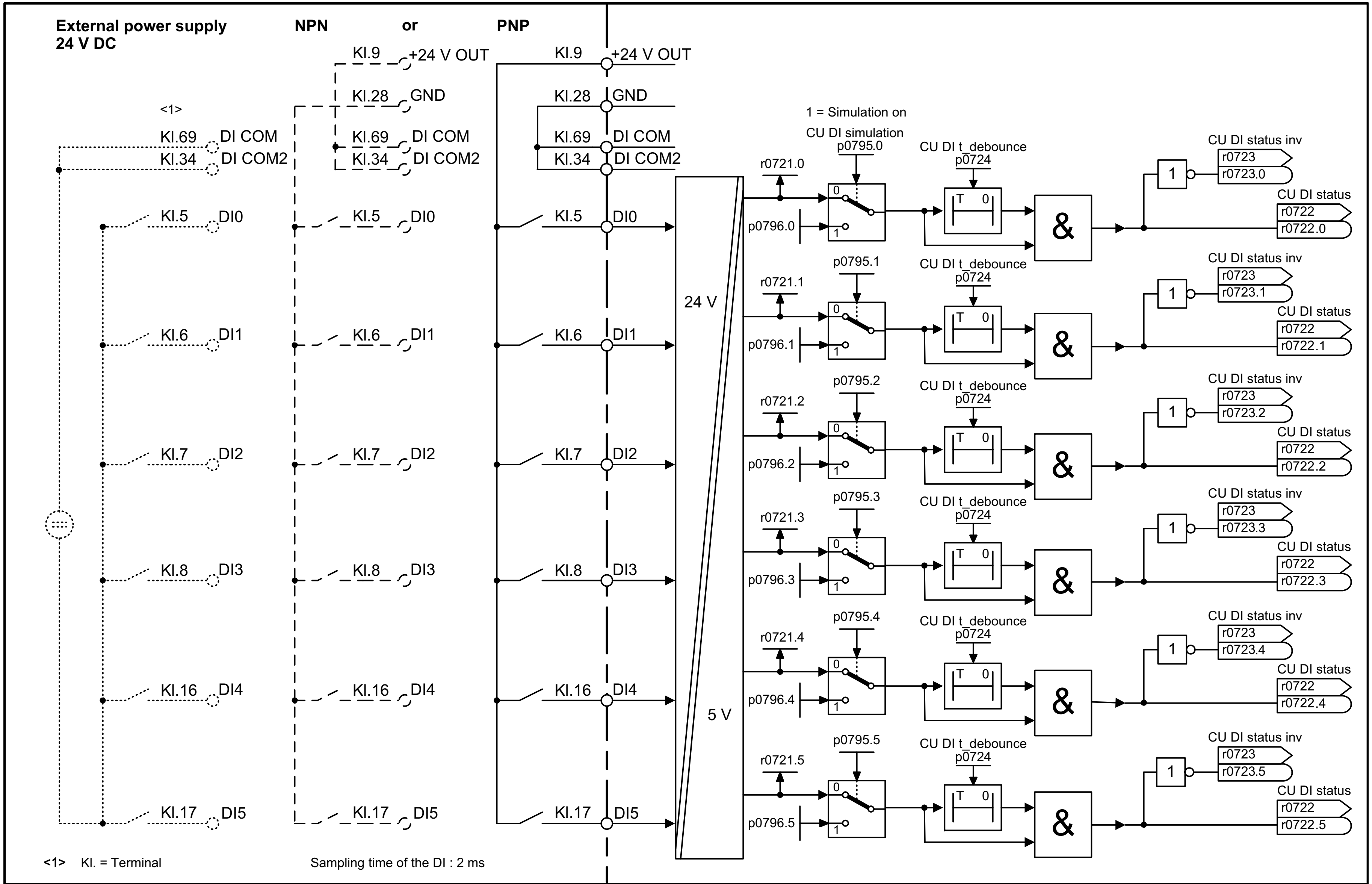


Fig. 2-13 2220 – CU240E-2: Digital inputs, electrically isolated (DI0 ... DI5)



1	2	3	4	5	6	7	8

External Interfaces	FP_2220_97_02.vsd	Function diagram	- 2220 -
Digital inputs, electrically isolated (DI0 … DI5)	13.12.2010 V4.4	G120 CU240E-2	

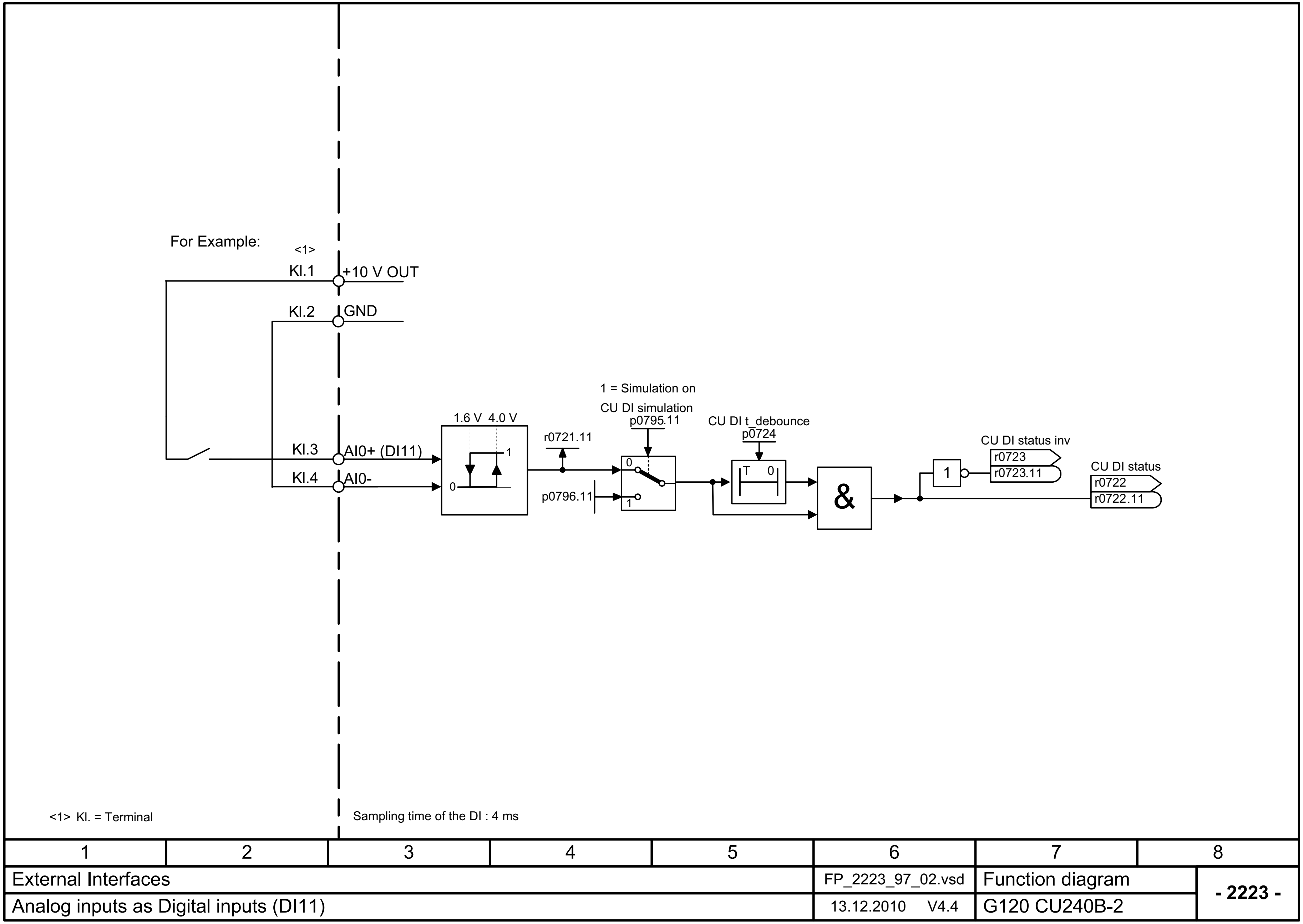


Fig. 2-14 2223 – CU240B-2: Analog inputs as Digital inputs (DI11)

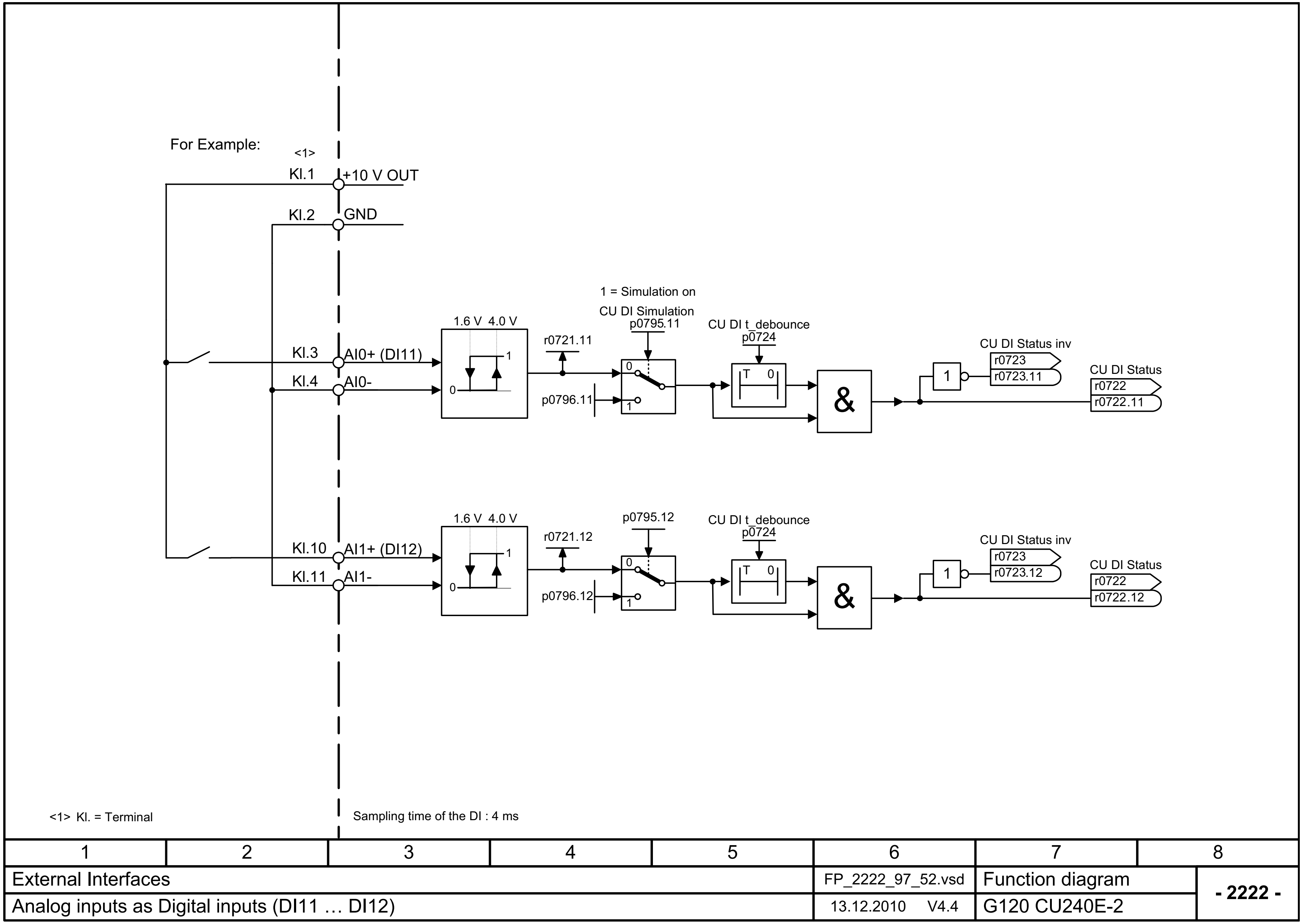
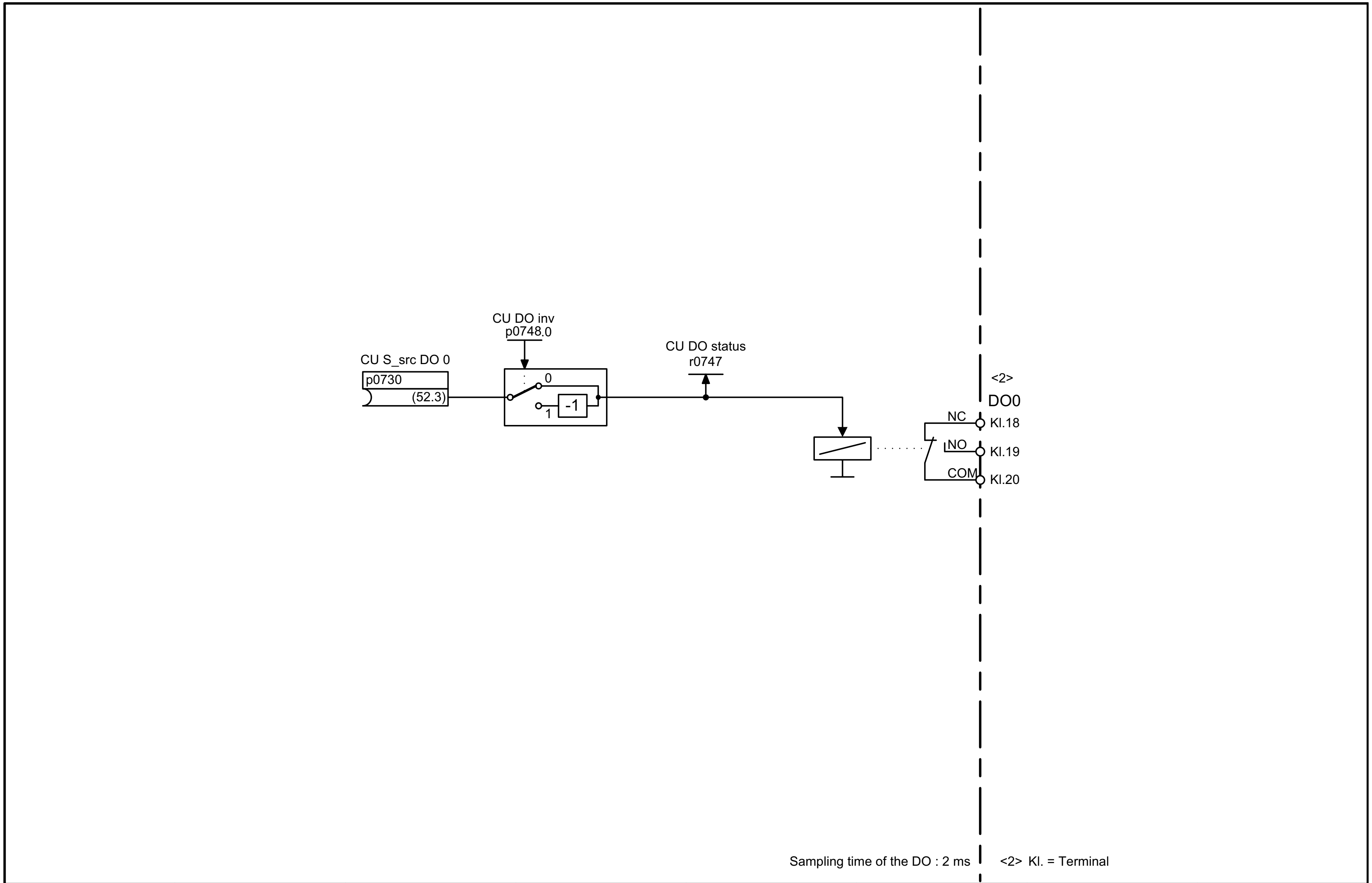


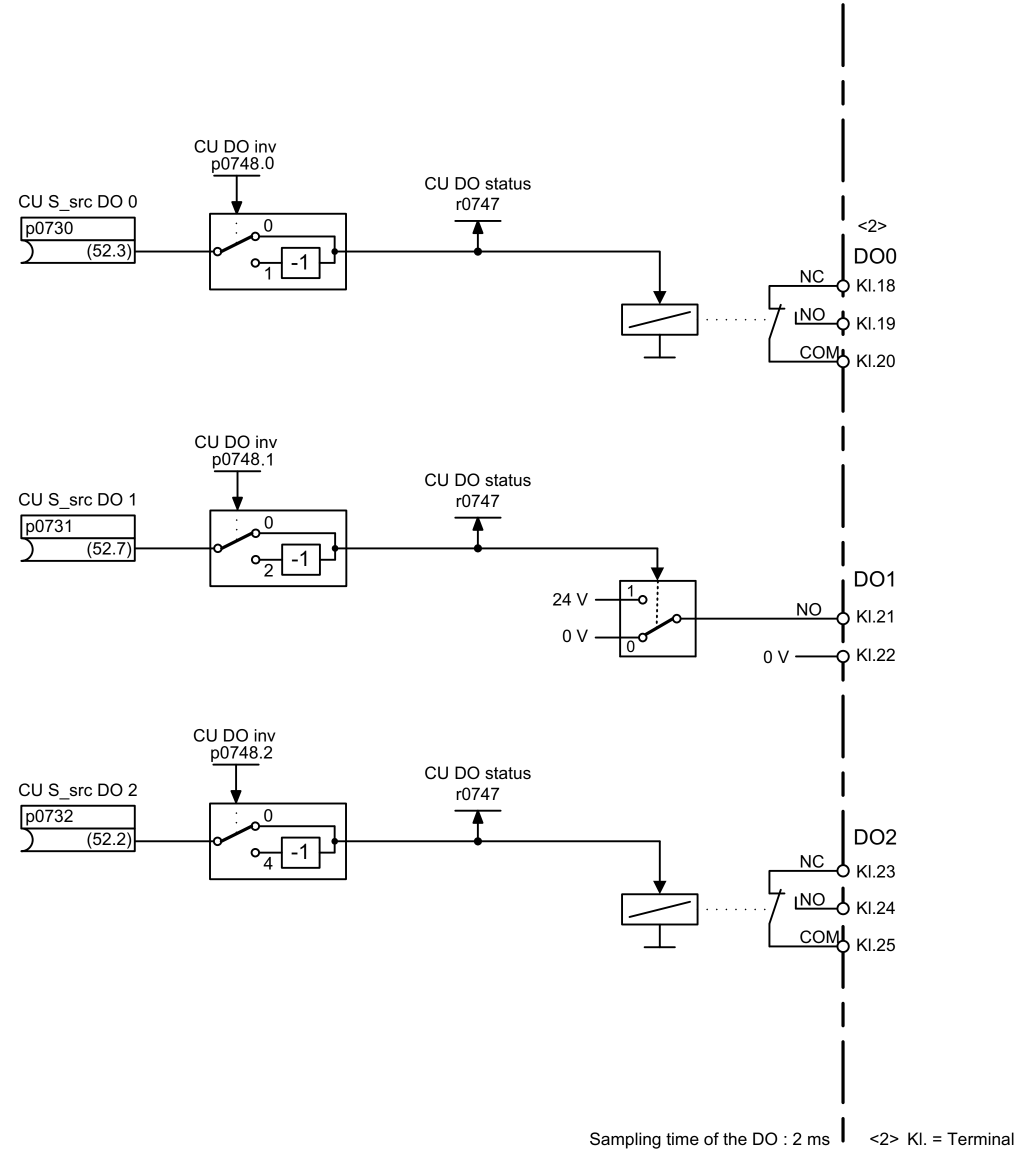
Fig. 2-15 2222 – CU240E-2: Analog inputs as Digital inputs (DI11 ... DI12)

Fig. 2-16 2231 – CU240B-2: Digital output (DO0)



1	2	3	4	5	6	7	8

External Interfaces	FP_2231_97_02.vsd	Function diagram	- 2231 -
Digital output (DO0)	13.12.2010 V4.4	G120 CU240B-2	

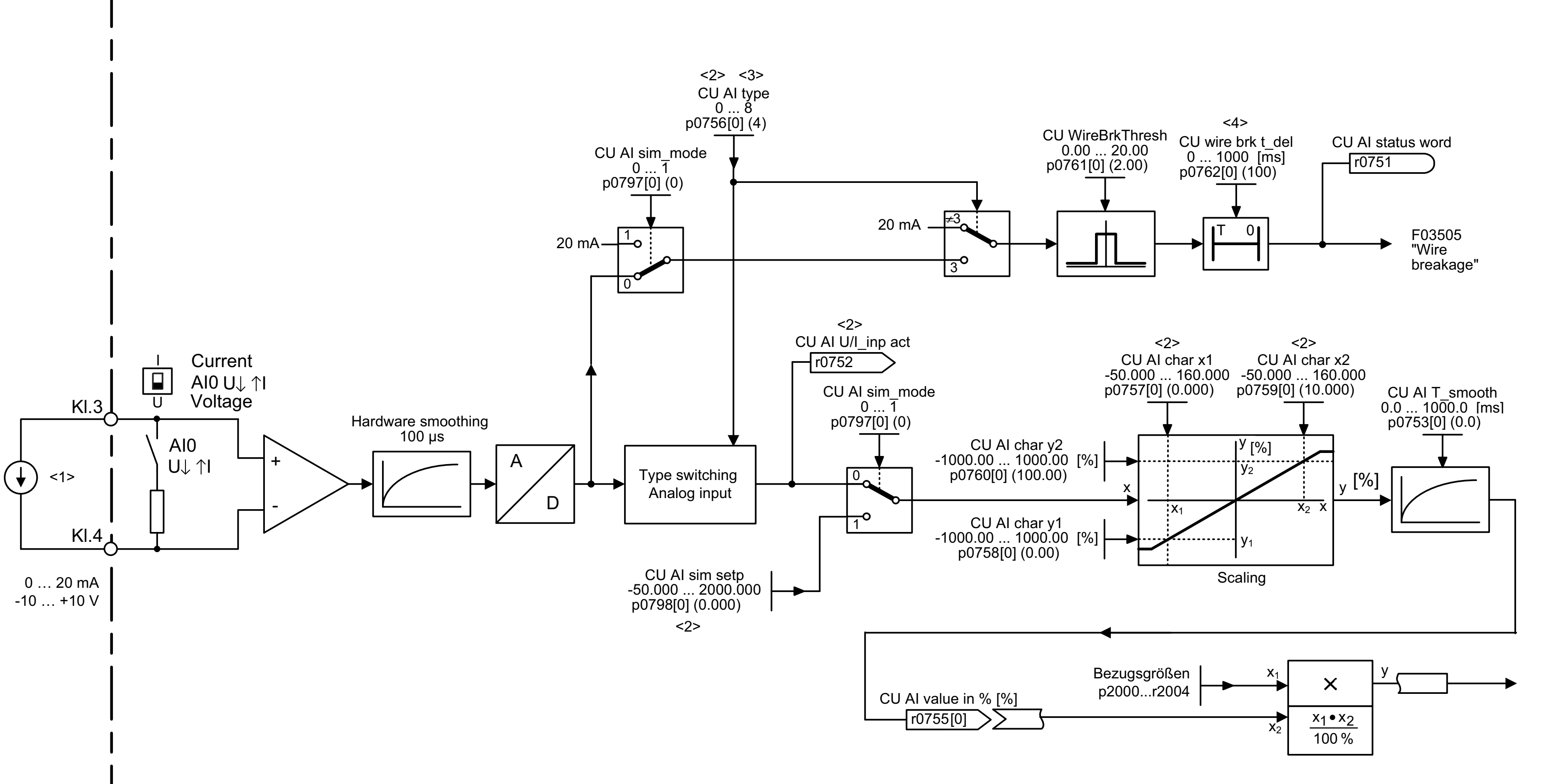


1	2	3	4	5	6	7	8

External Interfaces	FP_2230_97_56.vsd	Function diagram	- 2230 -
Digital outputs (DO0 … DO2)	13.12.2010 V4.4	G120 CU240E-2	

Fig. 2-17 2230 – CU240E-2: Digital outputs (DO0 ... DO2)

Fig. 2-18 9567 – CU240B-2: Analog input 0 (AI0)



<1> Differential input!
For an input signal referred to ground, terminal 4 must be connected to reference potential M.
Caution:
The voltage between an input (Kl.3 (Kl.10) or Kl.4 (Kl.11)) and the ground point must not exceed 35 V.
When the load resistor is switched in (DIP switch in position ↑I), the voltage between the input terminals must not exceed 10 V or the impressed current 80 mA.

<2> For p0756 = 2, 3 the units are mA.
For p0756 = 0, 1, 4 the units are V.

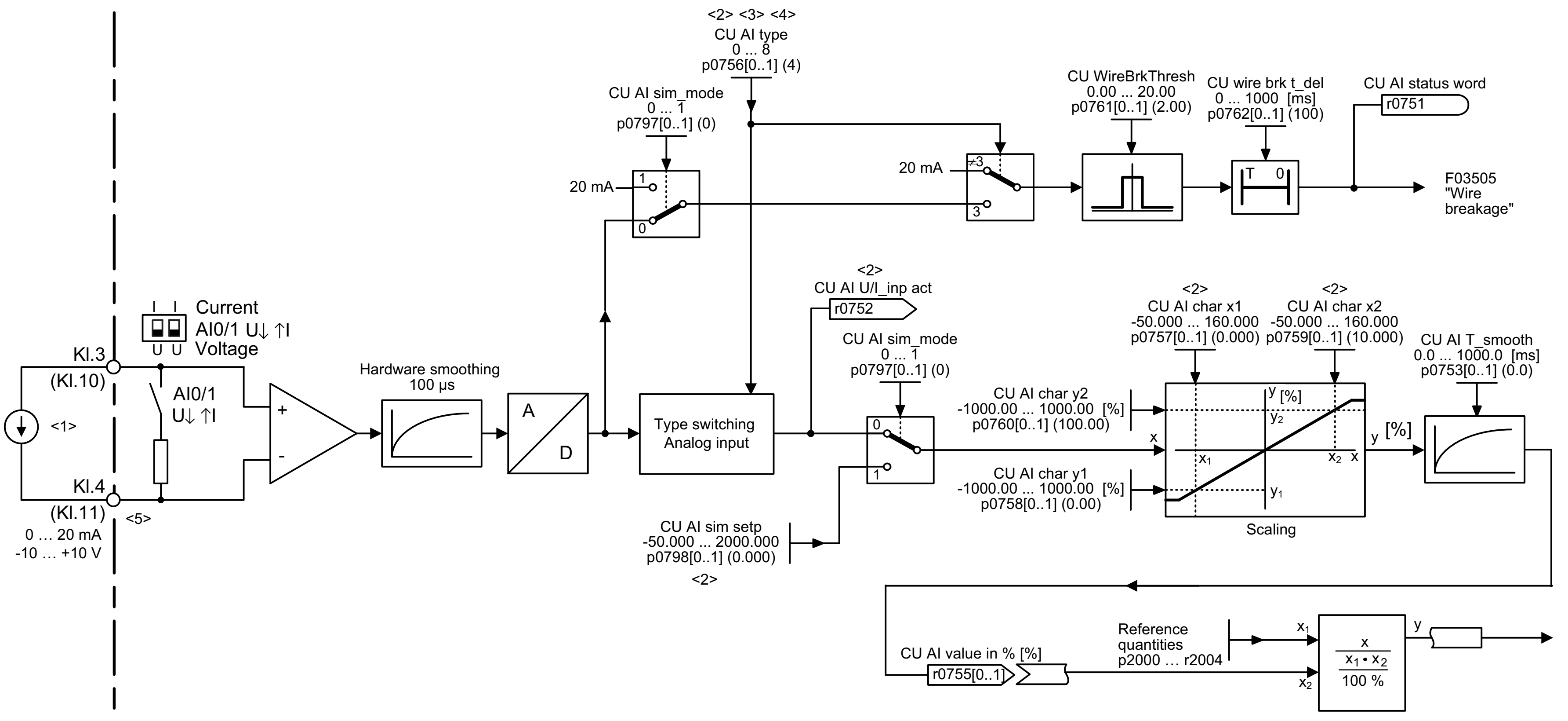
<3> Possible settings p0756[0]:
= 0: 0 V ... +10 V
= 1: +2 V ... +10 V with monitoring
= 2: 0 mA ... +20 mA
= 3: 4 mA ... +20 mA with monitoring
= 4: -10 V ... +10 V (Default for AI0)

<4> Wire breakage sensing only activated when p0756 = 1, 3.

Kl. = Terminal

Sampling time of the AI : 4 ms

1	2	3	4	5	6	7	8
External Interfaces					FP_9567_97_02.vsd	Function diagram	- 9567 -
Analog input 0 (AI0)					13.12.2010 V4.4	G120 CU240B-2	



<1> Differential input!
For an input signal referred to ground, terminal 4 (11) must be connected to reference potential M.
Caution:
The voltage between an input (Kl.3 (Kl.10) or Kl.4 (Kl.11)) and the ground point must not exceed 35 V.
When the load resistor is switched in (DIP switch in position ↑I), the voltage between the input terminals must not exceed 10 V or the impressed current 80 mA.

<2> For p0756 = 2, 3 the units are mA.
For p0756 = 0, 1, 4 the units are V.

Kl. = Terminal

Sampling time of the AI : 4 ms

<3> Possible settings p0756[0] and p0756[1]:
= 0: 0 V ... +10 V
= 1: +2 V ... +10 V with monitoring
= 2: 0 mA ... +20 mA
= 3: 4 mA ... +20 mA with monitoring
= 4: -10 V ... +10 V (Default for AI0 and AI1)

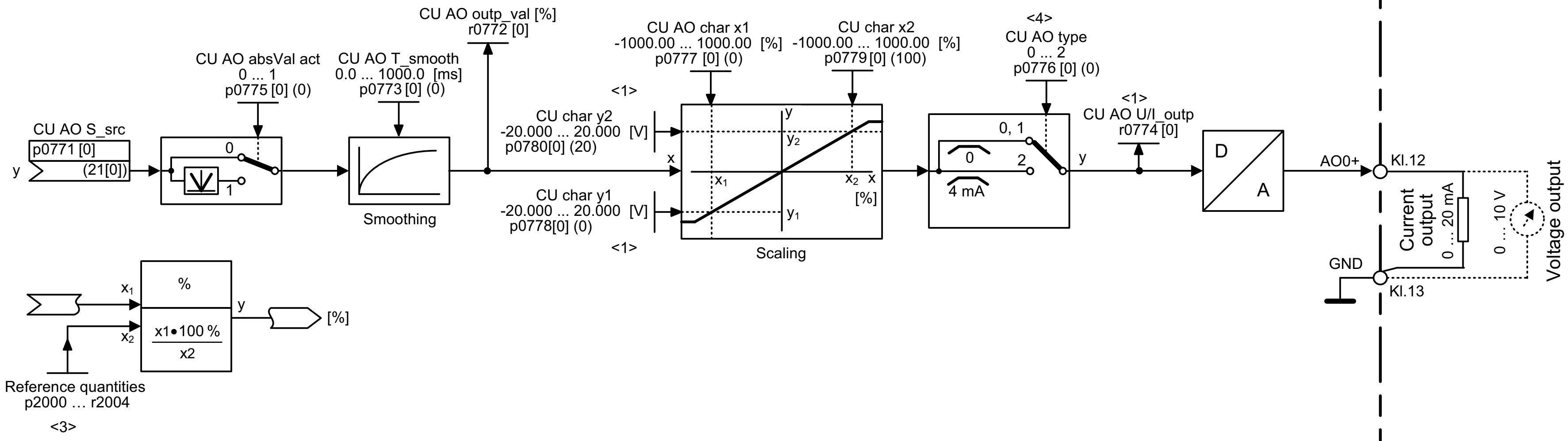
<4> Wire breakage sensing only activated when p0756 = 1, 3.

<5> Values in brackets --> AI1

1	2	3	4	5	6	7	8
External Interfaces					FP_9566_97_52.vsd	Function diagram	- 9566 -
Analog inputs 0 ... 1 (AI0 ... AI1)					13.12.2010 V4.4	G120 CU240E-2	

Fig. 2-19 9566 – CU240E-2: Analog inputs 0 ... 1 (AI0 ... AI1)

Fig. 2-20 9573 – CU240B-2: Analog output 0 (AO0)



<1> For p0776 = 0, 2 the units are mA.
For p0776 = 1 the units are V.

<3> The input signals are referred to the reference quantities p2000 ... r2004 (100 % = p200x).

<4> Possible settings p0776[0]:
= 0: 0 ... +20 mA
= 1: 0 ... +10 V
= 2: 4 ... +20 mA

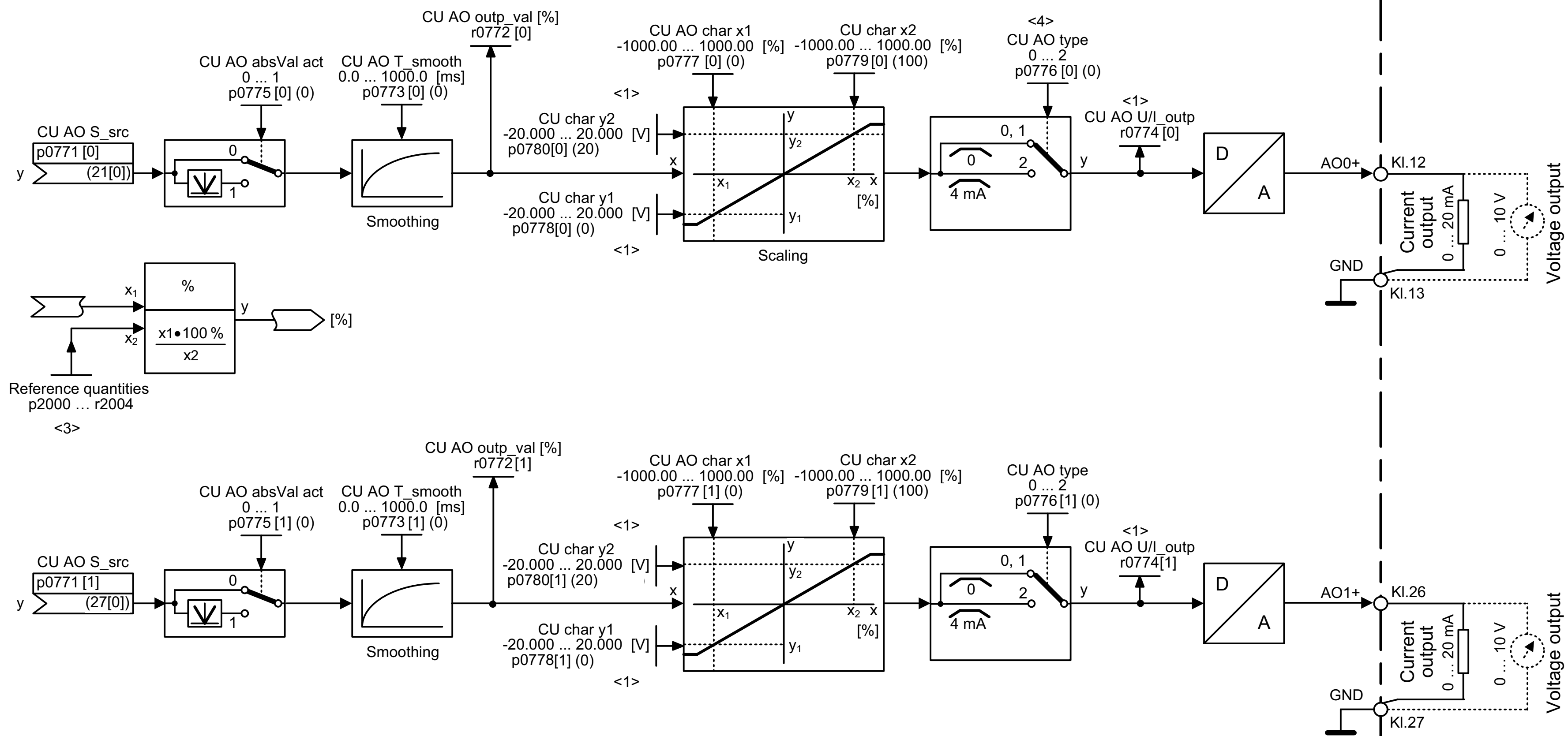
Sampling time of the AO : 4 ms

Kl. = Terminal

1	2	3	4	5	6	7	8

External Interfaces	FP_9573_97_02.vsd	Function diagram	- 9573 -
Analog output 0 (AO0)	13.12.2010 V4.4	G120 CU240B-2	

Fig. 2-21 9572 – CU240E-2: Analog outputs 0 … 1 (AO0 … AO1)



<1> For p0776 = 0, 2 the units are mA.
For p0776 = 1 the units are V.

<3> The input signals are referred to the reference quantities p2000 ... r2004 (100 % = p200x).

<4> Possible settings p0776[0] and p0776[1]:
= 0: 0 ... +20 mA
= 1: 0 ... +10 V
= 2: 4 ... +20 mA

Sampling time of the AO : 4 ms

Kl. = Terminal

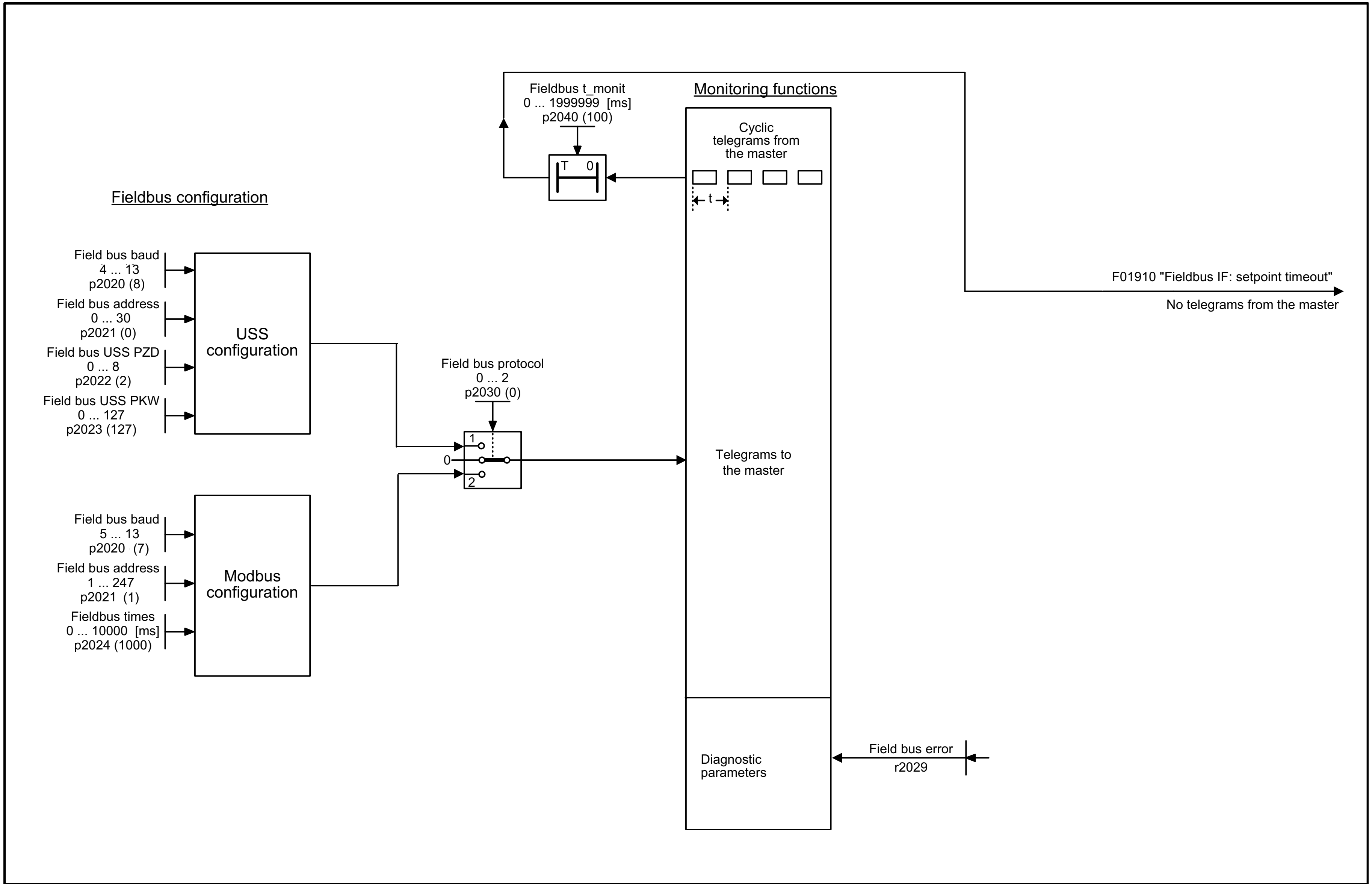
1	2	3	4	5	6	7	8
External Interfaces					FP_9572_97_52.vsd	Function diagram	- 9572 -
Analog outputs 0 … 1 (AO0 … AO1)					13.12.2010 V4.4	G120 CU240E-2	

2.5 Communication

2.5.1 Fieldbus Interface (USS, Modbus) (CU240B/E-2)

Function diagrams

Fig. 2-22 9310 – Configuration, addresses and diagnostics



1	2	3	4	5	6	7	8

Fieldbus Interface (USS, Modbus on RS485)	FP_9310_97_66.vsd	Function diagram	- 9310 -
Configuration, addresses and diagnostics	13.12.2010 V4.4	G120 CU240B/E-2	

Signal targets for fieldbus STW1 (p0700 = 6)

Signal	Meaning	Interconnection parameters	[Function diagram] internal control word	[Function diagram] signal target	Inverted
STW1.0	= ON (pulses can be enabled) 0 = OFF1 (braking with ramp-function generator, then pulse cancellation & ready for switching on)	p0840[0] = r2090.0	[2501.3]	Sequence control	-
STW1.1	1 = No OFF2 (enable is possible) 0 = OFF2 (immediate pulse suppression and switching on inhibited)	p0844[0] = r2090.1	[2501.3]	Sequence control	-
STW1.2	1 = No OFF3 (enable is possible) 0 = OFF3 (braking with the OFF3 ramp p1135, then pulse suppression and switching on inhibited)	p0848[0] = r2090.2	[2501.3]	Sequence control	-
STW1.3	1 = Enable operation (pulses can be enabled) 0 = Inhibit operation (cancel pulses)	p0852[0] = r2090.3	[2501.3]	Sequence control	-
STW1.4	1 = Operating condition (the ramp-function generator can be enabled) 0 = Inhibit ramp-function generator (set the ramp-function generator output to zero)	p1140[0] = r2090.4	[2501.3]	[3060] [3070] [3080]	-
STW1.5	1 = Enable the ramp-function generator 0 = Stop the ramp-function generator (freeze the ramp-function generator output)	p1141[0] = r2090.5	[2501.3]	[3060] [3070]	-
STW1.6	1 = Enable setpoint 0 = Inhibit setpoint (set the ramp-function generator input to zero)	p1142[0] = r2090.6	[2501.3]	[3060] [3070] [3080]	-
STW1.7	= Acknowledge faults	p2103[0] = r2090.7	[2546.1]	[8060]	-
STW1.8	Reserved	-	-	-	-
STW1.9	Reserved	-	-	-	-
STW1.10	1 = Control via PLC <1>	p0854[0] = r2090.10	[2501.3]	[2501]	-
STW1.11	1 = Dir of rot reversal	p1113[0] = r2090.11	[2505.3]	[3040]	-
STW1.12	Reserved	-	-	-	-
STW1.13	1 = Motorized potentiometer, setpoint, raise	p1035[0] = r2090.13	[2505.3]	[3020]	-
STW1.14	1 = Motorized potentiometer, setpoint, lower	p1036[0] = r2090.14	[2505.3]	[3020]	-
STW1.15	Reserved	-	-	-	-

<1> Bit 10 in STW1 must be set to ensure that the drive accepts the process data.

1	2	3	4	5	6	7	8

Fieldbus Interface (USS, Modbus on RS485)	FP_9342_97_62.vsd	Function diagram	- 9342 -
STW1 control word interconnection	13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-23 9342 – STW1 control word interconnection

Fig. 2-24 9352 – ZSW1 status word interconnection

Signal sources for fieldbus ZSW1 (p0700 = 6)

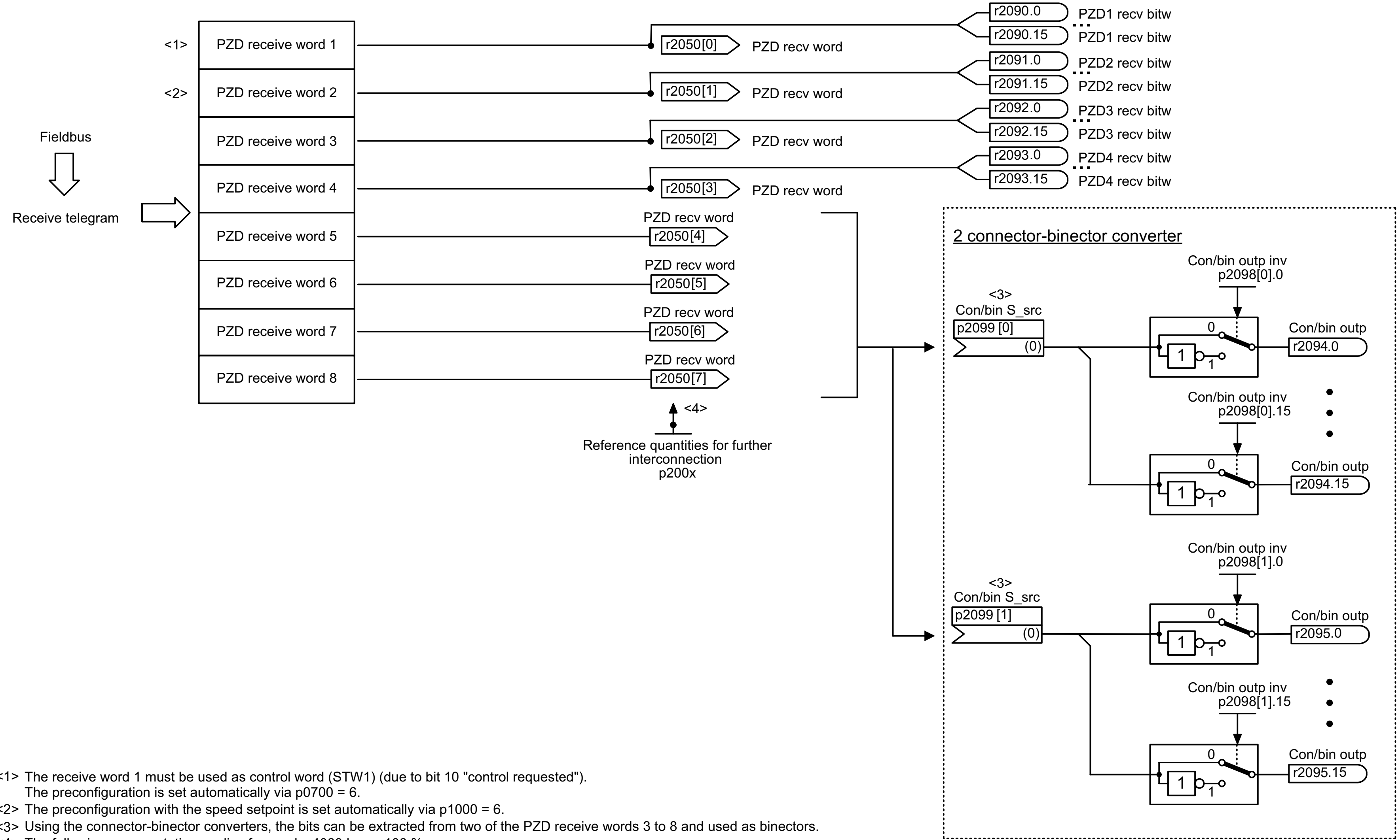
Signal	Meaning	Interconnection parameters	[Function diagram] internal control word	[Function diagram] signal target	Inverted <1>
ZSW1.0	1 = Ready for switching on	p2080[0] = r0899.0	[2503.7]	Sequence control	-
ZSW1.1	1 = Ready for operation (DC link loaded, pulses inhibited)	p2080[1] = r0899.1	[2503.7]	Sequence control	-
ZSW1.2	1 = Operation enabled (drive follows n_set)	p2080[2] = r0899.2	[2503.7]	Sequence control	-
ZSW1.3	1 = Fault present	p2080[3] = r2139.3	[2548.7]	[8060]	-
ZSW1.4	1 = No coast down active (OFF2 inactive)	p2080[4] = r0899.4	[2503.7]	Sequence control	-
ZSW1.5	1 = No fast stop active (OFF3 inactive)	p2080[5] = r0899.5	[2503.7]	Sequence control	-
ZSW1.6	1 = Switching on inhibited active	p2080[6] = r0899.6	[2503.7]	Sequence control	-
ZSW1.7	1 = Alarm present	p2080[7] = r2139.7	[2548.7]	[8065]	-
ZSW1.8	1 = Speed setpoint - actual value deviation within tolerance t_off	p2080[8] = r2197.7	[2534.7]	[8011]	-
ZSW1.9	1 = Control requested <2>	p2080[9] = r0899.9	[2503.7]	[2503]	-
ZSW1.10	1 = f or n comparison value reached/exceeded	p2080[10] = r2199.1	[2536.7]	[8010]	-
ZSW1.11	1 = I, M, or P limit not reached	p2080[11] = r1407.7	[2522.7]	[6060]	✔
ZSW1.12	1 = Open holding brake	p2080[12] = r0899.12	[2503.7]	[2701]	-
ZSW1.13	1 = No motor overtemperature alarm	p2080[13] = r2135.14	[2548.7]	[8016]	✔
ZSW1.14	1 = Motor rotates forwards (n_act ≥ 0) 0 = Motor rotates backwards (n_act < 0)	p2080[14] = r2197.3	[2534.7]	[8011]	-
ZSW1.15	1 = No alarm, thermal overload, power unit	p2080[15] = r2135.15	[2548.7]	[8014]	✔

<1> The ZSW1 is generated using the binector-connector converter (BI: p2080[0...15], inversion: p2088[0].0...p2088[0].15)
<2> The drive is ready to accept data.

1	2	3	4	5	6	7	8

Fieldbus Interface (USS, Modbus on RS485)	FP_9352_97_62.vsd	Function diagram	- 9352 -
ZSW1 status word interconnection	13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-25 9360 – Receive telegram, free interconnection via BICO



<1> The receive word 1 must be used as control word (STW1) (due to bit 10 "control requested").
The preconfiguration is set automatically via p0700 = 6.

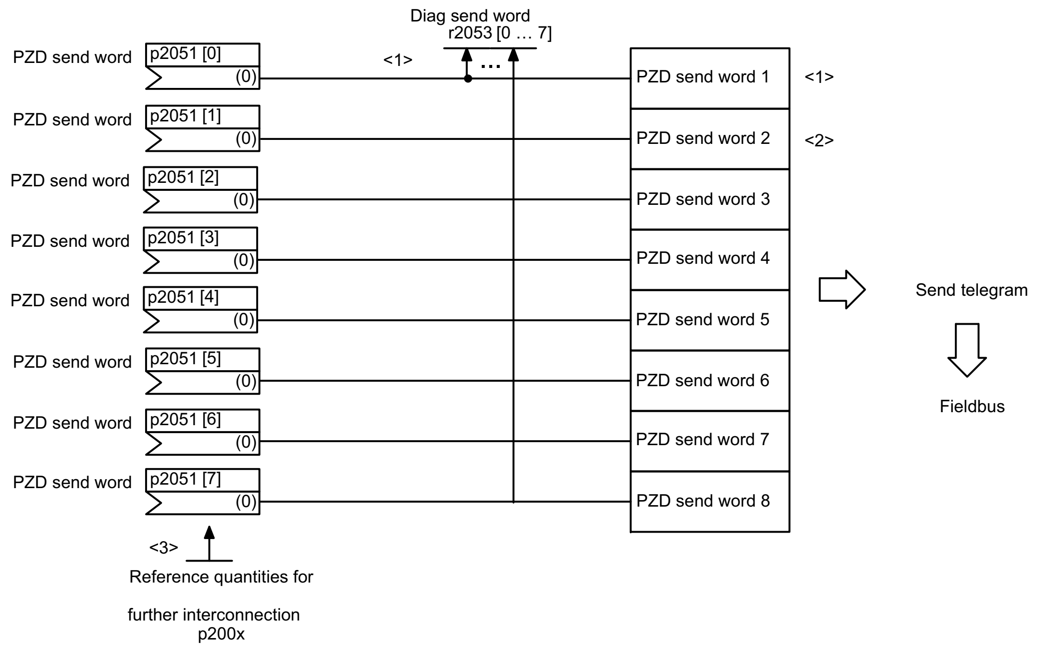
<2> The preconfiguration with the speed setpoint is set automatically via p1000 = 6.

<3> Using the connector-binector converters, the bits can be extracted from two of the PZD receive words 3 to 8 and used as binectors.

<4> The following representation applies for words: 4000 hex = 100 %.
The reference variables p200x apply for the ongoing interconnection (100 % -> p200x).
The following applies for temperature values: 100° C -> 100 % = 4000 hex, 0° C -> 0 %.

1	2	3	4	5	6	7	8
Fieldbus Interface (USS, Modbus on RS485)					FP_9360_97_52.vsd	Function diagram	- 9360 -
Receive telegram, free interconnection via BICO					13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-26 9370 – Send telegram, free interconnection via BICO



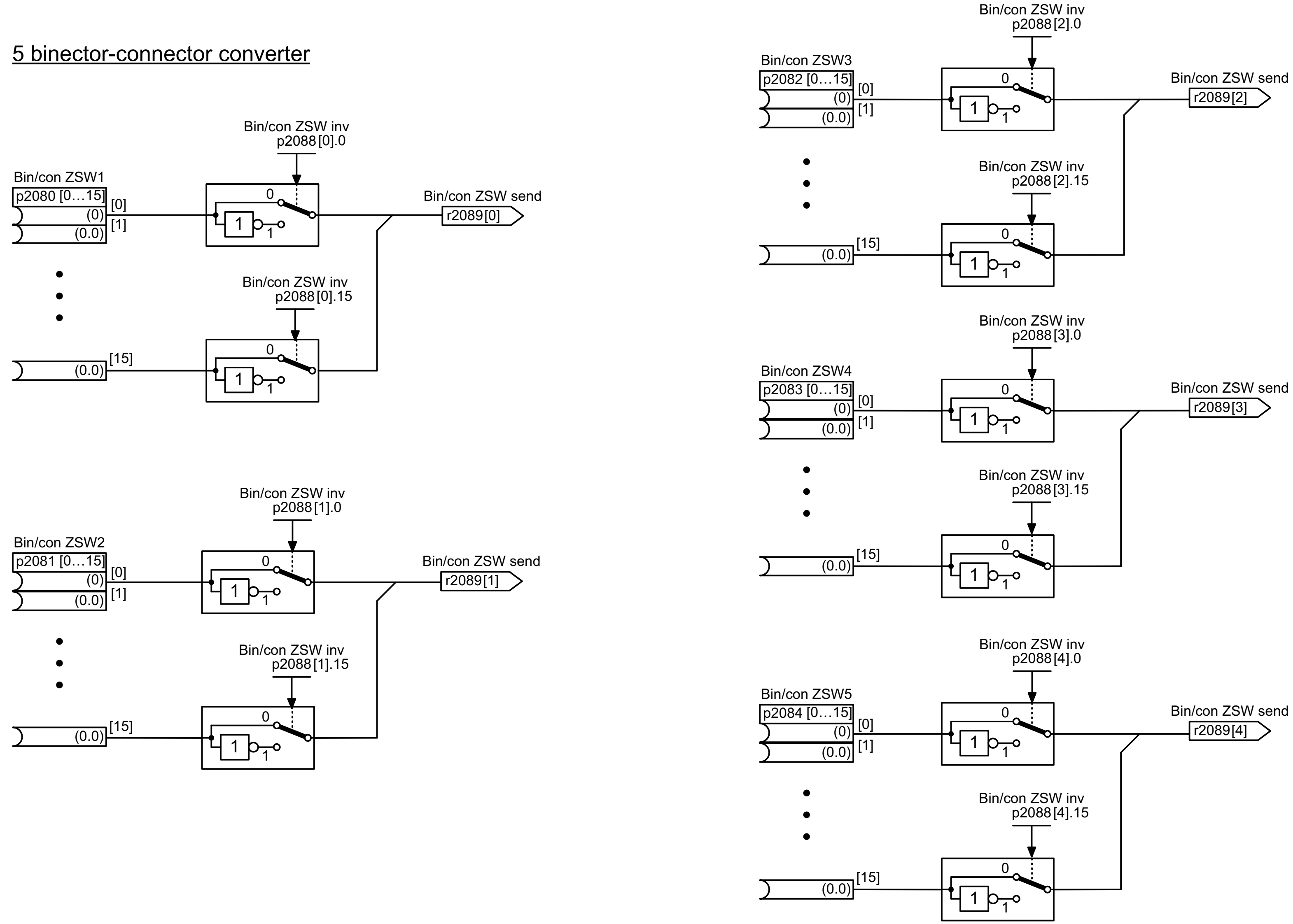
<1> The send word 1 must be used as status word (ZSW1). The preconfiguration is set automatically via p0700 = 6.

<2> The preconfiguration with the speed setpoint is set automatically via p1000 = 6.

<3> Physical word values are inserted in the telegram as referenced variables. p200x apply as reference variables (telegram contents = 4000 hex, if the input variable has the value p200x).
The following applies for temperature values: 100° C -> 100 % = 4000 hex; 0° C -> 0%.

1	2	3	4	5	6	7	8
Fieldbus Interface (USS, Modbus on RS485)					FP_9370_97_62.vsd	Function diagram	- 9370 -
Send telegram, free interconnection via BICO					13.12.2010 V4.4	G120 CU240B/E-2	

5 binector-connector converter



1	2	3	4	5	6	7	8

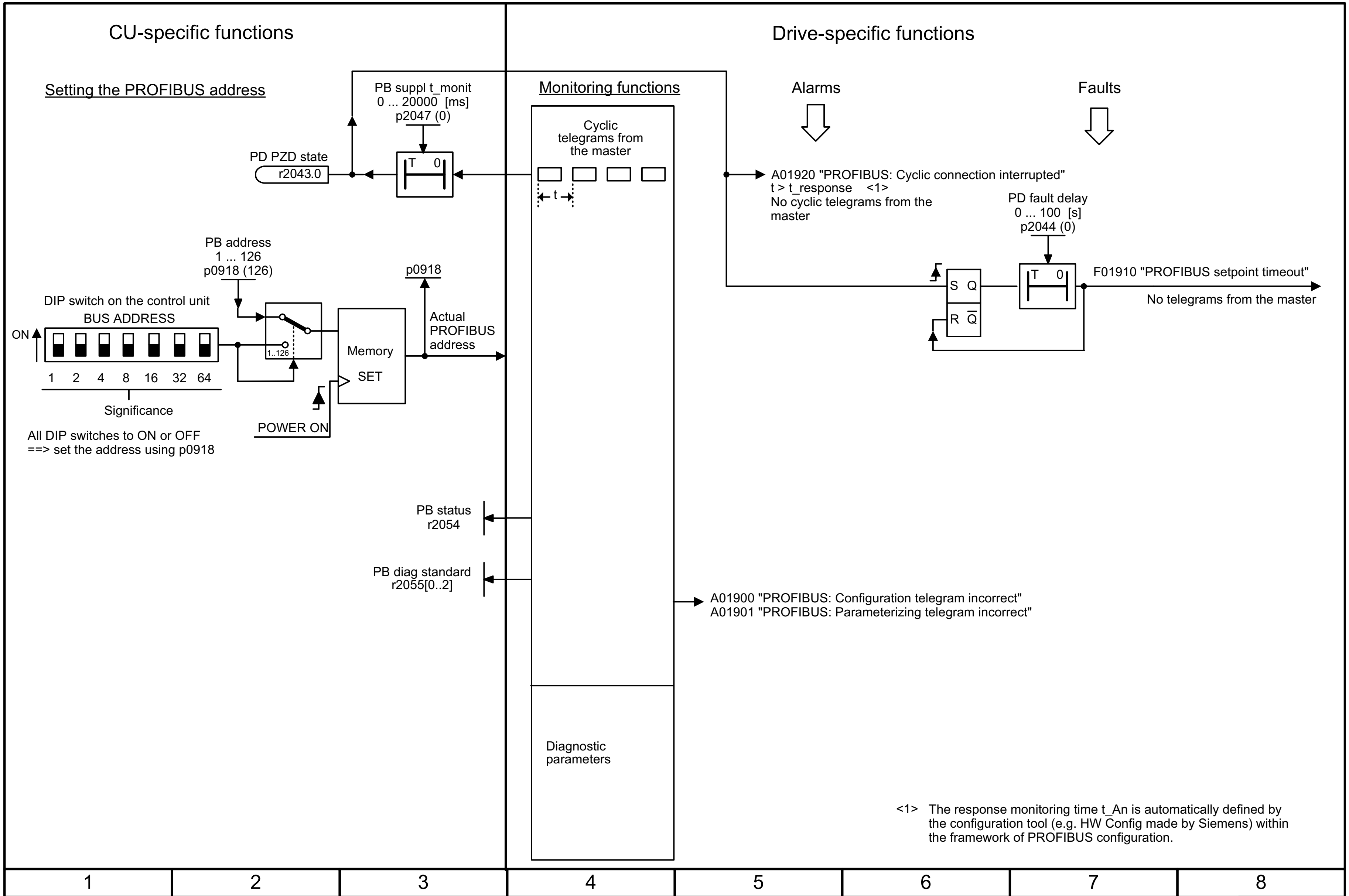
Fieldbus Interface (USS, Modbus on RS485)	FP_9372_97_52.vsd	Function diagram	- 9372 -
Status words, free interconnection	13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-27 9372 – Status words, free interconnection

2.5.2 PROFIdrive / PROFIBUS (CU240B/E-2 DP)

Function diagrams

Fig. 2-28 2410 – PROFIBUS, addresses and diagnostics



PROFIdrive / PROFIBUS	FP_2410_97_61.vsd	Function diagram	- 2410 -
PROFIBUS (PB), addresses and diagnostics	13.12.2010 V4.4	G120 CU240B/E-2 DP	

<1>
PD Telegr_sel
1 ... 999
p0922 (1)

	Standard telegrams				Manufacturer-specific telegrams								Free telegram	
Interconnection is made according to	[2440] [2450] automatically													
Telegram	1		20		350		352		353		354		999	
PZD1	STW1	ZSW1	STW1	ZSW1	STW1	ZSW1	STW1	ZSW1	STW1	ZSW1	STW1	ZSW1	STW1 <4>	ZSW1 <4>
PZD2	NSOLL_A	NIST_A	NSOLL_A	NIST_A_GL	NSOLL_A	NIST_A_GL	NSOLL_A	NIST_A_GL	NSOLL_A	NIST_A_GL	NSOLL_A	NIST_A_GL	Receive telegram length freely selectable via central PROFIdrive configuration in the master	Transmit telegram length freely selectable via central PROFIdrive configuration in the master
PZD3				IAIST_GL	M_LIM	IAIST_GL	<3>	IAIST_GL			<3>	IAIST_GL		
PZD4				MIST_GL	STW3	ZSW3	<3>	MIST_GL			<3>	MIST_GL		
PZD5				PIST_GL			<3>	WARN_CODE			<3>	WARN_CODE		
PZD6				<2>			<3>	FAULT_CODE			<3>	FAULT_CODE		
PZD7														
PZD8														

Receive telegram from PROFIdrive

Send telegram to PROFIdrive

<1> If p0922 = 999 is changed to another value, the telegram is automatically assigned.
If p0922 unequal 999 is changed to p0922 = 999, the "old" telegram assignment is maintained!

<2> Freely interconnectable (pre-setting: MELD_NAMUR).

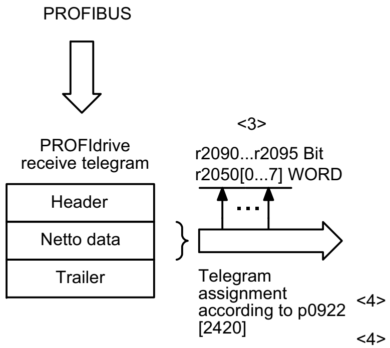
<3> Can be freely connected.

<4> In order to comply with the PROFIdrive profile, PZD1 must be used as control word 1 (STW1) or status word 1 (ZSW1).
p2037 = 2 should be set if STW1 is not transferred with PZD1 as specified in the PROFIdrive profile.

1	2	3	4	5	6	7	8

PROFIdrive / PROFIBUS	FP_2420_97_61.vsd	Function diagram	- 2420 -
Telegrams and Process Data (PZD)	13.12.2010 V4.4	G120 CU240B/E-2 DP	

Fig. 2-29 2420 – Telegrams and Process Data (PZD)



Signal receivers for PZD receive signals

Signal	Meaning	PROFIdrive Signal No.	Interconnection parameter <1>	Function diagram	Data type <2>	Scaling
STW1	Control word 1	1	(bit serial)	[2442]	U16	-
NSOLL_A	Speed setpoint A (16-bit)	5	p1070	[3030.2]	I16	4000 hex ≙ p2000
<4> M_LIM	Torque limit	310	p1552,p1554	[6060.1]	U16	4000 hex ≙ 100 %
<4> STW3	Control word 3	304	(bit serial)	[2444]	U16	-

<1> When selecting a standard telegram or a manufacturer-specific telegram via p0922, these interconnection parameters of the command data set CDS are automatically set to 0.
<2> Data type according to to the PROFIdrive profile: I16 = Integer16, U16 = Unsigned16.
<3> Display parameters for receive data according to [2460].
<4> Only SIEMENS telegram 350

1	2	3	4	5	6	7	8

PROFIdrive / PROFIBUS	FP_2440_97_61.vsd	Function diagram	- 2440 -
PZD receive signals interconnection	13.12.2010 V4.4	G120 CU240B/E-2 DP	

Fig. 2-30 2440 – PZD receive signals interconnection

Fig. 2-31 2441 – STW1 control word interconnection

Signal targets for STW1 in Interface Mode VIK-NAMUR (p2038 = 2)

<1>

Signal	Meaning	Interconnection parameters	[Function diagram] internal control word	[Function diagram] signal target	Inverted
STW1.0	= ON (pulses can be enabled) 0 = OFF1 (braking with ramp-function generator, then pulse cancellation & ready for switching on)	p0840[0] = r2090.0	[2501.3]	Sequence control	-
STW1.1	1 = No OFF2 (enable is possible) 0 = OFF2 (immediate pulse suppression and switching on inhibited)	p0844[0] = r2090.1	[2501.3]	Sequence control	-
STW1.2	1 = No OFF3 (enable is possible) 0 = OFF3 (braking with the OFF3 ramp p1135, then pulse suppression and switching on inhibited)	p0848[0] = r2090.2	[2501.3]	Sequence control	-
STW1.3	1 = Enable operation (pulses can be enabled) 0 = Inhibit operation (cancel pulses)	p0852[0] = r2090.3	[2501.3]	Sequence control	-
STW1.4	1 = Operating condition (the ramp-function generator can be enabled) 0 = Inhibit ramp-function generator (set the ramp-function generator output to zero)	p1140[0] = r2090.4	[2501.3]	[3060] [3070] [3080]	-
STW1.5	1 = Enable the ramp-function generator 0 = Stop the ramp-function generator (freeze the ramp-function generator output)	p1141[0] = r2090.5	[2501.3]	[3060] [3070]	-
STW1.6	1 = Enable setpoint 0 = Inhibit setpoint (set the ramp-function generator input to zero)	p1142[0] = r2090.6	[2501.3]	[3060] [3070] [3080]	-
STW1.7	= Acknowledge faults	p2103[0] = r2090.7	[2546.1]	[8060]	-
STW1.8	Reserved	-	-	-	-
STW1.9	Reserved	-	-	-	-
STW1.10	1 = Control via PLC <2>	p0854[0] = r2090.10	[2501.3]	[2501]	-
STW1.11	1 = Dir of rot reversal	p1113[0] = r2090.11	[2505.3]	[3040]	-
STW1.12	Reserved	-	-	-	-
STW1.13	Reserved	-	-	-	-
STW1.14	Reserved	-	-	-	-
STW1.15	1 = CDS selection	p0810[0] = 2090.15 <3>	-	[8565]	-

<1> Used in telegram 20.
<2> Bit 10 in STW1 must be set to ensure that the drive accepts the process data.
<3> Interconnection is not disabled.

1	2	3	4	5	6	7	8

PROFIdrive / PROFIBUS	FP_2441_97_61.vsd	Function diagram	- 2441 -
STW1 control word interconnection (p2038 = 2)	13.12.2010 V4.4	G120 CU240B/E-2 DP	

Signal targets for STW1 in Interface Mode SINAMICS (p2038 = 0) <1>

Signal	Meaning	Interconnection parameters	[Function diagram] internal control word	[Function diagram] signal target	Inverted
STW1.0	= ON (pulses can be enabled) 0 = OFF1 (braking with ramp-function generator, then pulse cancellation & ready for switching on)	p0840[0] = r2090.0	[2501.3]	Sequence control	-
STW1.1	1 = No OFF2 (enable is possible) 0 = OFF2 (immediate pulse suppression and switching on inhibited)	p0844[0] = r2090.1	[2501.3]	Sequence control	-
STW1.2	1 = No OFF3 (enable is possible) 0 = OFF3 (braking with the OFF3 ramp p1135, then pulse suppression and switching on inhibited)	p0848[0] = r2090.2	[2501.3]	Sequence control	-
STW1.3	1 = Enable operation (pulses can be enabled) 0 = Inhibit operation (cancel pulses)	p0852[0] = r2090.3	[2501.3]	Sequence control	-
STW1.4	1 = Operating condition (the ramp-function generator can be enabled) 0 = Inhibit ramp-function generator (set the ramp-function generator output to zero)	p1140[0] = r2090.4	[2501.3]	[3060] [3070] [3080]	-
STW1.5	1 = Enable the ramp-function generator 0 = Stop the ramp-function generator (freeze the ramp-function generator output)	p1141[0] = r2090.5	[2501.3]	[3060] [3070]	-
STW1.6	1 = Enable setpoint 0 = Inhibit setpoint (set the ramp-function generator input to zero)	p1142[0] = r2090.6	[2501.3]	[3060] [3070] [3080]	-
STW1.7	= Acknowledge faults	p2103[0] = r2090.7	[2546.1]	[8060]	-
STW1.8	Reserved	-	-	-	-
STW1.9	Reserved	-	-	-	-
STW1.10	1 = Control via PLC <2>	p0854[0] = r2090.10	[2501.3]	[2501]	-
STW1.11	1 = Dir of rot reversal	p1113[0] = r2090.11	[2505.3]	[3040]	-
STW1.12	Reserved	-	-	-	-
STW1.13	1 = Motorized potentiometer, setpoint, raise	p1035[0] = r2090.13	[2505.3]	[3020]	-
STW1.14	1 = Motorized potentiometer, setpoint, lower	p1036[0] = r2090.14	[2505.3]	[3020]	-
STW1.15	Reserved	-	-	-	-

<1> Used in telegrams 1, 350, 352, 353, 354.
<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 / PROFIBUS	FP_2442_97_61.vsd	Function diagram	- 2442 -
STW1 control word interconnection (p2038 = 0)	13.12.2010 V4.4	G120 CU240B/E-2 DP	

Fig. 2-32 2442 – STW1 control word interconnection (p2038 = 0)

Signal targets for STW3 in Interface Mode SINAMICS (p2038 = 0) <1>

Signal	Meaning	Interconnection parameters	[Function diagram] internal control word	[Function diagram] signal target	Inverted
STW3.0	1 = Fixed setp bit 0	p1020[0] = r2093.0	[3010.2]	[3010.2]	-
STW3.1	1 = Fixed setp bit 1	p1021[0] = r2093.1	[2513.2]	[3010.2]	-
STW3.2	1 = Fixed setp bit 2	p1022[0] = r2093.2	[2513.2]	[3010.2]	-
STW3.3	1 = Fixed setp bit 3	p1023[0] = r2093.3	[2513.2]	[3010.2]	-
STW3.4	1 = DDS select. bit 0	p0820 = r2093.4	[2513.2]	[8565.2]	-
STW3.5	1 = DDS select. bit 1	p0821 = r2093.5	[2513.2]	[8565.2]	-
STW3.6	Reserved	-	-	-	-
STW3.7	Reserved	-	-	-	-
STW3.8	1 = Technology controller enable	p2200[0] = r2093.8	[2513.2]	[7958.4]	-
STW3.9	1 = DC brake enable	p1230[0] = r2093.9	[2513.2]	[7017.1]	-
STW3.10	Reserved	-	-	-	-
STW3.11	1 = Droop enable	p1492[0] = r2093.11	[2513.2]	[6030.1]	-
STW3.12	1 = Torque control active	p1501[0] = r2093.12	[2513.2]	[6060.1]	-
STW3.13	0 = External fault 1 (F07860)	p2106[0] = r2093.13	[2513.2]	[8060.1]	-
STW3.14	Reserved	-	-	-	-
STW3.15	1 = CDS bit 1	p0811[0] = r2093.15	[2513.2]	[8560.3]	-

<1> Used in telegrams 350.

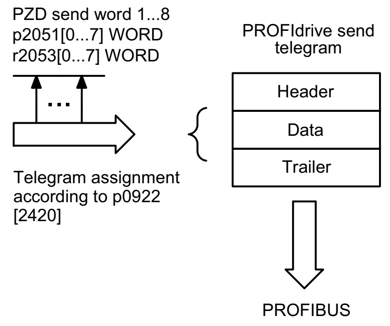
1	2	3	4	5	6	7	8

PROFIdrive / PROFIBUS	FP_2444_97_51.vsd	Function diagram	- 2444 -
STW3 control word interconnection (p2038 = 0)	13.12.2010 V4.4	G120 CU240B/E-2 DP	

Fig. 2-33 2444 – STW3 control word interconnection (p2038 = 0)

Signal sources for PZD send signals

Signal	Description	PROFIdrive Signal No.	Interconnection parameter	Function diagram	Data type <1>	Scaling
ZSW1	Status word 1	2	r2089[0]	[2452]	U16	-
NIST_A	Actual speed A (16 bit)	6	r0063[0]	-	I16	4000 hex ≙ p2000
IAIST_GLATT	Absolute actual current, smoothed	51	r0068[1]	[6799]	I16	4000 hex ≙ p2002
MIST_GLATT	Actual torque smoothed	53	r0080[1]	[6799]	I16	4000 hex ≙ p2003
PIST_GLATT	Power factor, smoothed	54	r0082[1]	[6799]	I16	4000 hex ≙ p2004
NIST_A_GLATT	Actual speed, smoothed	57	r0063[1]	-	I16	4000 hex ≙ p2000
MELD_NAMUR	VIK-NAMUR message bit bar	58	r3113	-	U16	
FAULT_CODE	Fault code	301	r2131	[8060]	U16	
WARN_CODE	Alarm code	303	r2132	[8065]	U16	
ZSW3	Status word 3	305	r0053	[2454]	U16	



<1> Data type according to the PROFIdrive profile: I16 = Integer16, U16 = Unsigned16.

1	2	3	4	5	6	7	8

PROFIdrive / PROFIBUS	FP_2450_97_61.vsd	Function diagram	- 2450 -
PZD send signals interconnection	13.12.2010 V4.4	G120 CU240B/E-2 DP	

Fig. 2-34 2450 – PZD send652 signals interconnection

Signal sources for ZSW1 in Interface Mode VIK-NAMUR (p2038 = 2)

<1>

Signal	Meaning	Interconnection parameters	[Function diagram] internal control word	[Function diagram] signal target	Inverted <2>
ZSW1.0	1 = Ready for switching on	p2080[0] = r0899.0	[2503.7]	Sequence control	-
ZSW1.1	1 = Ready for operation (DC link loaded, pulses inhibited)	p2080[1] = r0899.1	[2503.7]	Sequence control	-
ZSW1.2	1 = Operation enabled (drive follows n_set)	p2080[2] = r0899.2	[2503.7]	Sequence control	-
ZSW1.3	1 = Fault present	p2080[3] = r2139.3	[2548.7]	[8060]	-
ZSW1.4	1 = No coast down active (OFF2 inactive)	p2080[4] = r0899.4	[2503.7]	Sequence control	-
ZSW1.5	1 = No fast stop active (OFF3 inactive)	p2080[5] = r0899.5	[2503.7]	Sequence control	-
ZSW1.6	1 = Switching on inhibited active	p2080[6] = r0899.6	[2503.7]	Sequence control	-
ZSW1.7	1 = Alarm present	p2080[7] = r2139.7	[2548.7]	[8065]	-
ZSW1.8	1 = Speed setpoint - actual value deviation within tolerance t_off	p2080[8] = r2197.7	[2534.7]	[8011]	-
ZSW1.9	1 = Control requested <3>	p2080[9] = r0899.9	[2503.7]	[2503]	-
ZSW1.10	1 = f or n comparison value reached/exceeded	p2080[10] = r2199.1	[2536.7]	[8010]	-
ZSW1.11	1 = I, M, or P limit not reached	p2080[11] = r0056.13	[2522.7]	[6060]	✔
ZSW1.12	Reserved	-	-	-	-
ZSW1.13	1 = No motor overtemperature alarm	p2080[13] = r2135.14	[2548.7]	[8016]	✔
ZSW1.14	1 = Motor rotates forwards (n_act ≥ 0) 0 = Motor rotates backwards (n_act < 0)	p2080[14] = r2197.3	[2534.7]	[8011]	-
ZSW1.15	1 = Display CDS	p2080[15] = r0836.0 <4>	-	-	-

<1> Used in telegram 20.
<2> The ZSW1 is generated using the binector-connector converter (BI: p2080[0...15], inversion: p2088[0].0...p2088[0].15)
<3> The drive object is ready to accept data.
<4> Interconnection is not disabled.

1	2	3	4	5	6	7	8

PROFIdrive / PROFIBUS	FP_2451_97_61.vsd	Function diagram	- 2451 -
ZSW1 status word interconnection (p2038 = 2)	13.12.2010 V4.4	G120 CU240B/E-2 DP	

Fig. 2-35 2451 – ZSW1 status word interconnection (p2038 = 2)

Signal sources for ZSW1 im Interface Mode SINAMICS (p2038 = 0) <1>

Signal	Meaning	Interconnection parameters	[Function diagram] internal control word	[Function diagram] signal target	Inverted <2>
ZSW1.0	1 = Ready for switching on	p2080[0] = r0899.0	[2503.7]	Sequence control	-
ZSW1.1	1 = Ready for operation (DC link loaded, pulses inhibited)	p2080[1] = r0899.1	[2503.7]	Sequence control	-
ZSW1.2	1 = Operation enabled (drive follows n_set)	p2080[2] = r0899.2	[2503.7]	Sequence control	-
ZSW1.3	1 = Fault present	p2080[3] = r2139.3	[2548.7]	[8060]	-
ZSW1.4	1 = No coast down active (OFF2 inactive)	p2080[4] = r0899.4	[2503.7]	Sequence control	-
ZSW1.5	1 = No fast stop active (OFF3 inactive)	p2080[5] = r0899.5	[2503.7]	Sequence control	-
ZSW1.6	1 = Switching on inhibited active	p2080[6] = r0899.6	[2503.7]	Sequence control	-
ZSW1.7	1 = Alarm present	p2080[7] = r2139.7	[2548.7]	[8065]	-
ZSW1.8	1 = Speed setpoint - actual value deviation within tolerance t_off	p2080[8] = r2197.7	[2534.7]	[8011]	-
ZSW1.9	1 = Control requested <3>	p2080[9] = r0899.9	[2503.7]	[2503]	-
ZSW1.10	1 = f or n comparison value reached/exceeded	p2080[10] = r2199.1	[2536.7]	[8010]	-
ZSW1.11	1 = I, M, or P limit not reached	p2080[11] = r1407.7	[2522.7]	[6060]	✔
ZSW1.12	1 = Open holding brake	p2080[12] = r0899.12	[2503.7]	[2701]	-
ZSW1.13	1 = No motor overtemperature alarm	p2080[13] = r2135.14	[2548.7]	[8016]	✔
ZSW1.14	1 = Motor rotates forwards (n_act ≥ 0) 0 = Motor rotates backwards (n_act < 0)	p2080[14] = r2197.3	[2534.7]	[8011]	-
ZSW1.15	1 = No alarm, thermal overload, power unit	p2080[15] = r2135.15	[2548.7]	[8014]	✔

<1> Used in telegrams 1, 350, 352, 353, 354.
<2> The ZSW1 is generated using the binector-connector converter (BI: p2080[0...15], inversion: p2088[0].0...p2088[0].15)
<3> The drive is ready to accept data.

1	2	3	4	5	6	7	8

PROFIdrive / PROFIBUS	FP_2452_97_61.vsd	Function diagram	- 2452 -
ZSW1 status word interconnection (p2038 = 0)	13.12.2010 V4.4	G120 CU240B/E-2 DP	

Fig. 2-36 2452 – ZSW1 status word interconnection (p2038 = 0)

Fig. 2-37 2454 – ZSW3 status word interconnection (p2038 = 0)

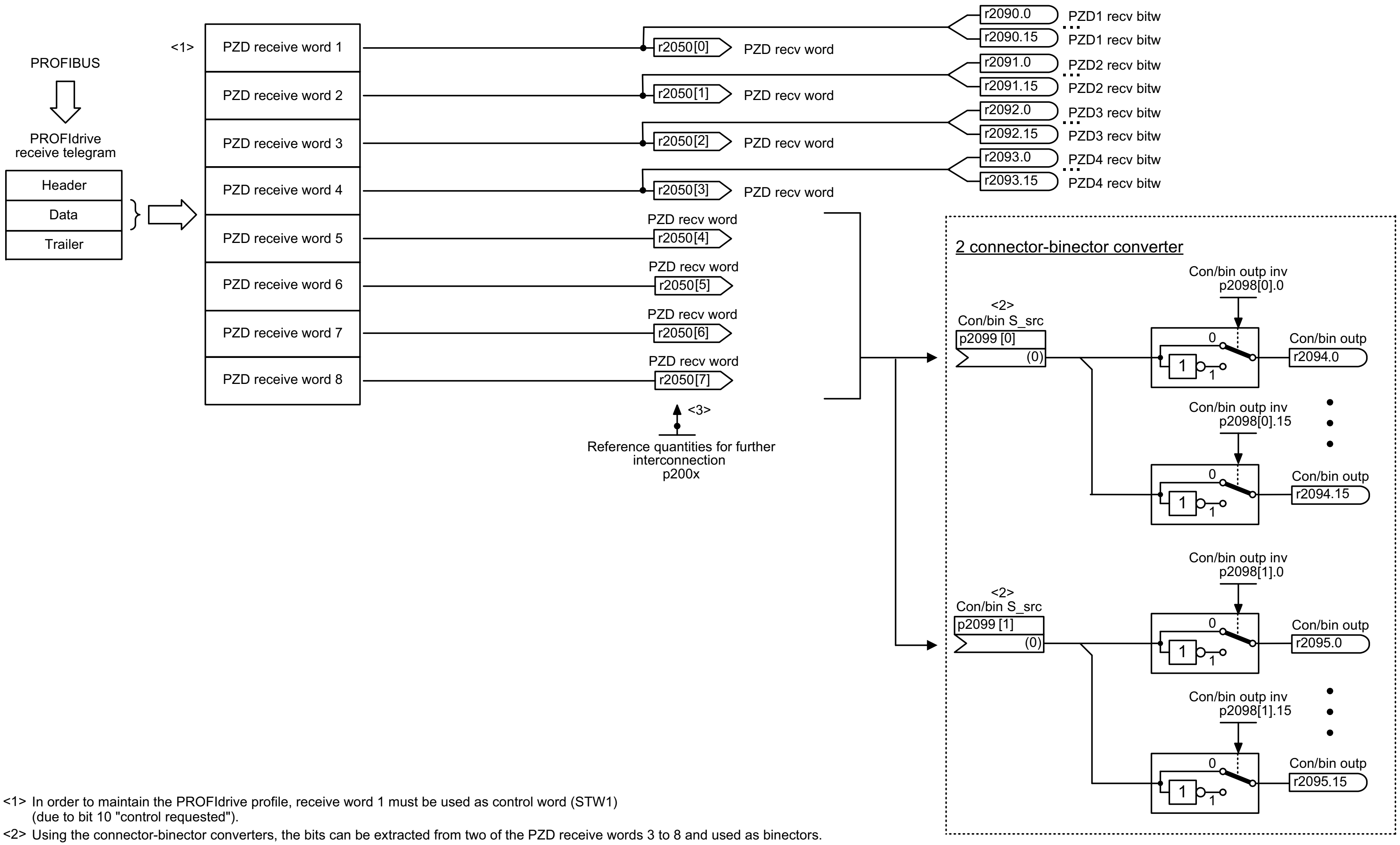
Signal sources for ZSW3 im Interface Mode SINAMICS (p2038 = 0) <1>

Signal	Meaning	Interconnection parameters	[Function diagram] internal status word	[Function diagram] signal source	Inverted
ZSW3.0	1 = DC brake active 0 = DC brake not active	p2051[3] = r0053	[2511.7]	[7017.5]	-
ZSW3.1	1 = |n_act| > p1226 (n_standstill)		[2511.7]	[2534.7]	-
ZSW3.2	1 = |n_act| > p1080 (n_min)		[2511.7]	[2534.7]	-
ZSW3.3	1 = I_act >= p2170		[2511.7]	[2534.7]	-
ZSW3.4	1 = |n_act| > p2155		[2511.7]	[2534.7]	-
ZSW3.5	1 = |n_act| <= p2155		[2511.7]	[2534.7]	-
ZSW3.6	1 = |n_act| >= r1119 (f_set)		[2511.7]	[2534.7]	-
ZSW3.7	1 = Vdc <= p2172		[2511.7]	[2534.7]	-
ZSW3.8	1 = Vdc > p2172		[2511.7]	[2534.7]	-
ZSW3.9	1 = Ramping finished		[2511.7]	[3080.7]	-
ZSW3.10	1 = Techn. contr. out at lower limit		[2511.7]	[7958.7]	-
ZSW3.11	1 = Techn. contr. out at upper limit		[2511.7]	[7958.7]	-
ZSW3.12	Reserved		-	-	-
ZSW3.13	Reserved		-	-	-
ZSW3.14	Reserved		-	-	-
ZSW3.15	Reserved		-	-	-

<1> Used in telegrams 350.

1	2	3	4	5	6	7	8
PROFIdrive / PROFIBUS					FP_2454_97_61.vsd	Function diagram	- 2454 -
ZSW3 status word interconnection (p2038 = 0)					13.12.2010 V4.4	G120 CU240B/E-2 DP	

Fig. 2-38 2468 – Receive telegram, free interconnection via BICO (p0922 = 999)



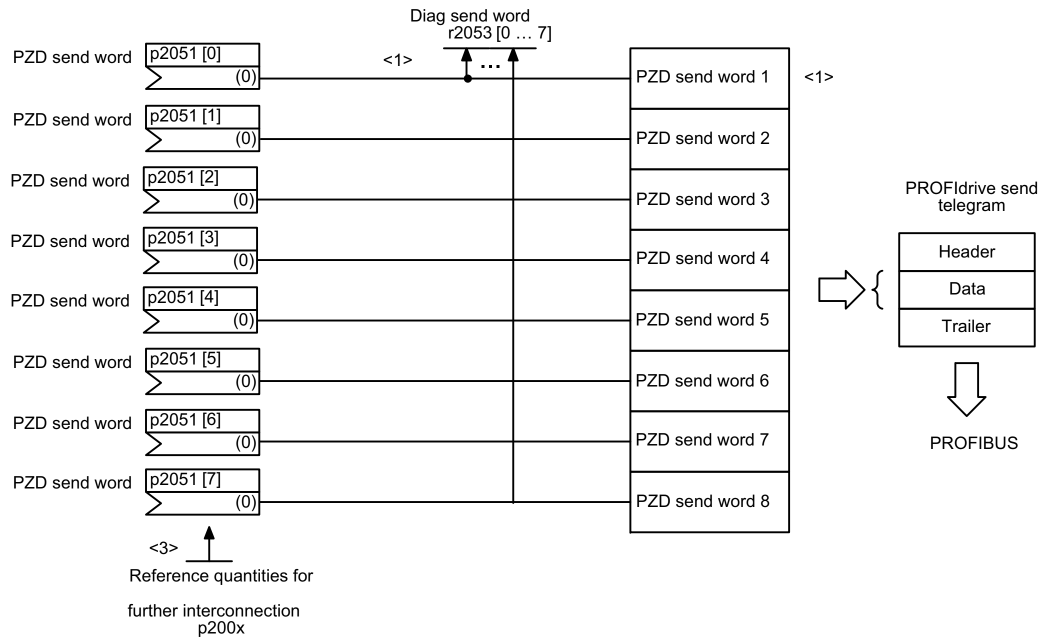
<1> In order to maintain the PROFIdrive profile, receive word 1 must be used as control word (STW1) (due to bit 10 "control requested").

<2> Using the connector-binector converters, the bits can be extracted from two of the PZD receive words 3 to 8 and used as binectors.

<3> The following representation applies for words: 4000 hex = 100 %.
The reference variables p200x apply for the ongoing interconnection (100 % -> p200x).
The following applies for temperature values: 100° C -> 100 % = 4000 hex, 0° C -> 0 %.

1	2	3	4	5	6	7	8
PROFIdrive / PROFIBUS					FP_2468_97_51.vsd	Function diagram	- 2468 -
Receive telegram, free interconnection via BICO (p0922 = 999)					13.12.2010 V4.4	G120 CU240B/E-2 DP	

Fig. 2-39 2470 – Send telegram, free interconnection via BICO (p0922 = 999)

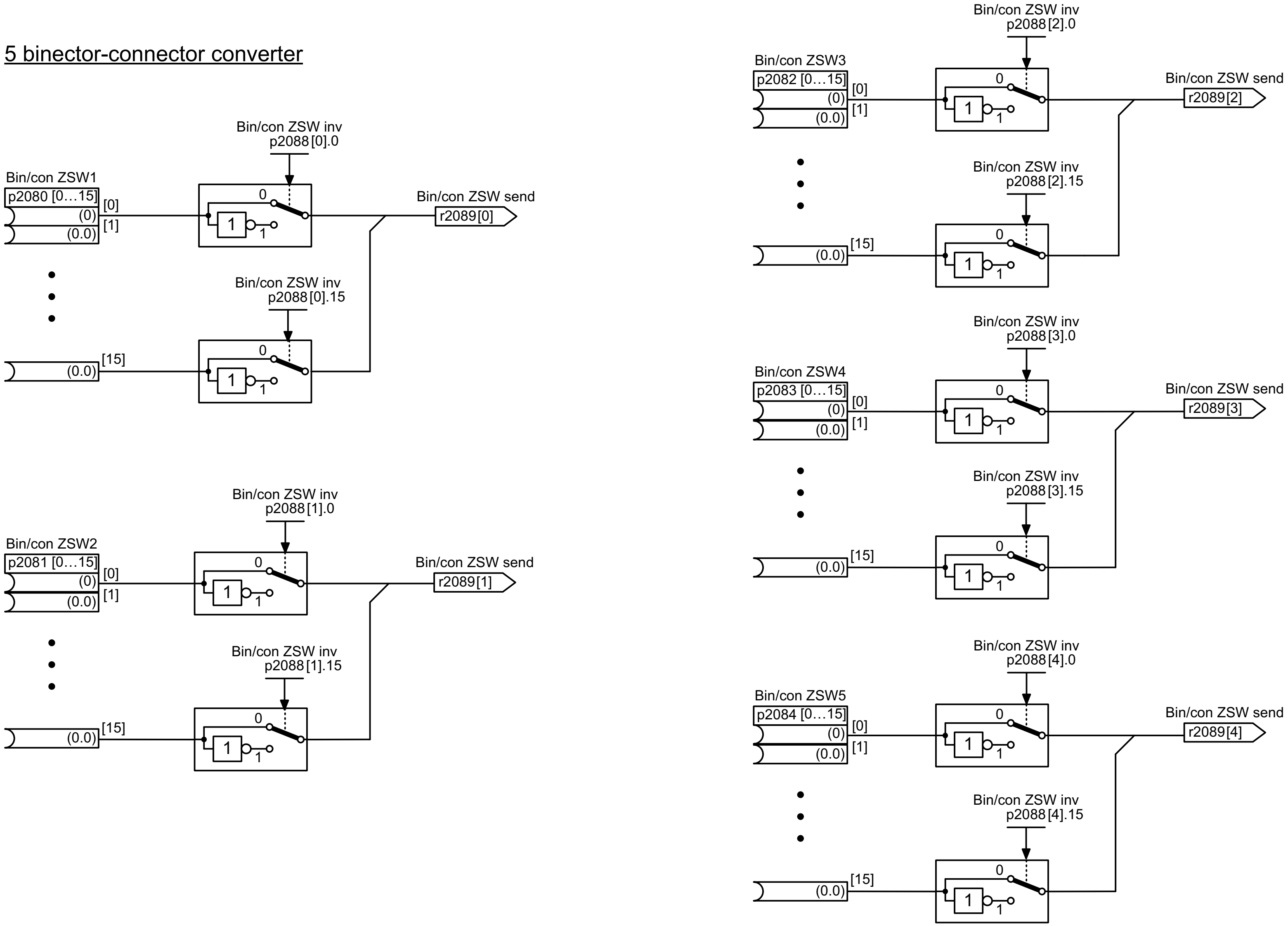


<1> To comply with the PROFIdrive profile, send word 1 must be used as status word 1 (ZSW1).

<2> Physical word values are inserted in the telegram as referenced variables. p200x apply as reference variables (telegram contents = 4000 hex, if the input variable has the value p200x).
The following applies for temperature values: 100° C -> 100 % = 4000 hex; 0° C -> 0%.

1	2	3	4	5	6	7	8
PROFIdrive / PROFIBUS					FP_2470_97_61.vsd	Function diagram	- 2470 -
Send telegram, free interconnection via BICO (p0922 = 999)					13.12.2010 V4.4	G120 CU240B/E-2 DP	

5 binector-connector converter



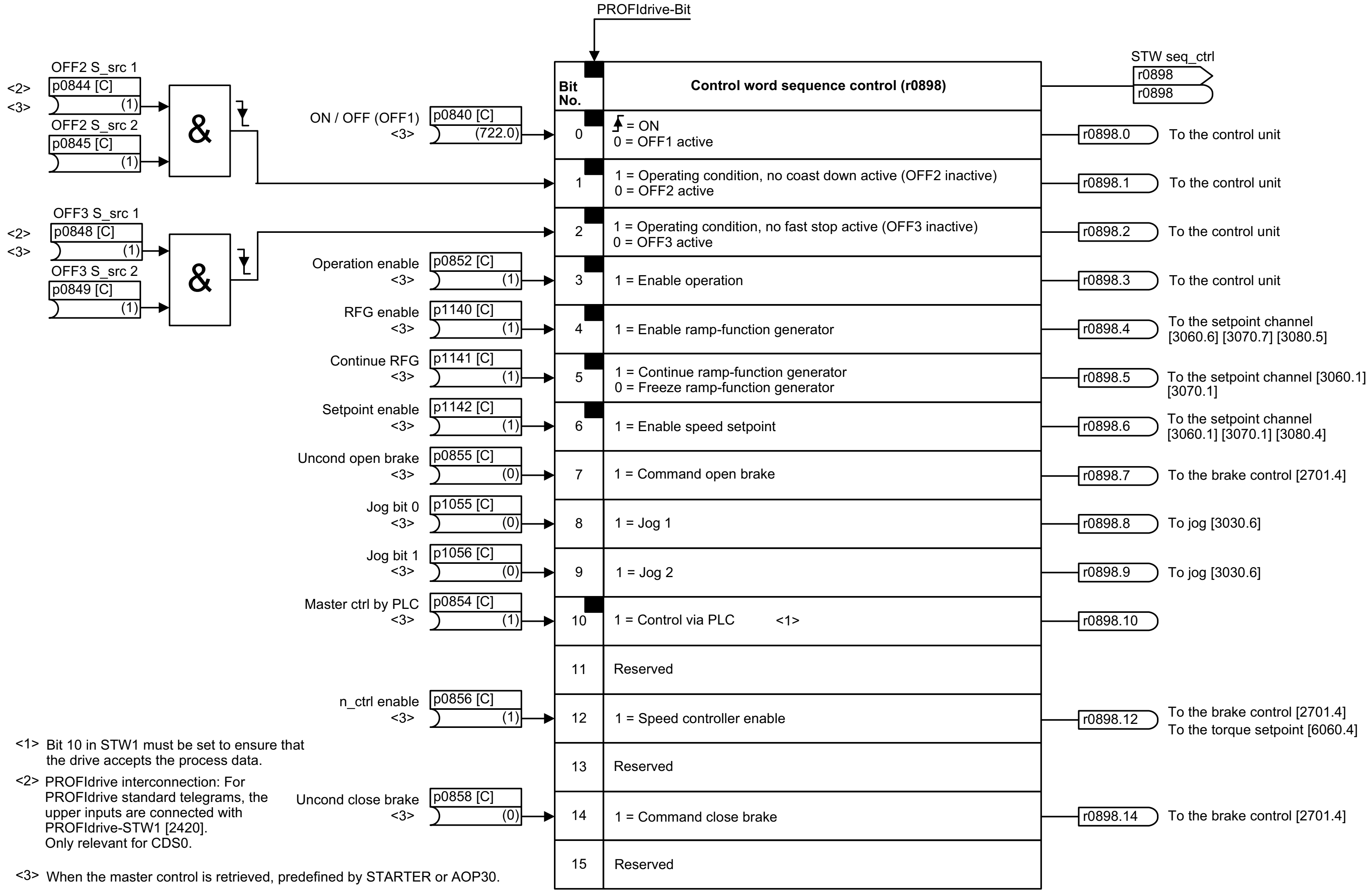
1	2	3	4	5	6	7	8
PROFIdrive / PROFIBUS					FP_2472_97_51.vsd	Function diagram	- 2472 -
Status words, free interconnection					13.12.2010 V4.4	G120 CU240B/E-2 DP	

Fig. 2-40 2472 – Status words, free interconnection

2.6 Internal control/status words

Function diagrams

Fig. 2-41 2501 – Control word, sequence control



<1> Bit 10 in STW1 must be set to ensure that the drive accepts the process data.

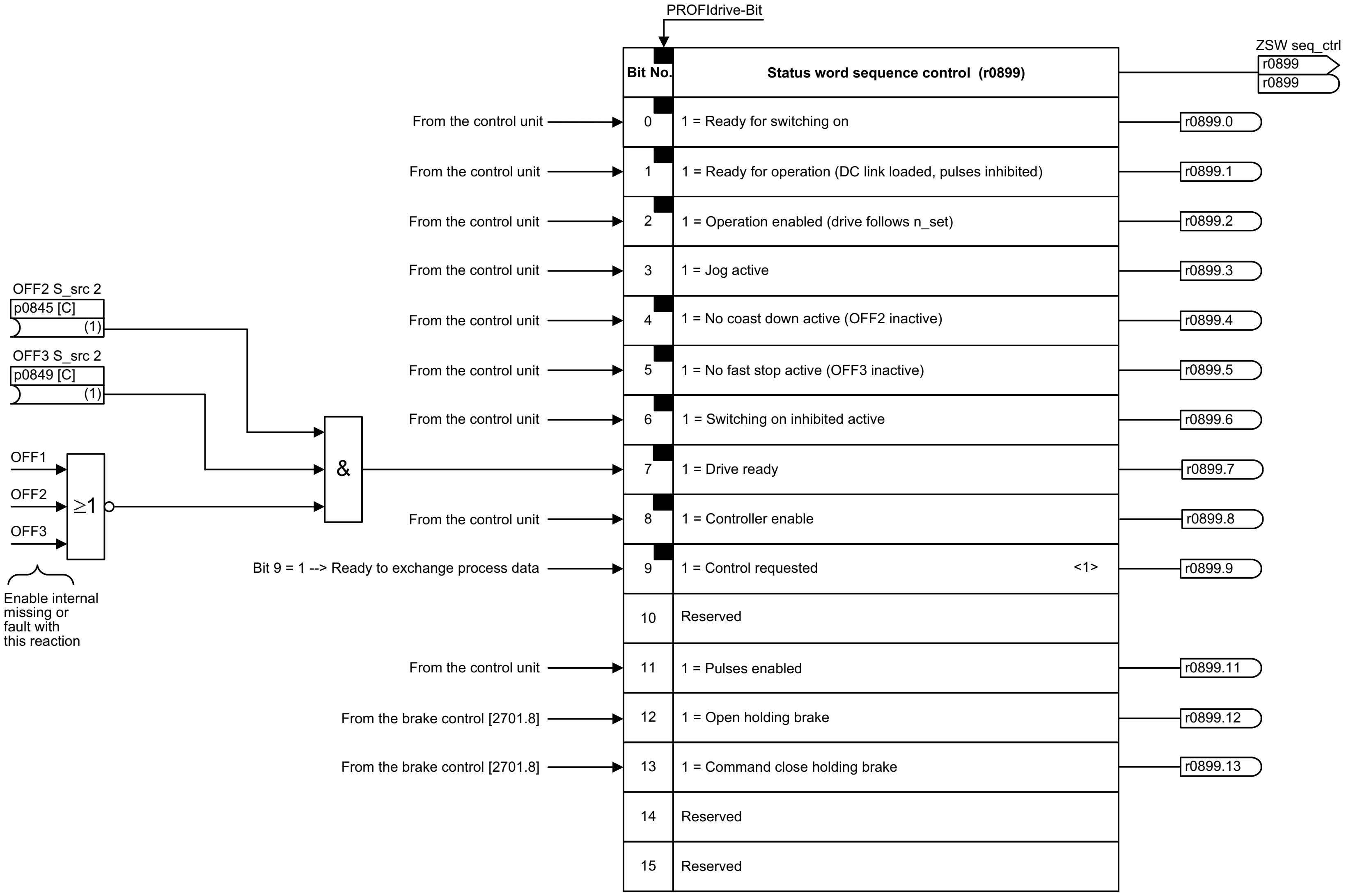
<2> PROFIdrive interconnection: For PROFIdrive standard telegrams, the upper inputs are connected with PROFIdrive-STW1 [2420]. Only relevant for CDS0.

<3> When the master control is retrieved, predefined by STARTER or AOP30.

1	2	3	4	5	6	7	8

Internal control/status words	FP_2501_97_53.vsd	Function diagram	- 2501 -
Control word, sequence control	13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-42 2503 – Status word, sequence control



<1> The drive is ready to accept data.

1	2	3	4	5	6	7	8

Internal control/status words	FP_2503_97_53.vsd	Function diagram	- 2503 -
Status word, sequence control	13.12.2010 V4.4	G120 CU240B/E-2	

STW setpoint chan: r1198

Signal	Parameter (default)	Bit No.	Control word, setpoint channel (r1198)	Output	Destination
n_set_fixed Bit 0	p1020 [C] (0)	0	1 = Fixed setpoint, bit 0	r1198.0	To fixed speed setpoints [3010.2]
n_set_fixed Bit 1	p1021 [C] (0)	1	1 = Fixed setpoint, bit 1	r1198.1	To fixed speed setpoints [3010.2]
n_set_fixed Bit 2	p1022 [C] (0)	2	1 = Fixed setpoint, bit 2	r1198.2	To fixed speed setpoints [3010.2]
n_set_fixed Bit 3	p1023 [C] (0)	3	1 = Fixed setpoint, bit 3	r1198.3	To fixed speed setpoints [3010.2]
		4	Reserved		
Inhib neg dir	p1110 [C] (0)	5	1 = Inhibit negative direction of rotation	r1198.5	To direction of rotation limiting and direction of rotation reversal [3040.3]
Inhib pos dir	p1111 [C] (0)	6	1 = Inhibit positive direction of rotation	r1198.6	To direction of rotation limiting and direction of rotation reversal [3040.5]
		7	Reserved		
		8	Reserved		
		9	Reserved		
		10	Reserved		
Setp inv	p1113 [C] (722.1)	11	1 = Setpoint inversion	r1198.11	To direction of rotation limiting and direction of rotation reversal [3040.2]
		12	Reserved		
Mop raise	p1035 [C] (0)	13	1 = Motorized potentiometer, raise	r1198.13	To the motorized potentiometer [3020.1]
Mop lower	p1036 [C] (0)	14	1 = Motorized potentiometer, lower	r1198.14	To the motorized potentiometer [3020.1]
Bypass RFG	p1122 [C] (0)	15	1 = Bypass ramp-function generator	r1198.15	To the setpoint channel [3060.1] [3070.3]

1	2	3	4	5	6	7	8

Internal control/status words	FP_2505_97_51.vsd	Function diagram	- 2505 -
Control word, setpoint channel	13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-43 2505 – Control word, setpoint channel

Fig. 2-44 2510 – Status word 1 (r0052)

ZSW 1: r0052 / r0052

Source	Parameter	Signal	Bit No.	Status word 1 (r0052)	Output
[2503.7]	r0899 / r0899.0	ZSW seq_ctrl	0	1 = Drive ready for switching on 0 = Drive not ready for switching on	r0052.0
[2503.7]	r0899 / r0899.1	ZSW seq_ctrl	1	1 = Drive ready for operation (DC link loaded, pulses disabled) 0 = Drive not ready for operation	r0052.1
[2503.7]	r0899 / r0899.2	ZSW seq_ctrl	2	1 = Drive running (voltage at output terminals) 0 = Pulses disabled	r0052.2
[2548.7]	r2139 / r2139.3	ZSW fault/alarm 1	3	1 = Drive fault active (pulses disabled) <1> 0 = No fault	r0052.3
[2503.7]	r0899 / r0899.4	ZSW seq_ctrl	4	0 = Coast down active (OFF2 active) 1 = No coast down active (OFF2 inactive)	r0052.4
[2503.7]	r0899 / r0899.5	ZSW seq_ctrl	5	0 = Fast stop active (OFF3 active) 1 = No fast stop active (OFF3 inactive)	r0052.5
[2503.7]	r0899 / r0899.6	ZSW seq_ctrl	6	1 = Switching on inhibited active 0 = No switching on inhibited (possible to switch on)	r0052.6
[2548.7]	r2139 / r2139.7	ZSW fault/alarm 1	7	1 = Drive warning active 0 = No warning	r0052.7
[2534.7]	r2197 / r2197.7	ZSW monitor 1	8	0 = Deviation setpoint / act. value 1 = No deviation setpoint / act. Value	r0052.8
[2503.7]	r0899 / r0899.7	ZSW seq_ctrl	9	1 = PZD control (always 1)	r0052.9
[2534.7]	r2197 / r2197.6	ZSW monitor 1	10	1 = Maximum speed reached (f_act >= p1082 (f_max)) 0 = f_act < p1082 (f_max)	r0052.10
[2526.7]	r0056 / r0056.13	ZSW cl-loop ctrl	11	0 = I,M,P limit reached 1 = Limit not reached	r0052.11
[2701.8]	r0899 / r0899.12	ZSW seq_ctrl	12	1 = Open motor holding brake	r0052.12
[2548.7]	r2135 / r2135.14	ZSW fault/alarm 2	13	0 = Alarm motor overtemperature 1 = No motor overtemperature	r0052.13
[2534.7]	r2197 / r2197.3	ZSW monitor 1	14	1 = Motor runs right 0 = Motor does not run right	r0052.14
[2548.7]	r2135 / r2135.15	ZSW fault/alarm 2	15	0 = Alarm drive converter overload 1 = No drive converter overload	r0052.15

Signal "Fault active" is inverted if connected to a digital output which means that the relay will be in the de-energised state.

<1> r0052.3 displays status bit r2139.3 or r1214.10, if p1210 > 0

1	2	3	4	5	6	7	8

Internal control/status words	FP_2510_97_53.vsd	Function diagram	- 2510 -
Status word 1	13.12.2010 V4.4	G120 CU240B/E-2	

ZSW 2: r0053

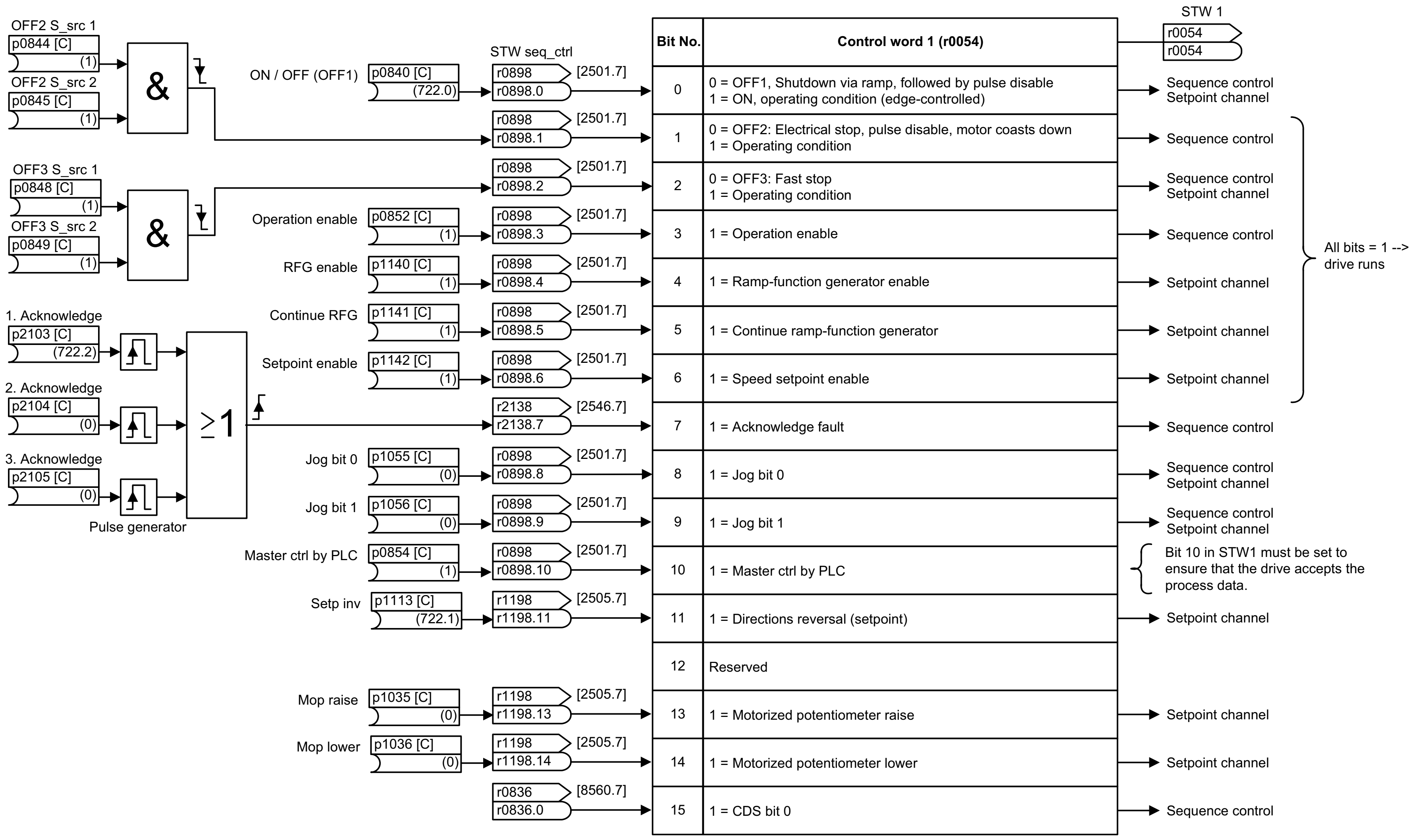
Source	Input	Signal	Bit No.	Status word 2 (r0053)	Output
[7017.5]	r1239 / r1239.8	DCBRK ZSW	0	1 = DC brake active 0 = DC brake not active	r0053.0
[2534.7]	r2197 / r2197.5	ZSW monitor 1	1	1 = |n_act| > p1226 (n_standstill)	r0053.1
[2534.7]	r2197 / r2197.0	ZSW monitor 1	2	1 = |n_act| > p1080 (n_min)	r0053.2
[2534.7]	r2197 / r2197.8	ZSW monitor 1	3	1 = I_act >= p2170	r0053.3
[2534.7]	r2197 / r2197.2	ZSW monitor 1	4	1 = |n_act| > p2155	r0053.4
[2534.7]	r2197 / r2197.1	ZSW monitor 1	5	1 = |n_act| <= p2155	r0053.5
[2534.7]	r2197 / r2197.4	ZSW monitor 1	6	1 = |n_act| >= r1119 (f_set)	r0053.6
[2534.7]	r2197 / r2197.9	ZSW monitor 1	7	1 = Vdc <= p2172	r0053.7
[2534.7]	r2197 / r2197.10	ZSW monitor 1	8	1 = Vdc > p2172	r0053.8
[3080.7]	r1199 / r1199.2	RFG ZSW	9	1 = Ramping finished	r0053.9
[7958.7]	r2349 / r2349.10	Tec_ctrl status	10	1 = Techn. contr. out at lower limit	r0053.10
[7958.7]	r2349 / r2349.11	Tec_ctrl status	11	1 = Techn. contr. out at upper limit	r0053.11
			12	Reserved	
			13	Reserved	
			14	Reserved	
			15	Reserved	

1	2	3	4	5	6	7	8

Internal control/status words	FP_2511_97_51.vsd	Function diagram	- 2511 -
Status word 2	13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-45 2511 – Status word 2 (r0053)

Fig. 2-46 2512 – Control word 1 (r0054)



1	2	3	4	5	6	7	8

Internal control/status words | FP_2512_97_51.vsd | Function diagram | - 2512 -

Control word 1 | 13.12.2010 V4.4 | G120 CU240B/E-2

Suppl STW: r0055 / r0055

Source	Parameter	Signal	Bit No.	Control word 2 (r0055)	Destination
[2505.7]	r1198 / r1198.0	STW setpoint chan	0	1 = Fixed setp bit 0	Fixed frequencies
[2505.7]	r1198 / r1198.1	STW setpoint chan	1	1 = Fixed setp bit 1	Fixed frequencies
[2505.7]	r1198 / r1198.2	STW setpoint chan	2	1 = Fixed setp bit 2	Fixed frequencies
[2505.7]	r1198 / r1198.3	STW setpoint chan	3	1 = Fixed setp bit 3	Fixed frequencies
[8565.7]	r0837 / r0837.0	DDS selected	4	1 = DDS select. bit 0	Sequence control
[8565.7]	r0837 / r0837.1	DDS selected	5	1 = DDS select. bit 1	Sequence control
			6	Reserved	
			7	Reserved	
[7958.6]	r2349 / r2349.0	Tec_ctrl status	8	1 = Technology controller enable	Technology controller
[7017.7]	r1239 / r1239.11	DCBRK ZSW	9	1 = DC brake enable	DC braking control
			10	Reserved	
[2520.7]	r1406 / r1406.11	STW n_ctrl	11	1 = Droop enable	Speed control
[2520.7]	r1406 / r1406.12	STW n_ctrl	12	1 = Torque control active	Speed/torque control
[2546.7]	r2138 / r2138.13	STW fault/alarm	13	0 = External fault 1 (F07860)	Sequence control
			14	Reserved	
[8560.7]	r0836 / r0836.0	CDS selected	15	1 = CDS bit 1	Sequence control

1	2	3	4	5	6	7	8

Internal control/status words	FP_2513_97_51.vsd	Function diagram	- 2513 -
Control word 2	13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-47 2513 – Control word 2 (r0055)

Fig. 2-48 2520 – Control word, speed controller

STW n_ctrl
r1406
r1406

Bit No.	Control word, speed controller (r1406)
0	Reserved
1	Reserved
2	Reserved
3	Reserved
4	1 = speed controller, hold I component
5	1 = speed controller, set I component
6	Reserved
7	Reserved
8	Reserved
9	Reserved
10	Reserved
11	1 = Droop enable
12	1 = Closed-loop torque control active
13	Reserved
14	Reserved
15	1 = Speed adaption controller set I-comp.

Inputs:

- n_ctrl integ stop: p1476 [C] (0) → Bit 4
- n_ctrl integ set: p1477 [C] (0) → Bit 5
- Droop enable: p1492 [C] (0) → Bit 11
- Changeov n/M_ctrl: p1501 [C] (0) → Bit 12

Outputs:

- r1406.4 To the speed controller [6040.4]
- r1406.5 To the speed controller [6040.4]
- r1406.11 To the speed setpoint, droop [6030.1]
- r1406.12 To the closed-loop speed control [6060.1]
- r1406.15

1	2	3	4	5	6	7	8

Internal control/status words	FP_2520_97_51.vsd	Function diagram	- 2520 -
Control word, speed controller	13.12.2010 V4.4	G120 CU240B/E-2	

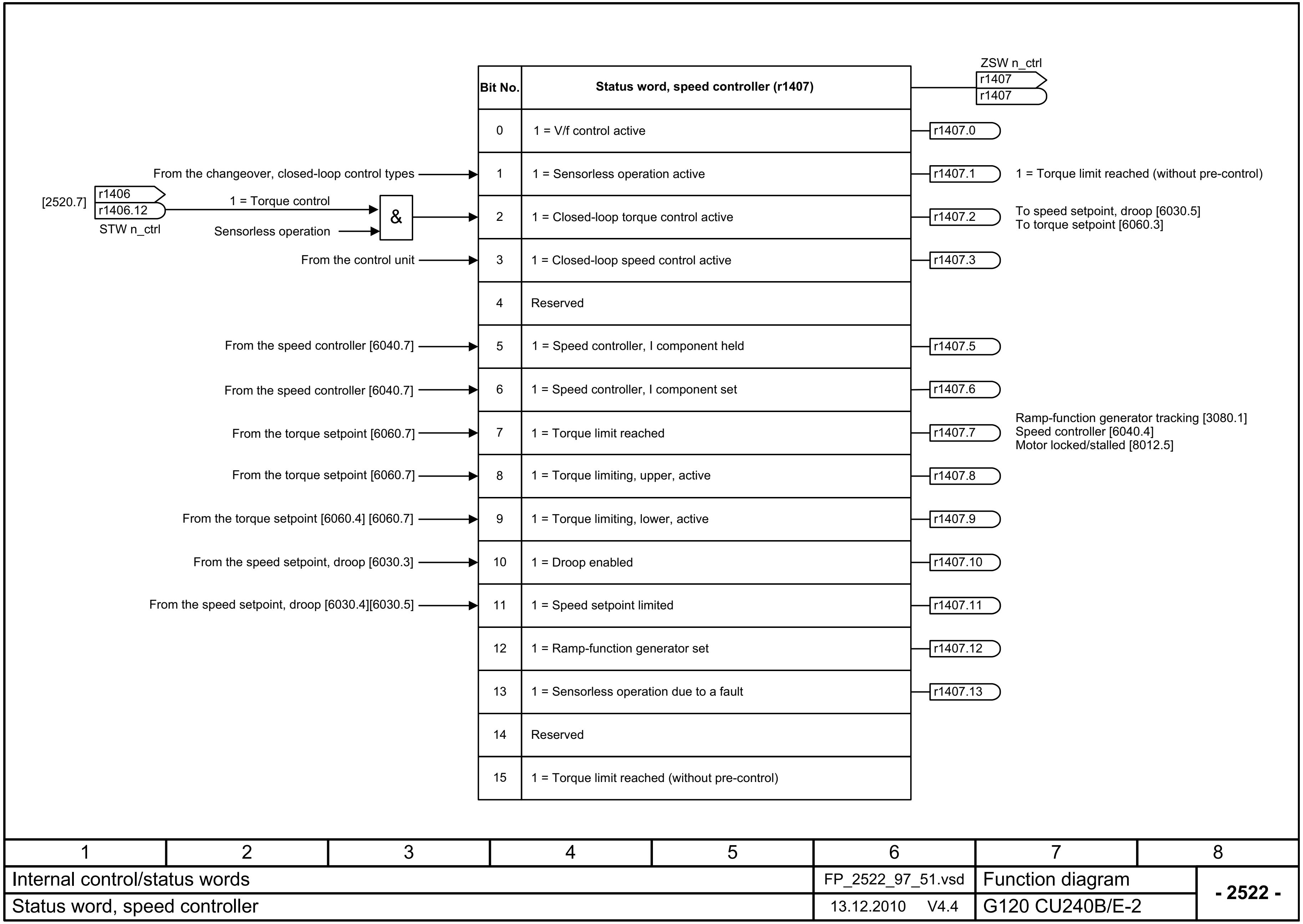


Fig. 2-49 2522 – Status word, speed controller

ZSW cl-loop ctrl: r0056, r0056

Input	Bit No.	Status word closed-loop control (r0056)	Note	Output	Reference
	0	1 = Initialization completed		r0056.0	
	1	1 = De-magnetization completed		r0056.1	
	2	1 = Pulses enabled		r0056.2	
	3	1 = Soft starting available	<1>	r0056.3	
[6722.6]	4	1 = Magnetization completed		r0056.4	
	5	1 = Starting boost active		r0056.5	
	6	1 = Acceleration voltage active	<1>	r0056.6	
[6730.5][6731.5][6732.4]	7	1 = Frequency, negative		r0056.7	
[6722.3]	8	1 = Field weakening active		r0056.8	
[6714.8]	9	1 = Voltage limit active		r0056.9	
[6310.8]	10	1 = Slip limiting active	<1>	r0056.10	
[6730.5][6731.5][6732.4]	11	1 = Frequency limit active		r0056.11	
	12	1 = Current limiting controller, voltage output active	<1>	r0056.12	[8012.5]
[6060.7]	13	1 = Current/torque limiting active	<1>	r0056.13	
[6220.8][6320.8]	14	1 = Vdc_max controller active	<2>	r0056.14	[6031.6][6710.2]
[6220.8][6320.8]	15	1 = Vdc_min controller active	<3>	r0056.15	[6710.2]

<1> Only for V/f control
<2> Only for Power Modules PM230/PM240
<3> Only for Power Modules PM240 and for PM230 with Vector Control

1	2	3	4	5	6	7	8

Internal control/status words	FP_2526_97_61.vsd	Function diagram	- 2526 -
Status word, closed-loop control	13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-50 2526 – Status word, closed-loop control

ZSW I_ctrl
r1408
r1408

Input	Bit No.	Status word closed-loop current control (r1408)	Output
	0	1 = Closed-loop current control active	r1408.0
[6714.5]	1	1 = Id controller I comp. limitation	r1408.1
	2	Reserved	
[6714.8]	3	1 = Voltage limitation	r1408.3
	4	Reserved	
	5	Reserved	
	6	Reserved	
	7	Reserved	
	8	Reserved	
	9	Reserved	
[6730.3]	10	1 = Speed adaption limitation	r1408.10
	11	Reserved	
[8012.7] r2198 / r2198.7 ZSW monitor 2	12	1 = Motor stalled	r1408.12
	13	Reserved	
	14	Reserved	
	15	Reserved	

1	2	3	4	5	6	7	8

Internal control/status words	FP_2530_97_64.vsd	Function diagram	- 2530 -
Status word, current control	13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-51 2530 – Status word, current control

Fig. 2-52 2534 – Status word, monitoring functions 1

ZSW monitor 1
r2197
r2197

Source	Bit No.	Status word, monitoring functions 1 (r2197)	Output
From extended signals [8020.8]	0	1 = |n_act| <= n_min p1080	r2197.0
From speed signals [8010.8]	1	1 = |n_act| <= speed threshold value 2 (p2155) <1>	r2197.1
1	2	1 = |n_act| > speed threshold value 2 (p2155) <1>	r2197.2
From speed signals [8011.8]	3	1 = n_act >= 0	r2197.3
From extended signals [8020.8]	4	1 = |n_act| >= n_set	r2197.4
From extended signals [8020.8]	5	1 = |n_act| <= n_standstill p1226	r2197.5
From speed signals [8010.8]	6	1 = |n_act| > n_max	r2197.6
From speed signals [8011.8]	7	1 = Speed setpoint - actual value deviation within tolerance t_off	r2197.7
From extended signals [8020.8]	8	1 = I_act >= I_threshold p2170	r2197.8
From extended signals [8020.8]	9	1 = Vdc_act <= Vdc_threshold p2172	r2197.9
From extended signals [8020.8]	10	1 = Vdc_act > Vdc_threshold p2172	r2197.10
From extended signals [8020.8]	11	1 = Load missing	r2197.11
From extended signals [8021.8]	12	1 = |n_act| > n_max (with delay)	r2197.12
	13	Reserved	
	14	Reserved	
	15	Reserved	

<1> n_act = smoothed speed actual value r2169 [8010.2].

1	2	3	4	5	6	7	8

Internal control/status words	FP_2534_97_51.vsd	Function diagram	- 2534 -
Status word, monitoring functions 1	13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-53 2536 – Status word, monitoring functions 2

ZSW monitor 2
r2198
r2198

Signal source	Bit No.	Status word, monitoring functions 2 (r2198)	Output
From extended signals [8021.8]	0	1 = |n_act| <= speed threshold 5	r2198.0
From extended signals [8021.8]	1	1 = |n_act| > speed threshold 5	r2198.1
From extended signals [8021.8]	2	1 = |n_act| <= speed threshold 6	r2198.2
From extended signals [8021.8]	3	1 = |n_act| > speed threshold 6	r2198.3
From speed signals [8011.8]	4	1 = |n_set| < p2161	r2198.4
From speed signals [8011.8]	5	1 = n_set > 0	r2198.5
From torque messages, motor locked/stalled [8012.8]	6	1 = Motor blocked	r2198.6
From torque messages, motor locked/stalled [8012.8]	7	1 = Motor stalled	r2198.7
From extended signals [8020.8]	8	1 = |I_act| < I_threshold p2170	r2198.8
From extended signals [8021.8]	9	1 = |M_act| > torque threshold 1 and n_set reached	r2198.9
From torque messages, motor locked/stalled [8012.3]	10	1 = |M_set| < torque threshold 1 (p2174)	r2198.10
From load monitoring [8013.8]	11	1 = Load monitoring signals an alarm	r2198.11
From load monitoring [8013.8]	12	1 = Load monitoring signals a fault	r2198.12
From extended signals [8021.8]	13	1 = |M_act| > torque threshold 1	r2198.13
	14	Reserved	
	15	Reserved	

1	2	3	4	5	6	7	8

Internal control/status words	FP_2536_97_51.vsd	Function diagram	- 2536 -
Status word, monitoring functions 2	13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-54 2537 – Status word, monitoring functions 3

PROFIdrive-Bit

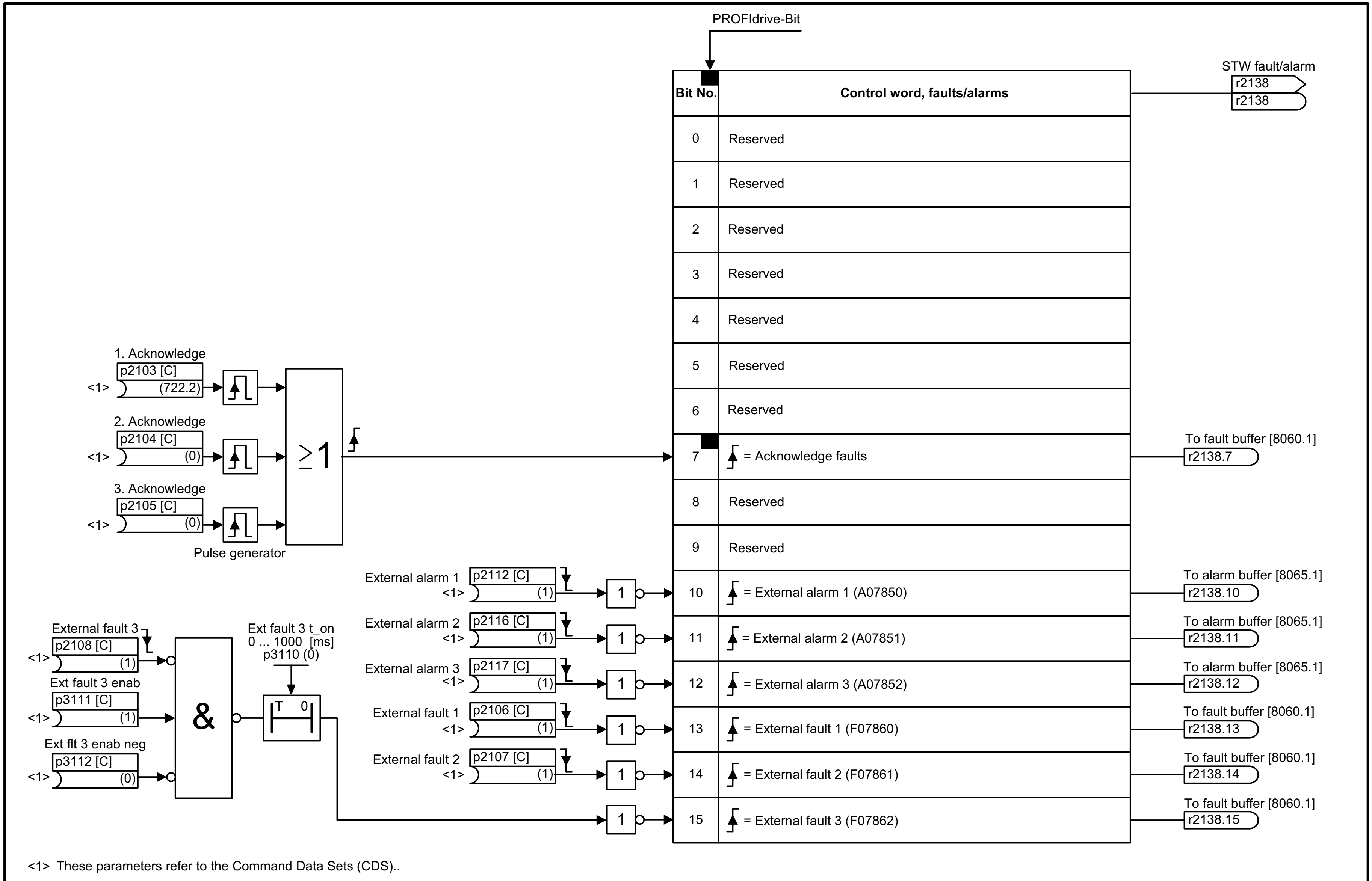
ZSW monitor 3: r2199

Input	Bit No.	Status word, monitoring functions 3 (r2199)	Output
From speed signals [8010.8]	0	1 = |n_act| < speed threshold value 3 (p2161) <1>	r2199.0
From speed signals [8010.8]	1	1 = f or n comparison value reached or exceeded (p2141)	r2199.1
	2	Reserved	
	3	Reserved	
From speed signals [8011.8]	4	1 = Speed setpoint - actual value deviation within tolerance t_on	r2199.4
From speed signals [8011.8]	5	1 = Ramp-up/ramp-down completed 0 = Ramp-function generator active	r2199.5 [8012.1]
	6	Reserved	
	7	Reserved	
	8	Reserved	
	9	Reserved	
	10	Reserved	
From speed signals [8012.5]	11	1 = Torque utilization < torque threshold value 2 (p2194)	r2199.11
	12	Reserved	
	13	Reserved	
	14	Reserved	
	15	Reserved	

<1> n_act = smoothed speed actual value r2169 [8010.2].

1	2	3	4	5	6	7	8

Internal control/status words	FP_2537_97_51.vsd	Function diagram	- 2537 -
Status word, monitoring functions 3	13.12.2010 V4.4	G120 CU240B/E-2	



1	2	3	4	5	6	7	8

Internal control/status words	FP_2546_97_51.vsd	Function diagram	- 2546 -
Control word, faults/alarms	13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-55 2546 – Control word, faults/alarms

ZSW fault/alarm 1: r2139

Input	Bit No.	Status word, faults/alarms 1	Output
	0	1 = Acknowledgement running	r2139.0
	1 2	Reserved	
From the fault buffer [8060.6]	3	1 = Fault present	r2139.3
	4 5	Reserved	
	6	1 = Internal signal 1 present	r2139.6
From the alarm buffer [8065.4]	7	1 = Alarm present	r2139.7
	8	1 = Internal signal 2 present	r2139.8
	9 10	Reserved	
	11	Alarm class bit 0	r2139.11
	12	Alarm class bit 1	r2139.12
	13 - 15	Reserved	

ZSW fault/alarm 2: r2135

Input	Bit No.	Status word, faults/alarms 2	Output
	0 ... 11	Reserved	
From the thermal monitoring, motor [8016.8]	12	1 = Fault motor overtemperature	r2135.12
From the thermal monitoring, power module [8014.8]	13	1 = Fault, thermal overload, power module	r2135.13
From the thermal monitoring, motor [8016.8]	14	1 = Alarm motor overtemperature	r2135.14
From the thermal monitoring, motor [8016.8]	15	1 = Alarm, thermal overload, power module	r2135.15

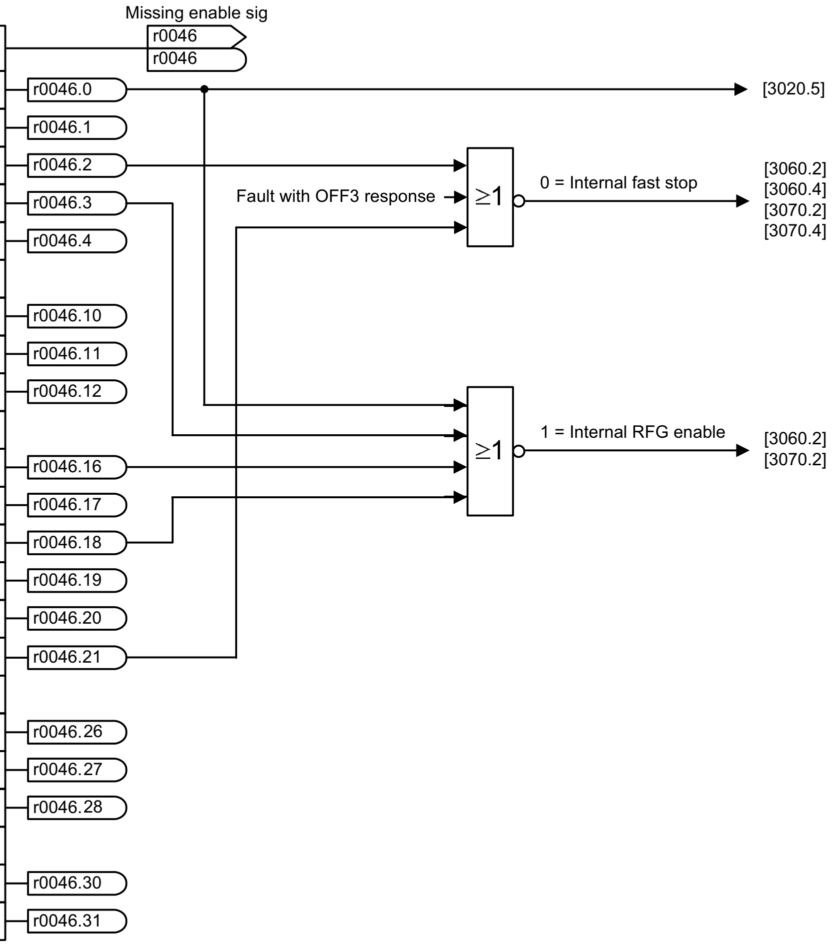
1	2	3	4	5	6	7	8

Internal control/status words	FP_2548_97_61.vsd	Function diagram	- 2548 -
Status word, faults/alarms 1 and 2	13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-56 2548 – Status word, faults/alarms 1 and 2

Fig. 2-57 2634 – Sequence control - Missing enable signals

Bit No.	Missing enable signals (r0046)	
0	1 = OFF1 enable missing	r0046.0
1	1 = OFF2 enable missing	r0046.1
2	1 = OFF3 enable missing	r0046.2
3	1 = Operation enable missing	r0046.3
4	1 = DC current brake, enable missing	r0046.4
...	Reserved	
10	1 = Ramp-function generator enable missing	r0046.10
11	1 = Ramp-function generator start missing	r0046.11
12	1 = Setpoint enable missing	r0046.12
...	Reserved	
16	1 = OFF1 enable internal missing	r0046.16
17	1 = OFF2 enable internal missing	r0046.17
18	1 = OFF3 enable internal missing	r0046.18
19	1 = Pulse enable internal missing	r0046.19
20	1 = DC current brake, internal enable missing	r0046.20
21	1 = PU enable missing	r0046.21
...	Reserved	
26	1 = Drive inactive or not operational	r0046.26
27	1 = Demagnetizing not completed	r0046.27
28	1 = Brake open missing	r0046.28
...	Reserved	
30	1 = Speed controller inhibited	r0046.30
31	1 = Jog setpoint active	r0046.31



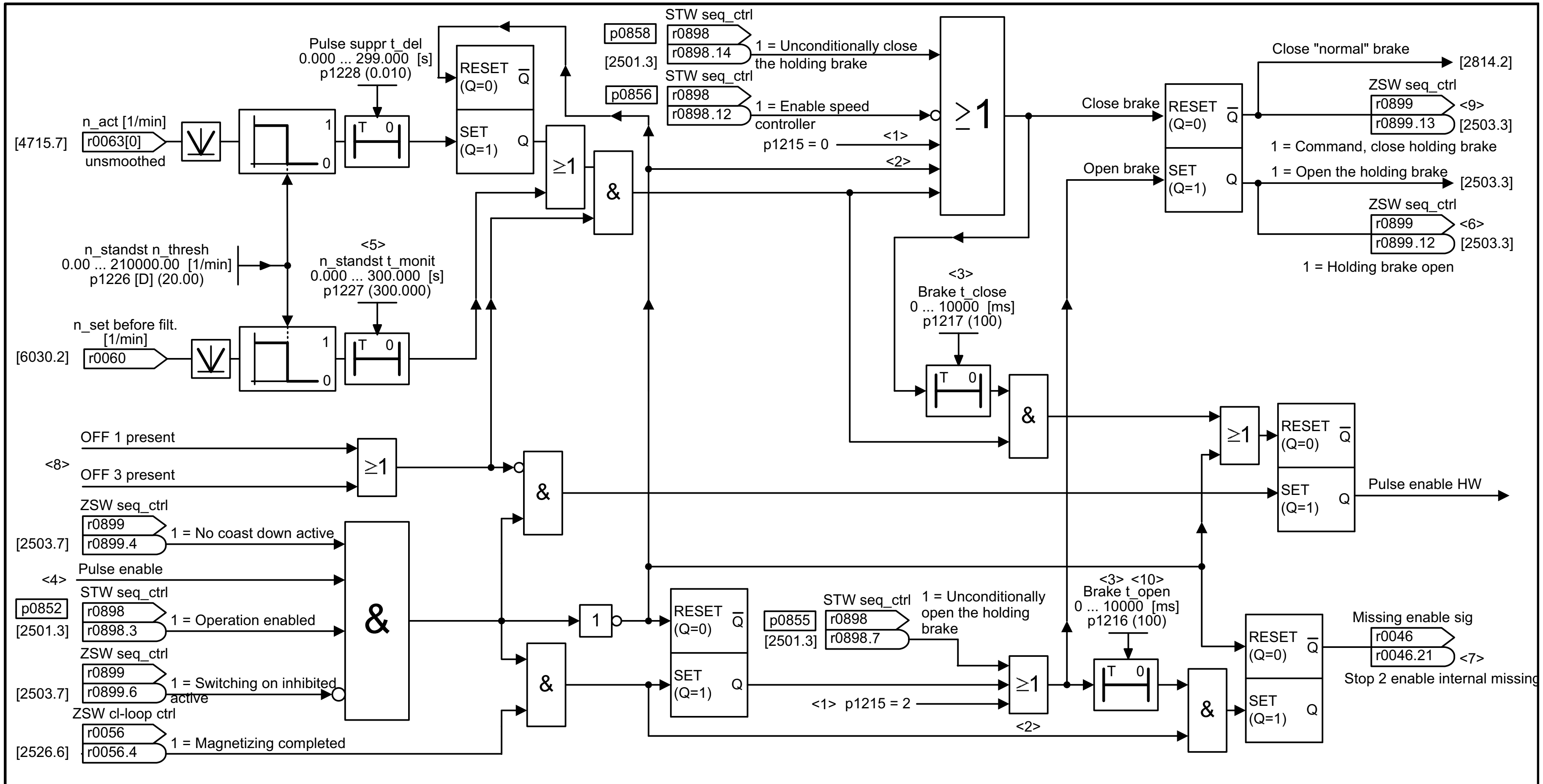
1	2	3	4	5	6	7	8

Internal control/status words	FP_2634_97_61.vsd	Function diagram	- 2634 -
Sequence control - Missing enable signals	13.12.2010 V4.4	G120 CU240B/E-2	

2.7 Braking Control

Function diagrams

Fig. 2-58 2701 – Basic braking control



<1> Motor holding brake configuration (p1215)
0 = No motor holding brake being used.
1 = Motor holding brake acc. to sequence control.
2 = Motor holding brake always released.
3 = Motor holding brake like sequence control, connection via BICO.

<2> Priority assignment (high -> low): p1215, p0858, p0855, p0856, sequence control.

<3> If p1215 = 0, 2 -> t = 0 ms.

<4> Only if Safety Integrated is active.

<5> For p1227 = 300 s, the monitoring function is deactivated.

<6> If an external motor holding brake is used, p1215 should be set to 3 and r0899.12 should be interconnected as control signal.

<7> r0046.21 = 0, as long as r0046.0 = 1 (OFF1 enable missing or switching on inhibited).
r0046.21 = 1, if p0858 = 1 or p0856 = 0.
The signal generation is shown simplified.

<8> The internal signal includes signals that lead to OFF1 or OFF3 (e. g. BICO or fault response).

<9> If the brake is permanently applied or released (p0855, p0858 or p1215), the drive does not wait while the brake is released or applied.

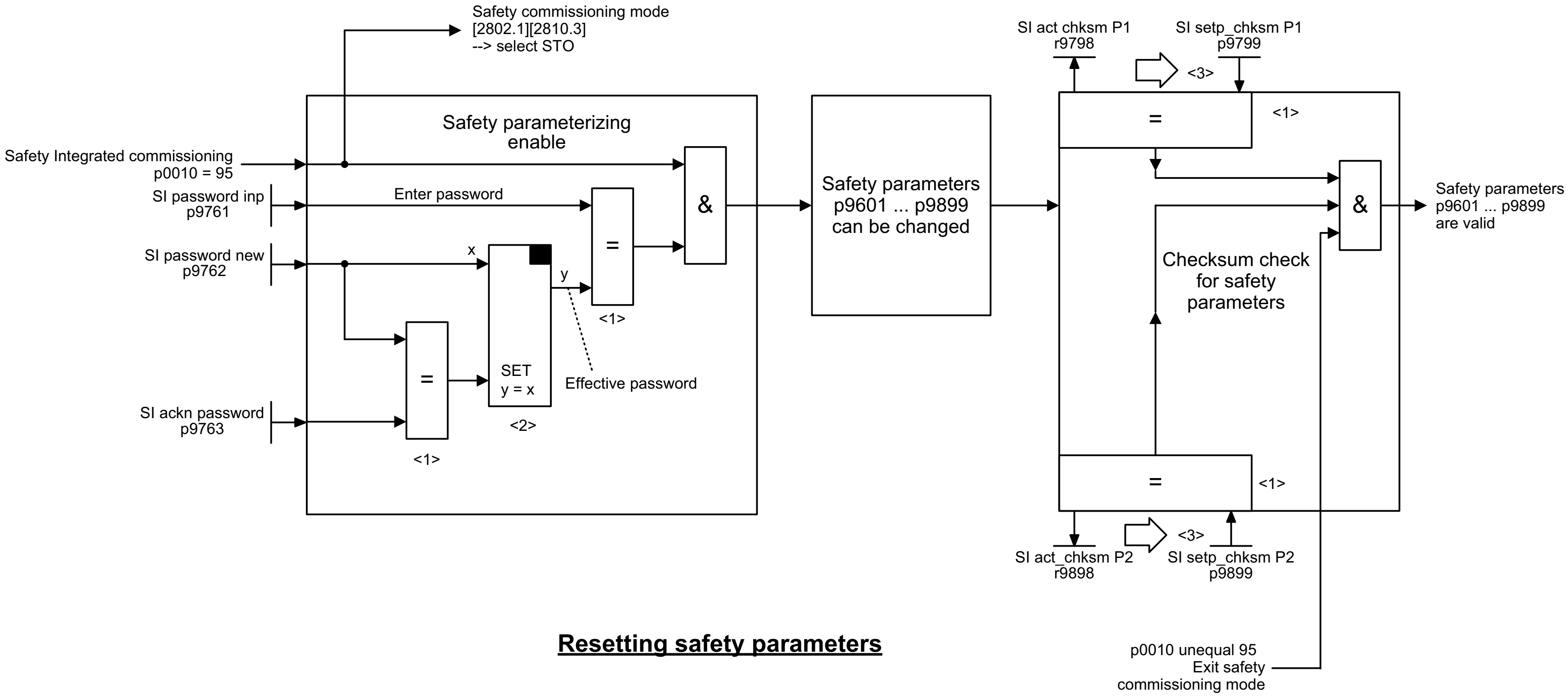
<10> Start frequency with V/f control: p1351, p1352 [6310.6]; Start torque with vector control: p1475 [6040.3]

1	2	3	4	5	6	7	8
Braking Control					FP_2701_97_53.vsd	Function diagram	- 2701 -
Basic braking control					13.12.2010 V4.4	G120 CU240B/E-2	

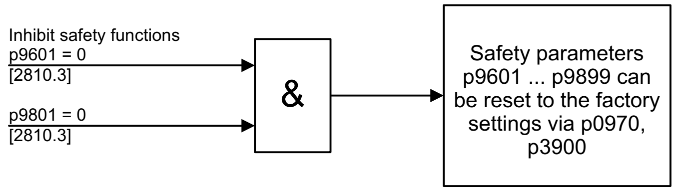
2.8 Safety Integrated

Function diagrams

Changing safety parameters



Resetting safety parameters



<1> Comparator, refer to [1021]

<2> Analog signal memory, refer to [1021]

<3> The target checksum must be equal to the actual checksum.

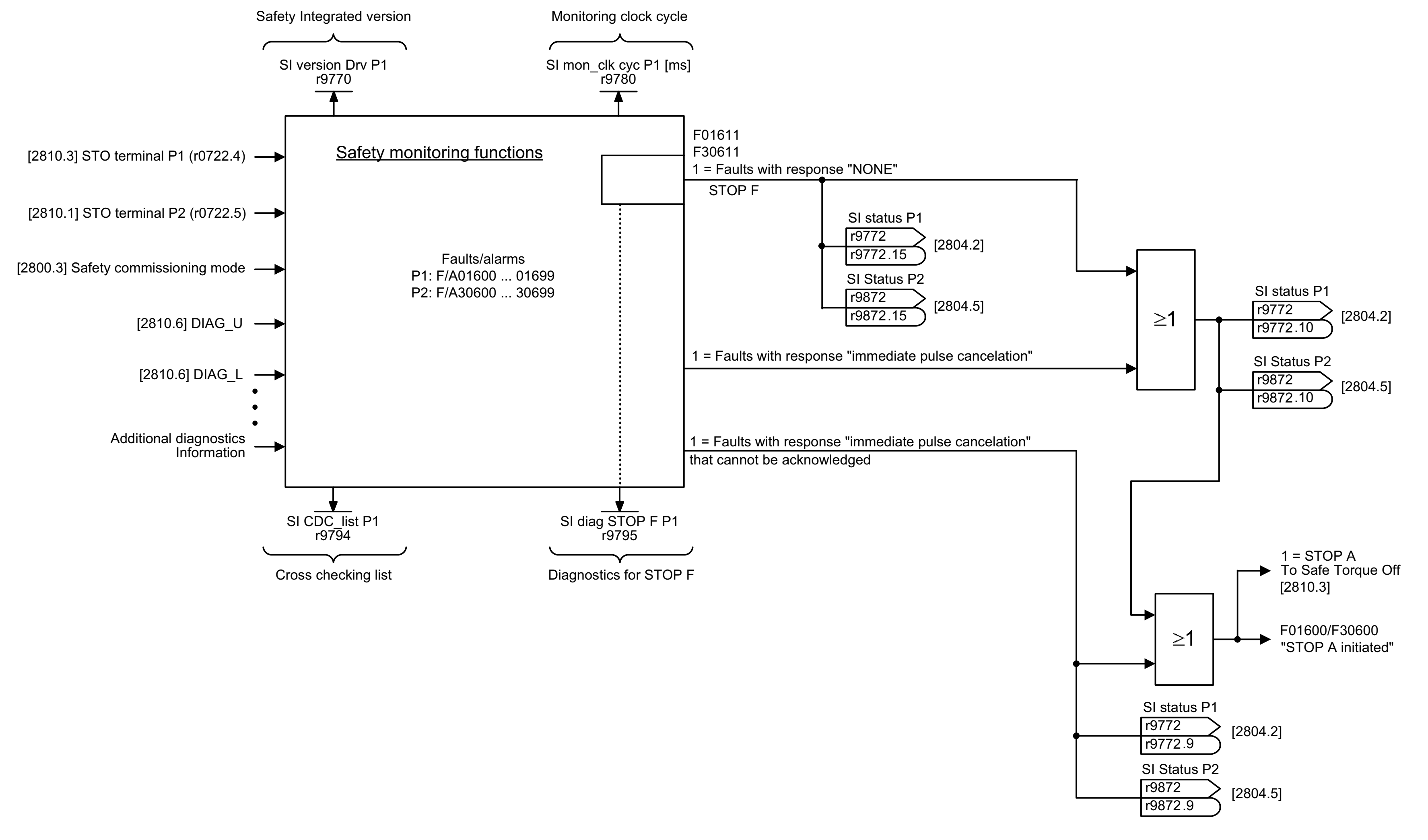
<**> Valid for all CU240E-2 variants

1	2	3	4	5	6	7	8

Safety Integrated	FP_2800_97_63.vsd	Function diagram	- 2800 -
Basic Functions, Parameter Manager	13.12.2010 V4.4	G120 CU240E-2 <**>	

Fig. 2-59 2800 – Basic Functions, Parameter Manager

Fig. 2-60 2802 – Basic Functions, Monitoring functions and faults/alarms



<**> Valid for all CU240E-2 variants

1	2	3	4	5	6	7	8

Safety Integrated	FP_2802_97_63.vsd	Function diagram	- 2802 -
Basic Functions, Monitoring functions and faults/alarms	13.12.2010 V4.4	G120 CU240E-2 <**>	

Status word Safety Integrated Processor 1

SI status P1: r9772

Input	Bit No.	Status (Processor 1)
[2810.3]	0	1 = STO selected on Processor 1
[2810.7]	1	1 = STO active on Processor 1
	...	Reserved
[2802.7]	9	1 = STOP A cannot be acknowledged, active
[2802.8]	10	1 = STOP A active
	...	Reserved
[2802.5]	15	1 = STOP F active
	16	1 = STO cause: Safety commissioning mode
[2810.3]	17	1 = STO cause: selection via terminal
	18	Reserved
	19	1 = STO cause: missing actual value
	20	1 = STO cause: selection PROFIsafe

Status word Safety Integrated Processor2

SI Status P2: r9872

Input	Bit No.	Status (Processor 2)
[2810.3]	0	1 = STO selected on Processor 2
[2810.6]	1	1 = STO active on Processor 2
	...	Reserved

Status word Safety Integrated Processor 1 and Processor 2

SI status P1+P2: r9773

Input	Bit No.	Status (Processor 1 + Processor 2)
&	0	1 = STO selected in drive
&	1	1 = STO active in drive
	...	Reserved
[2810.5]	31	1 = The shutdown paths must be tested

Functions available on Processor 1 und Processor 2

SI general fct P1: r9771

Bit No.	Functions available on Processor 1 und Processor 2
0	1 = STO supported via terminals
...	Reserved
6	1 = PROFIsafe supported <1>
...	Reserved

<1> only PROFIBUS variants

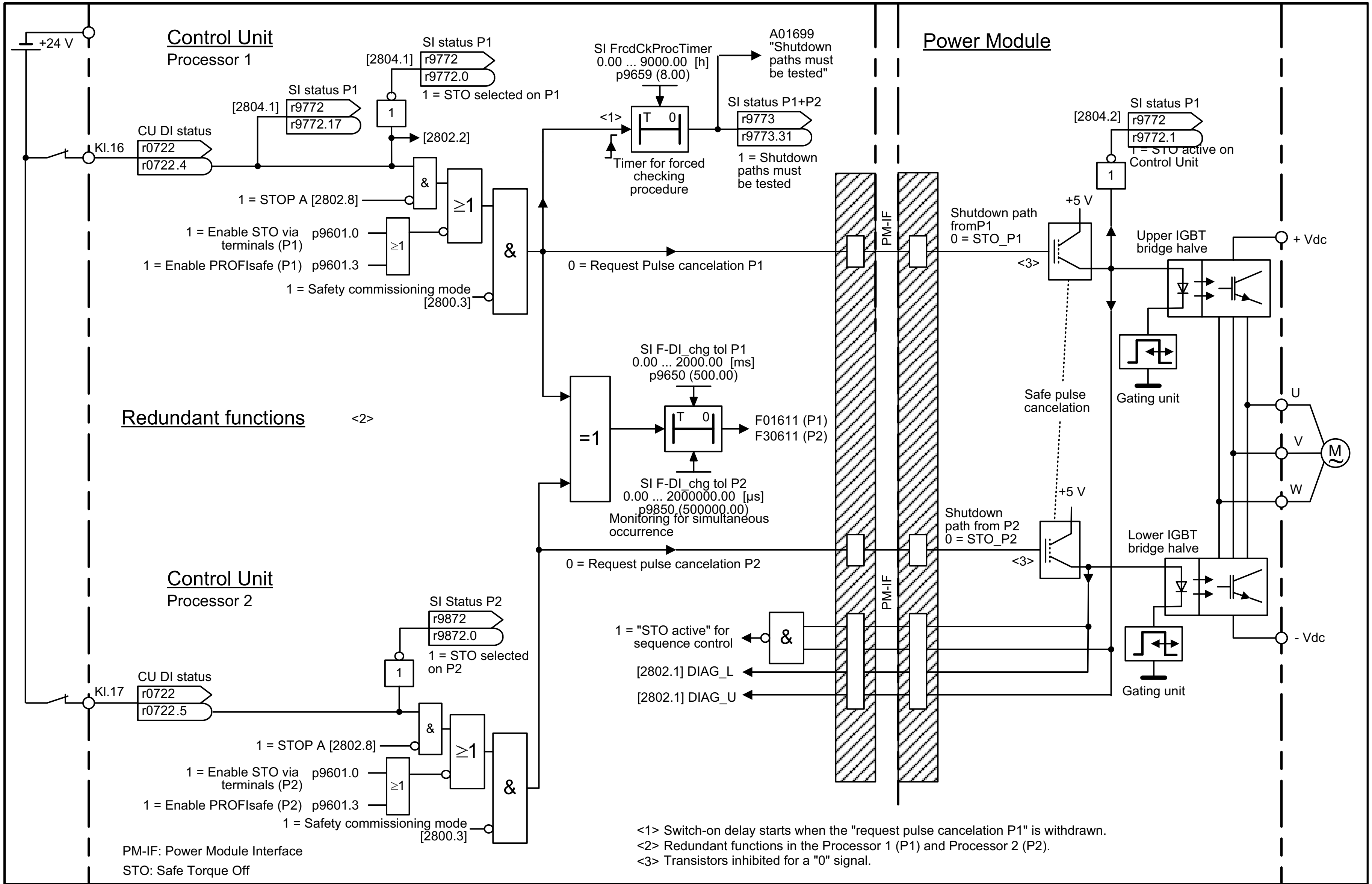
<**> Valid for all CU240E-2 variants

1	2	3	4	5	6	7	8

Safety Integrated	FP_2804_97_63.vsd	Function diagram	- 2804 -
Basic Functions, Status words	13.12.2010 V4.4	G120 CU240E-2 <**>	

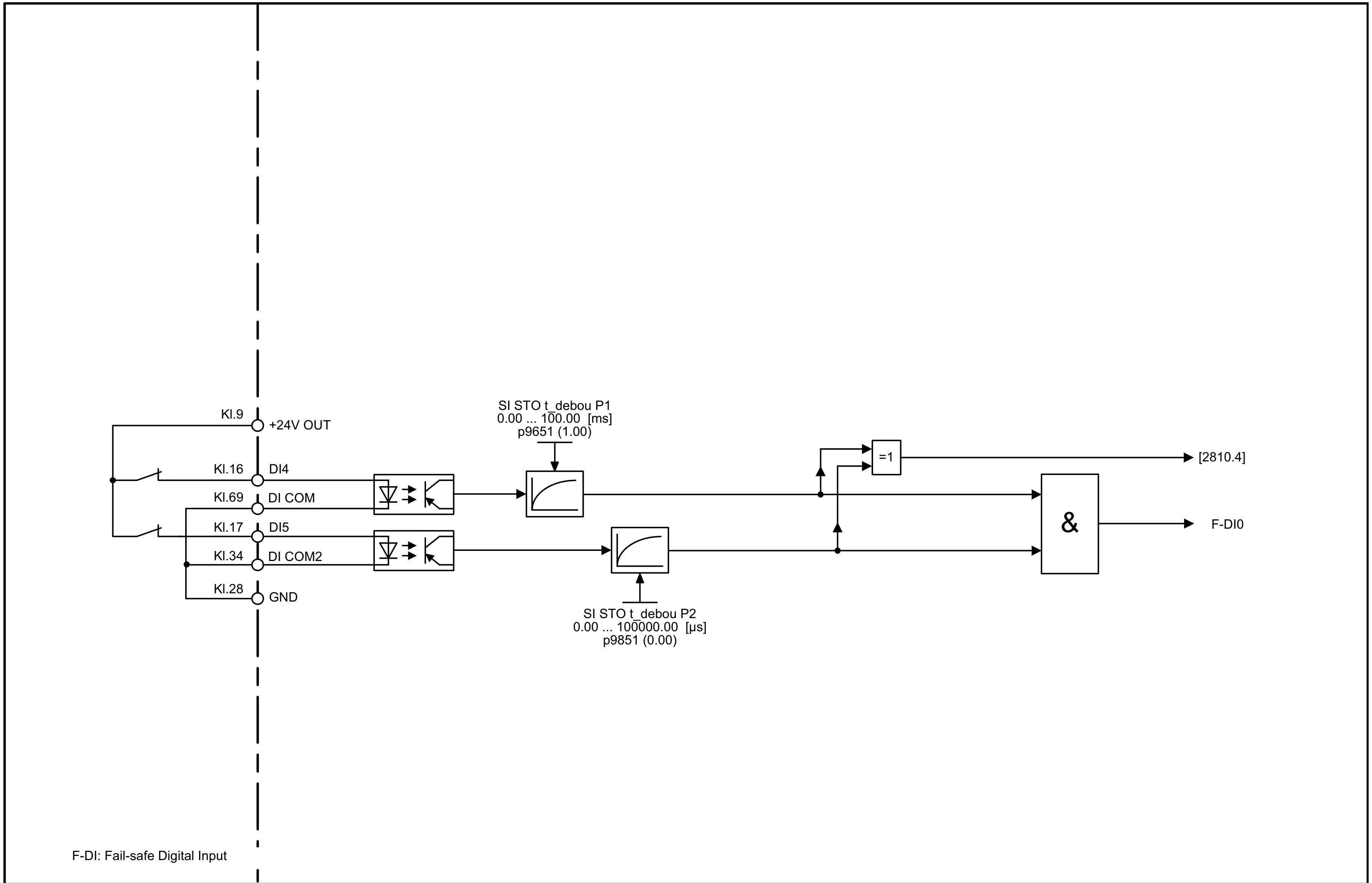
Fig. 2-61 2804 – Basic Functions, Status words

Fig. 2-62 2810 – Basic Functions, STO: Safe Torque Off



1	2	3	4	5	6	7	8

Safety Integrated	FP_2810_97_53.vsd	Function diagram	- 2810 -
Basic Functions, STO: Safe Torque Off	13.12.2010 V4.4	G120 CU240E-2/E-2 DP	

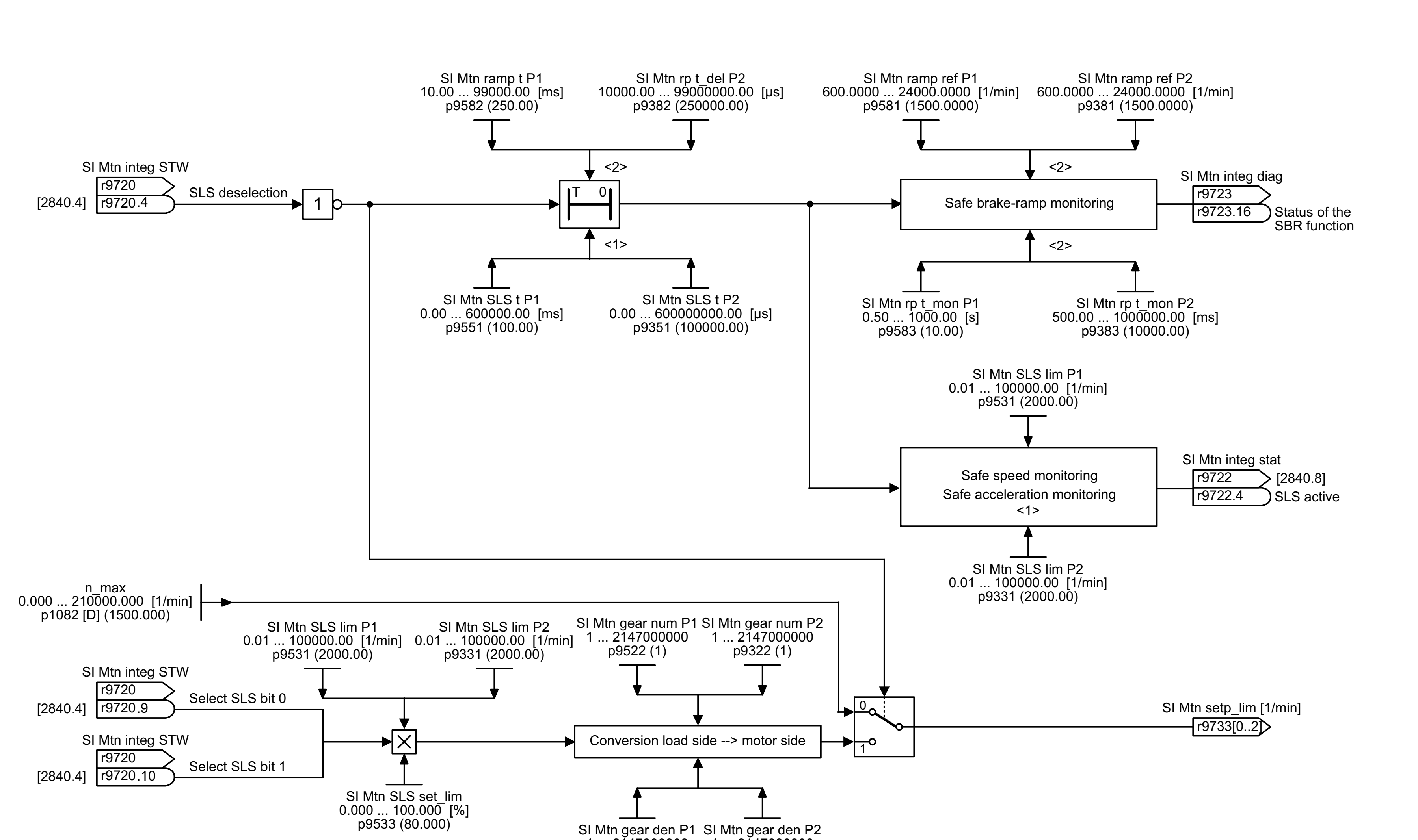


1	2	3	4	5	6	7	8

Safety Integrated	FP_2812_97_63.vsd	Function diagram	- 2812 -
Basic Functions, F-DI: Fail-safe Digital Input	13.12.2010 V4.4	G120 CU240E-2/E-2 DP	

Fig. 2-63 2812 – Basic Functions, F-DI: Fail-safe Digital Input

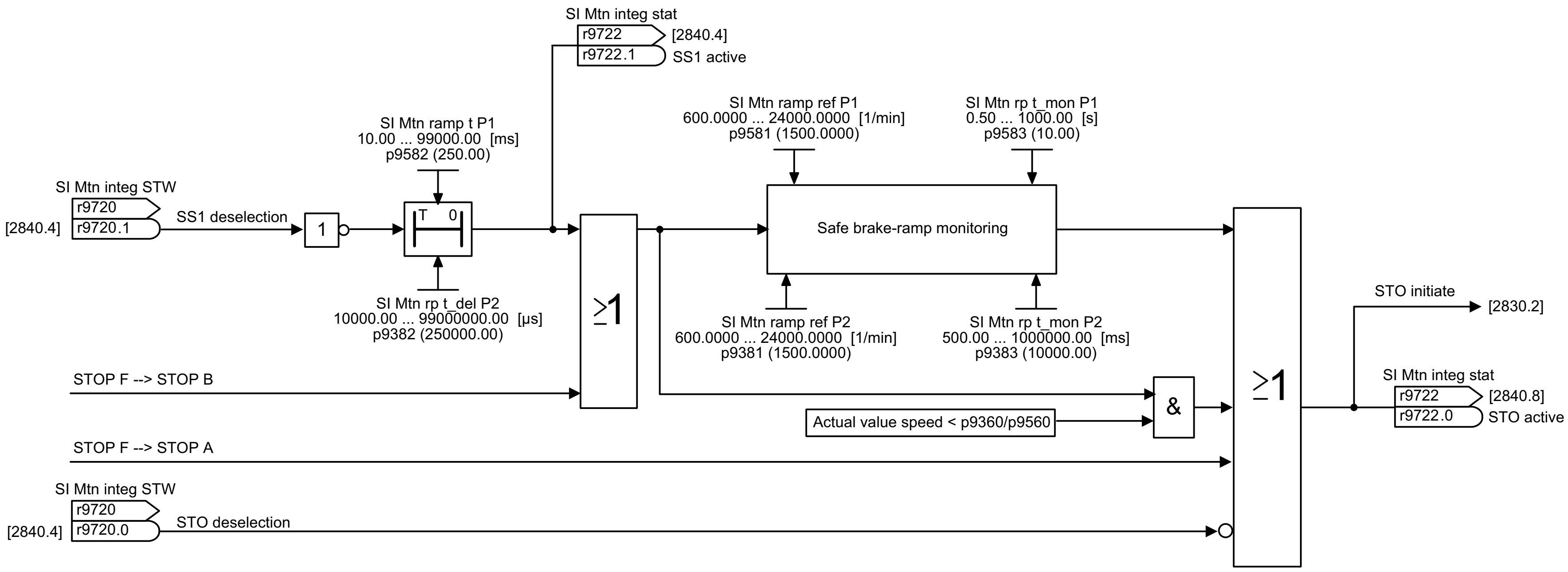
Fig. 2-64 2820 – SI Motion, SLS: Safely-Limited Speed



<1> With p9306/p9506 = 3
<2> With p9306/p9506 = 1

1	2	3	4	5	6	7	8

Safety Integrated	FP_2820_97_53.vsd	Function diagram	- 2820 -
SI Motion, SLS: Safely-Limited Speed	13.12.2010 V4.4	G120 CU240E-2 F/DP F	



SS1: Safe Stop 1

1	2	3	4	5	6	7	8

Safety Integrated	FP_2825_97_53.vsd	Function diagram	- 2825 -
SI Motion, SS1: Safe Stop 1, Internal STOP A, B, F	13.12.2010 V4.4	G120 CU240E-2 F/DP F	

Fig. 2-65 2825 – SI Motion, SS1: Safe Stop 1, Internal STOP A, B, F

Fig. 2-66 2834 – SI Motion, Status words

Status word Safety Integrated Prozessor 1

SI status P1: r9772

Input	Bit No.	Status (Processor 1)
[2810.3]	0	1 = STO selected on Prozessor 1
[2810.7]	1	1 = STO active on Prozessor 1
	...	Reserved
[2802.7]	9	1 = STOP A cannot be acknowledged, active
[2802.8]	10	1 = STOP A active
	...	Reserved
[2802.5]	15	1 = STOP F active
	16	1 = STO cause: Safety commissioning mode
	17	1 = STO cause: selection via terminal
	18	1 = STO cause: selection via SMM
	19	1 = STO cause: missing actual value
	20	1 = STO cause: selection PROFIsafe

Status word Safety Integrated Prozessor2

SI Status P2: r9872

Input	Bit No.	Status (Processor 2)
[2810.3]	0	1 = STO selected on Prozessor 2
[2810.6]	1	1 = STO active on Prozessor 2
	2	1 = SS1 delay time on P2 active
	...	Reserved
	5	1 = SS1 selected on processor 2
	6	1 = SS1 active on processor 2
	...	Reserved
	9	1 = STOP A cannot be acknowledged, active
	10	1 = STOP A active
	...	Reserved
	15	1 = STOP F active
	16	1 = STO cause: Safety commissioning mode
	17	1 = STO cause: selection via terminal
	18	1 = STO cause: selection via SMM
	19	Reserved
	20	1 = STO cause: selection PROFIsafe
	21	Reserved
	22	1 = SS1 cause selection terminal
	23	1 = SS1 cause selection PROFIsafe

Status word Safety Integrated Prozessor 1 and Prozessor 2

SI status P1+P2: r9773

Input	Bit No.	Status (Processor 1 + Processor 2)
&	0	1 = STO selected in drive
&	1	1 = STO active in drive
	...	Reserved
[2810.5]	31	1 = The shutdown paths must be tested

Functions available on prozessor 1 und prozessor 2

SI general fct P1: r9771

Bit No.	Functions available on prozessor 1 und prozessor 2	
0	1 = STO supported via terminals	
1 ... 3	Reserved	
4	1 = PROFIsafe supported (SI Motion)	<1>
5	1 = Drive-based motion monitoring functions supported	
6	1 = PROFIsafe supported (Basic Functions)	<1>
7	1 = Sensorless motion monitoring functions supported	

<1> only PROFIBUS variants

1	2	3	4	5	6	7	8

Safety Integrated — FP_2834_97_53.vsd — Function diagram — - 2834 -
SI Motion, Status words — 13.12.2010 V4.4 — G120 CU240E-2 F/DP F

SI Mtn integ STW: r9720

Input	Bit No.	PROFIsafe control word	Output	Target
[2855.3]	0	1 = STO deselection	r9720.0	[2855.3]
[2855.3]	1	1 = SS1 deselection	r9720.1	[2855.3]
	2	Reserved		
	3	Reserved		
[2855.3]	4	1 = SLS deselection	r9720.4	[2855.3]
	5	Reserved		
	6	Reserved		
[2855.3]	7	1/0 = Acknowledgement	r9720.7	[2855.3]
	8	Reserved		
[2855.3]	9	1 = SLS selection bit 0 active	r9720.9	[2855.3]
[2855.3]	10	1 = SLS selection bit 1 active	r9720.10	[2855.3]

SI Mtn integ stat: r9722

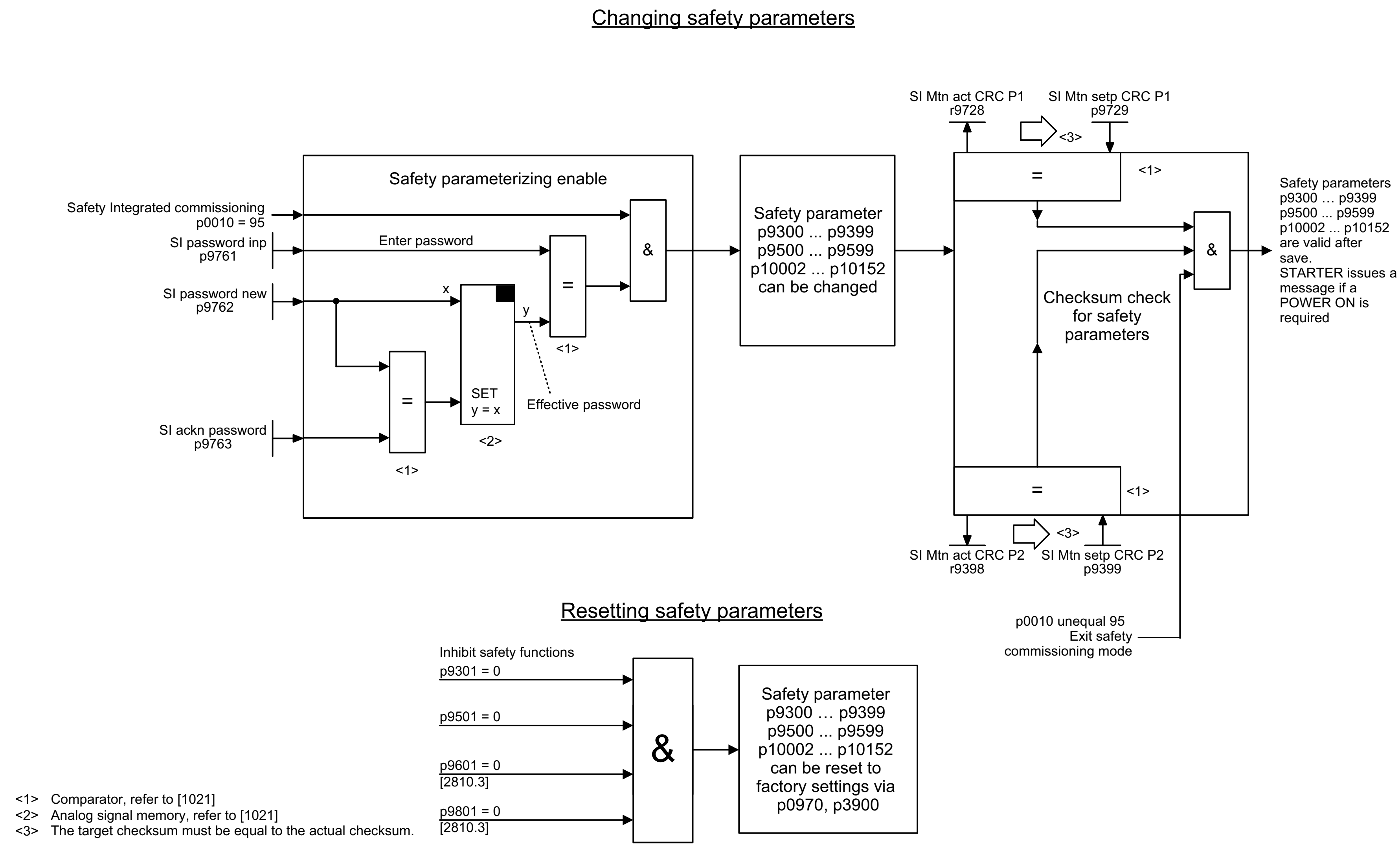
Input	Bit No.	PROFIsafe status word	Output	Target
[2855.5]	0	1 = STO active	r9722.0	[2855.5]
[2855.5]	1	1 = SS1 active	r9722.1	[2855.5]
	2	Reserved		
	3	Reserved		
[2855.5]	4	1 = SLS active	r9722.4	[2855.5]
	5	Reserved		
	6	Reserved		
[2855.5]	7	1 = Not a internal event	r9722.7	[2855.5]
	8	Reserved		
[2855.5]	9	1 = Active SLS stage, bit 0	r9722.9	[2855.5]
[2855.5]	10	1 = Active SLS stage, bit 1	r9722.10	[2855.5]
	11	Reserved		
[2865.8]	12	1 = SDI positive active	r9722.12	
[2865.8]	13	1 = SDI negative active	r9722.13	
	14	Reserved		
	15	1 = SSM (Speed below limit)	r9722.15	[2855.5]

1	2	3	4	5	6	7	8

Safety Integrated	FP_2840_97_53.vsd	Function diagram	- 2840 -
SI Motion, PROFIsafe Control word and Status word	13.12.2010 V4.4	G120 CU240E-2 F/DP F	

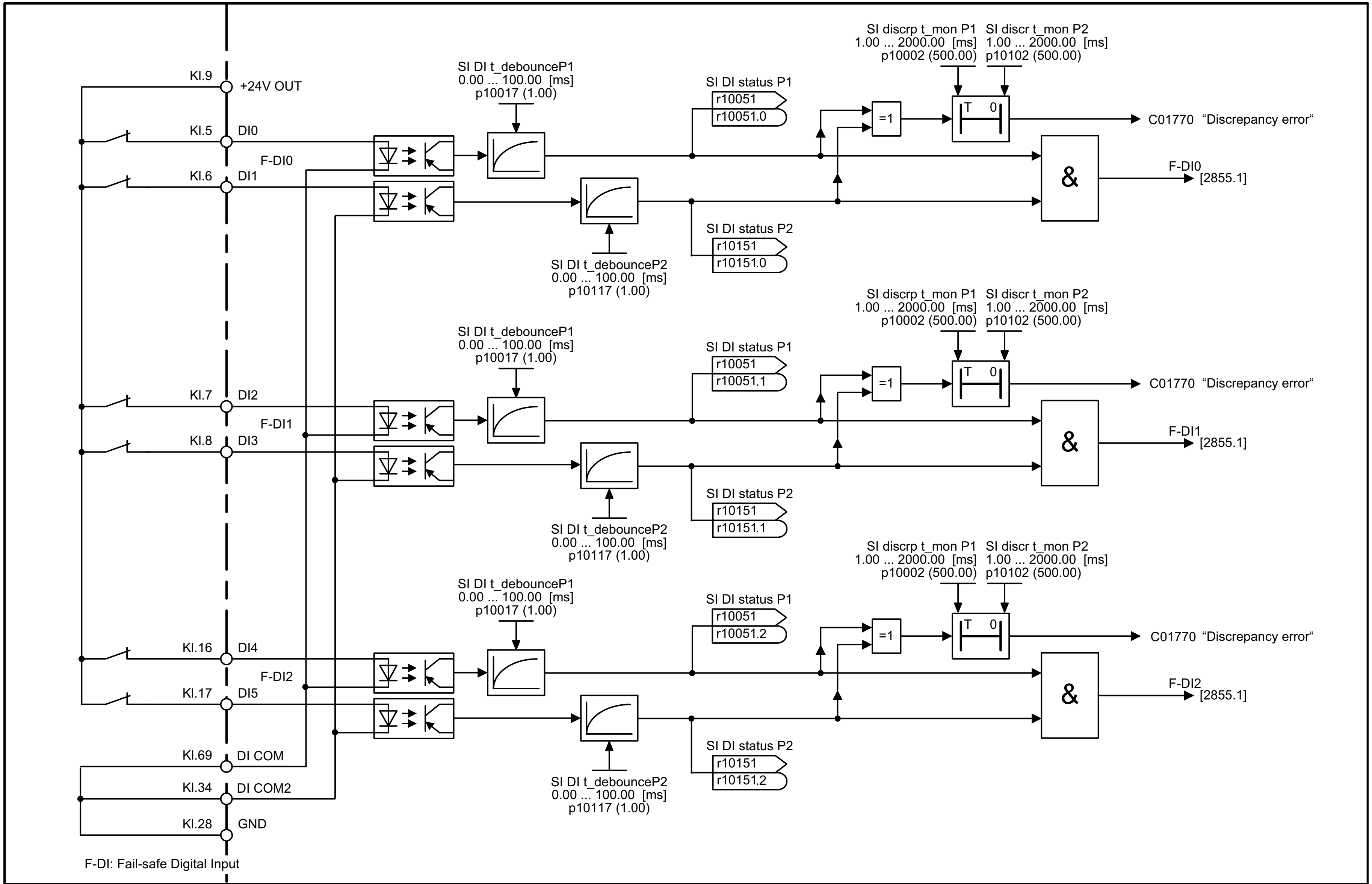
Fig. 2-67 2840 – SI Motion, PROFIsafe Control word and Status word

Fig. 2-68 2846 – SI Motion, Parameter Manager



1	2	3	4	5	6	7	8

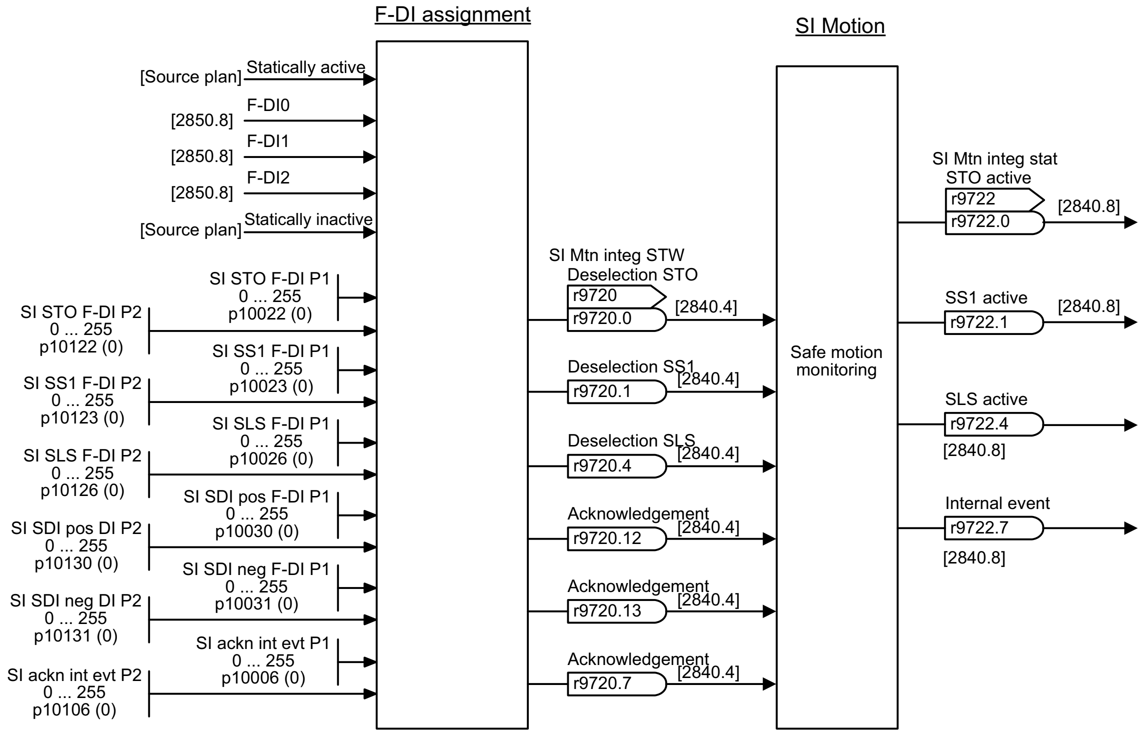
Safety Integrated	FP_2846_97_53.vsd	Function diagram	- 2846 -
SI Motion, Parameter Manager	13.12.2010 V4.4	G120 CU240E-2 F/DP F	



1	2	3	4	5	6	7	8
Safety Integrated					FP_2850_97_53.vsd	Function diagram	- 2850 -
SI Motion, Fail-safe Digital Inputs (F-DI0 ... F-DI2)					13.12.2010 V4.4	G120 CU240E-2 F/DP F	

Fig. 2-69 2850 – SI Motion, Fail-safe Digital Inputs (F-DI0 ... F-DI2)

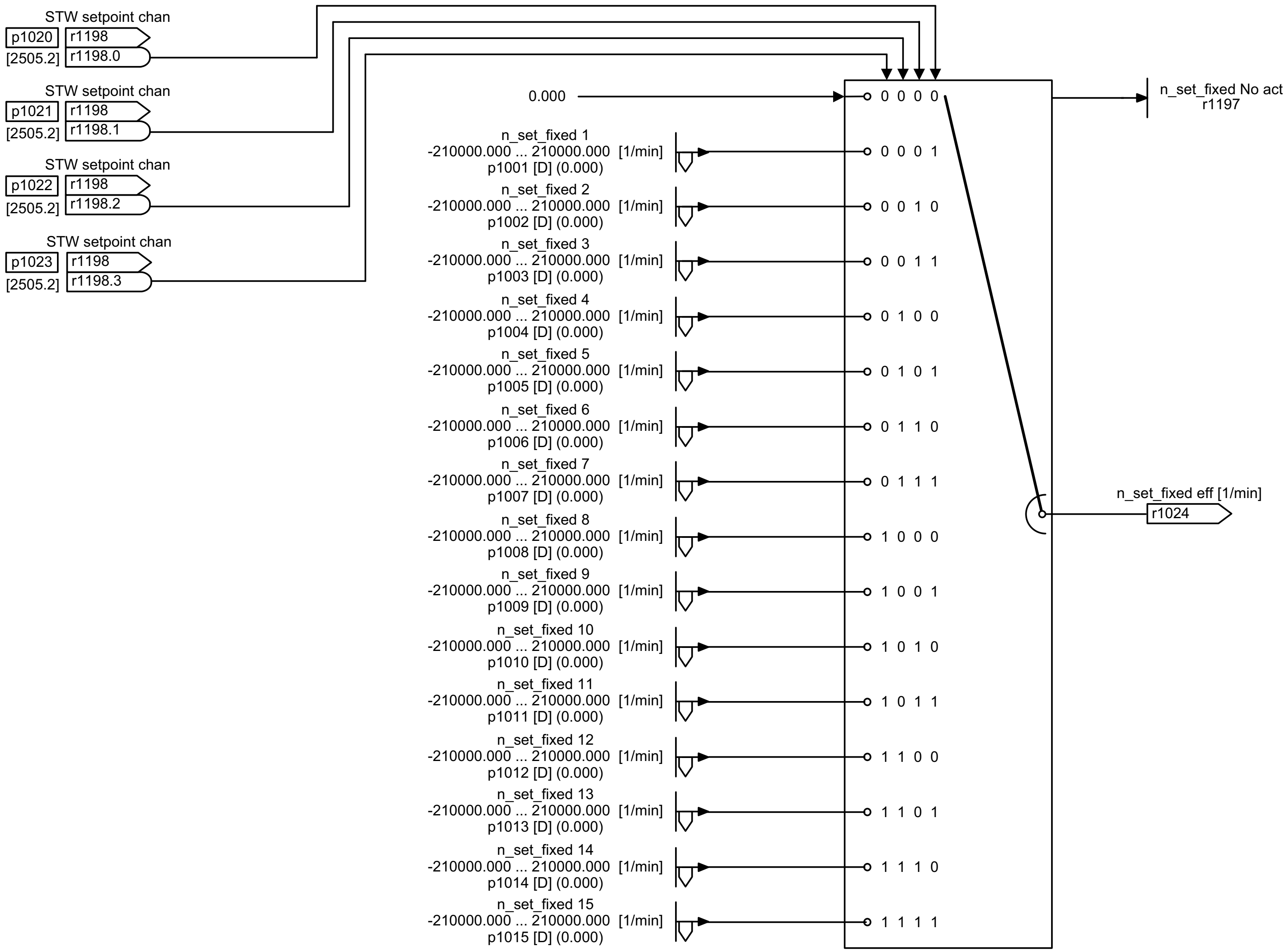
Fig. 2-70 2855 – SI Motion, Safe State selection



1	2	3	4	5	6	7	8
Safety Integrated					FP_2855_97_53.vsd	Function diagram	- 2855 -
SI Motion, F-DI assignment					13.12.2010 V4.4	G120 CU240E-2 F/DP F	

2.9 Setpoint channel

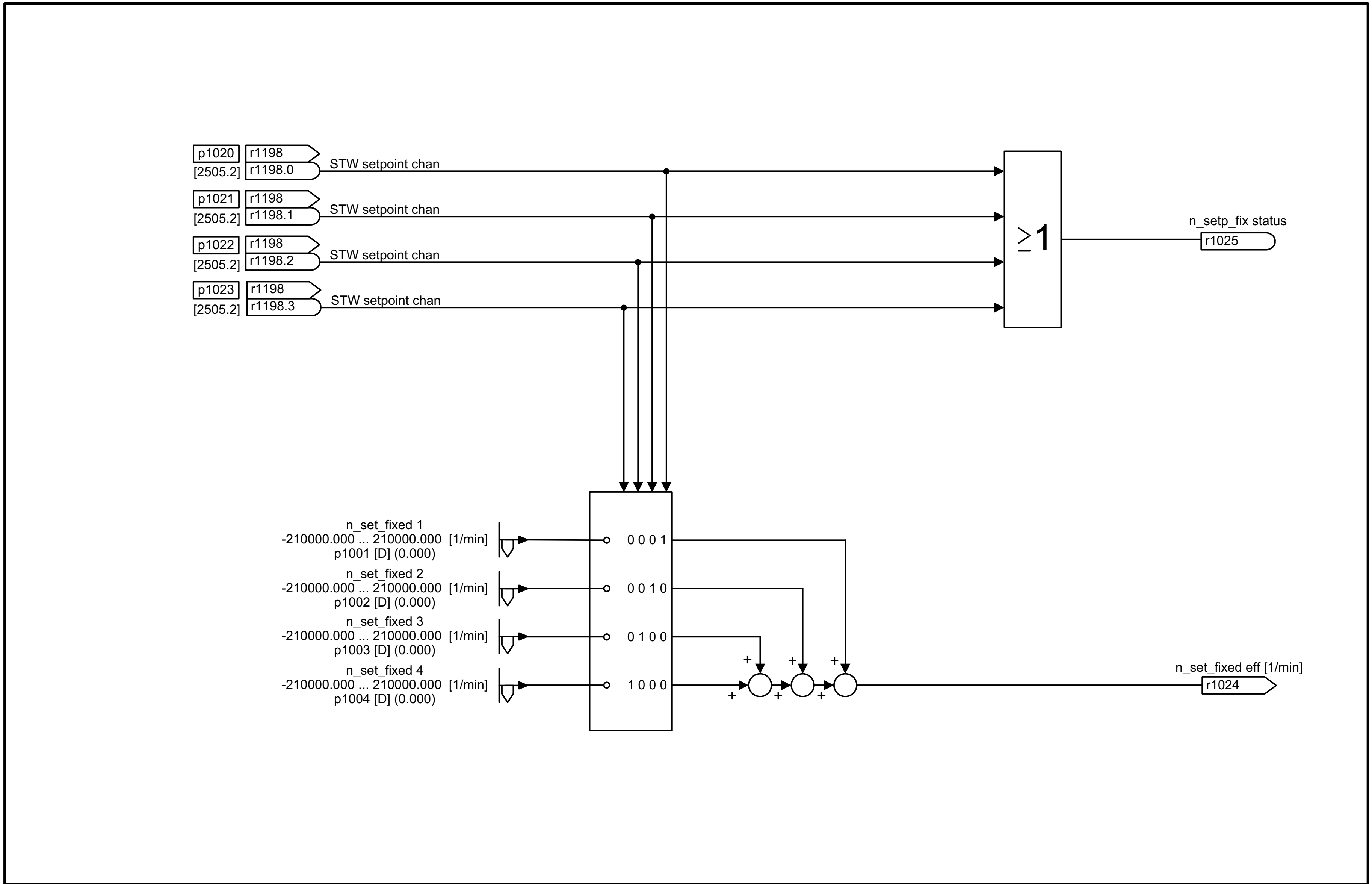
Function diagrams



1	2	3	4	5	6	7	8

Setpoint channel	FP_3010_97_51.vsd	Function diagram	**- 3010 -**
Fixed speed setpoints, binary selection (p1016 = 2)	13.12.2010 V4.4	G120 CU240B/E-2	

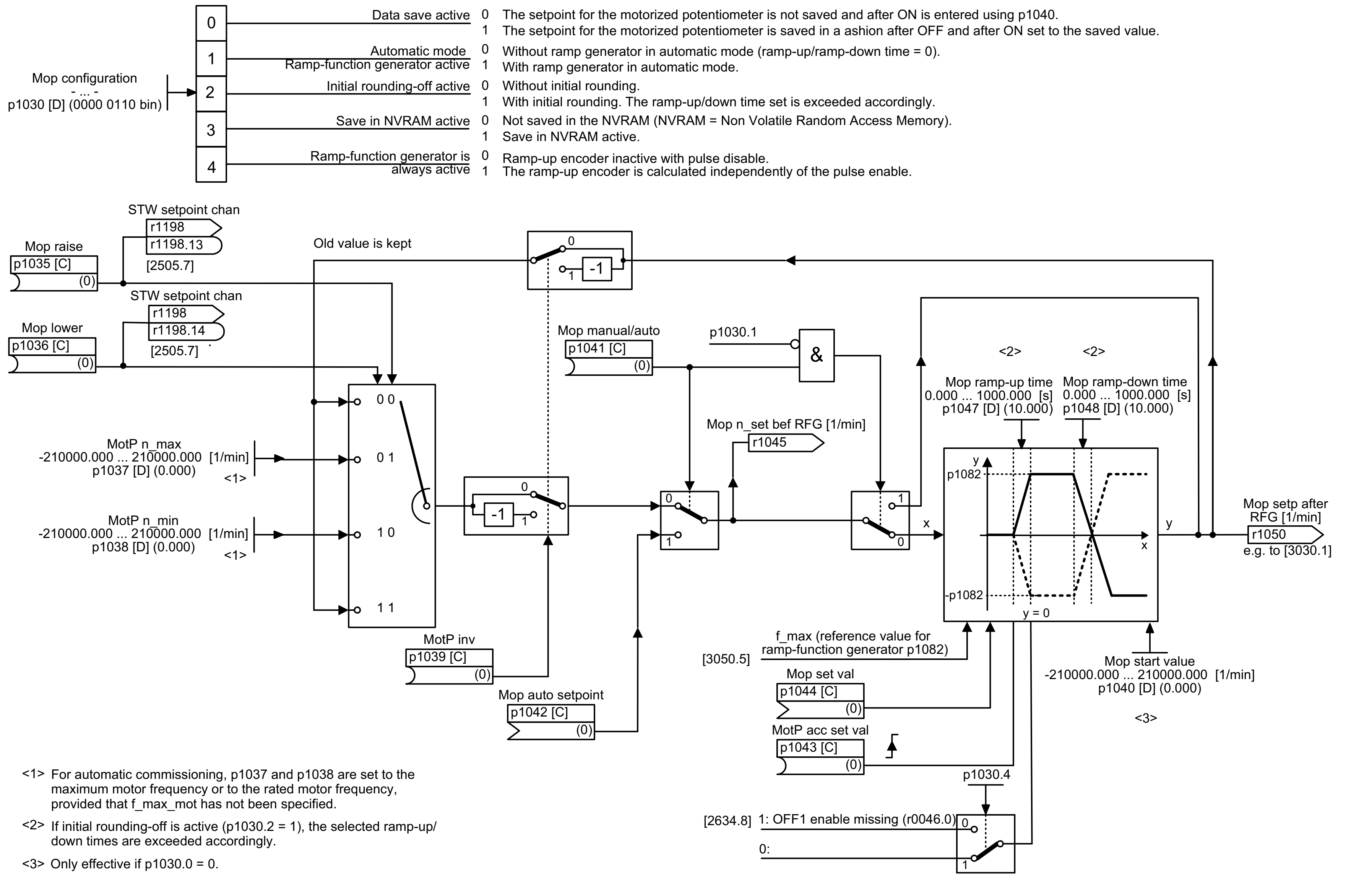
Fig. 2-71 3010 – Fixed speed setpoints, binary selection (p1016 = 2)



1	2	3	4	5	6	7	8
Setpoint channel					FP_3011_97_51.vsd	Function diagram	- 3011 -
Fixed speed setpoints, direct selection (p1016 = 1)					13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-72 3011 – Fixed speed setpoints, direct selection (p1016 = 1)

Fig. 2-73 3020 – Motorized potentiometer

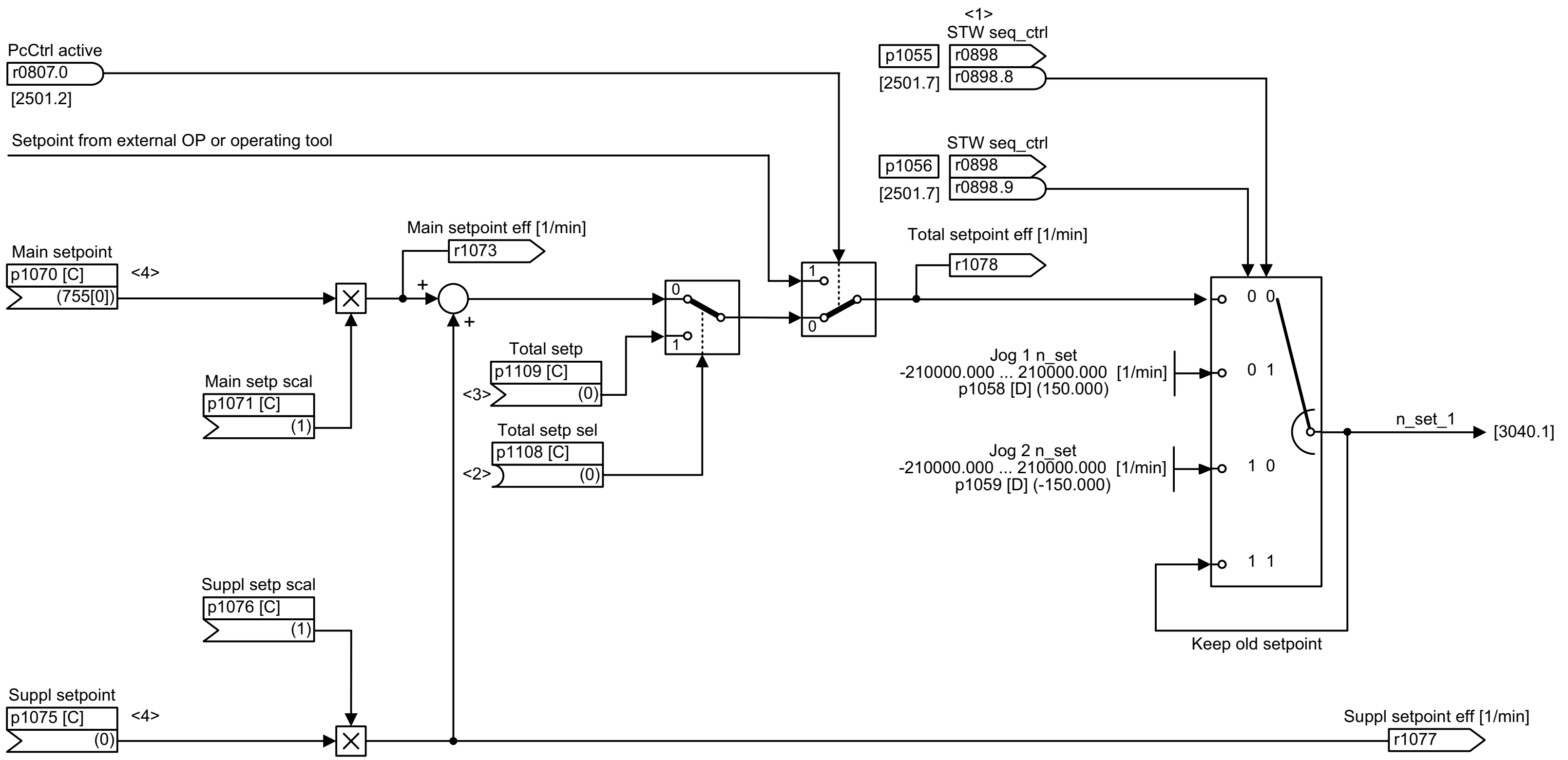


<1> For automatic commissioning, p1037 and p1038 are set to the maximum motor frequency or to the rated motor frequency, provided that f_max_mot has not been specified.

<2> If initial rounding-off is active (p1030.2 = 1), the selected ramp-up/down times are exceeded accordingly.

<3> Only effective if p1030.0 = 0.

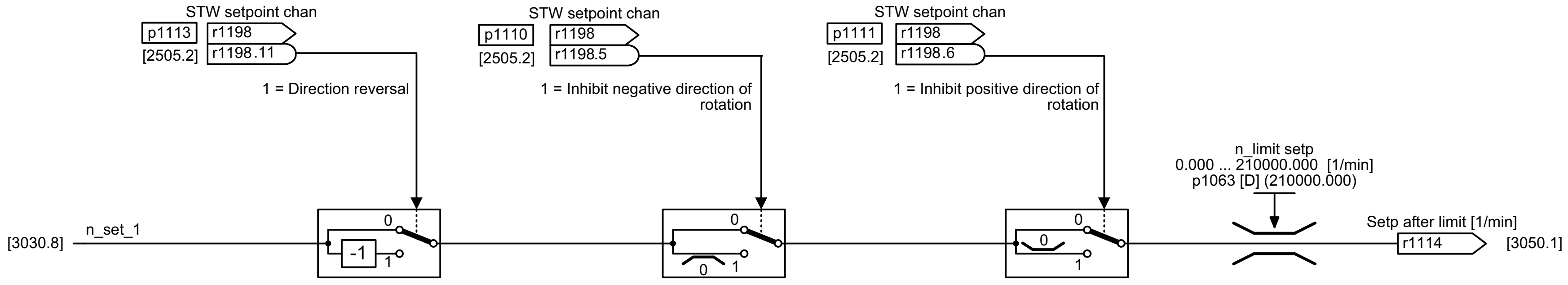
1	2	3	4	5	6	7	8
Setpoint channel					FP_3020_97_51.vsd	Function diagram	- 3020 -
Motorized potentiometer					13.12.2010 V4.4	G120 CU240B/E-2	



<1> Jogging can only be activated in the operating state “Ready for operation (S2)“.
<2> If technology controller is activated (p2200 > 0, p2251 = 0) connected with r2349.4.
<3> If technology controller is activated (p2200 > 0, p2251 = 0) connected with r2294.
<4> The connection to the source for the main and additional setpoint is estabished automatically via the setting in p1000.

1	2	3	4	5	6	7	8
Setpoint channel					FP_3030_97_51.vsd	Function diagram	- 3030 -
Main/supplementary setpoint, setpoint scaling, jogging					13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-74 3030 – Main/supplementary setpoint, setpoint scaling, jogging

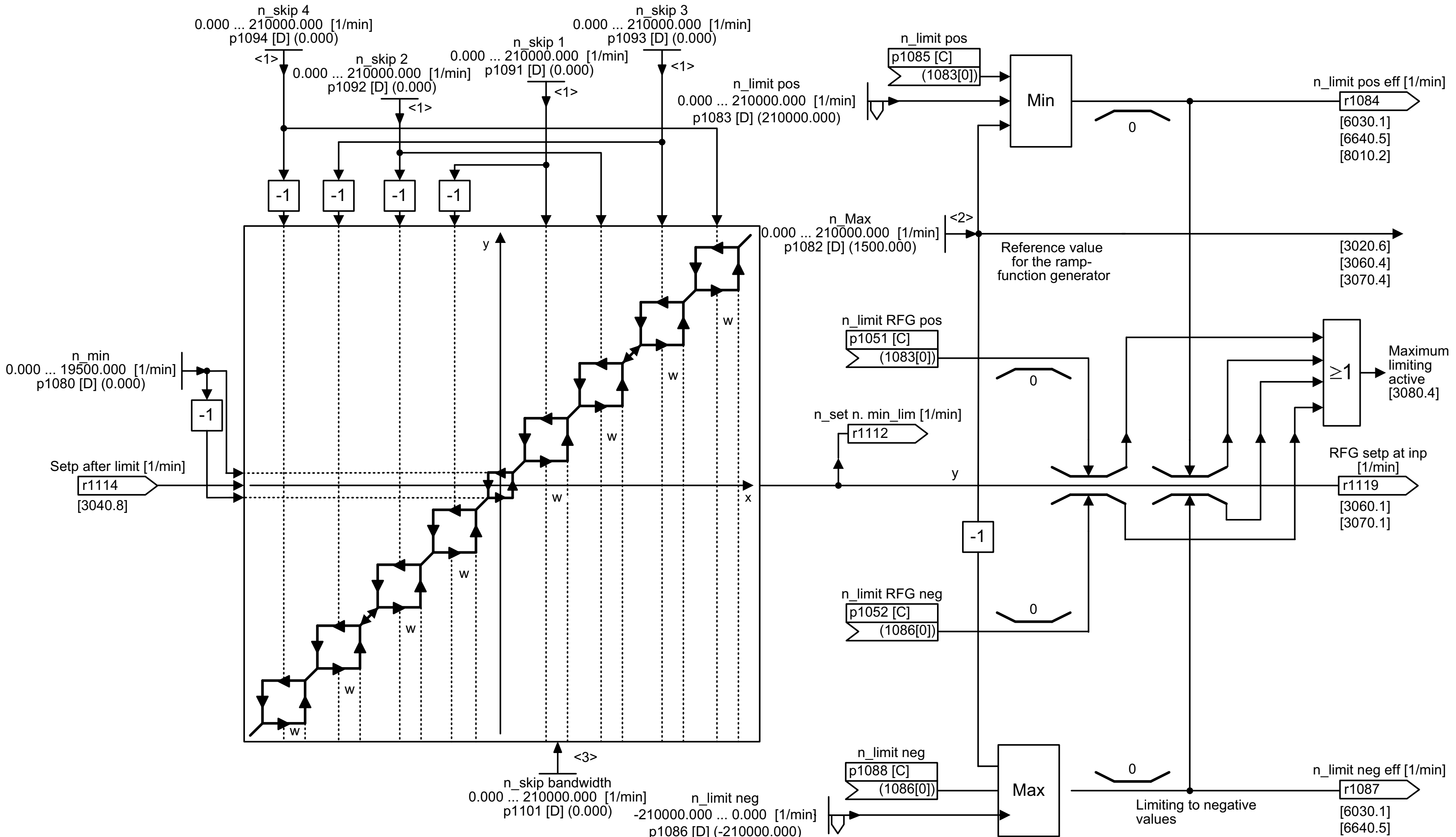


1	2	3	4	5	6	7	8

Setpoint channel	FP_3040_97_53.vsd	Function diagram	- 3040 -
Direction limitation and direction reversal	13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-75 3040 – Direction limitation and direction reversal

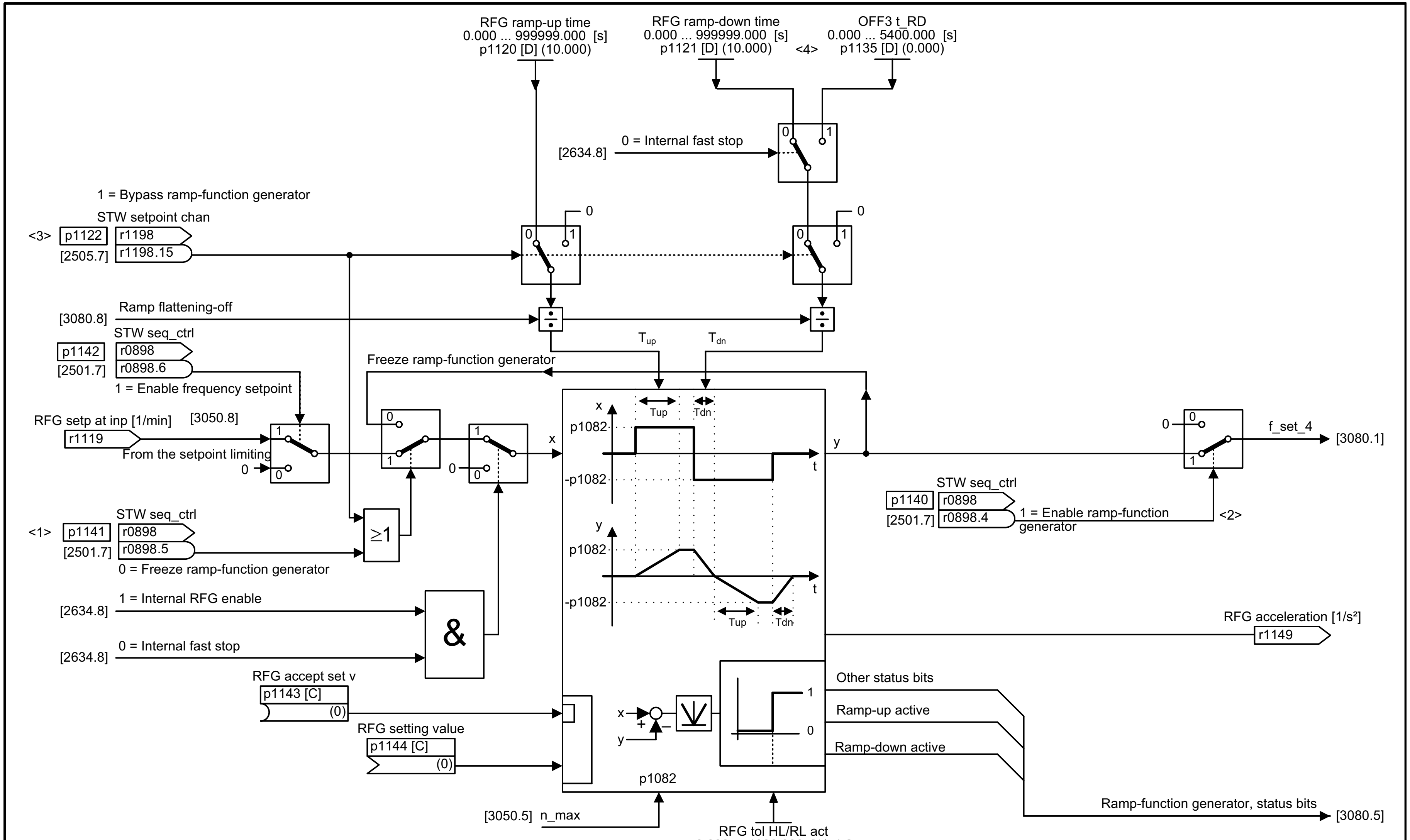
Fig. 2-76 3050 – Skip frequency bands and frequency limitations



<1> A suppression frequency of "0" de-activates the suppression frequency bandwidth.
<2> The setting range of p1082 is limited to f_max_mot.
<3> If the drive is not stopped via the input setpoint, but via controlled intervention, the lower hysteresis branch is relevant after a subsequent run-up.

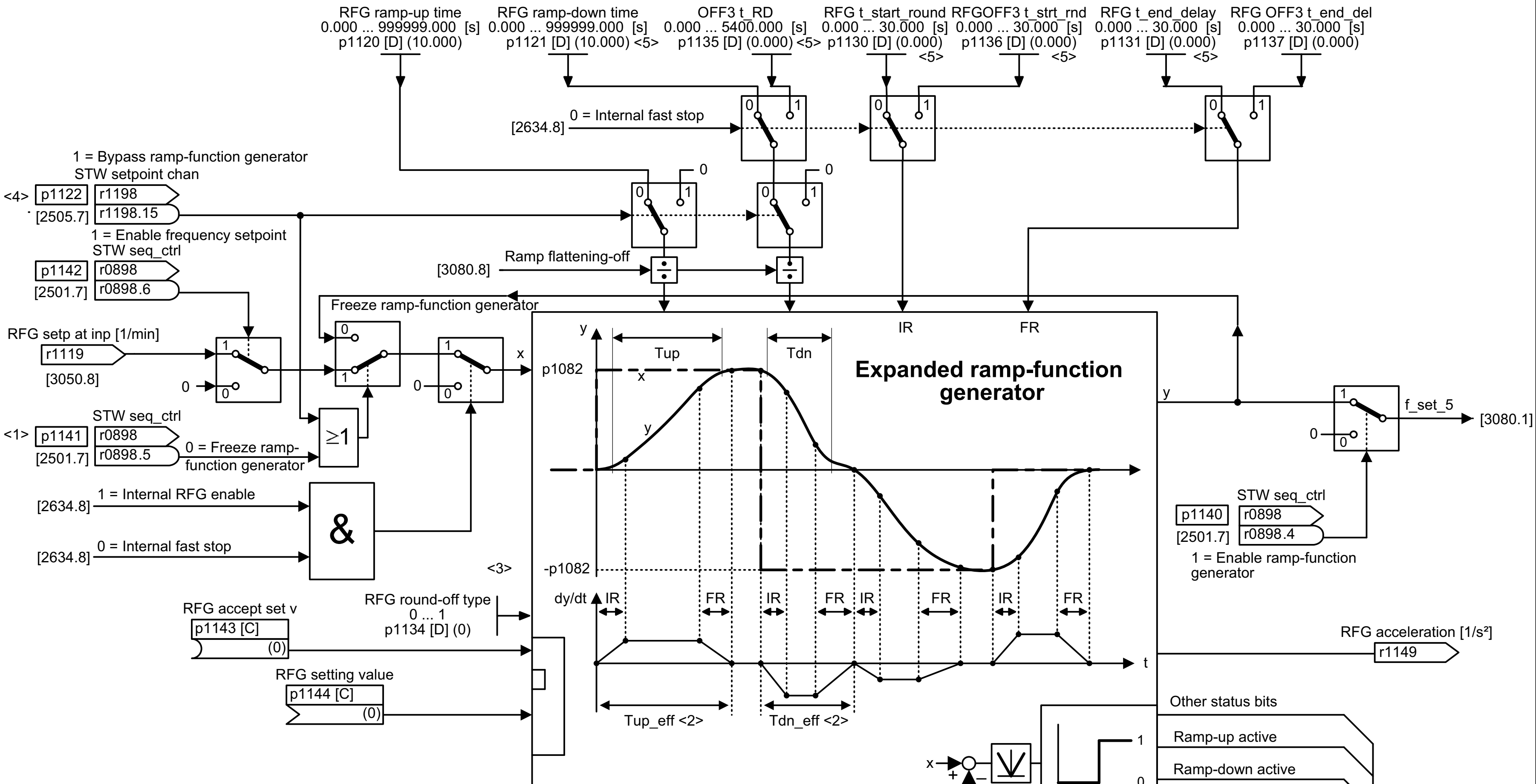
1	2	3	4	5	6	7	8
Setpoint channel					FP_3050_97_51.vsd	Function diagram	- 3050 -
Skip speed bands and speed limitations					13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-77 3060 – Basic ramp-function generator



<1> Inhibited during jogging.
<2> After a 0/1 signal the ramping is re-started.
<3> With activated Technology controller (p2200 > 0, p2251 = 0) the ramp-function generator is bypassed (r2349.5).
<4> Value range and/or factory setting depend on Power Module

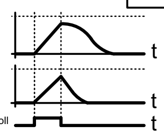
1	2	3	4	5	6	7	8
Setpoint channel					FP_3060_97_02.vsd	Function diagram	- 3060 -
Basic ramp-function generator					13.12.2010 V4.4	G120 CU240B/E-2	



<1> Inhibited during jogging.

<2> Effective ramp-up time: Tup_eff = Tup + (IR/2 + FR/2)
Effective ramp-down time: Tdn_eff = Tdn + (IR/2 + FR/2)

<3> p1134 = 0: Rounding-off is always active. Overshoots can occur.
p1134 = 1: Final rounding-off is not effective when the setpoint is suddenly reduced during ramp-up.



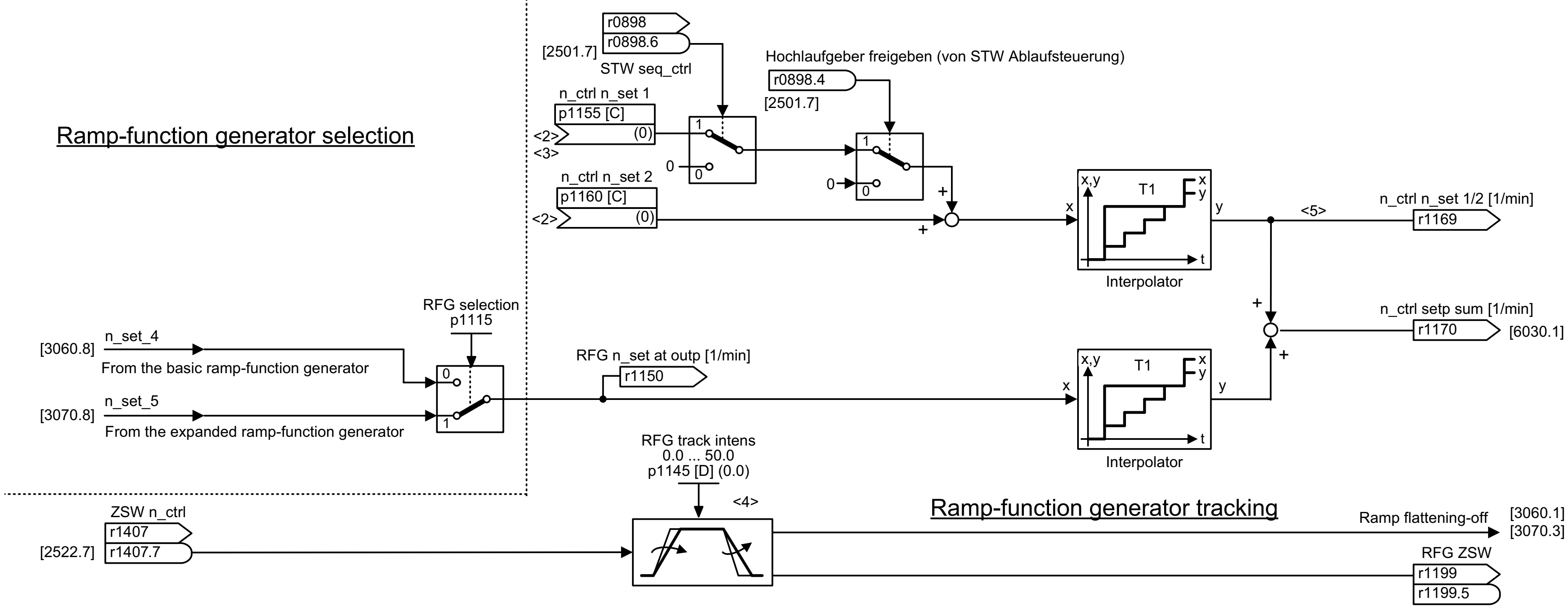
<4> With activated Technology controller (p2200 > 0, p2251 = 0) the ramp-function generator is bypassed (r2349.5).

<5> Value range and/or factory setting depend on Power Module

1	2	3	4	5	6	7	8
Setpoint channel					FP_3070_97_02.vsd	Function diagram	- 3070 -
Extended ramp-function generator					13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-78 3070 – Extended ramp-function generator

Fig. 2-79 3080 – Ramp-function generator selection, status word, tracking



Ramp-function generator status word

[3060.8] [3070.8] → Bit 0; [3060.8] [3070.8] → Bit 1; ≥1 → Bit 2; [3080.8] → Bit 5; [3050.8] → Bit 6

Bit	Hochlaufgeber-Zustandswort
0	Ramp-up active
1	Ramp-down active
2	Ramp-function generator active
3	Ramp-function generator set
4	Ramp-function generator held
5	Ramp-function generator tracking active <1>
6	Maximum limiting active
7	Reserved
8	Reserved
9	Reserved
10	Reserved
11	Reserved
12	Reserved
13	Reserved
14	Reserved
15	Reserved

RFG ZSW r1199, r1199 (Bits 0, 1); RFG ZSW r1199, r1199.2 (p2148)

<1> For p1145 > 0, ramp-function generator tracking is activated when the torque limiting responds. This means that the speed controller output only exceeds the torque limit by a deviation that can be set via p1145.

<2> For OFF1/OFF3, the ramp-function generator ramp is active. The ramp-function generator is set to the setpoint (r1170)) and stops the drive with the ramp-downtime (p1121 or p1135). STW1.4 (enable ramp-function generator) is effective while the drive is stopped via the ramp-function generator. Depending on the p1115, the basic ramp-function generator [3060] or the extended ramp-function generator [3070] is effective.

<3> If technology controller is activated (p2200 > 0, p2251 = 1) connected with r2294.

<4> Behavior of the response ramp of the torque limiting:
p1145 = 0.0: No ramp-function generator tracking. The ramp-function generator ramp is no longer in the range of the frequency actual value.
p1145 = 1.0: The ramp-function generator ramp remains as close as possible to the speed actual value.
p1145 > 1.0: The ramp-function generator ramp is steeper than for p1145 = 1.0 (higher "speed following error").

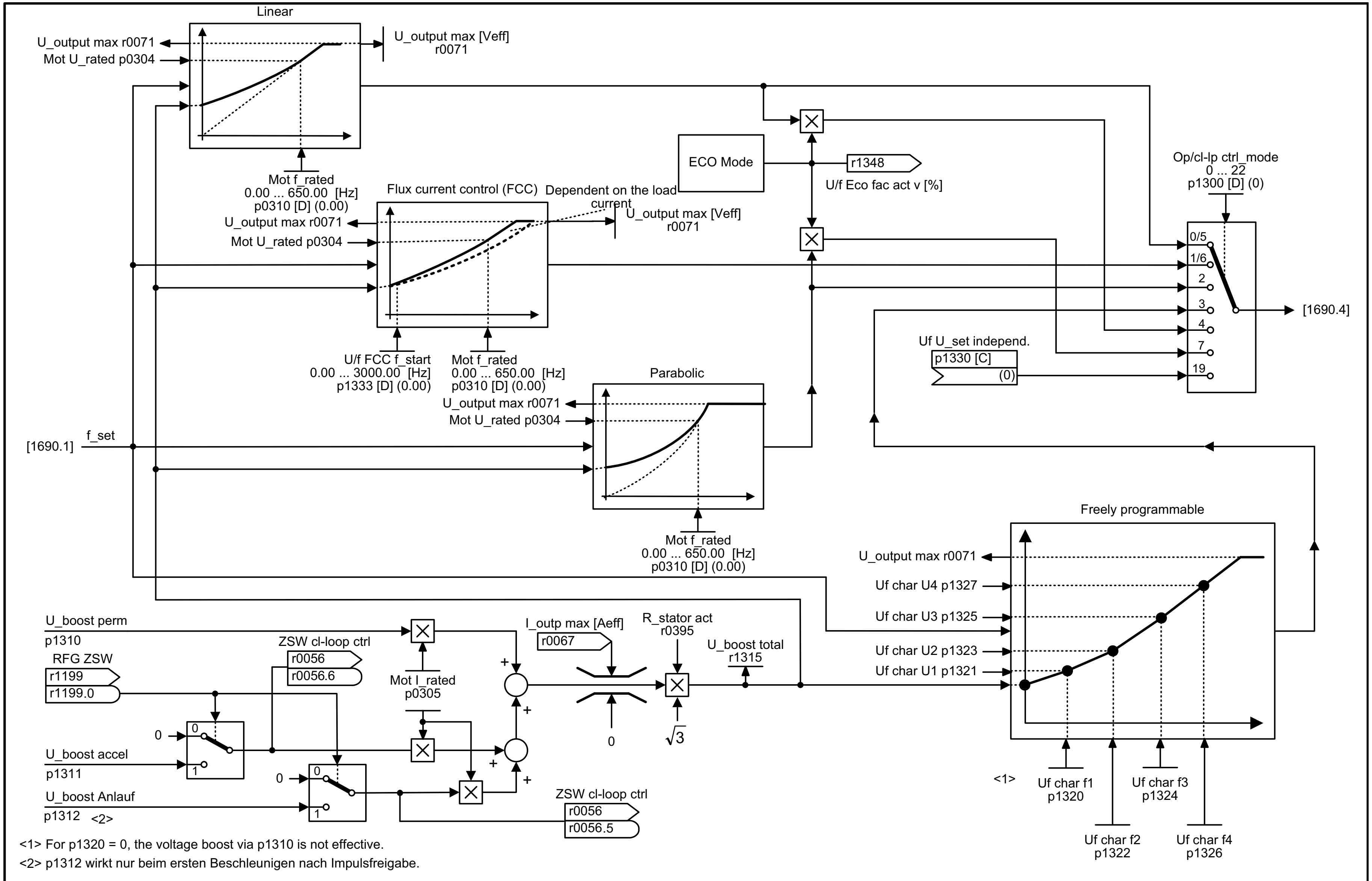
<5> The value is displayed correctly only with r0899.2 = 1 (operation enabled)

1	2	3	4	5	6	7	8
Setpoint channel					FP_3080_97_51.vsd	Function diagram	- 3080 -
Ramp-function generator selection, status word, tracking					13.12.2010 V4.4	G120 CU240B/E-2	

2.10 V/f control

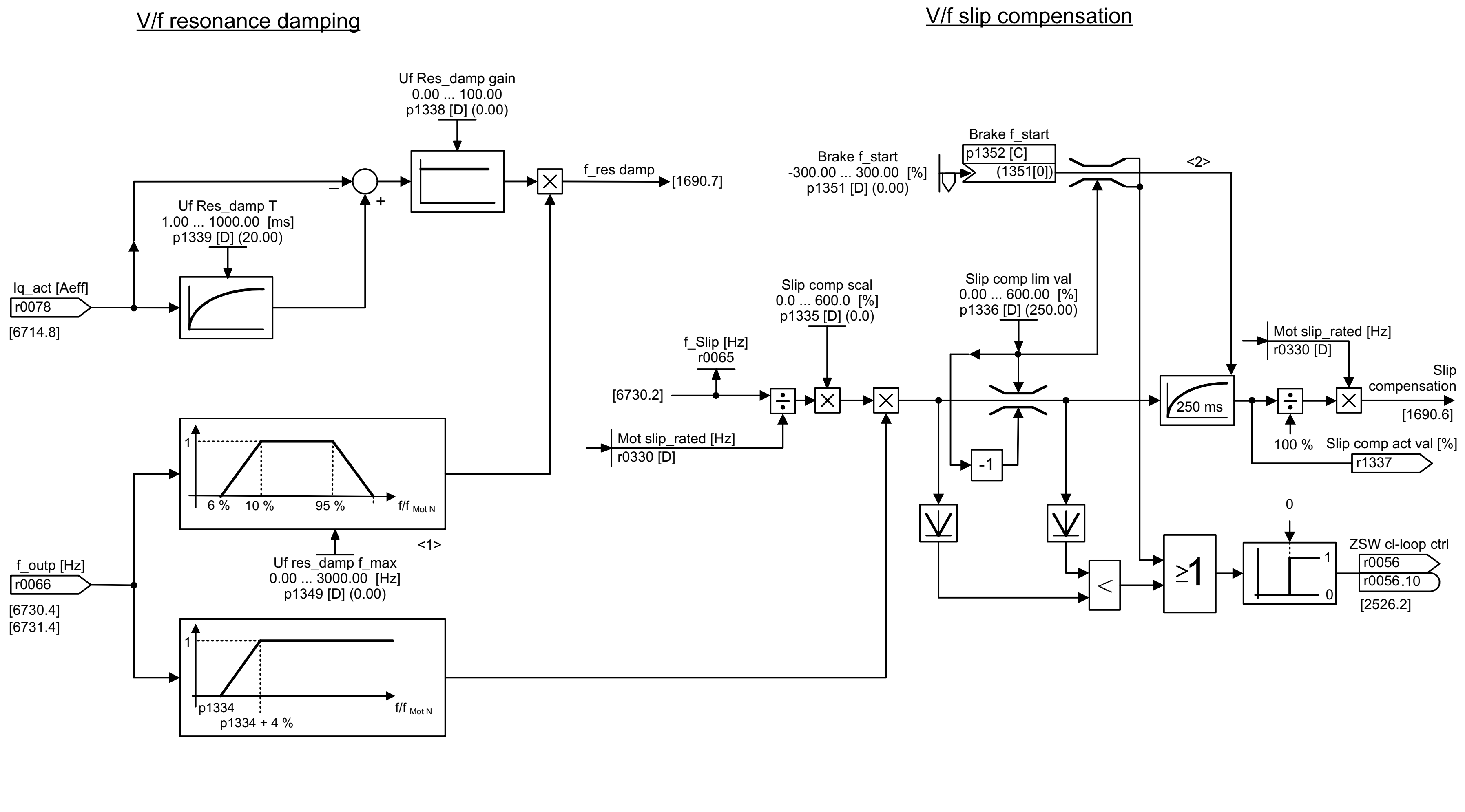
Function diagrams

Fig. 2-80 6300 – V/f characteristic and voltage boost



1	2	3	4	5	6	7	8
V/f control					FP_6300_97_51.vsd	Function diagram	- 6300 -
V/f characteristic and voltage boost					13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-81 6310 – Resonance damping and slip compensation



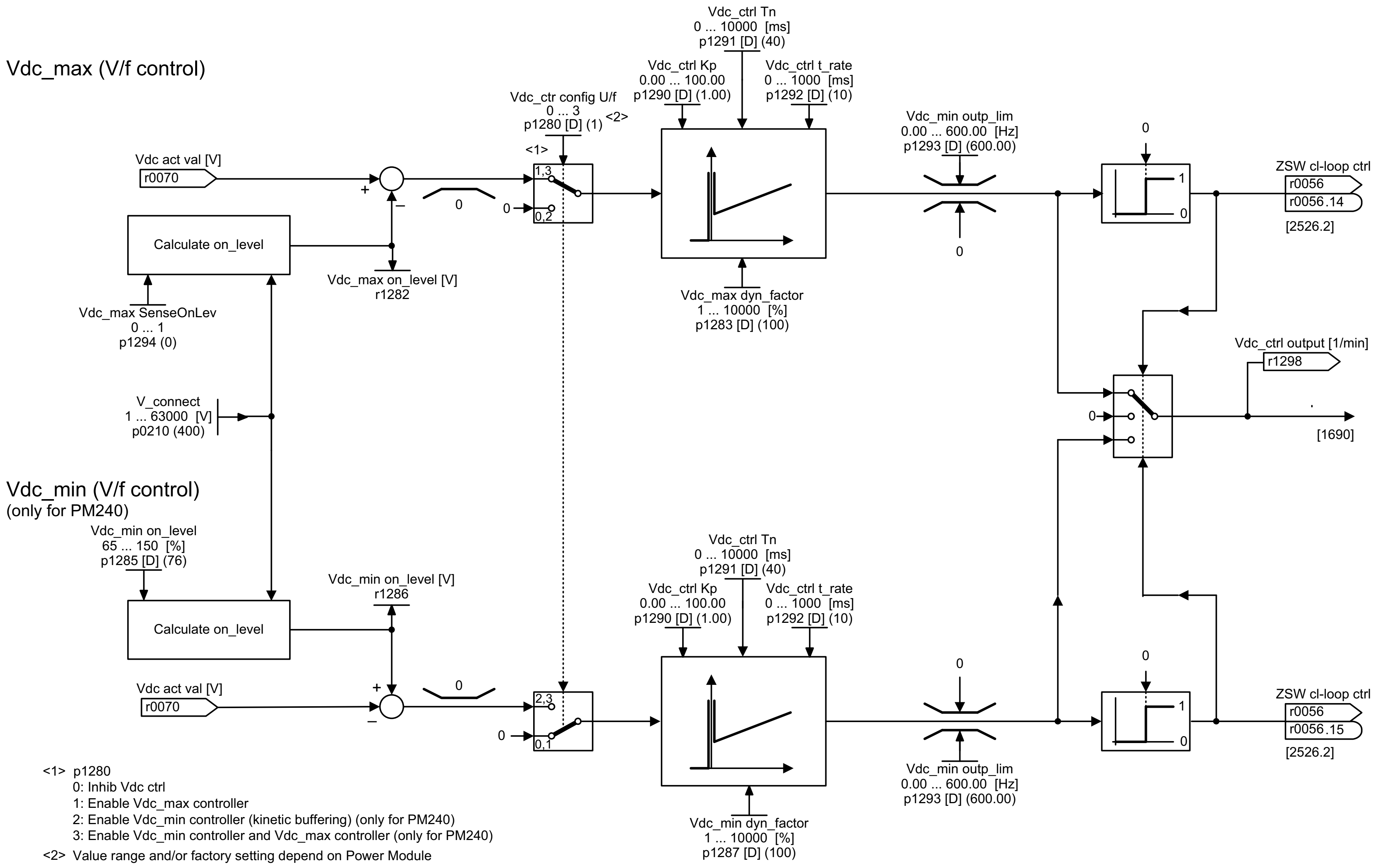
<1> If p1349 = 0: the limit is 0,95 x f Mot N <= 45 Hz.

<2> Activation with r0056.4 = 1 till r0066 >= p1334 and p1216 has expired.
100 % equal r0330 (Rated motor slip)

1	2	3	4	5	6	7	8

V/f control	FP_6310_97_53.vsd	Function diagram	- 6310 -
Resonance damping and slip compensation	13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-82 6320 – Vdc_max controller and Vdc_min controller (PM230 / PM240)



<1> p1280
0: Inhib Vdc ctrl
1: Enable Vdc_max controller
2: Enable Vdc_min controller (kinetic buffering) (only for PM240)
3: Enable Vdc_min controller and Vdc_max controller (only for PM240)

<2> Value range and/or factory setting depend on Power Module

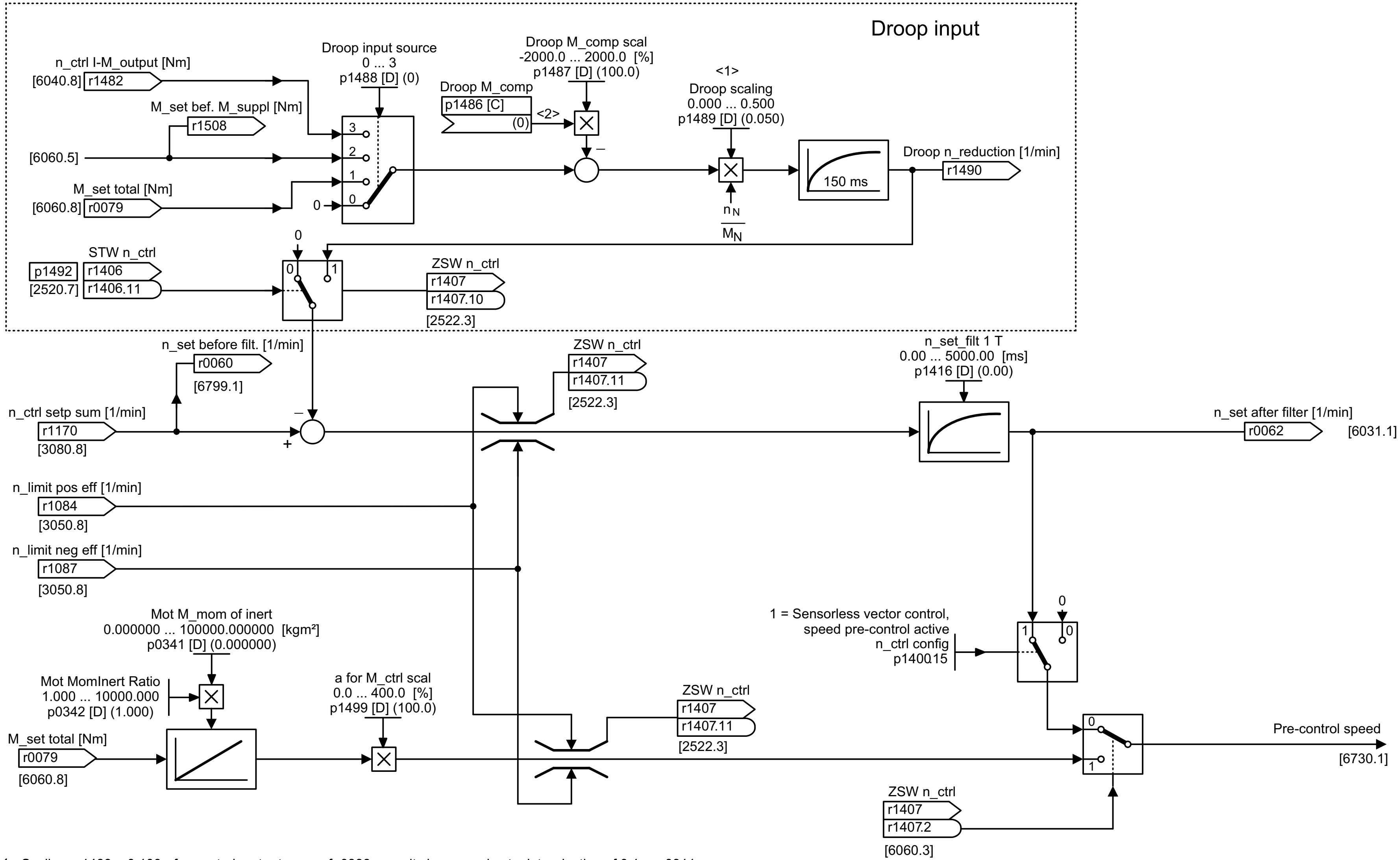
1	2	3	4	5	6	7	8

V/f control	FP_6320_97_02.vsd	Function diagram	- 6320 -
Vdc_max controller and Vdc_min controller (PM230 / PM240)	13.12.2010 V4.4	G120 CU240B/E-2	

2.11 Vector control

Function diagrams

Fig. 2-83 6030 – Speed setpoint, droop

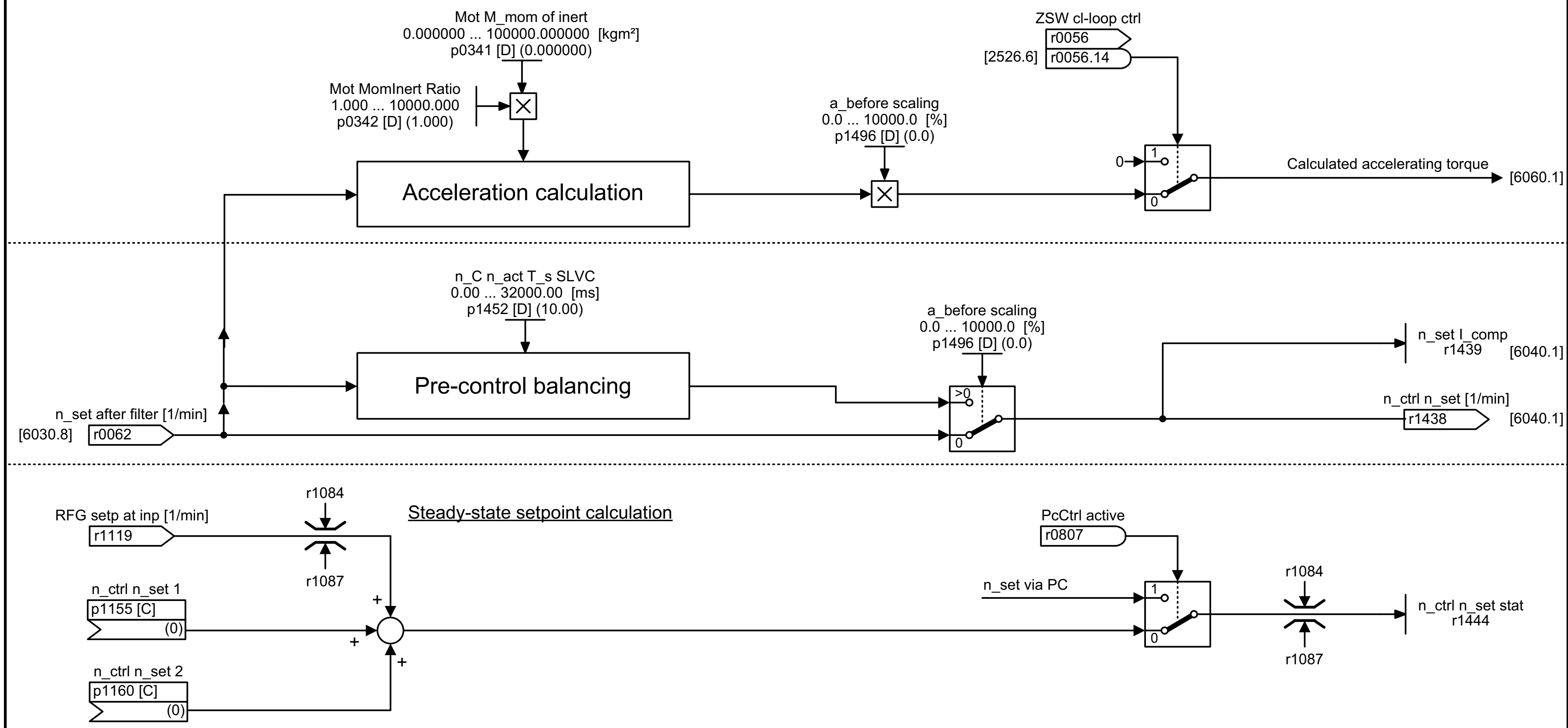


<1> Scaling: p1489 = 0.100 - for a rated motor torque of r0333 - results in a speed setpoint reduction of 0.1 x p0311.

<2> Only active, if p1488 > 0

1	2	3	4	5	6	7	8

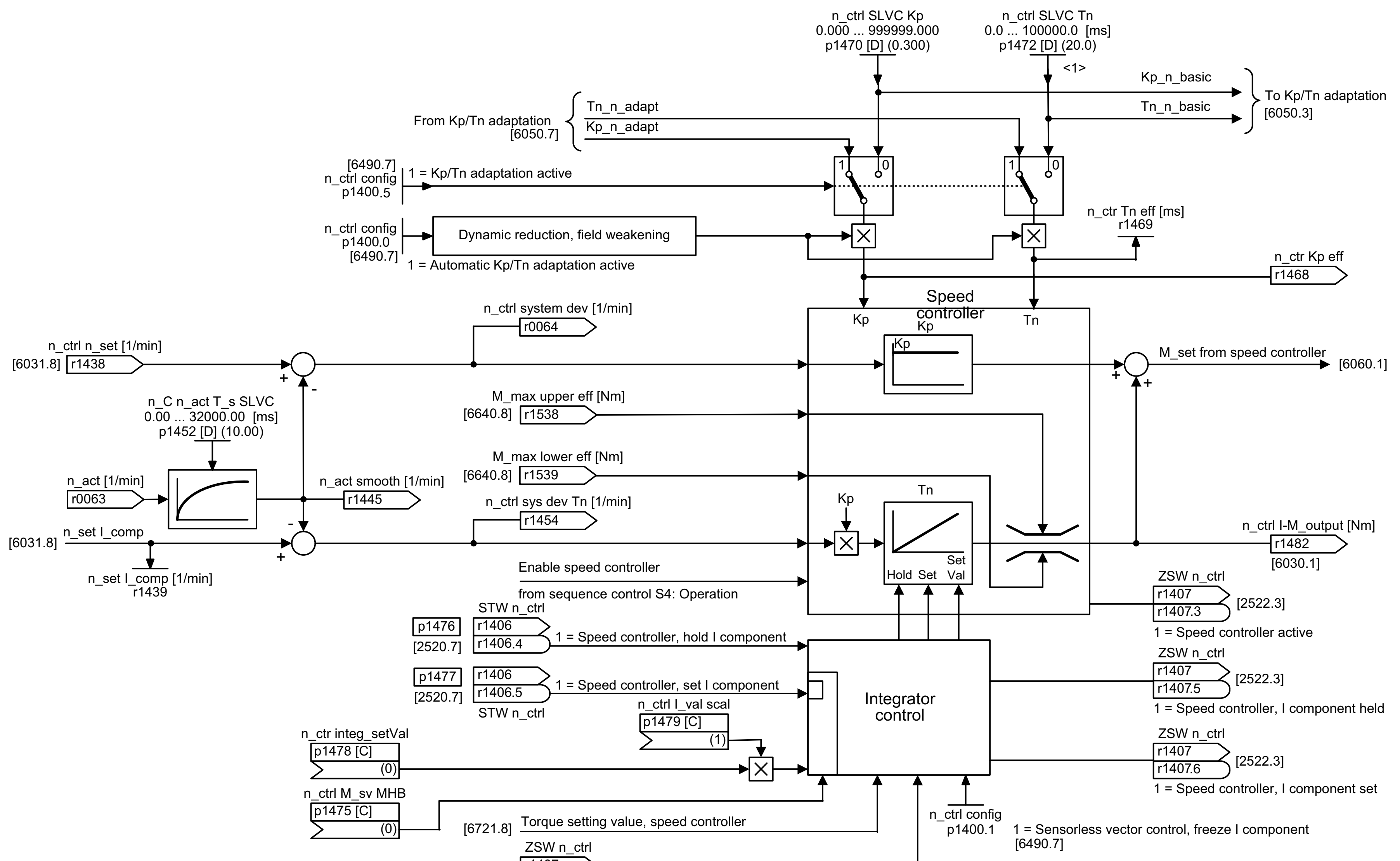
Vector control	FP_6030_97_54.vsd	Function diagram	- 6030 -
Speed setpoint, droop	13.12.2010 V4.4	G120 CU240B/E-2	



1	2	3	4	5	6	7	8
Vector control					FP_6031_97_51.vsd	Function diagram	- 6031 -
Pre-control balancing, acceleration model					13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-84 6031 – Pre-control balancing, acceleration model

Fig. 2-85 6040 – Speed controller



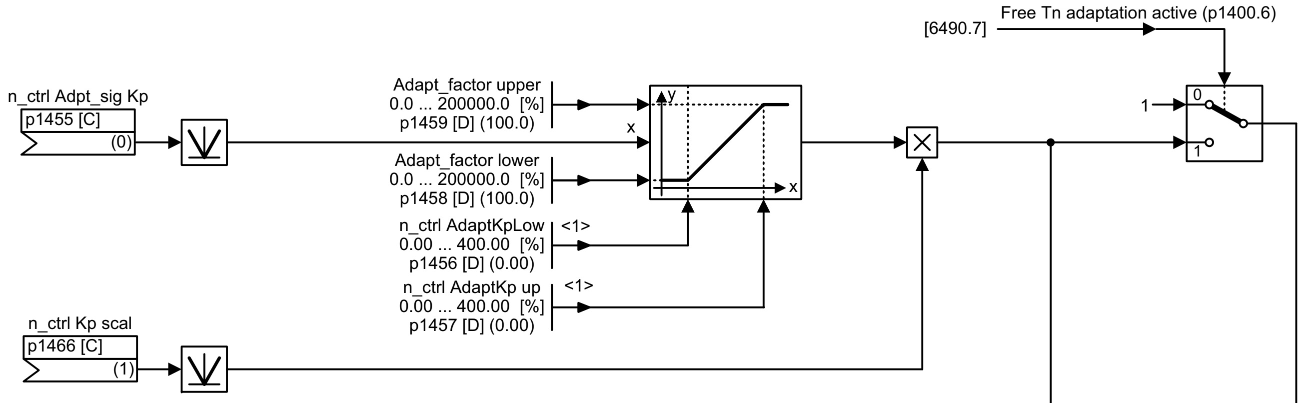
<1> For p1472 = 0.0 s or 100.0 s, the I component is disabled (integral action time = infinite).

1	2	3	4	5	6	7	8

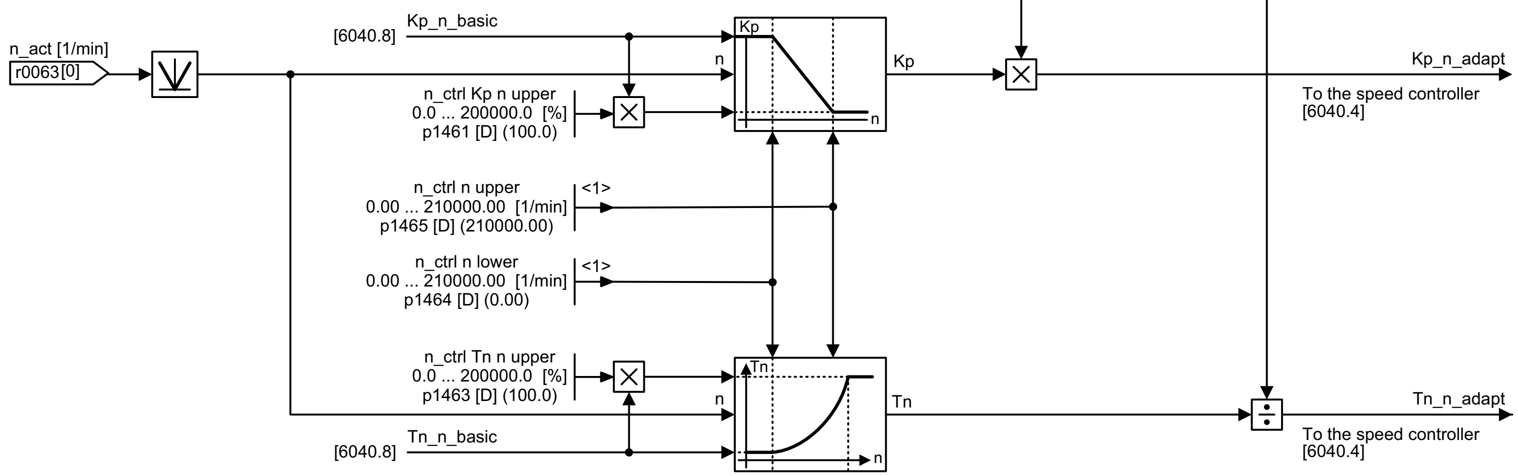
Vector control	FP_6040_97_02.vsd	Function diagram	- 6040 -
Speed controller	13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-86 6050 – Kp_n/Tn_n adaption

Free Kp_n adaptation



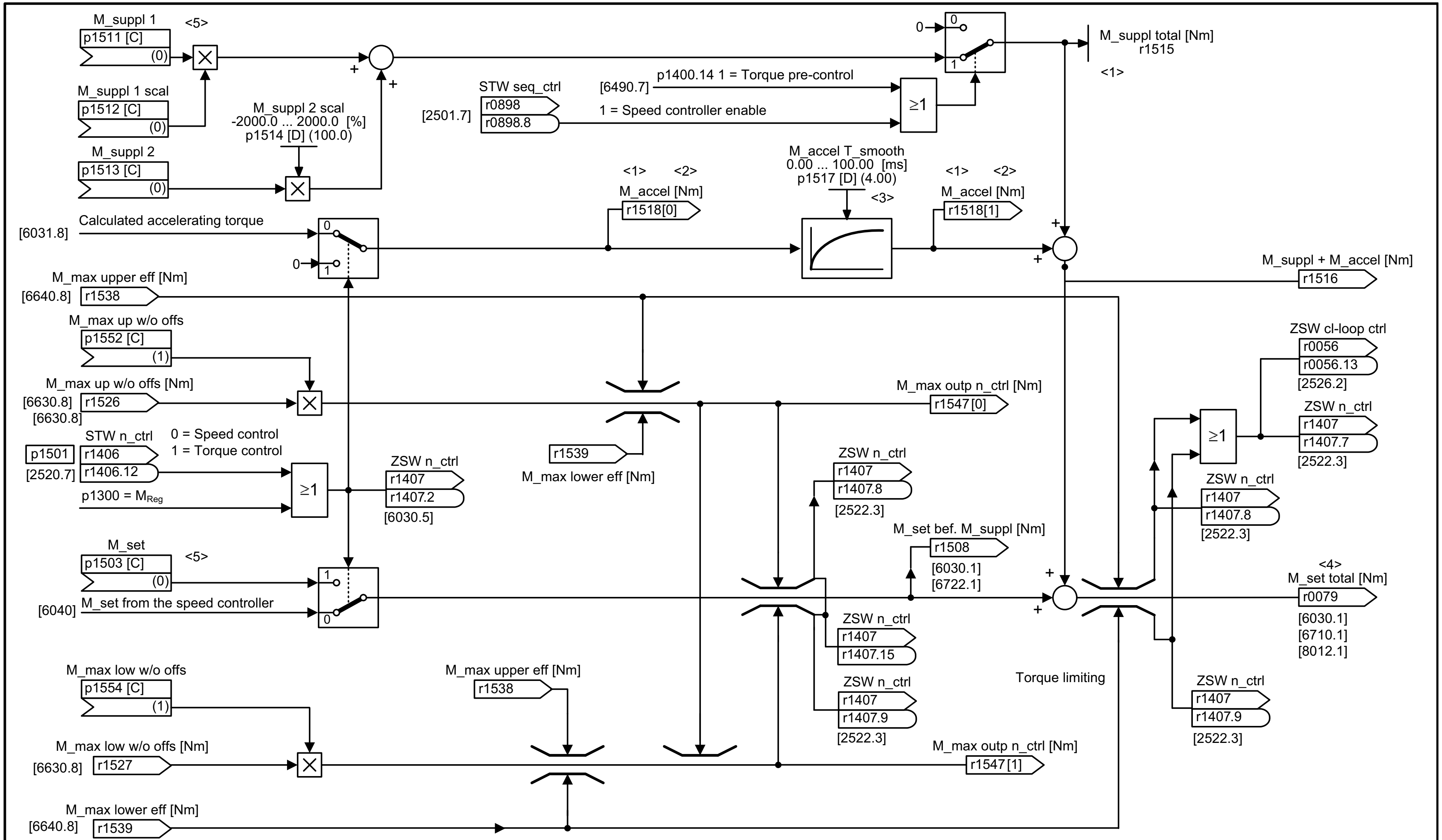
Speed-dependent Kp_n/Tn_n adaptation



<1> If the lower transition point exceeds the upper transition point, the Kp-adaptation also changes over.

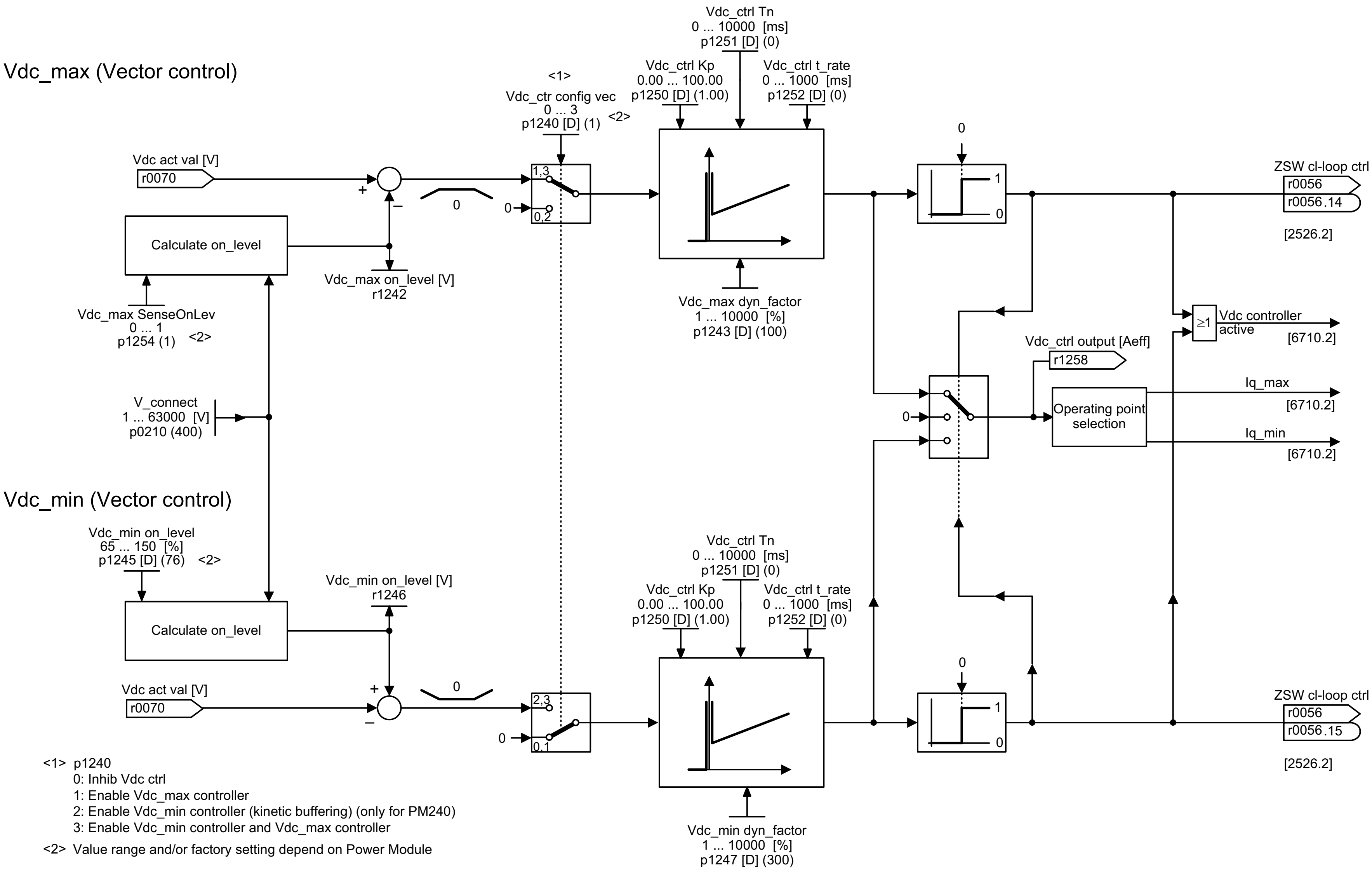
1	2	3	4	5	6	7	8
Vector control					FP_6050_97_51.vsd	Function diagram	- 6050 -
Kp_n/Tn_n adaption					13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-87 6060 – Torque setpoint



<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 connection to the source for the torque setpoint is estabished automatically via the setting in p1500.

1	2	3	4	5	6	7	8
Vector control					FP_6060_97_51.vsd	Function diagram	- 6060 -
Torque setpoint					13.12.2010 V4.4	G120 CU240B/E-2	



<1> p1240
0: Inhib Vdc ctrl
1: Enable Vdc_max controller
2: Enable Vdc_min controller (kinetic buffering) (only for PM240)
3: Enable Vdc_min controller and Vdc_max controller

<2> Value range and/or factory setting depend on Power Module

1	2	3	4	5	6	7	8

Vector control	FP_6220_97_02.vsd	Function diagram	- 6220 -
Vdc_max controller and Vdc_min controller (PM230 / PM240)	13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-88 6220 – Vdc_max controller and Vdc_min controller (Vector control, PM230 / PM240)

Fig. 2-89 6490 – Speed control configuration

n_reg Konfig
p1400[D]

Speed control configuration

Bit No.	Meaning	Factory setting	
00	1 = Automatic Kp/Tn adaptation active	1	[6040.3]
01	1 = Sensorless vector control, freeze I component	0	[6040.3]
02	Reserved		
03	Reserved		
04	Reserved		
05	1 = Kp/Tn adaptation active	1	[6040.3]
06	1 = Free Tn adaptation active	0	[6050.6]
07	Reserved		
08	Reserved		
09	Reserved		
10	Reserved		
11	Reserved		
12	Reserved		
13	Reserved		
14	1 = Torque pre-control always active 0 = Torque pre-control for n_ctrl enabled	0	[6060.4]
15	1 = Sensorless vector control, speed pre-control active	1	[6030.5]

1	2	3	4	5	6	7	8

Vector control	FP_6490_97_51.vsd	Function diagram	- 6490 -
Speed control configuration	13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-90 6491 – Flux control configuration

Flux ctrl config
- ... -
p1401 [D] (0000 0110 bin)

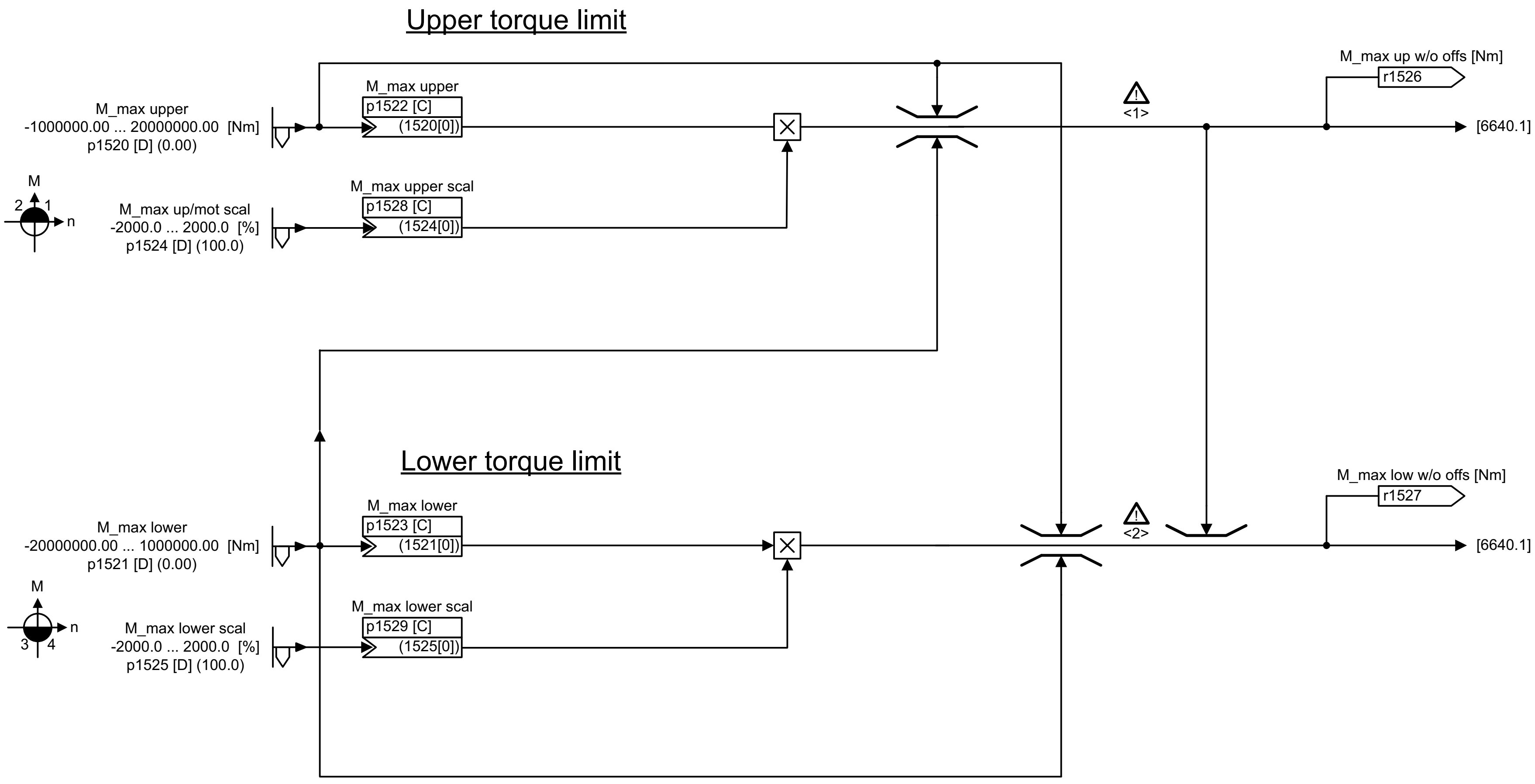
Flux control, configuration

Bit No.	Meaning	Factory setting	
00	1 = Flux setpoint, soft starting active	0	[6722.3]
01	1 = Flux setpoint, differentiation active	1	[6723.7]
02	1 = Flux build-up control active		[6723.6]
03	Reserved		
04	Reserved		
05	Reserved		
06	1 = Quick magnetization	0	[6722.5]
07	Reserved		
08	Reserved		
09	Reserved		
10	Reserved		
11	Reserved		
12	Reserved		
13	Reserved		
14	Reserved		
15	Reserved		

1	2	3	4	5	6	7	8

Vector control	FP_6491_97_51.vsd	Function diagram	- 6491 -
Flux control configuration	13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-91 6630 – Upper/lower torque limit



<1> <2> Danger: Negative values at <1> / positive values at <2> represent a minimum torque for the other torque direction and can cause the motor to accelerate uncontrollably.

1	2	3	4	5	6	7	8
Vector control					FP_6630_97_51.vsd	Function diagram	- 6630 -
Upper/lower torque limit					13.12.2010 V4.4	G120 CU240B/E-2	

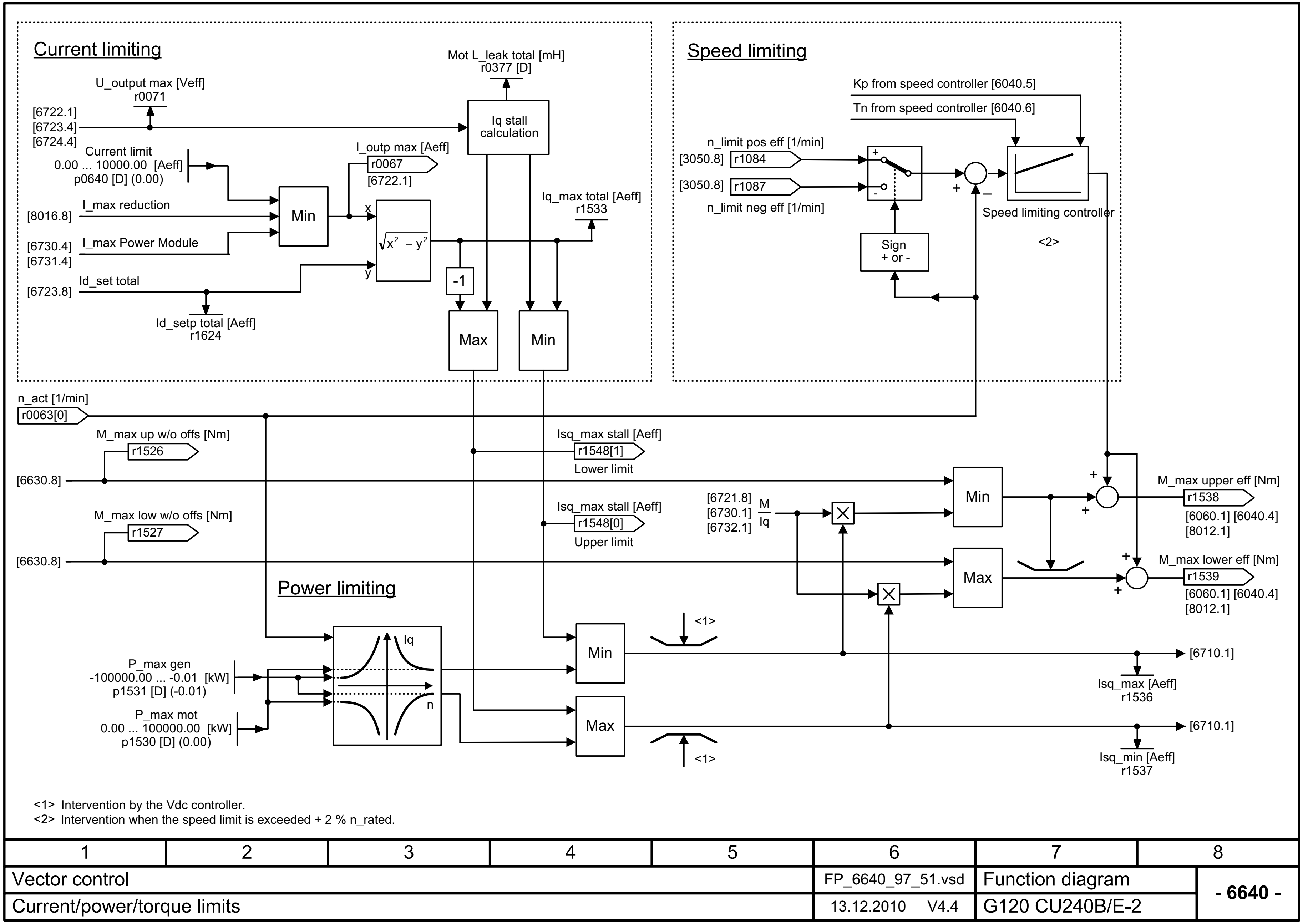
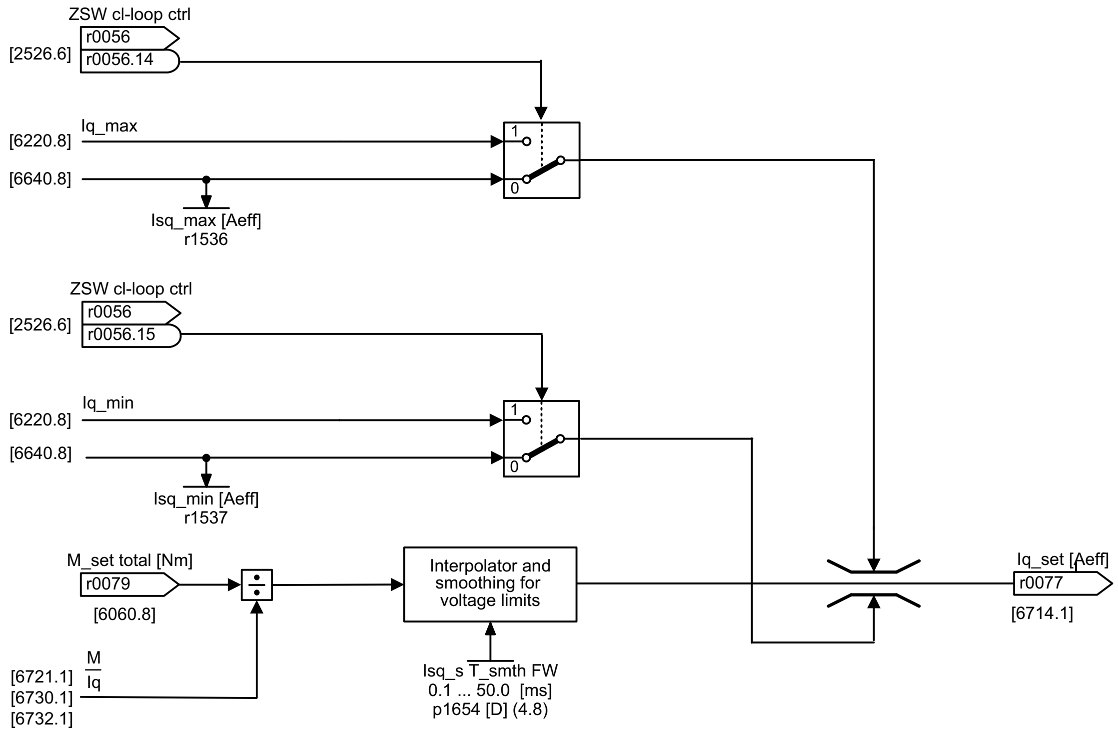


Fig. 2-92 6640 – Current/power/torque limits

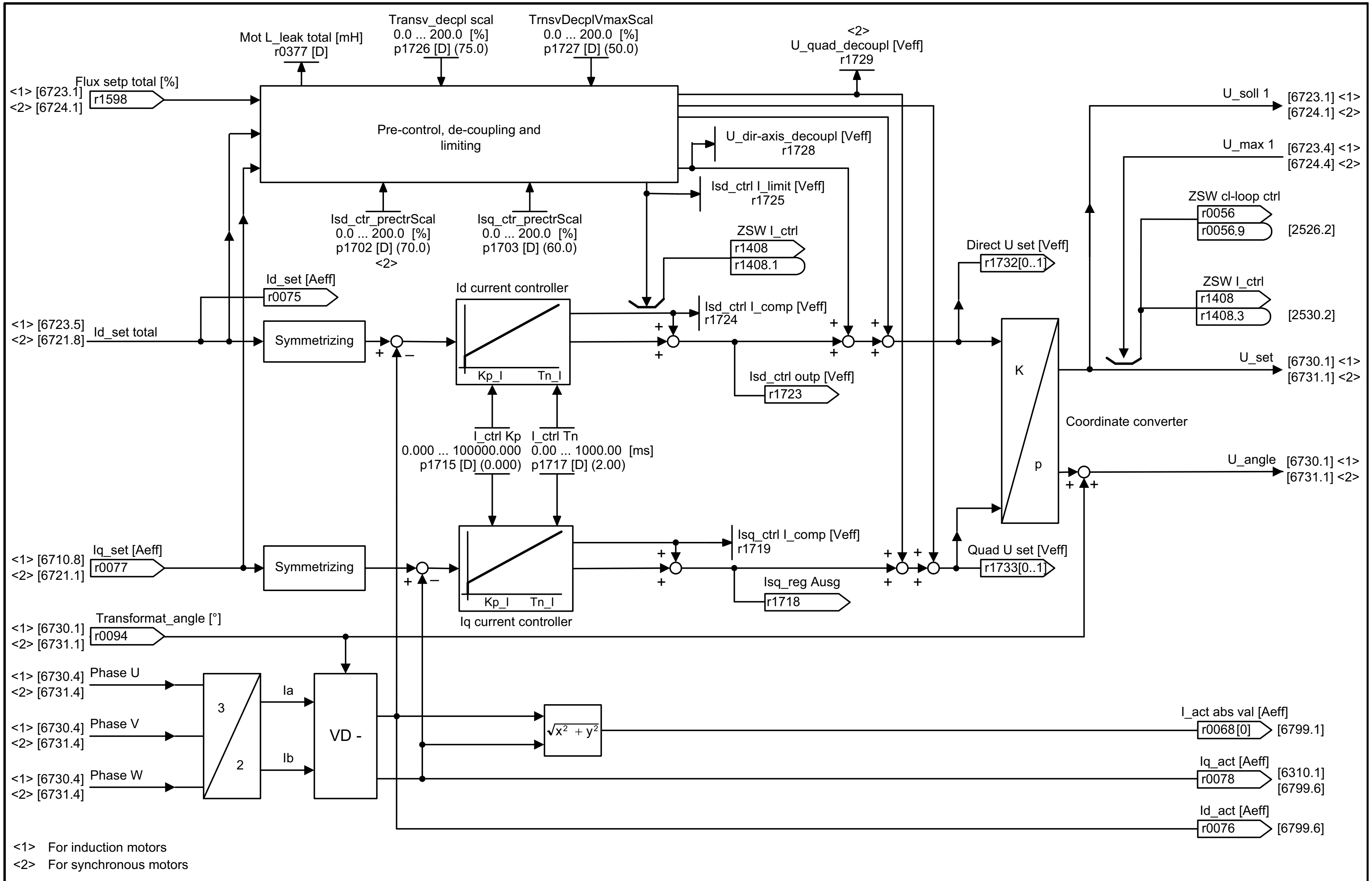
Fig. 2-93 6710 – Current setpoint filter



1	2	3	4	5	6	7	8

Vector control	FP_6710_97_51.vsd	Function diagram	- 6710 -
Current setpoint filter	13.12.2010 V4.4	G120 CU240B/E-2	

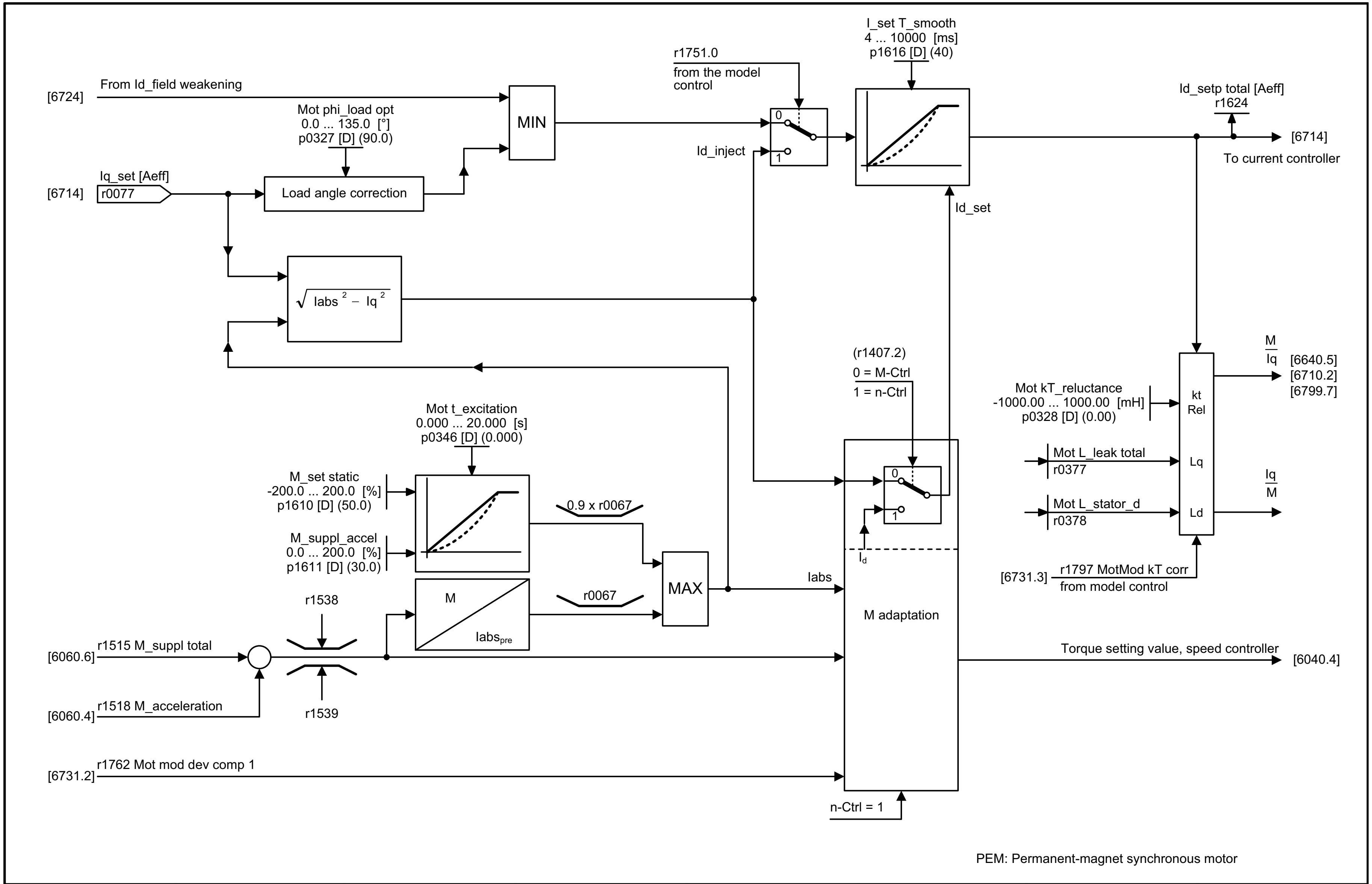
Fig. 2-94 6714 – Iq and Id controllers



1	2	3	4	5	6	7	8

Vector control	FP_6714_97_51.vsd	Function diagram	- 6714 -
Iq and Id controllers	13.12.2010 V4.4	G120 CU240B/E-2	

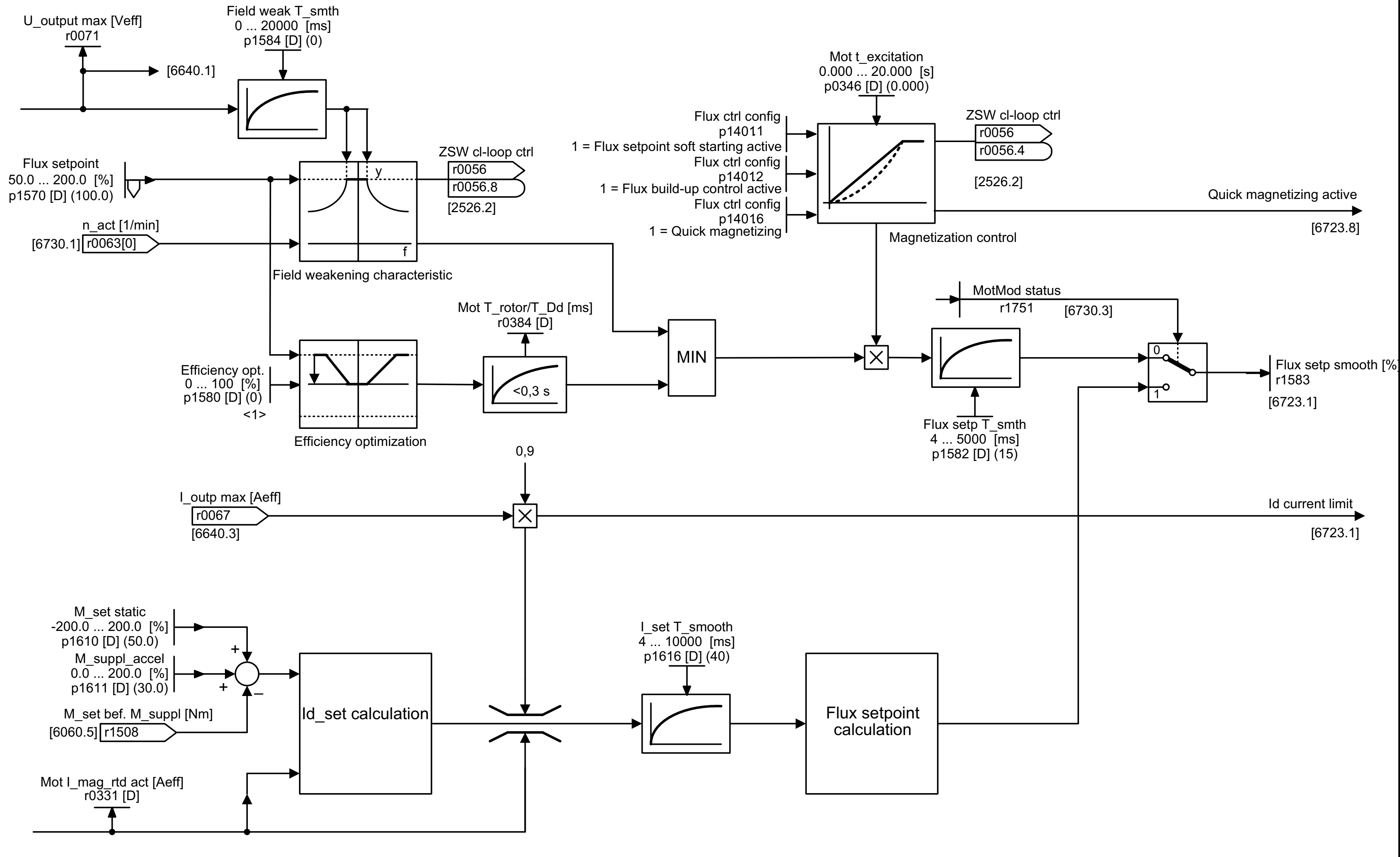
Fig. 2-95 6721 – Id setpoint (PEM, p0300 = 2xx)



1	2	3	4	5	6	7	8

Vector control	FP_6721_97_51.vsd	Function diagram	- 6721 -
Id setpoint (PEM, p0300 = 2xx)	13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-96 6722 – Field weakening characteristic, Id setpoint (ASM, p0300 = 1)

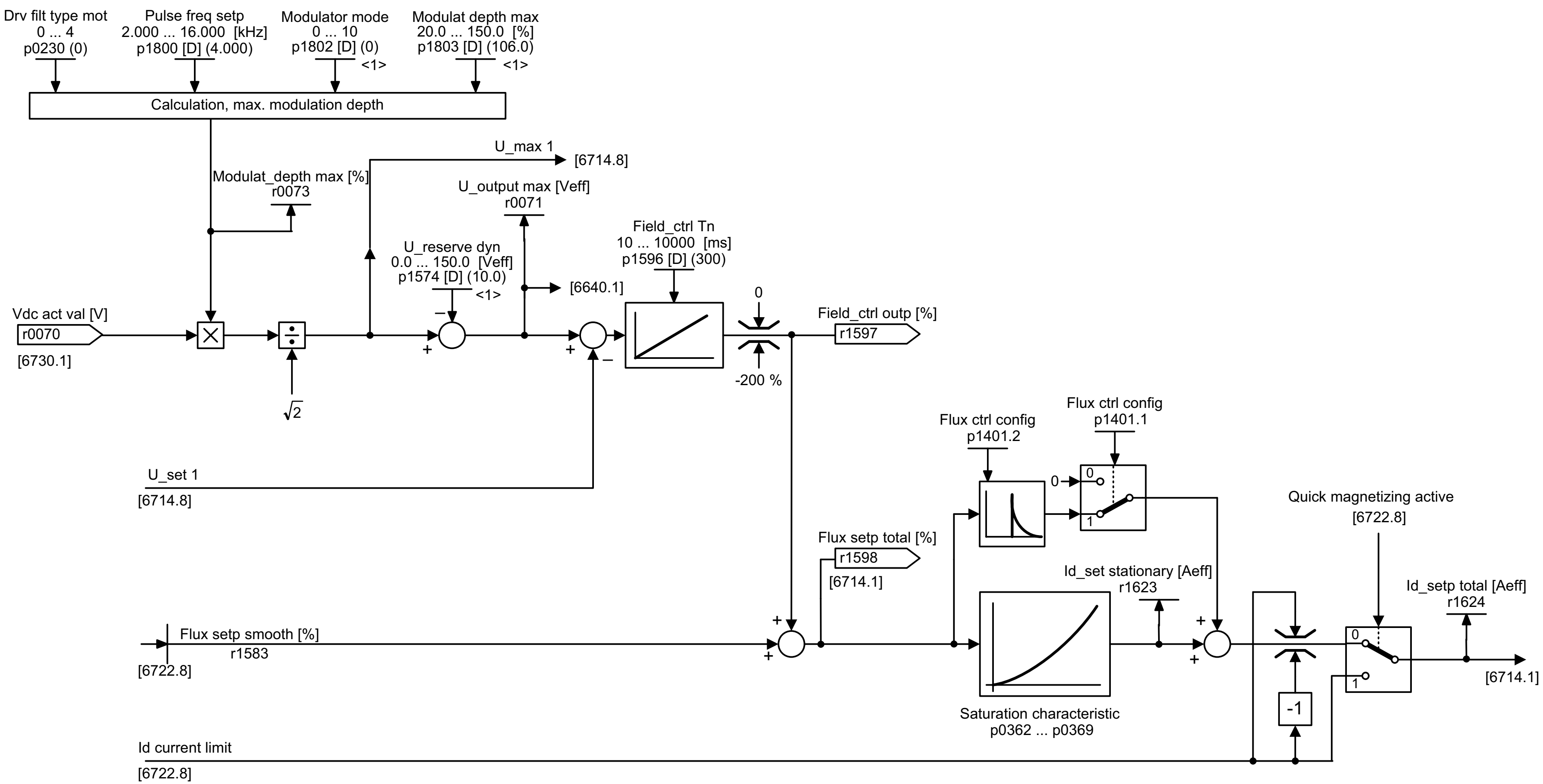


<1> Value range and/or factory setting depend on Power Module

ASM: Induction motor

1	2	3	4	5	6	7	8
Vector control					FP_6722_97_02.vsd	Function diagram	- 6722 -
Field weakening characteristic, Id setpoint (ASM, p0300 = 1)					13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-97 6723 – Field weakening controller, flux controller (ASM, p0300 = 1)



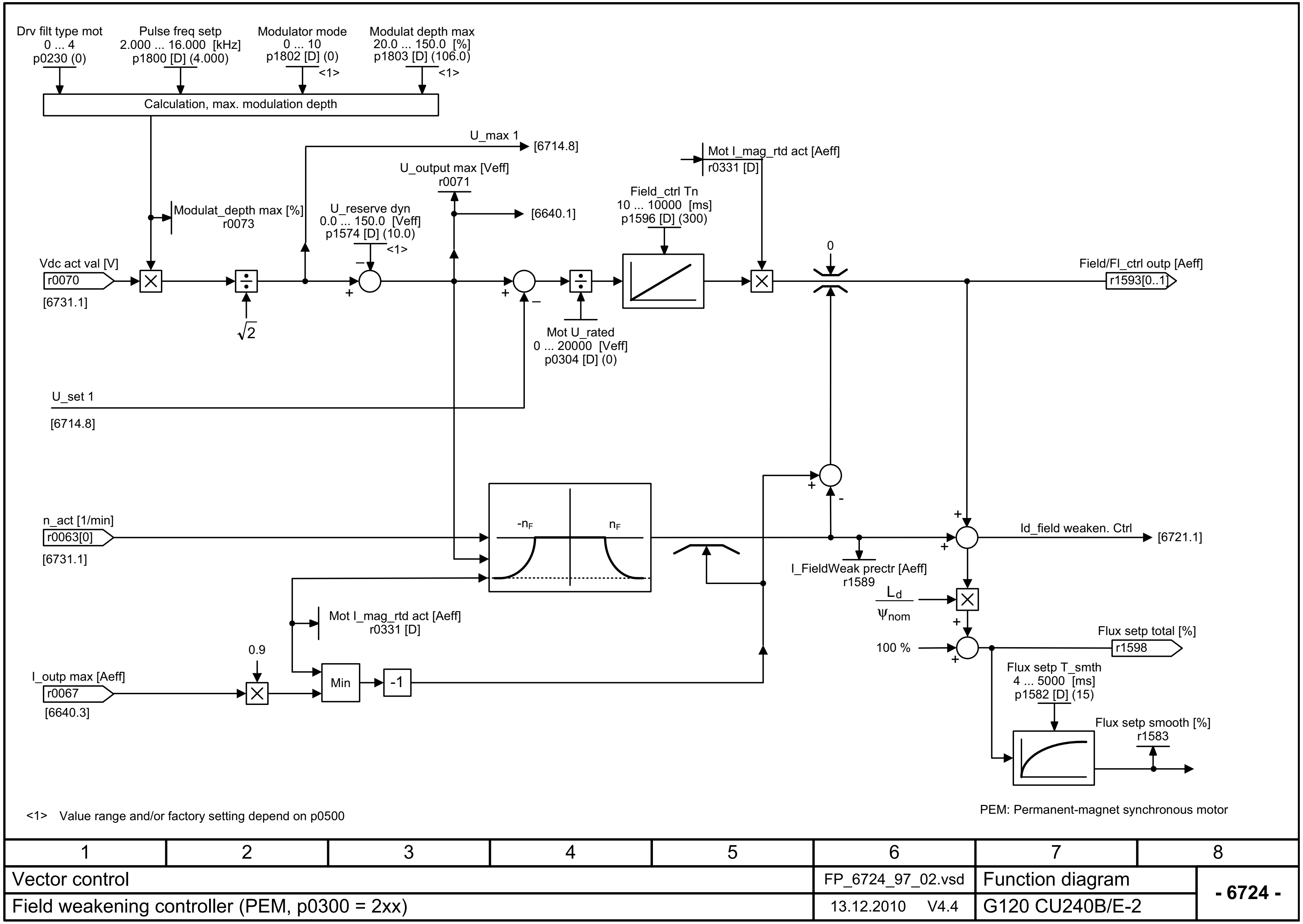
<1> Value range and/or factory setting depend on p0500

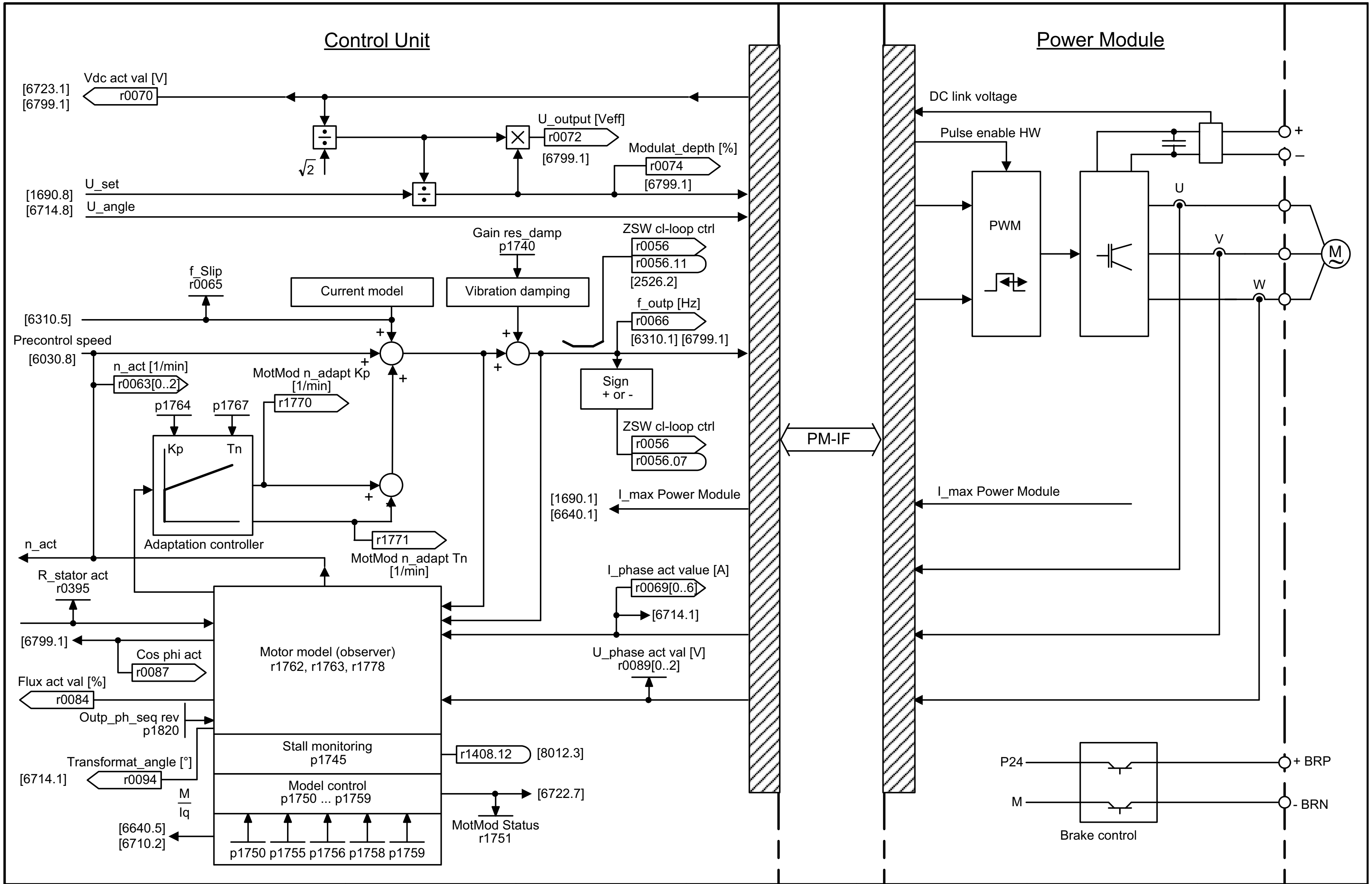
ASM: Induction motor

1	2	3	4	5	6	7	8

Vector control	FP_6723_97_02.vsd	Function diagram	- 6723 -
Field weakening controller, flux controller (ASM, p0300 = 1)	13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-98 6724 – Field weakening controller (PEM, p0300 = 2xx)

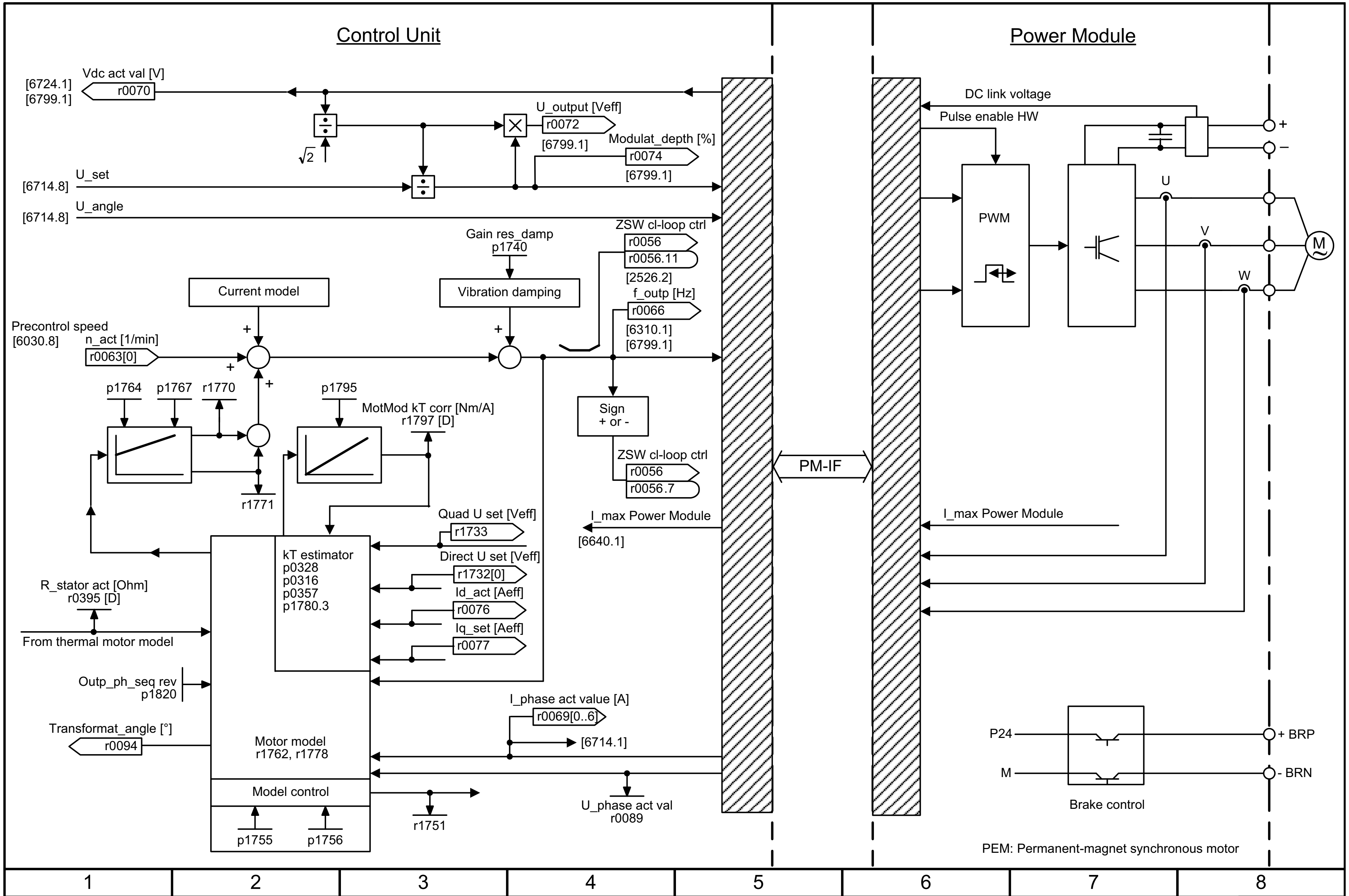




Vector control	FP_6730_97_54.vsd	Function diagram	- 6730 -
Interface to the Power Module (ASM, p0300 = 1)	13.12.2010 V4.4	G120 CU240B/E-2	

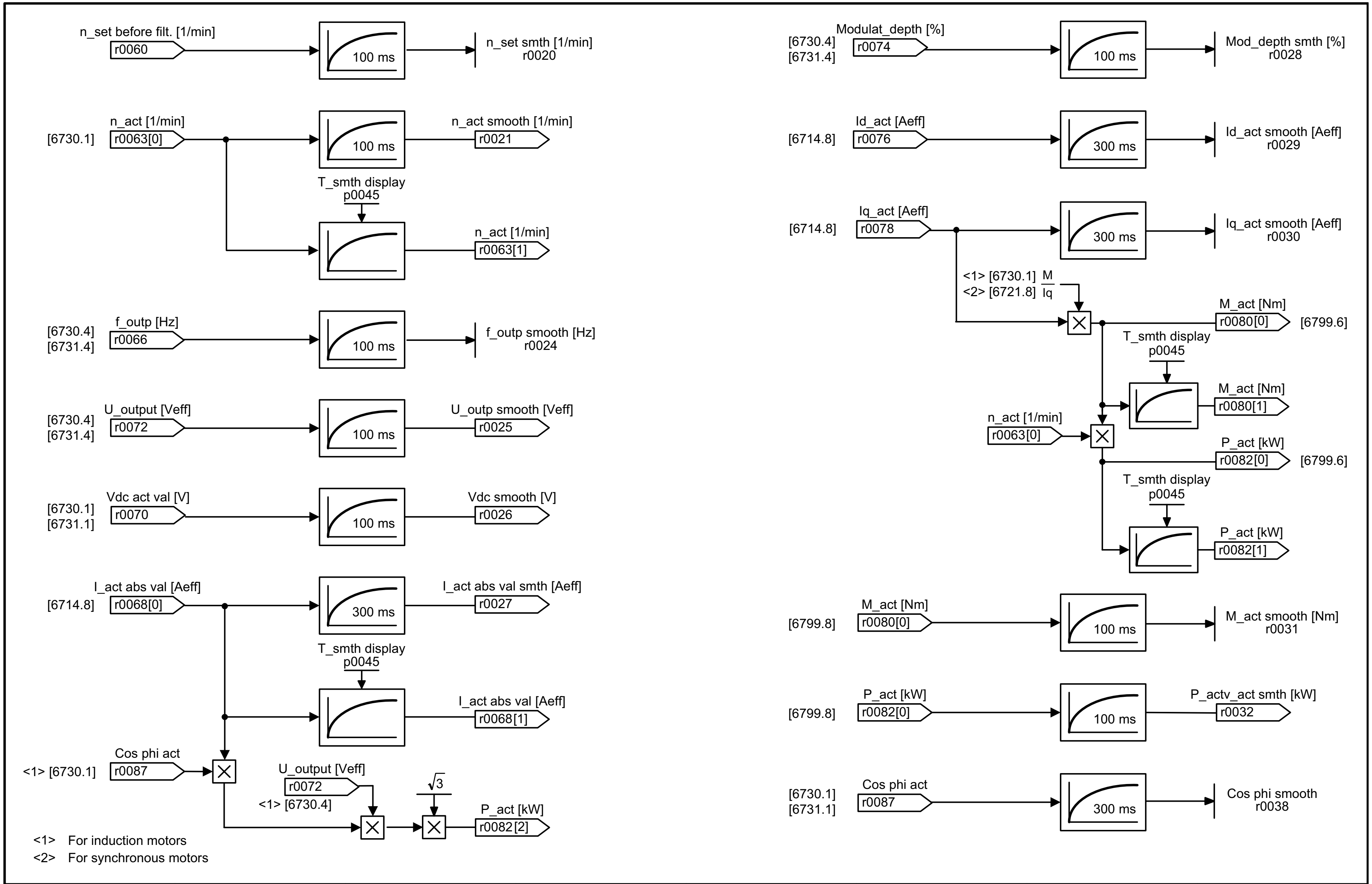
Fig. 2-99 6730 – Interface to the Power Module (ASM, p0300 = 1)

Fig. 2-100 6731 – Interface to the Power Module (PEM, p0300 = 2xx)



Vector control	FP_6731_97_51.vsd	Function diagram	- 6731 -
Interface to the Power Module (PEM, p0300 = 2xx)	13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-101 6799 – Display signals



1	2	3	4	5	6	7	8
Vector control					FP_6799_97_61.vsd	Function diagram	- 6799 -
Display signals					13.12.2010 V4.4	G120 CU240B/E-2	

2.12 Free Function Blocks

Function diagrams

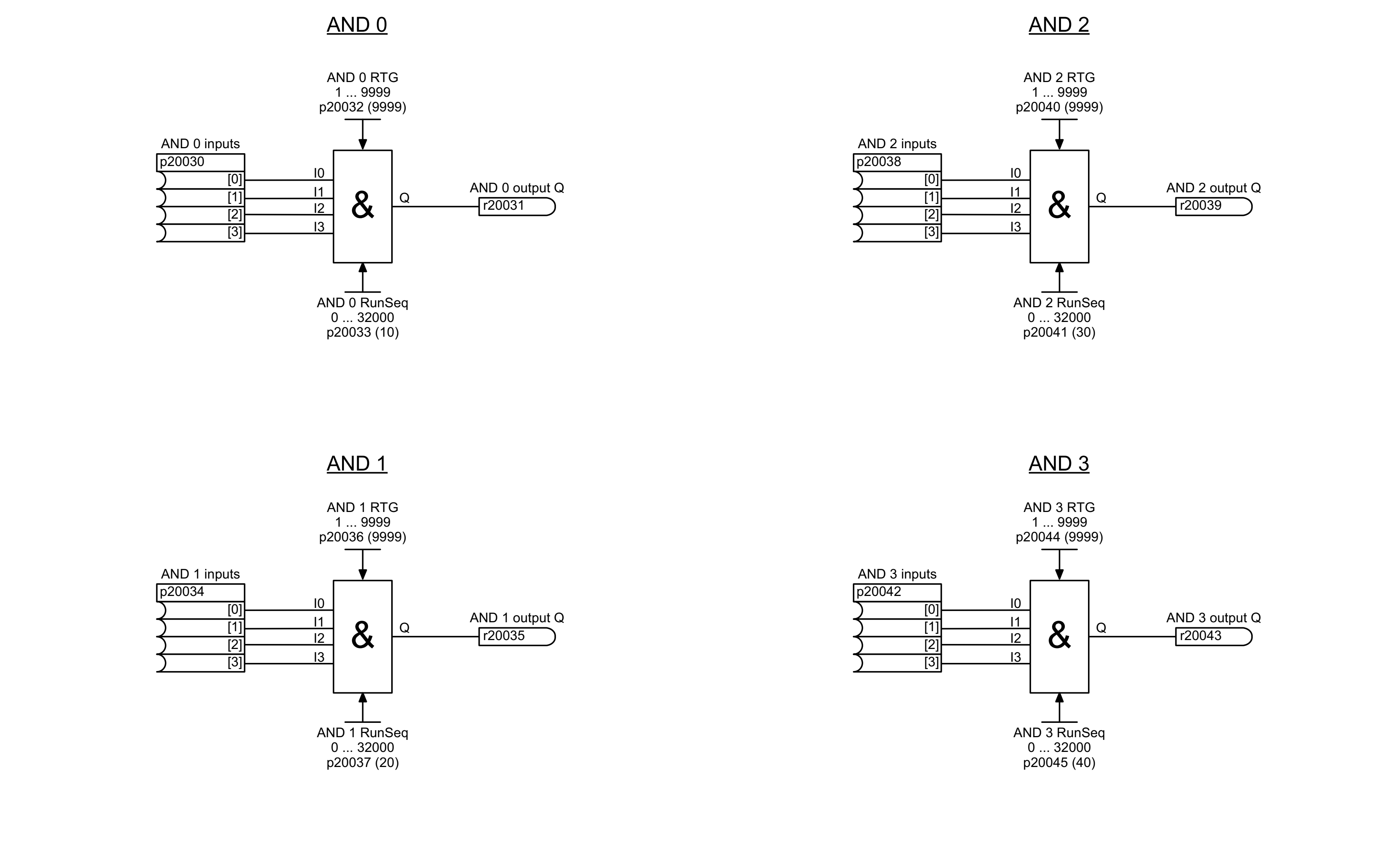
Fig. 2-102 7200 – Run-time groups / Sampling times

	Run-time group					
	1	2	3	4	5	6
	r20001[1] = 8 ms	r20001[2] = 16 ms	r20001[3] = 32 ms	r20001[4] = 64 ms	r20001[5] = 128 ms	r20001[6] = 256 ms
Logic function blocks AND, OR, XOR, NOT	X	X	X	X	X	X
Arithmetic function blocks ADD, SUB, MUL, DIV, AVA, NCM, PLI	-	-	-	-	X	X
Time function blocks MFP, PCL, PDE, PDF, PST	-	-	-	-	X	X
Memory function blocks RSR, DSR	X	X	X	X	X	X
Switch function block NSW	-	-	-	-	X	X
Switch function block BSW	X	X	X	X	X	X
Control function blocks LIM, PT1, INT, DIF	-	-	-	-	X	X
Complex function blocks LVM	-	-	-	-	X	X

→ RTG sampling time [ms]
r20001[0..9]

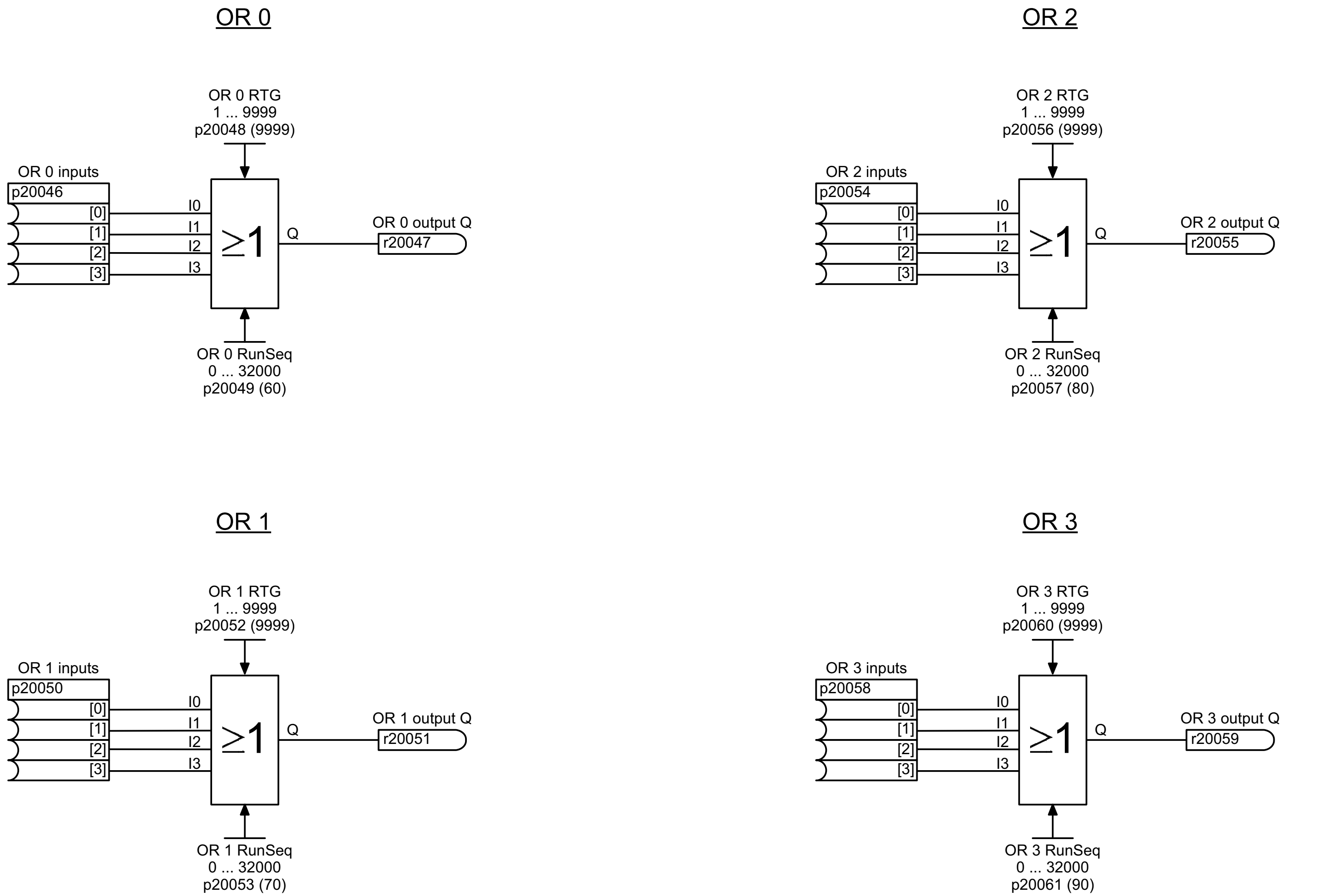
1	2	3	4	5	6	7	8

Free Function Blocks	FP_7200_97_51.vsd	Function diagram	- 7200 -
Run-time groups / Sampling times	13.12.2010 V4.4	G120 CU240B/E-2	



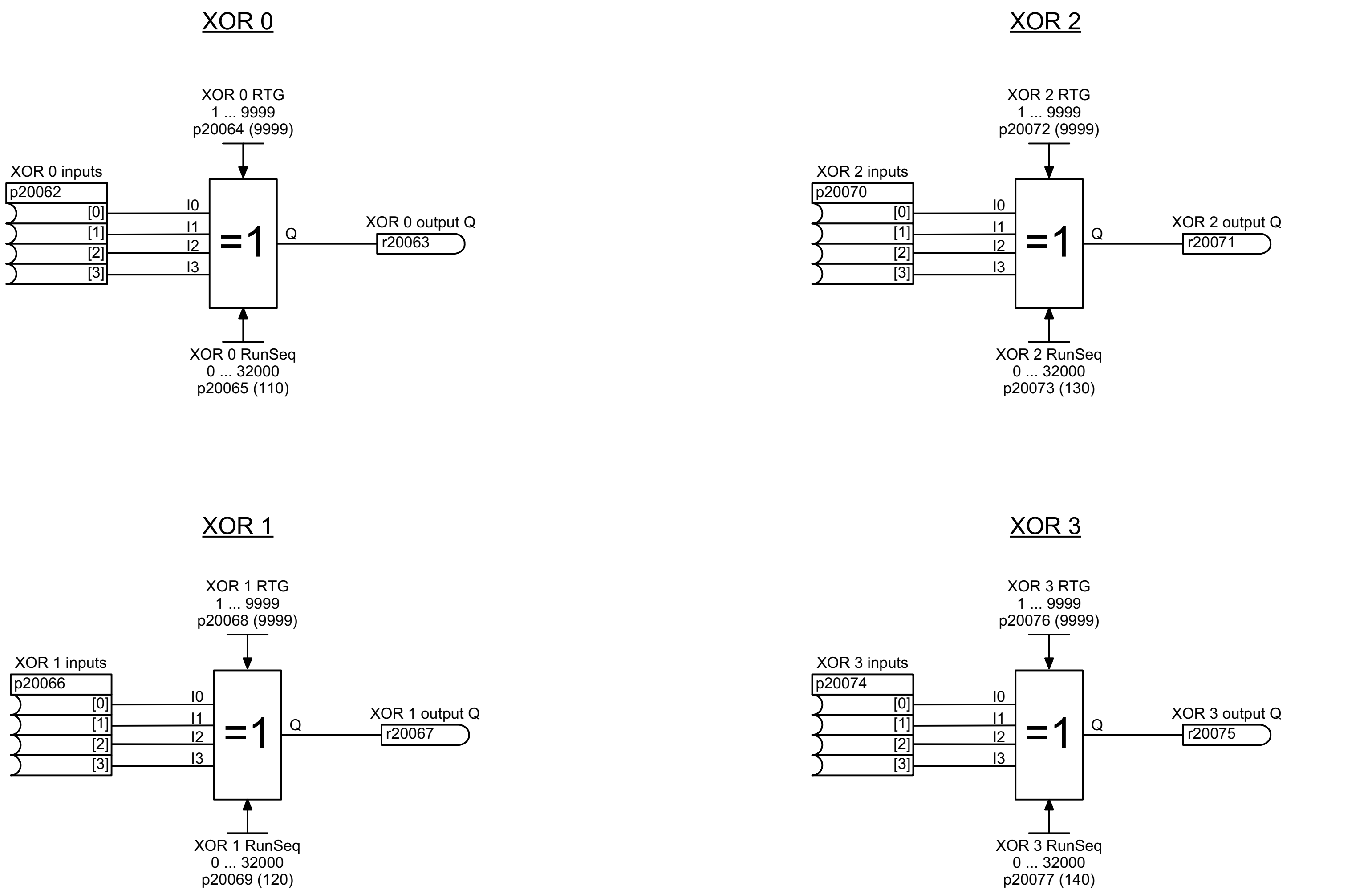
1	2	3	4	5	6	7	8
Logic function blocks					FP_7210_97_51.vsd	Function diagram	- 7210 -
AND (AND function block with 4 inputs)					13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-103 7210 – AND (AND function block with 4 inputs)



1	2	3	4	5	6	7	8
Logic function blocks					FP_7212_97_51.vsd	Function diagram	- 7212 -
OR (OR function block with 4 inputs)					13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-104 7212 – OR (OR function block with 4 inputs)

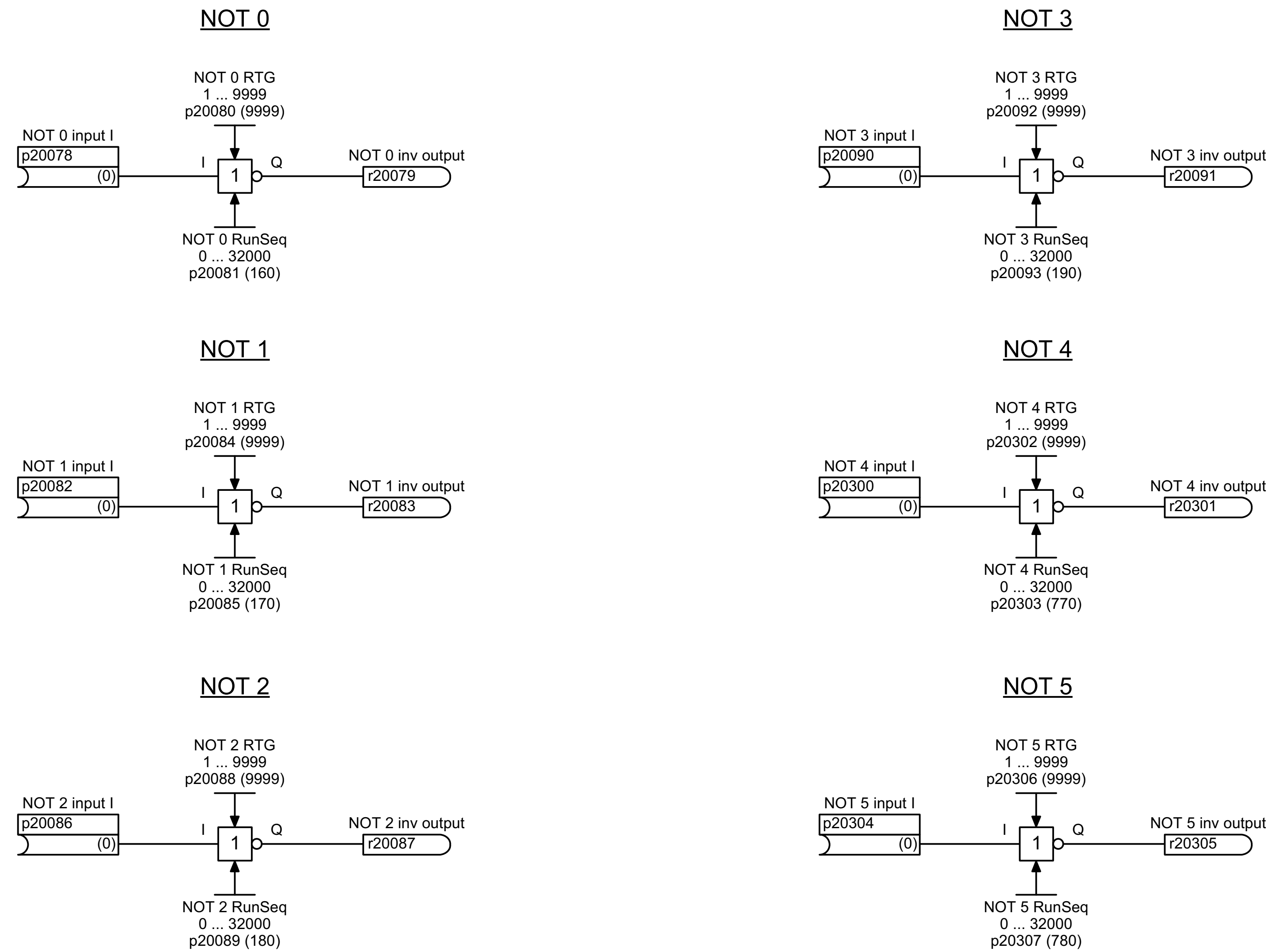


1	2	3	4	5	6	7	8

Logic function blocks	FP_7214_97_51.vsd	Function diagram	- 7214 -
XOR (XOR function block with 4 inputs)	13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-105 7214 – XOR (XOR function block with 4 inputs)

Fig. 2-106 7216 – NOT (inverter)



1	2	3	4	5	6	7	8
Logic function blocks					FP_7216_97_51.vsd	Function diagram	- 7216 -
NOT (inverter)					13.12.2010 V4.4	G120 CU240B/E-2	

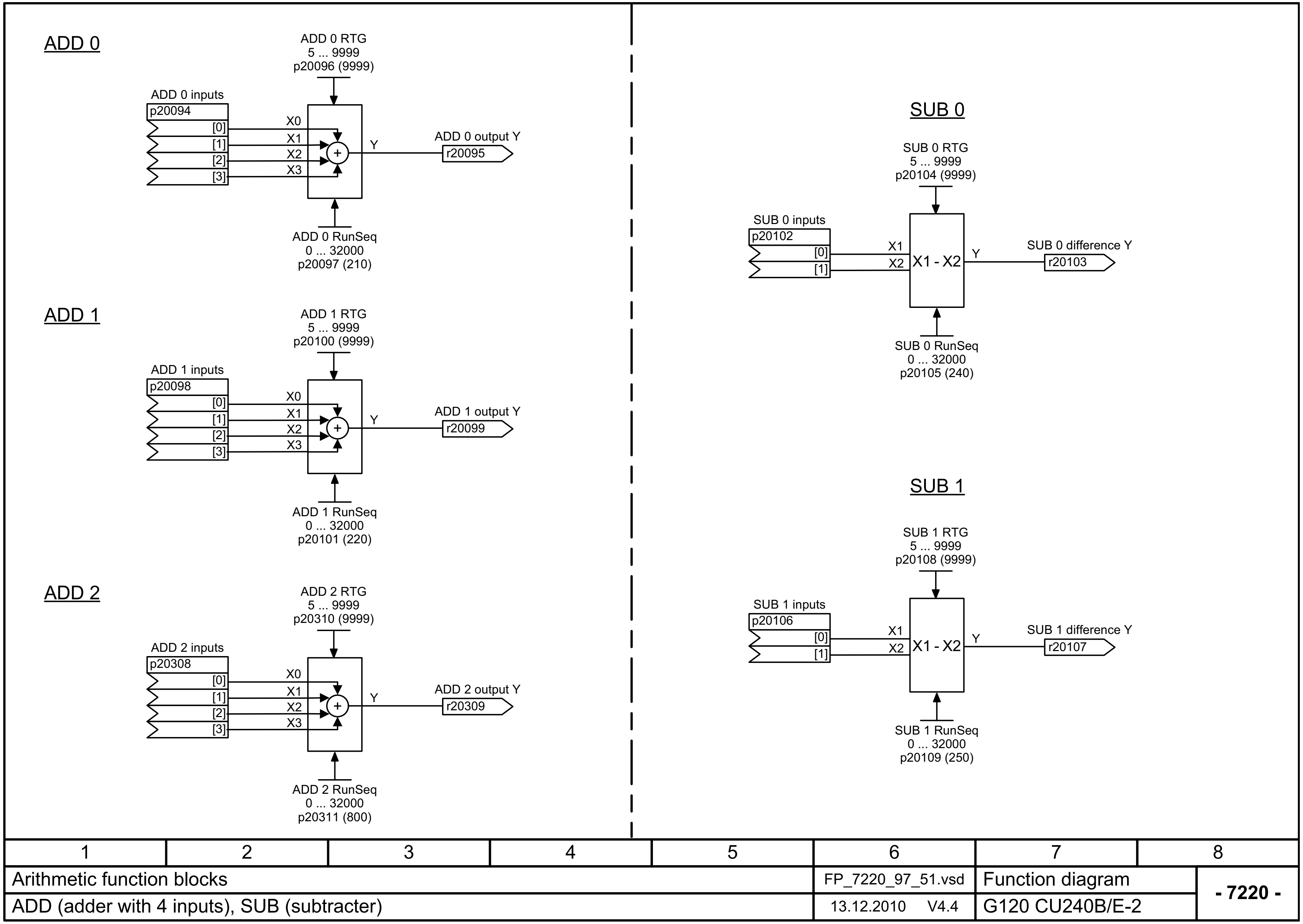
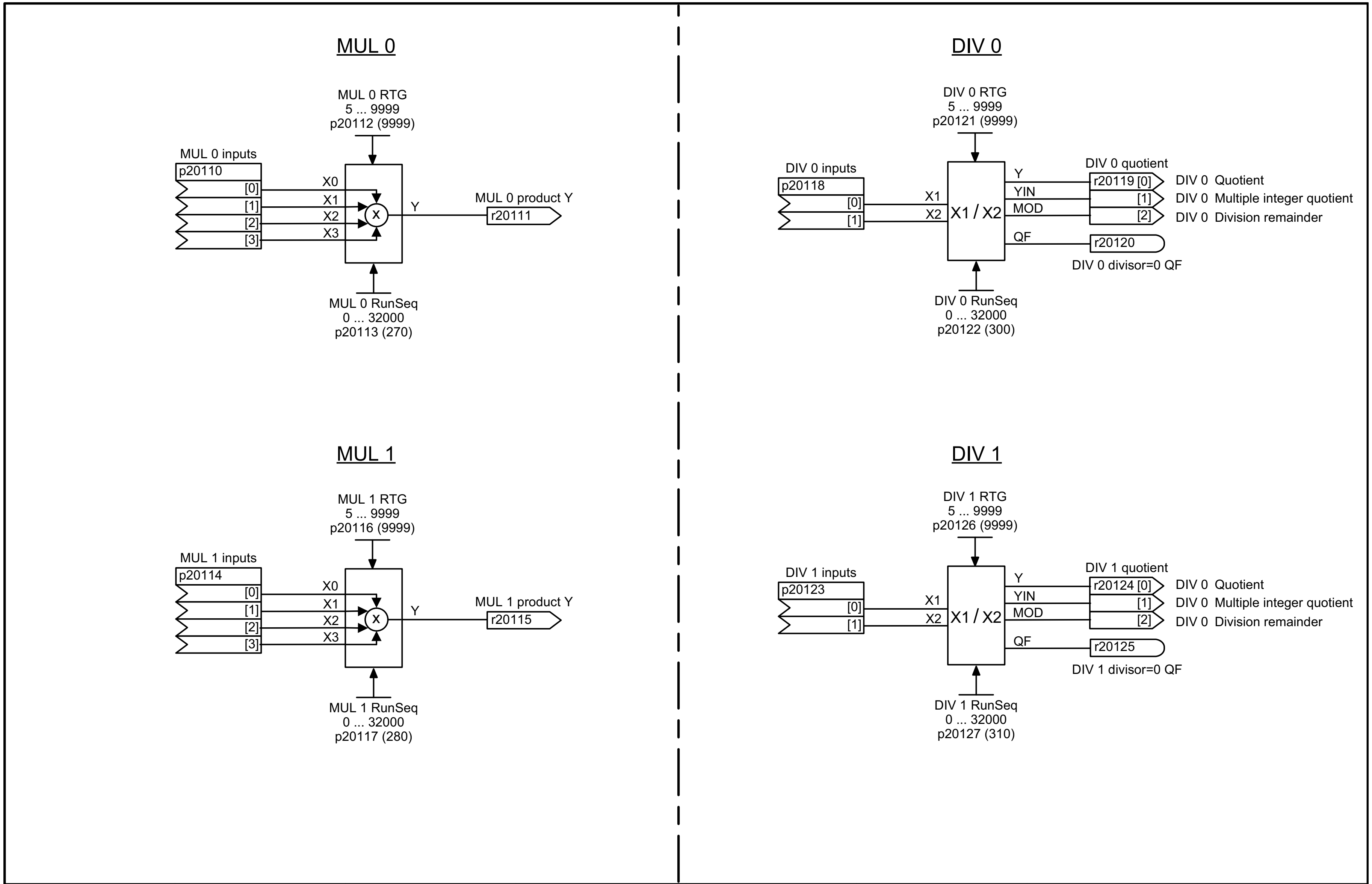
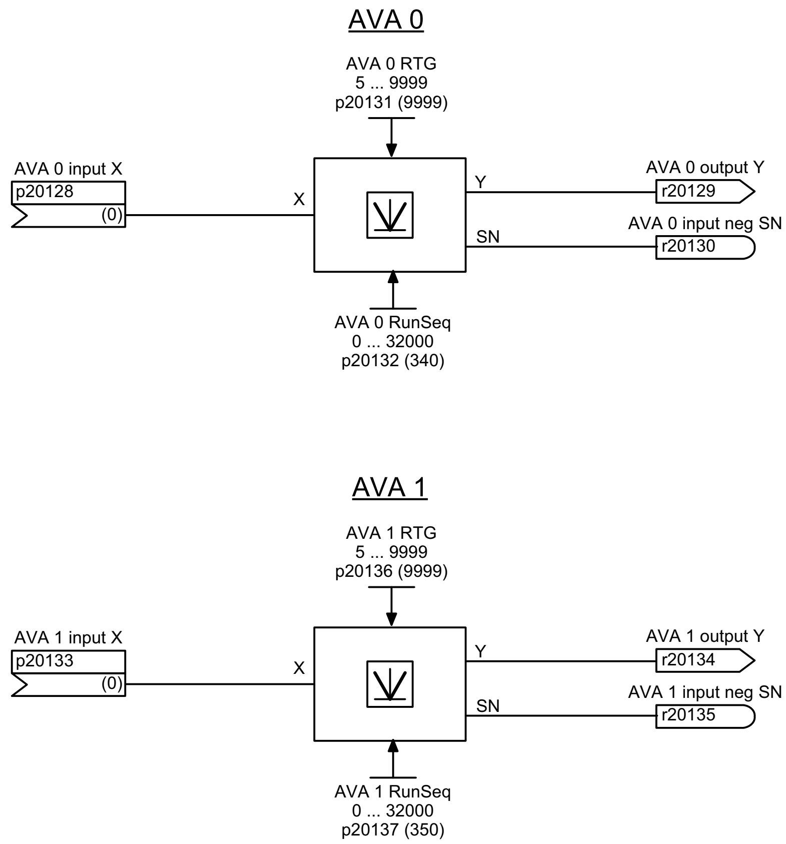


Fig. 2-107 7220 – ADD (adder with 4 inputs), SUB (subtracter)

Fig. 2-108 7222 – MUL (multiplier), DIV (divider)

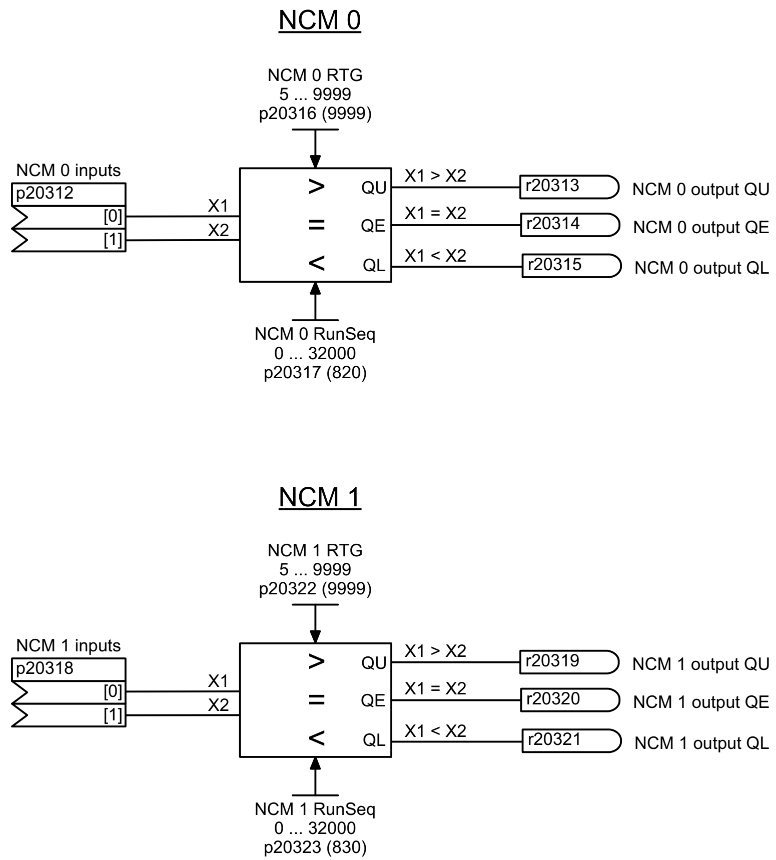


1	2	3	4	5	6	7	8
Arithmetic function blocks					FP_7222_97_51.vsd	Function diagram	- 7222 -
MUL (multiplier), DIV (divider)					13.12.2010 V4.4	G120 CU240B/E-2	



1	2	3	4	5	6	7	8
Arithmetic function blocks					FP_7224_97_51.vsd	Function diagram	- 7224 -
AVA (absolute value generators)					13.12.2010 V4.4	G120 CU240B/E-2	

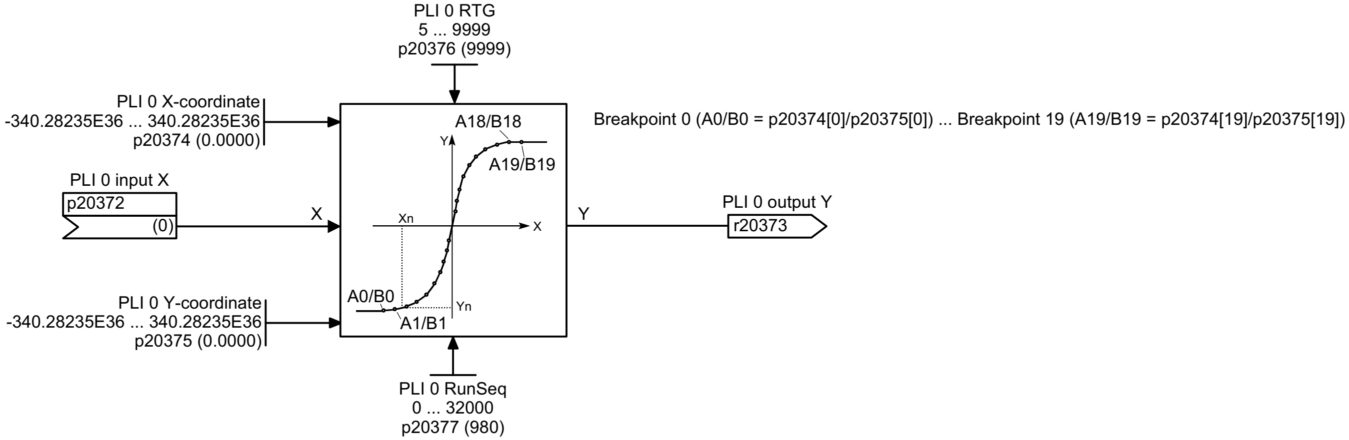
Fig. 2-109 7224 – AVA (absolute value generators)



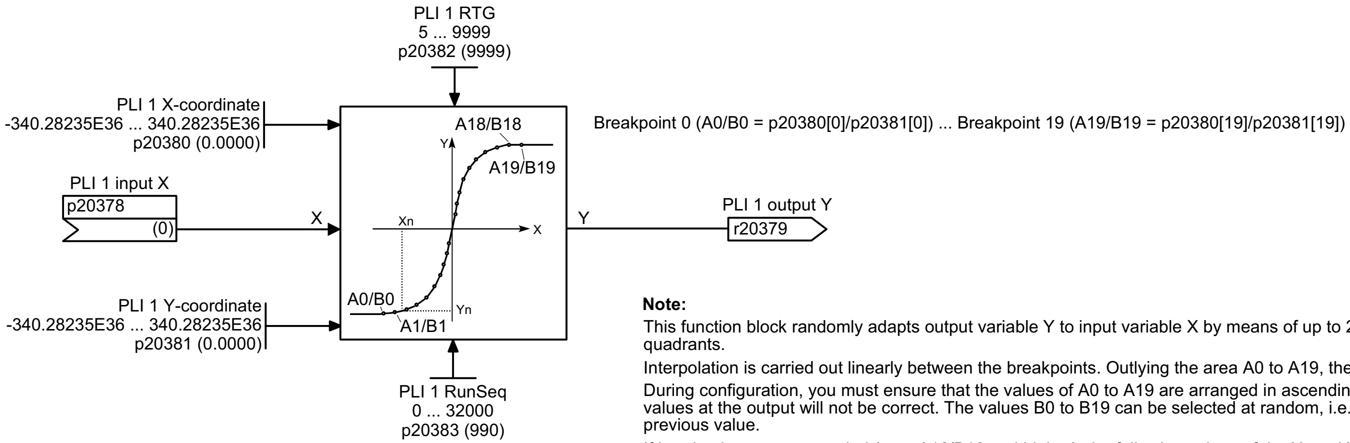
1	2	3	4	5	6	7	8
Arithmetic function blocks					FP_7225_97_51.vsd	Function diagram	- 7225 -
NCM (numerical comparator)					13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-110 7225 – NCM (numerical comparator)

PLI 0



PLI 1



Note:

This function block randomly adapts output variable Y to input variable X by means of up to 20 breakpoints in 4 quadrants.

Interpolation is carried out linearly between the breakpoints. Outlying the area A0 to A19, the characteristic curve runs horizontally.

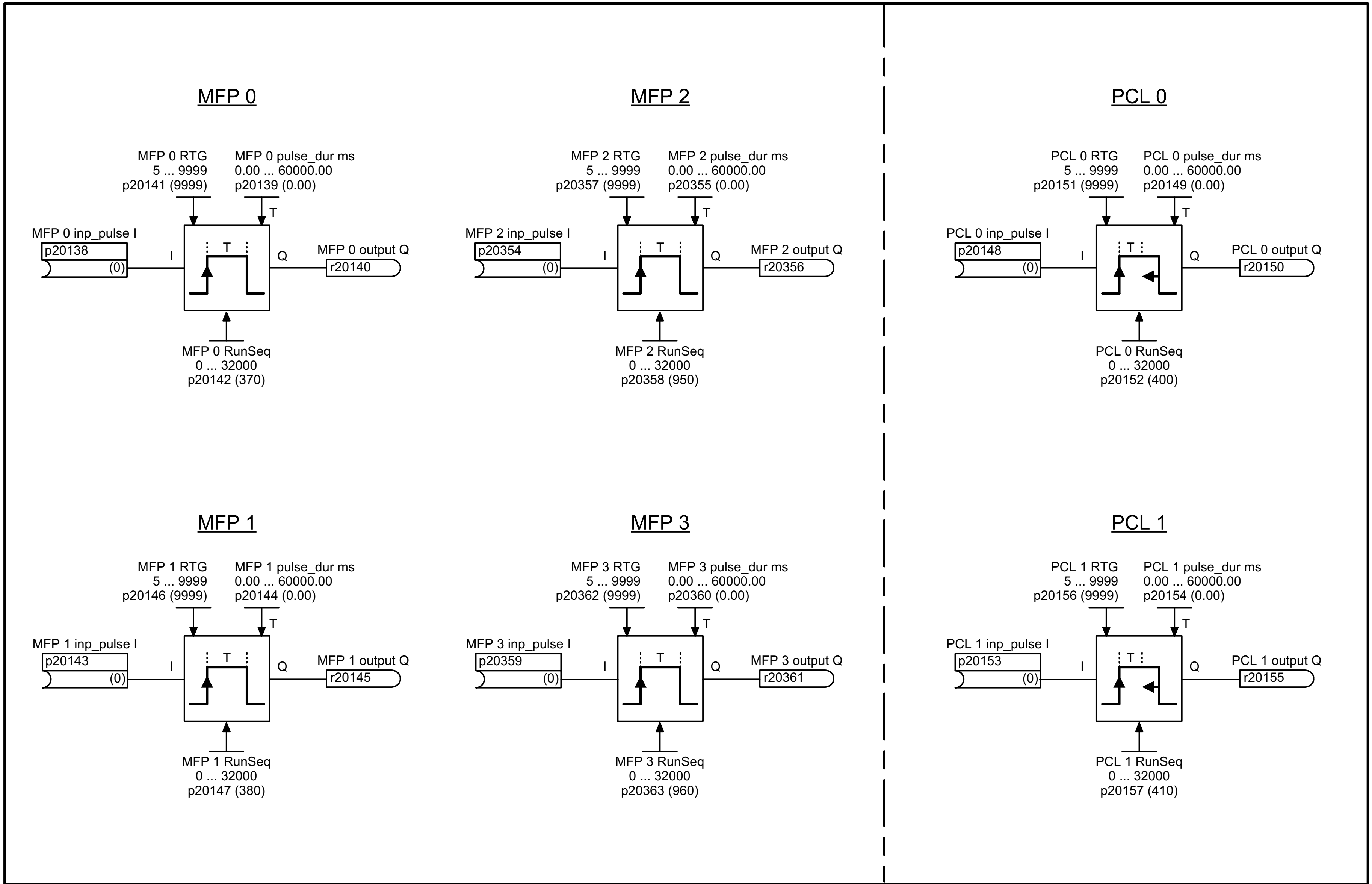
During configuration, you must ensure that the values of A0 to A19 are arranged in ascending order. Otherwise the values at the output will not be correct. The values B0 to B19 can be selected at random, i.e., independently of the previous value.

If breakpoints are not needed (e.g., A16/B16 and higher), the following values of the X- and Y-coordinates (A16/B16 to A19/B19) must be assigned the same values as A15/B15.

1	2	3	4	5	6	7	8
Arithmetic function blocks					FP_7226_97_51.vsd	Function diagram	- 7226 -
PLI (scaling polyline)					13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-111 7226 – PLI (scaling polyline)

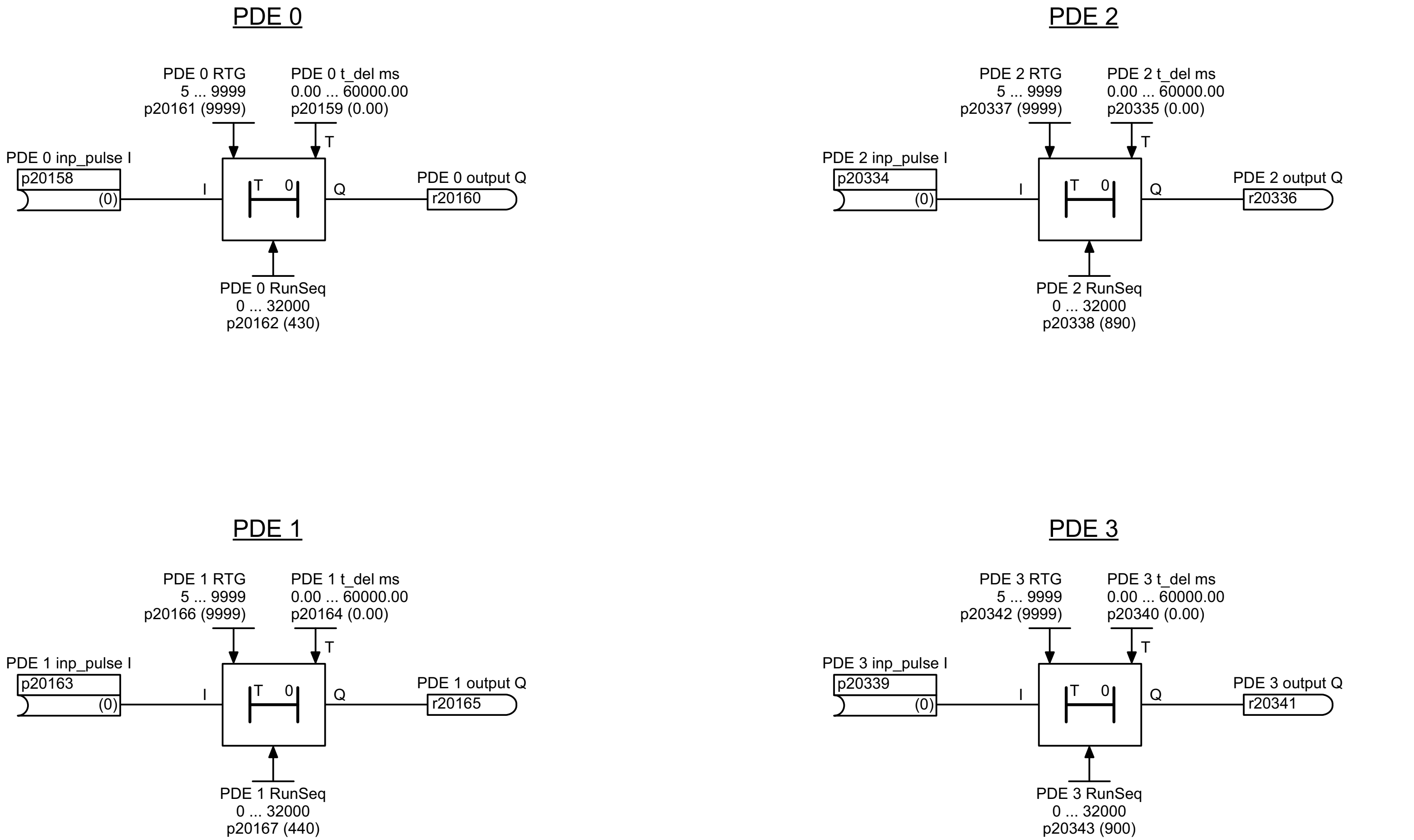
Fig. 2-112 7230 – MFP (pulse generator), PCL (pulse shortener)



1	2	3	4	5	6	7	8

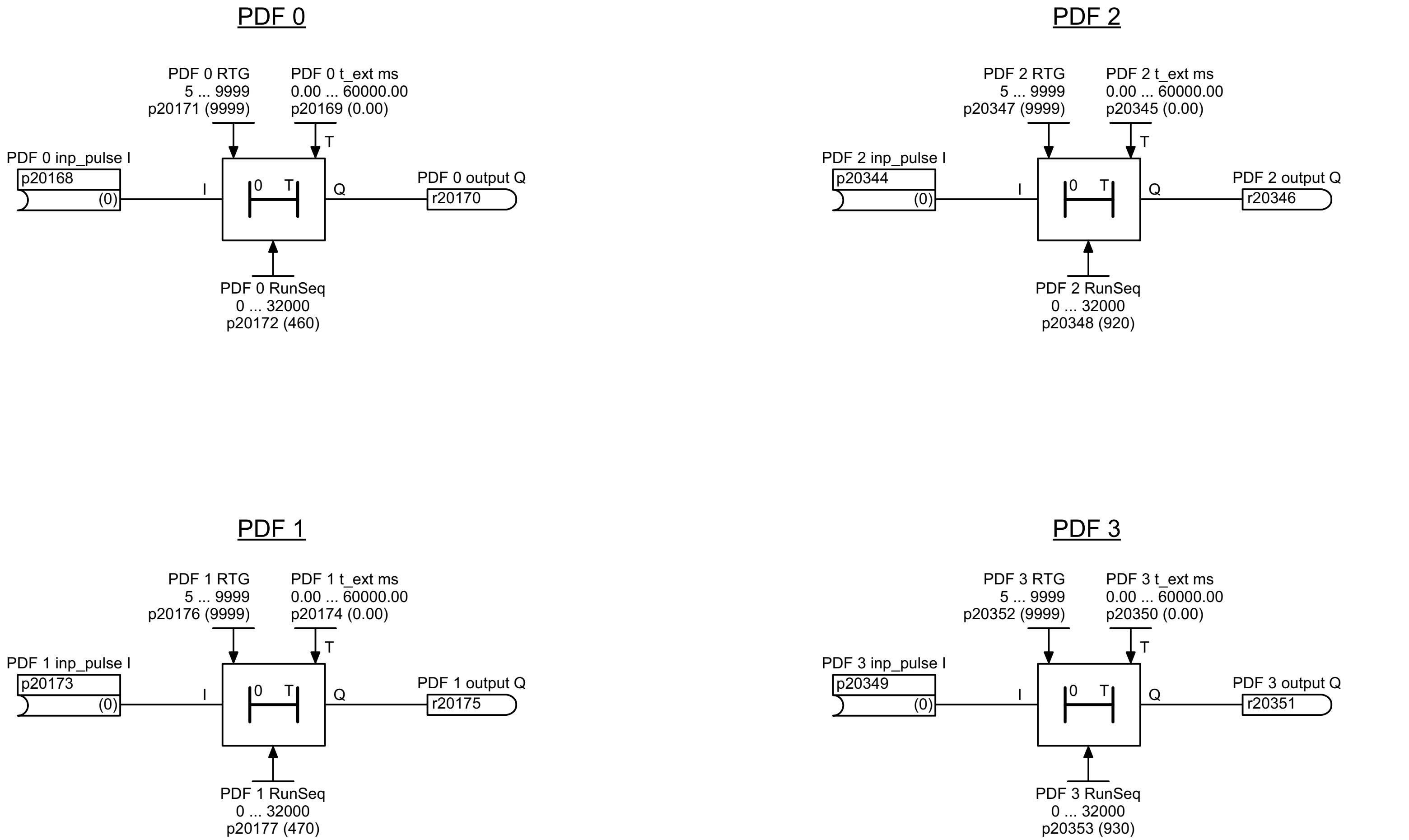
Time function blocks	FP_7230_97_51.vsd	Function diagram	- 7230 -
MFP (pulse generator), PCL (pulse shortener)	13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-113 7232 – PDE (switch-in delay)

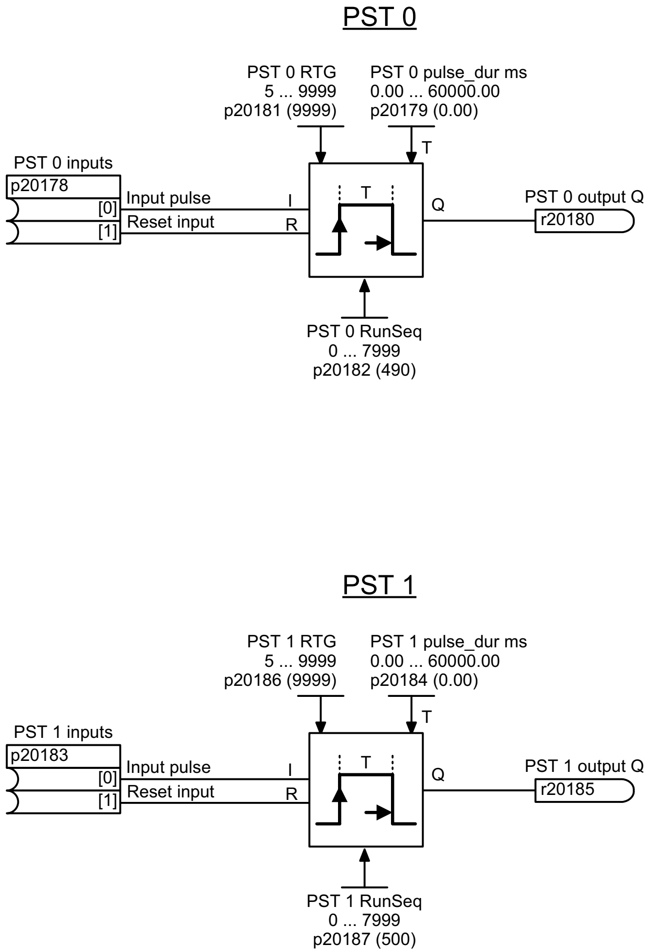


1	2	3	4	5	6	7	8
Time function blocks					FP_7232_97_51.vsd	Function diagram	- 7232 -
PDE (switch-in delay)					13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-114 7233 – PDF (switch-out delay)

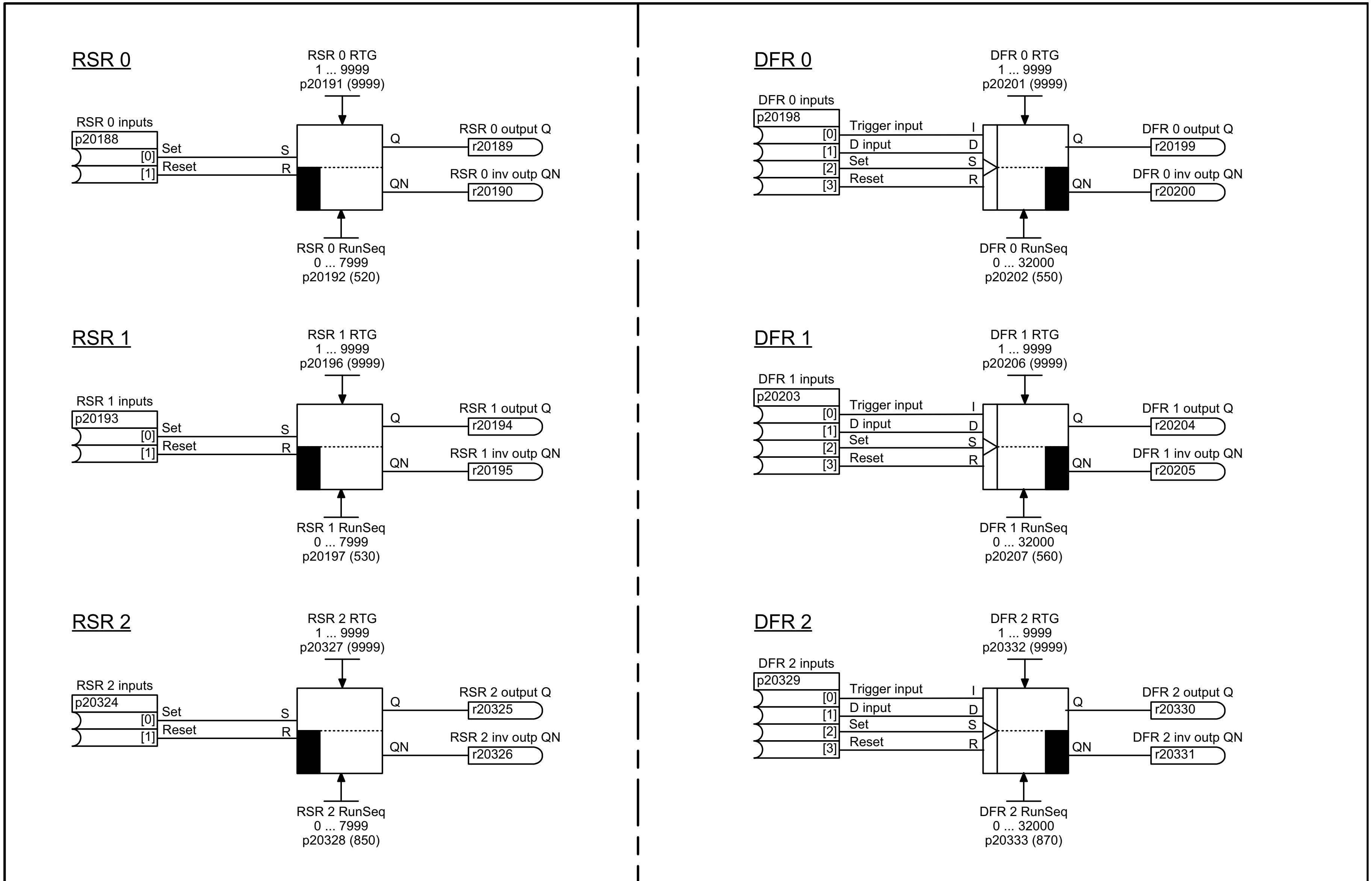


1	2	3	4	5	6	7	8
Time function blocks					FP_7233_97_51.vsd	Function diagram	- 7233 -
PDF (switch-out delay)					13.12.2010 V4.4	G120 CU240B/E-2	



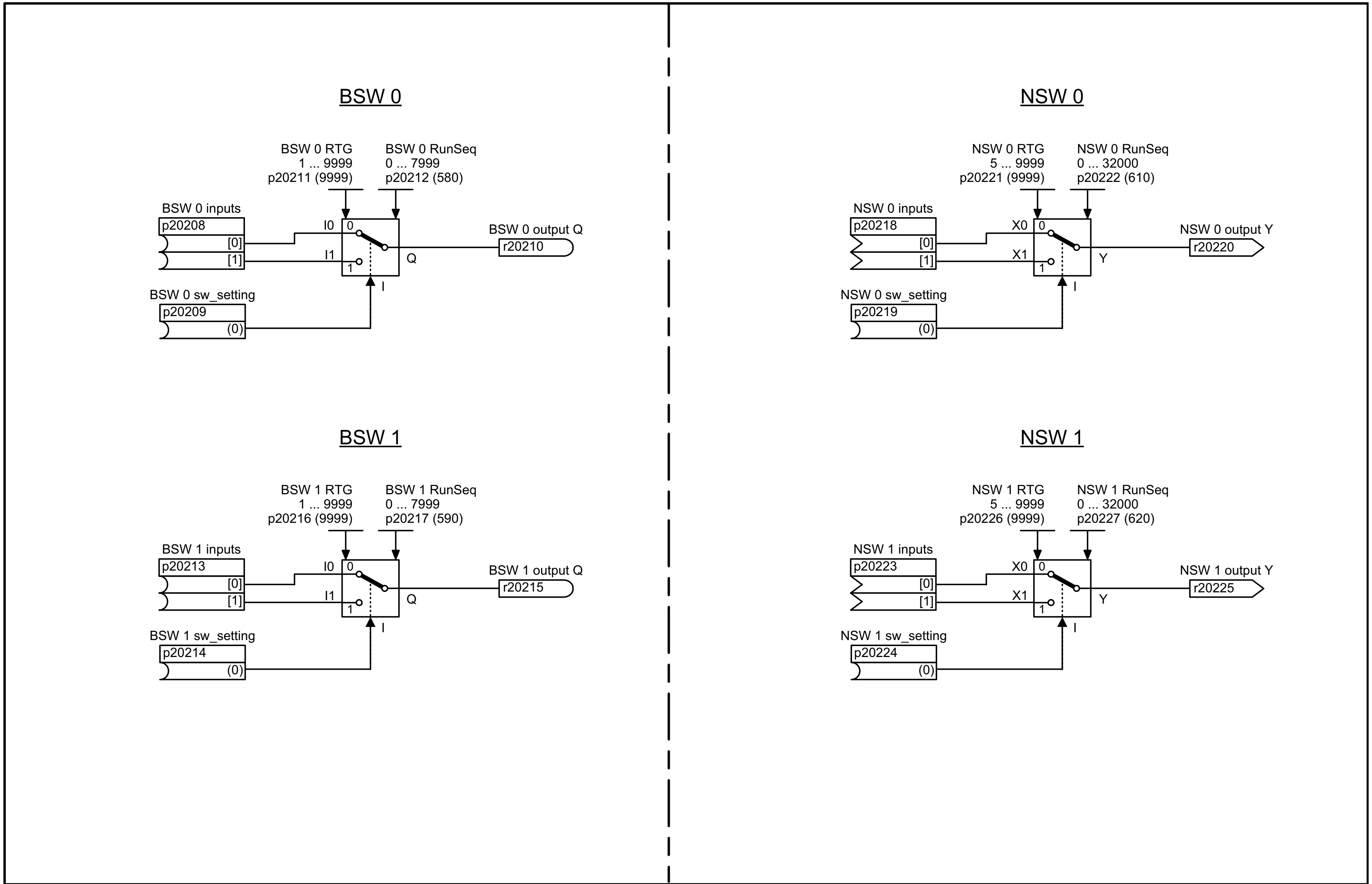
1	2	3	4	5	6	7	8
Time function blocks					FP_7234_97_51.vsd	Function diagram	- 7234 -
PST (pulse extender)					13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-115 7234 – PST (pulse extender)



1	2	3	4	5	6	7	8
Flipflop function blocks					FP_7240_97_51.vsd	Function diagram	- 7240 -
RSR (RS flipflop), DFR (D flipflop)					13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-116 7240 – RSR (RS flipflop), DFR (D flipflop)

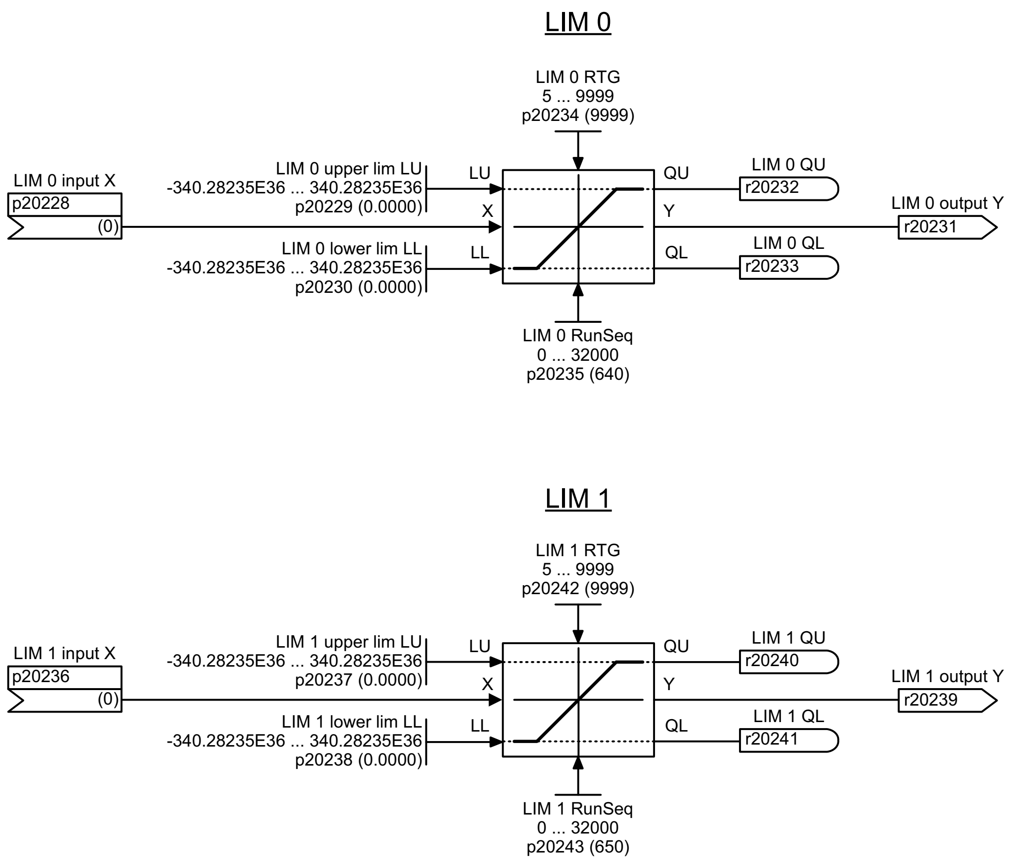


1	2	3	4	5	6	7	8

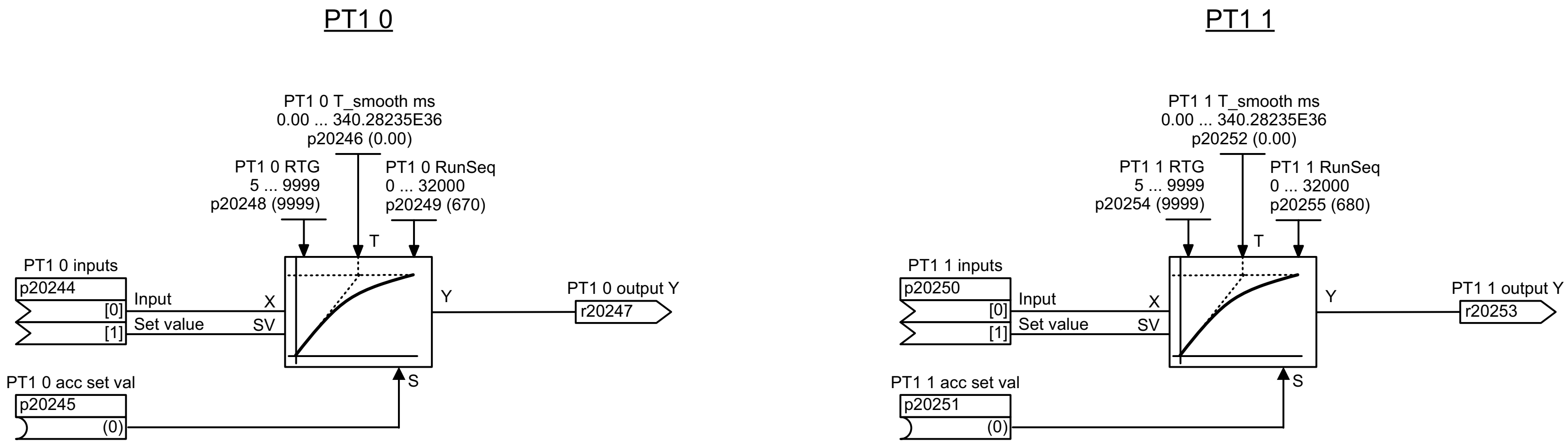
Switch function blocks	FP_7250_97_51.vsd	Function diagram	- 7250 -
BSW (binary changeover switch), NSW (numerical changeover switch)	13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-117 7250 – BSW (binary changeover switch), NSW (numerical changeover switch)

Fig. 2-118 7260 – LIM (limiter)



1	2	3	4	5	6	7	8
Control function blocks					FP_7260_97_51.vsd	Function diagram	- 7260 -
LIM (limiter)					13.12.2010 V4.4	G120 CU240B/E-2	

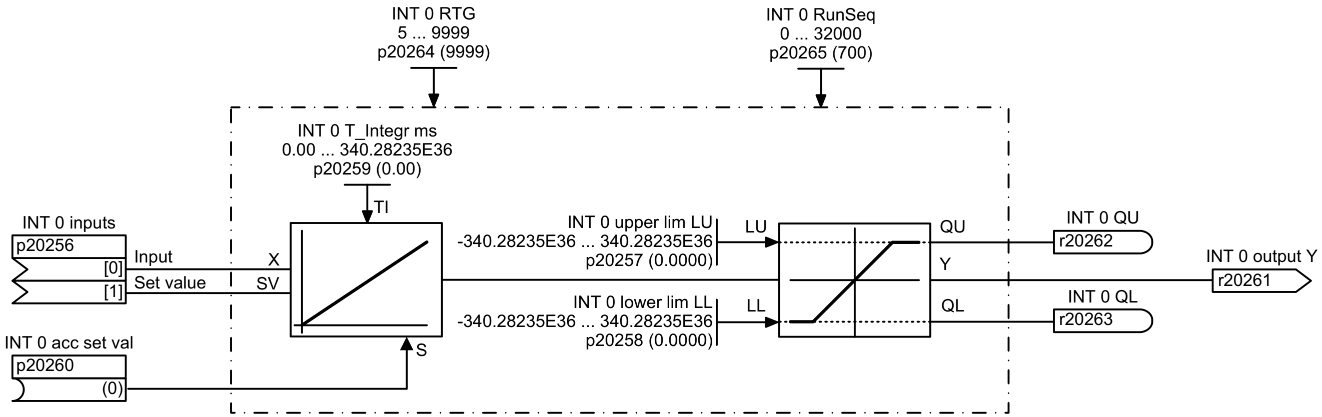


1	2	3	4	5	6	7	8
Control function blocks					FP_7262_97_51.vsd	Function diagram	- 7262 -
PT1 (smoothing element)					13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-119 7262 – PT1 (smoothing element)

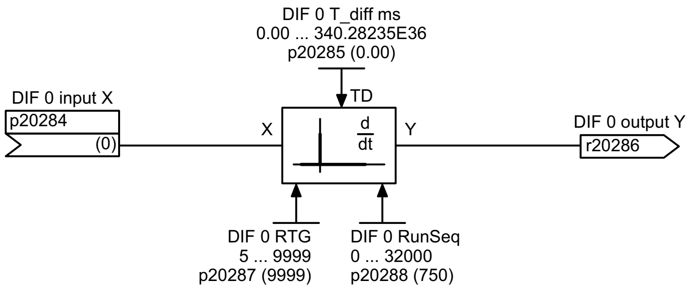
Fig. 2-120 7264 – INT (integrator), DIF (differentiating element)

INT 0



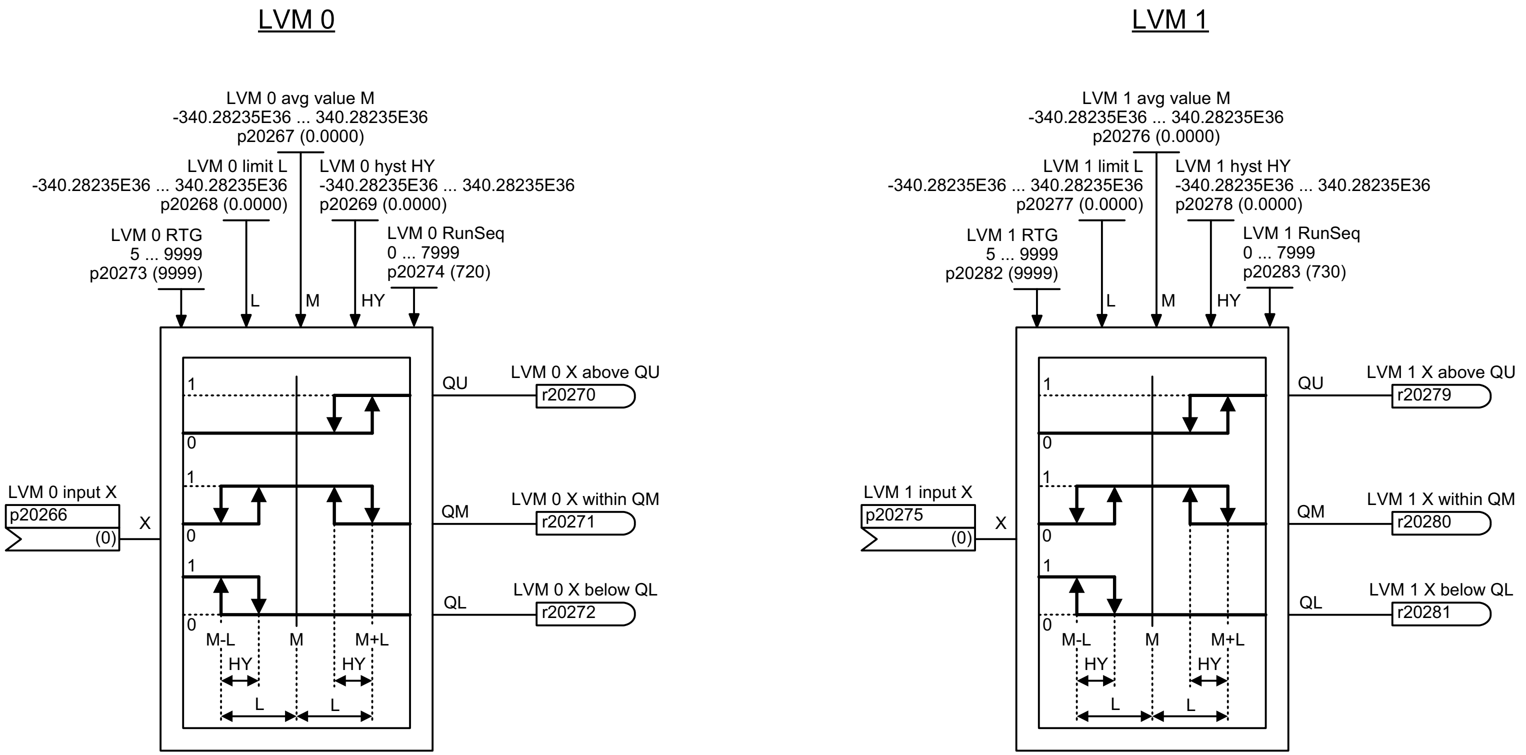
Integrating algorithm: Y(n) = Y(n-1) + (T_sample / Ti) * X(n)

DIF 0



Differentiating algorithm: Y(n) = (X(n) - X(n-1)) * (TD / T_sample)

1	2	3	4	5	6	7	8
Control function blocks					FP_7264_97_51.vsd	Function diagram	- 7264 -
INT (integrator), DIF (differentiating element)					13.12.2010 V4.4	G120 CU240B/E-2	



1	2	3	4	5	6	7	8

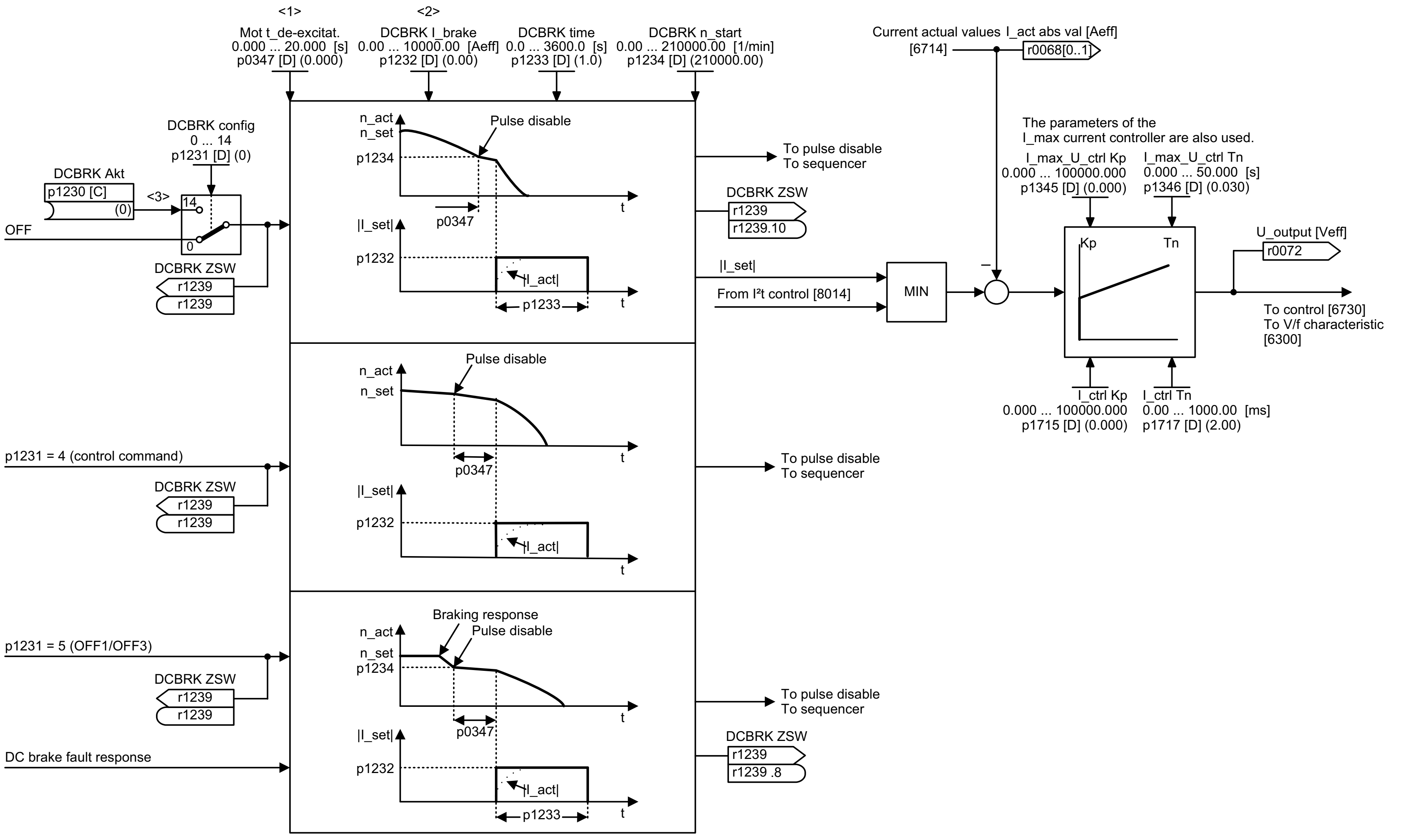
Complex function blocks	FP_7270_97_51.vsd	Function diagram	- 7270 -
LVM (limit value monitor, double-sided with hysteresis)	13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-121 7270 – LVM (limit value monitor)

2.13 Technology functions

Function diagrams

Fig. 2-122 7017 – DC brake (p0300 = 1)

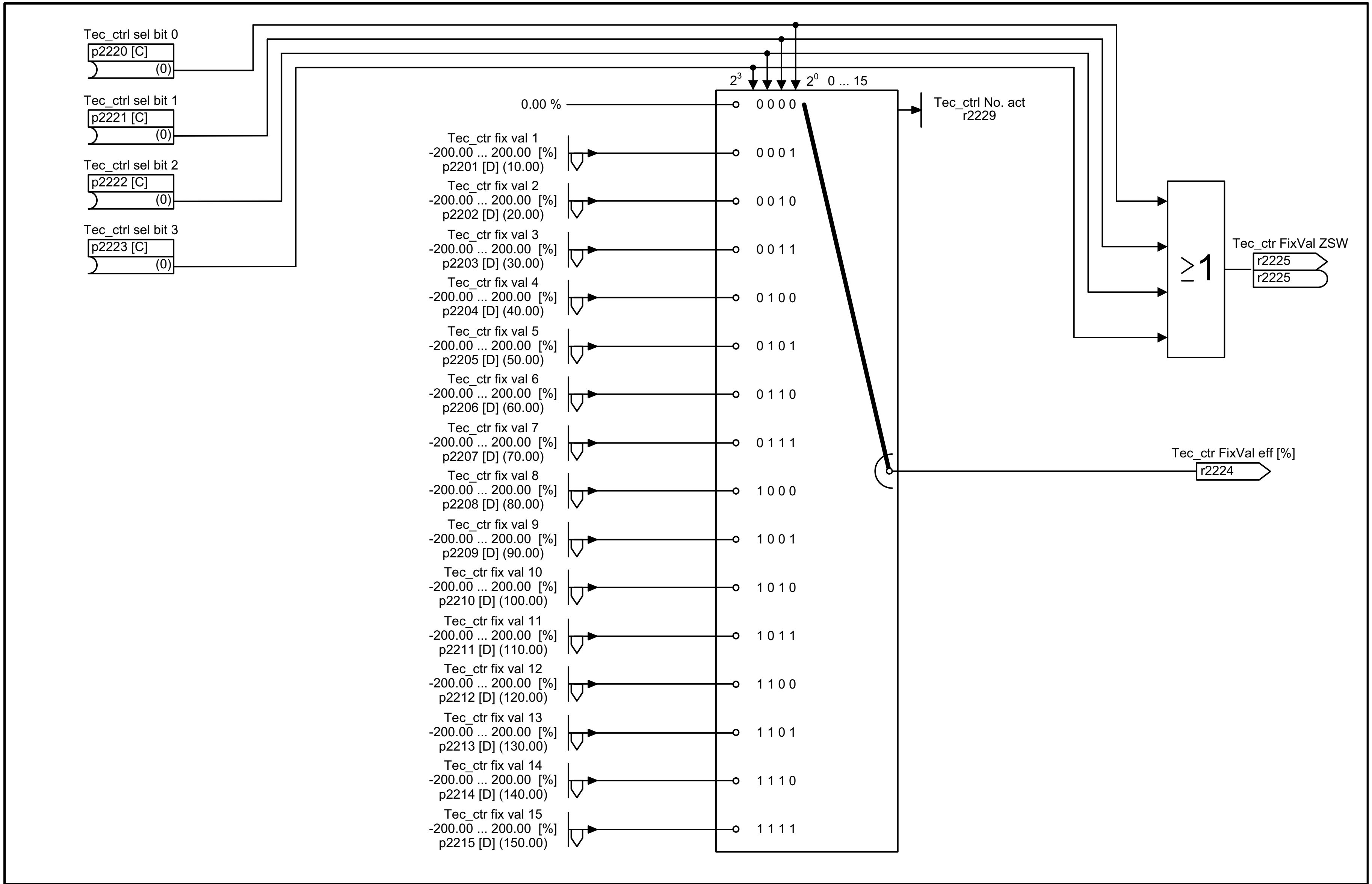


<1> The de-magnetization time is determined during automatic calculation (p0340 = 1, 3).
<2> The DC braking current is determined during automatic calculation (p0340 = 1).
<3> DC braking when starting speed for DC braking (p1234) is fallen below.

1	2	3	4	5	6	7	8
Technology functions					FP_7017_97_54.vsd	Function diagram	- 7017 -
DC brake (p0300 = 1)					13.12.2010 V4.4	G120 CU240B/E-2	

2.14 Technology controller

Function diagrams

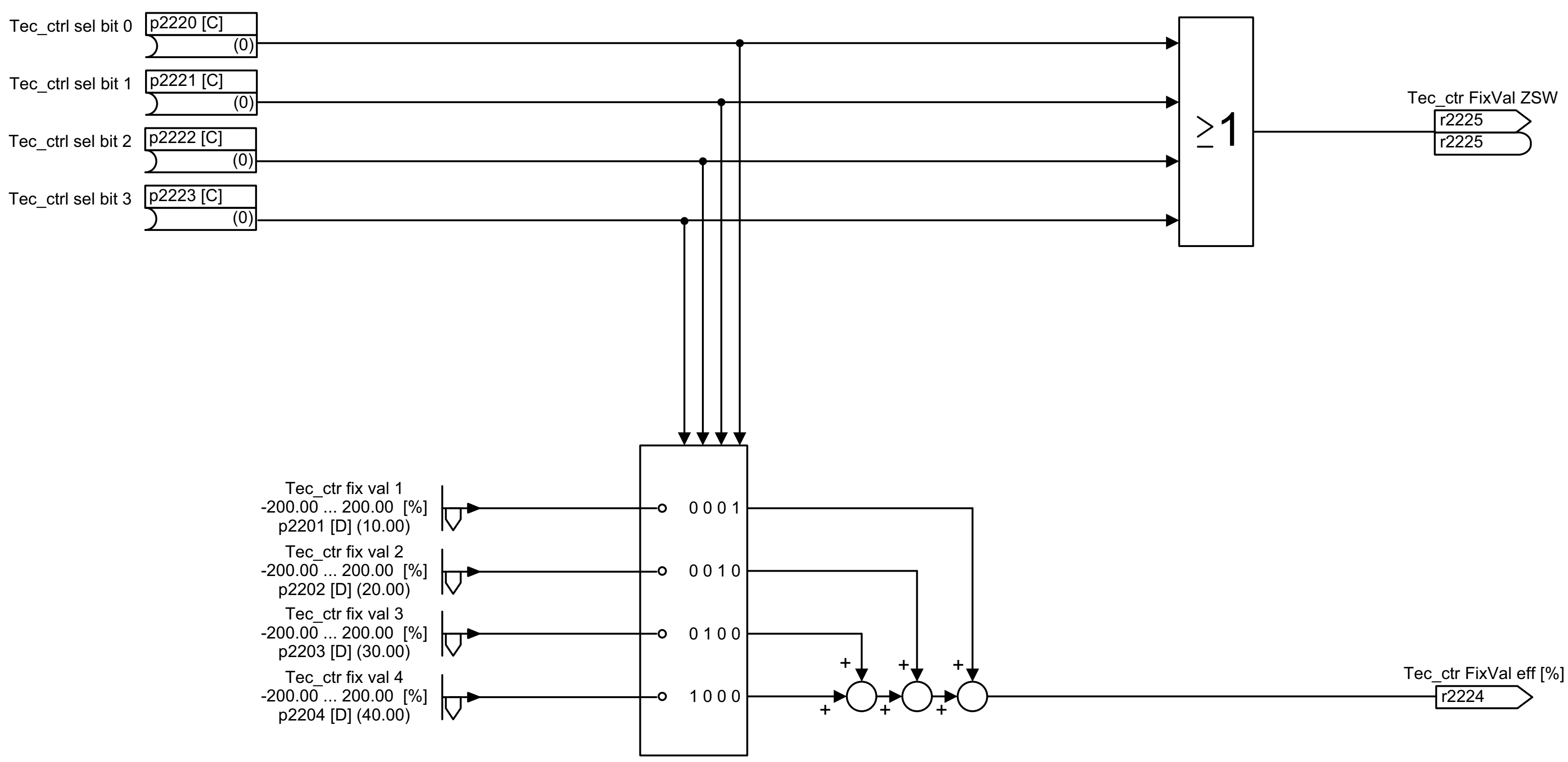


1	2	3	4	5	6	7	8

Technology controller	FP_7950_97_51.vsd	Function diagram	- 7950 -
Fixed values, binary selection (p2216 = 2)	13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-123 7950 – Fixed values, binary selection (p2216 = 2)

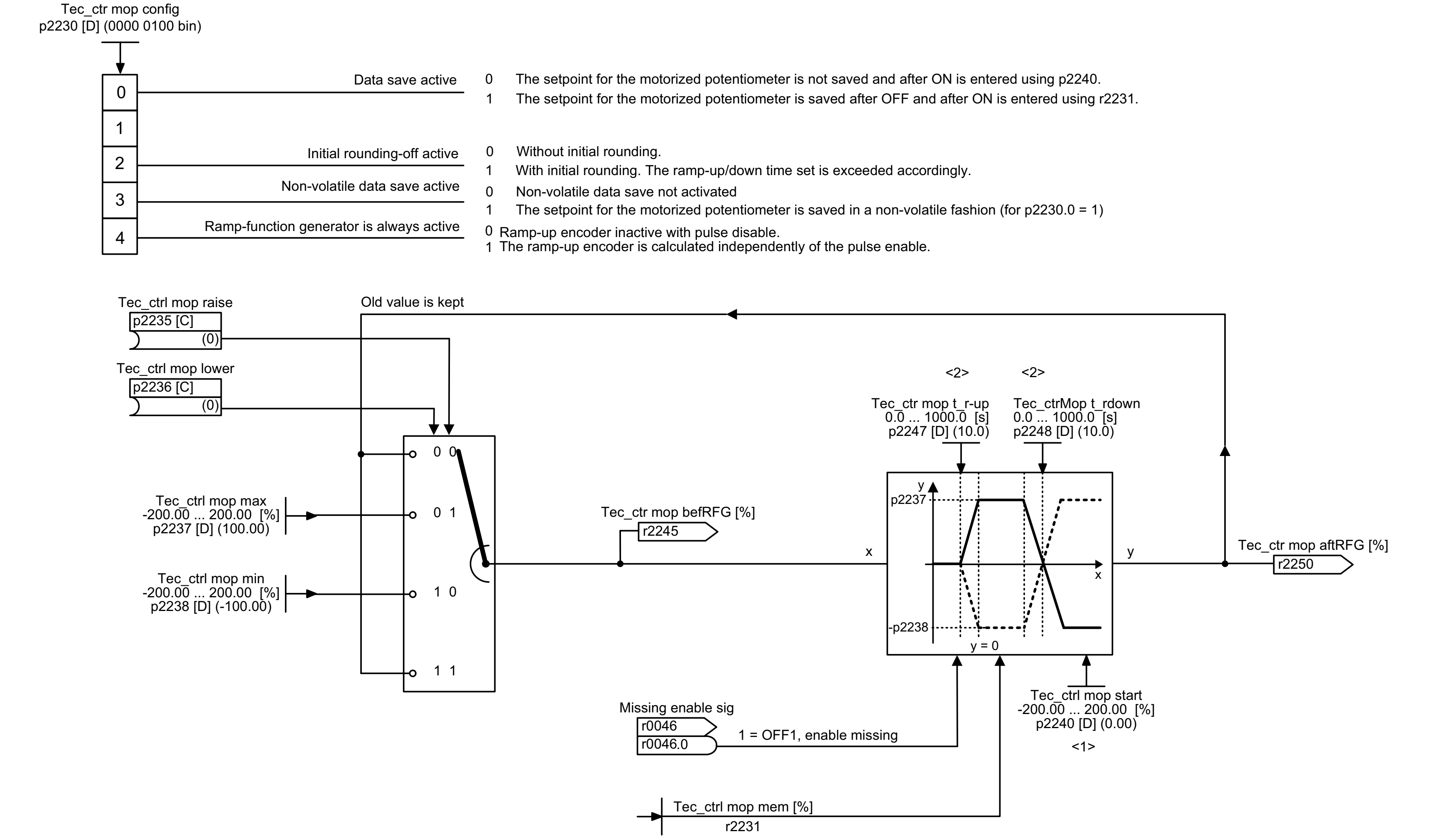
Fig. 2-124 7951 – Fixed values, direct selection (p2216 = 1)



1	2	3	4	5	6	7	8

Technology controller	FP_7951_97_51.vsd	Function diagram	- 7951 -
Fixed values, direct selection (p2216 = 1)	13.12.2010 V4.4	G120 CU240B/E-2	

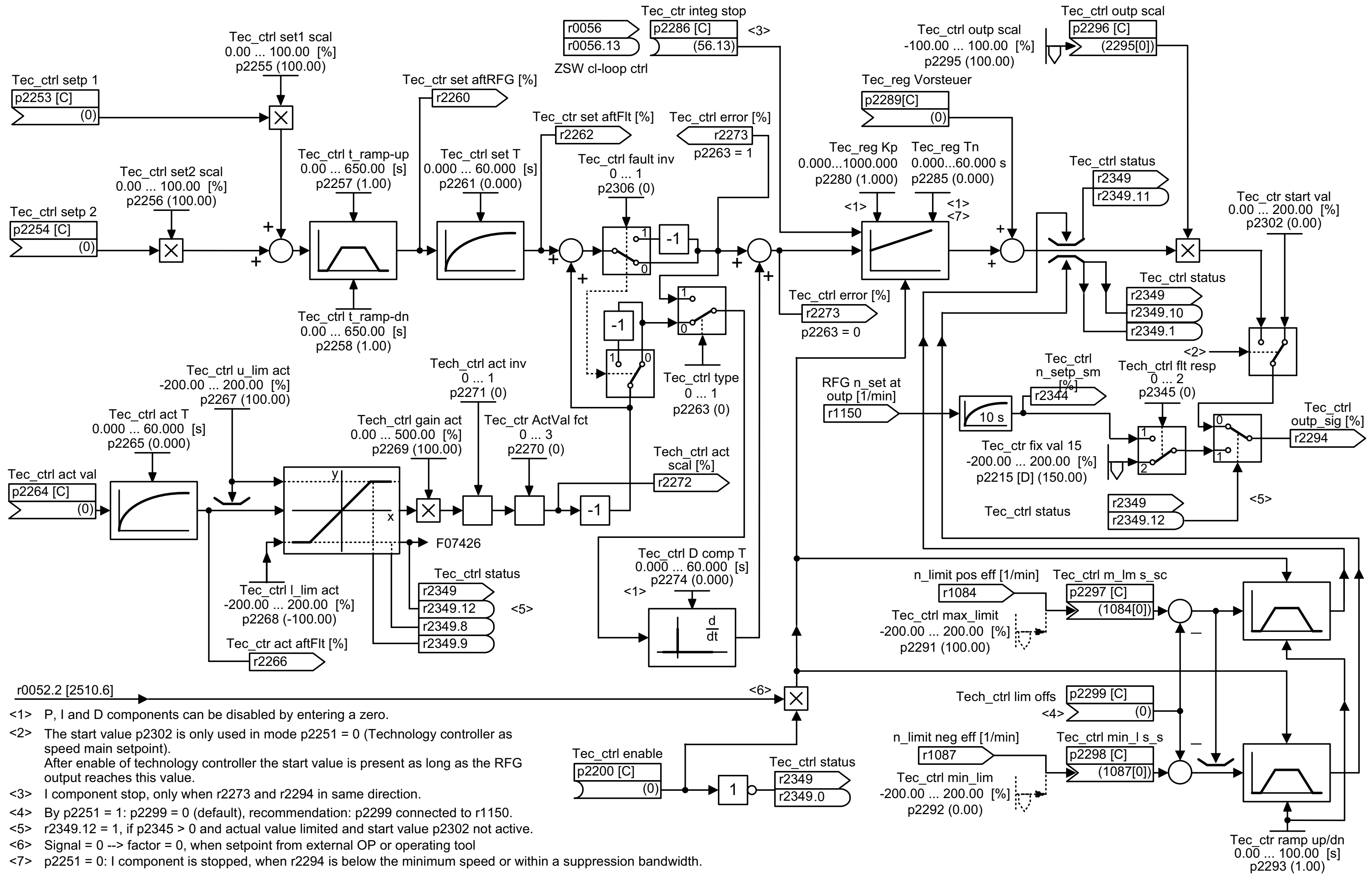
Fig. 2-125 7954 – Motorized potentiometer



<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					FP_7954_97_61.vsd	Function diagram	- 7954 -
Motorized potentiometer					13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-126 7958 – Closed-loop control



<1> P, I and D components can be disabled by entering a zero.

<2> The start value p2302 is only used in mode p2251 = 0 (Technology controller as speed main setpoint).
After enable of technology controller the start value is present as long as the RFG output reaches this value.

<3> I component stop, only when r2273 and r2294 in same direction.

<4> By p2251 = 1: p2299 = 0 (default), recommendation: p2299 connected to r1150.

<5> r2349.12 = 1, if p2345 > 0 and actual value limited and start value p2302 not active.

<6> Signal = 0 --> factor = 0, when setpoint from external OP or operating tool

<7> p2251 = 0: I component is stopped, when r2294 is below the minimum speed or within a suppression bandwidth.

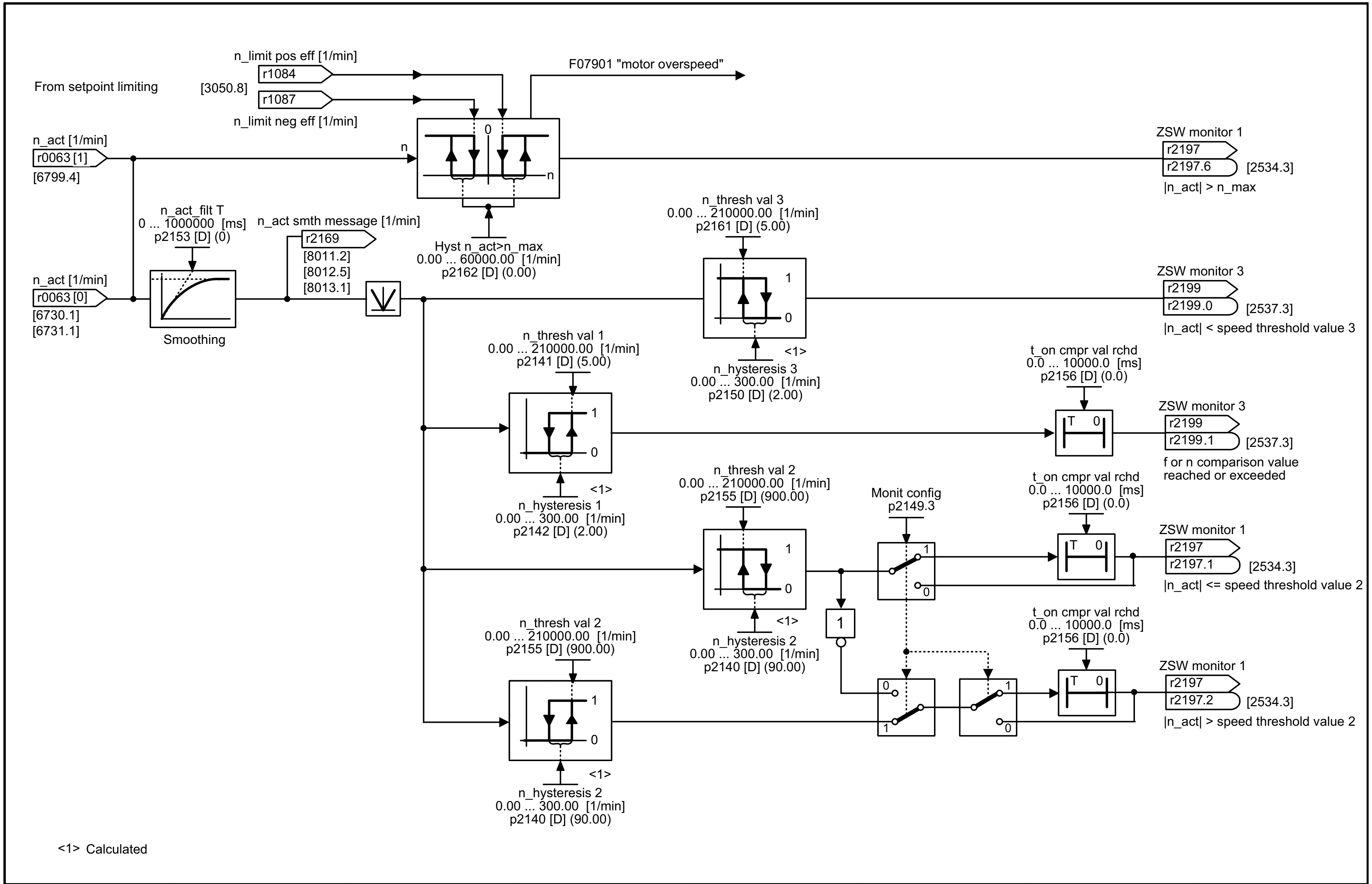
1	2	3	4	5	6	7	8

Technology controller	FP_7958_97_53.vsd	Function diagram	- 7958 -
Closed-loop control	13.12.2010 V4.4	G120 CU240B/E-2	

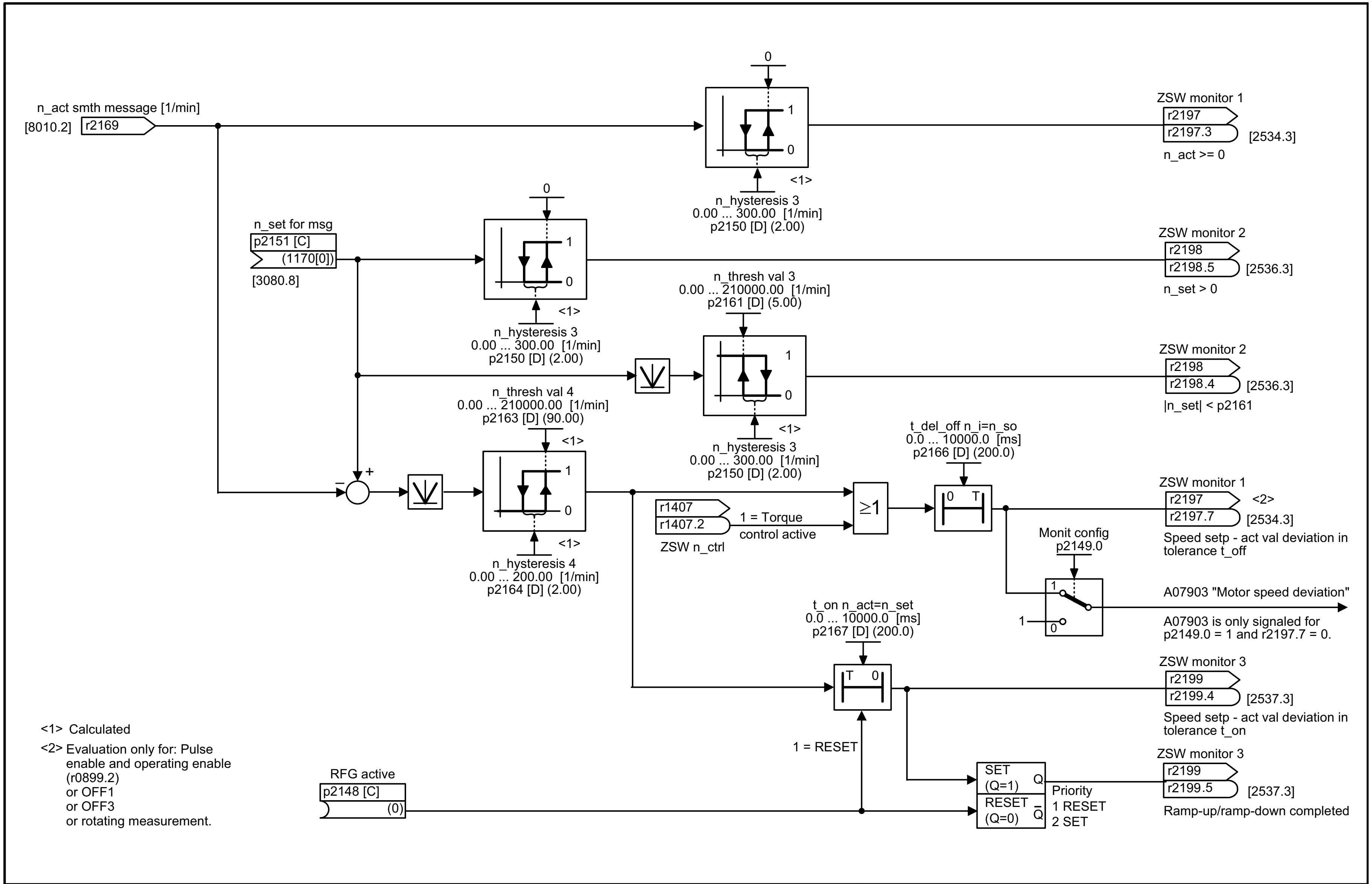
2.15 Signals and monitoring functions

Function diagrams

Fig. 2-127 8010 – Speed signals 1



1	2	3	4	5	6	7	8
Signals and monitoring functions					FP_8010_97_51.vsd	Function diagram	- 8010 -
Speed signals 1					13.12.2010 V4.4	G120 CU240B/E-2	

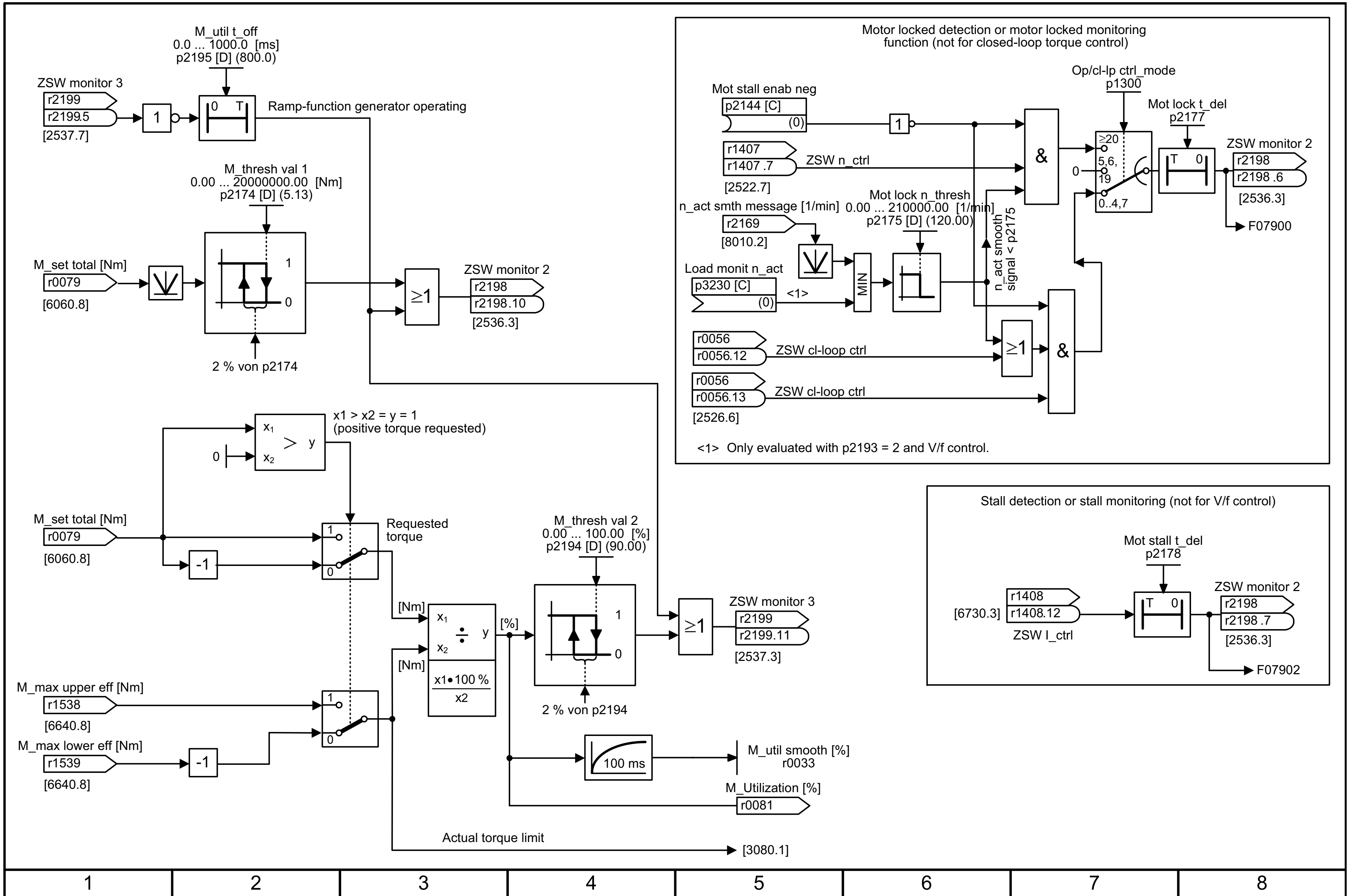


1	2	3	4	5	6	7	8

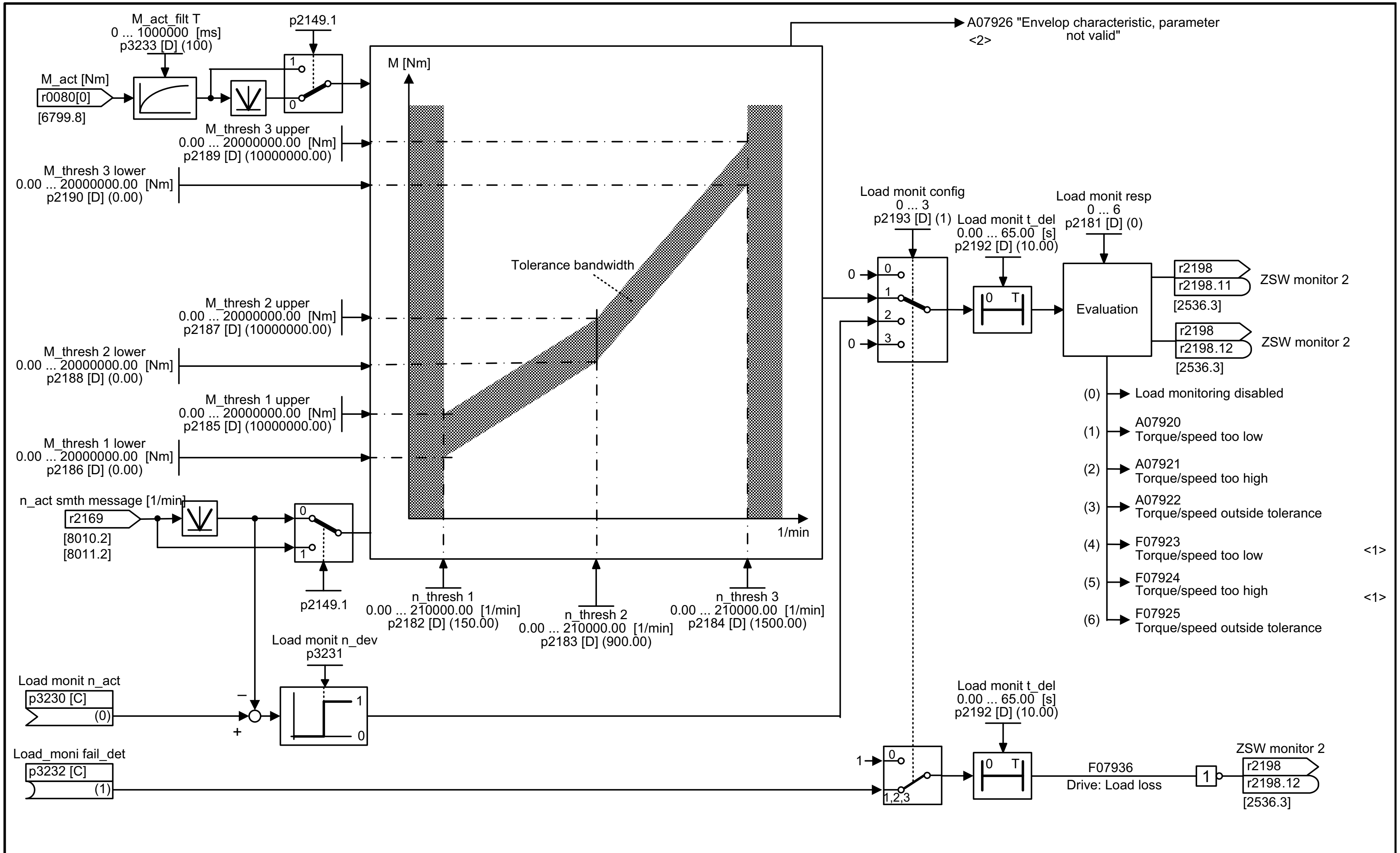
Signals and monitoring functions	FP_8011_97_51.vsd	Function diagram	- 8011 -
Speed signals 2	13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-128 8011 – Speed signals 2

Fig. 2-129 8012 – Torque signals, motor locked/stalled



Signals and monitoring functions	FP_8012_97_54.vsd	Function diagram	- 8012 -
Torque signals, motor locked/stalled	13.12.2010 V4.4	G120 CU240B/E-2	



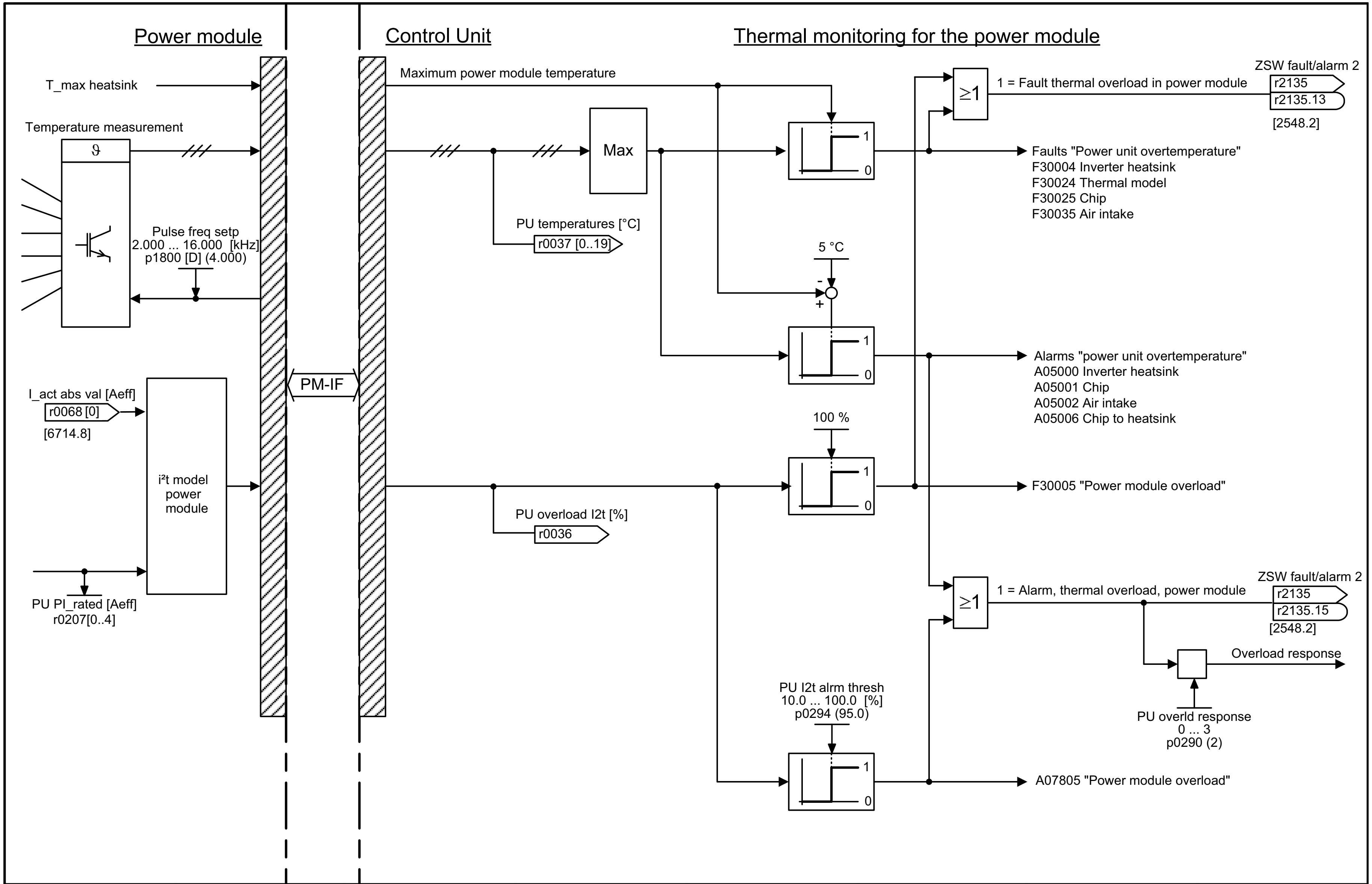
<1> The response to these faults can be defined.
<2> Fault evaluation only with p2181 > 0 and p2193 > 0.

1	2	3	4	5	6	7	8

Signals and monitoring functions	FP_8013_97_51.vsd	Function diagram	- 8013 -
Load monitoring	13.12.2010 V4.4	G120 CU240B/E-2	

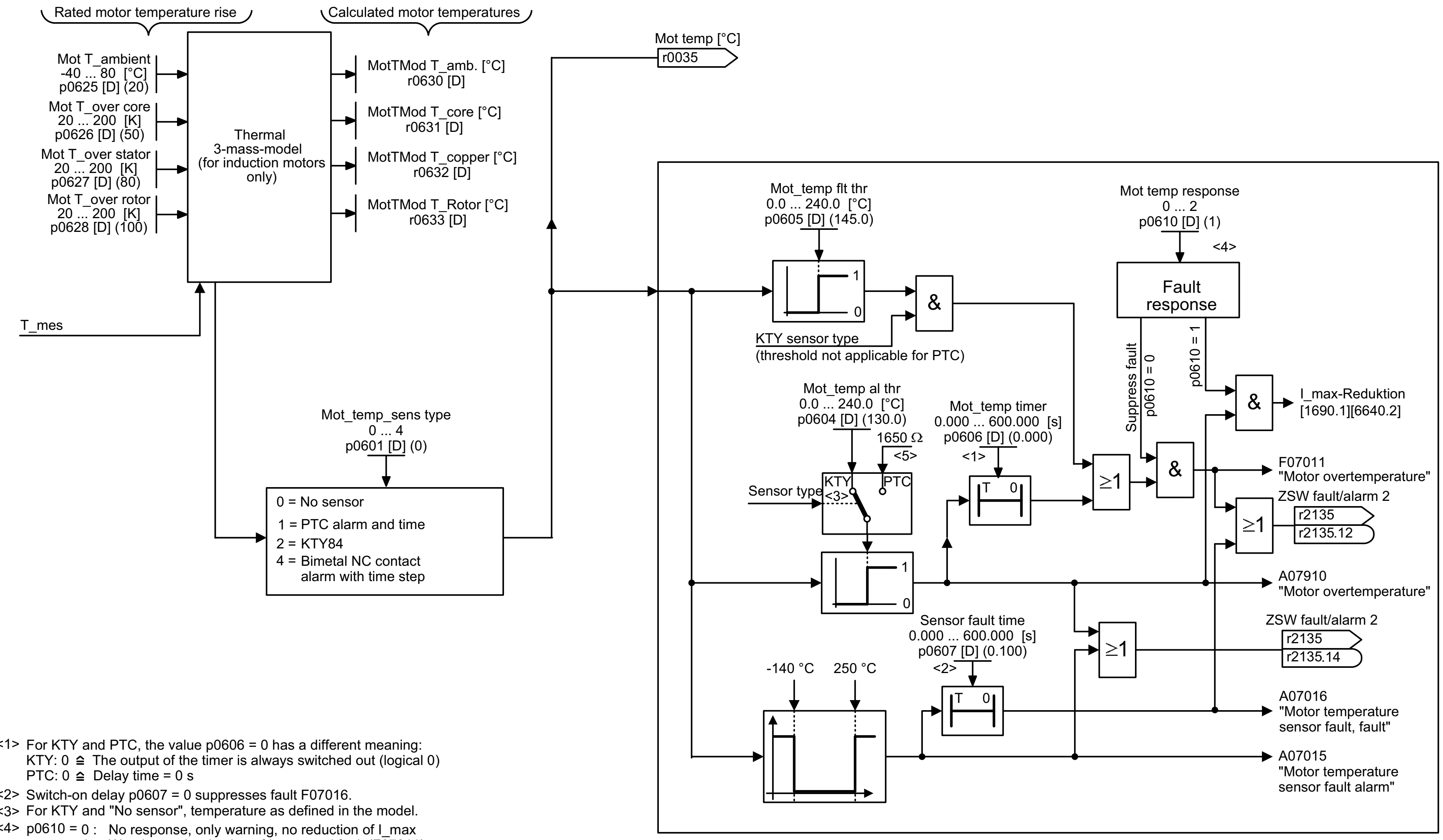
Fig. 2-130 8013 – Load monitoring

Fig. 2-131 8014 – Thermal monitoring, power module



1	2	3	4	5	6	7	8

Signals and monitoring functions	FP_8014_97_51.vsd	Function diagram	- 8014 -
Thermal monitoring, power module	13.12.2010 V4.4	G120 CU240B/E-2	



<1> For KTY and PTC, the value p0606 = 0 has a different meaning:
KTY: 0 ≙ The output of the timer is always switched out (logical 0)
PTC: 0 ≙ Delay time = 0 s

<2> Switch-on delay p0607 = 0 suppresses fault F07016.

<3> For KTY and "No sensor", temperature as defined in the model.

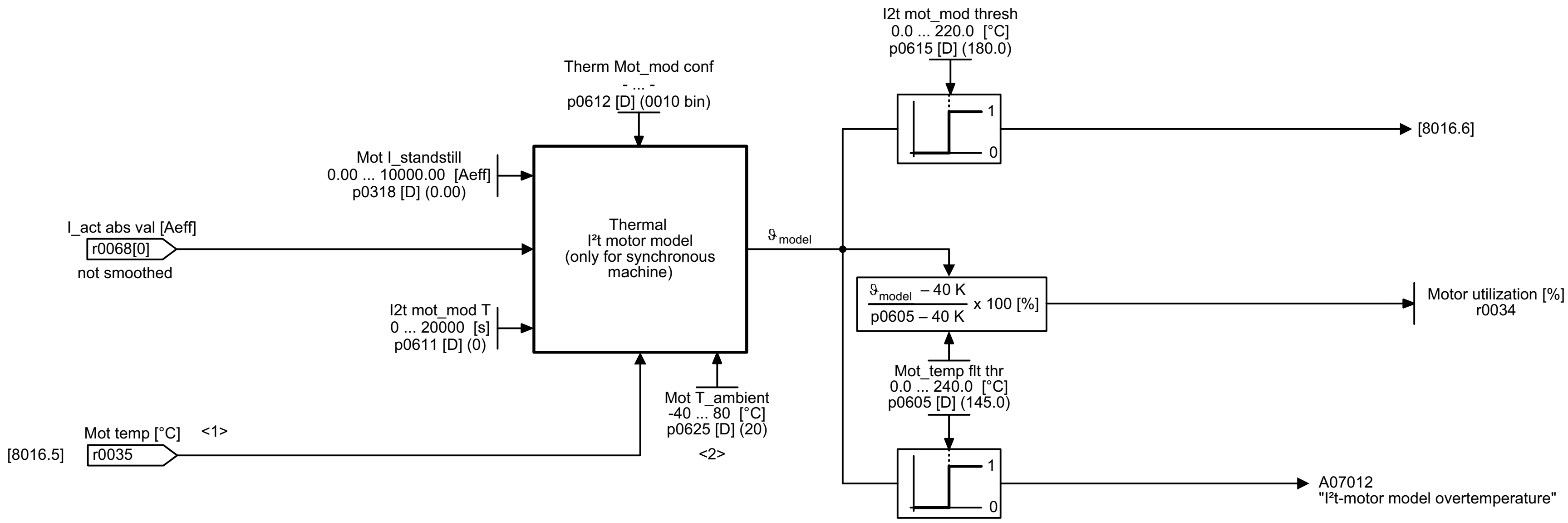
<4> p0610 = 0 : No response, only warning, no reduction of I_max
1 : Warning and reduction of I_max and fault (F07011)
2 : Warning and fault, no reduction of I_max

<5> The relevant rated response temperature in °C depends on the temperature sensor chosen by the motor manufacturer.

1	2	3	4	5	6	7	8

Signals and monitoring functions	FP_8016_97_51.vsd	Function diagram	- 8016 -
Thermal monitoring, motor	13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-132 8016 – Thermal monitoring, motor

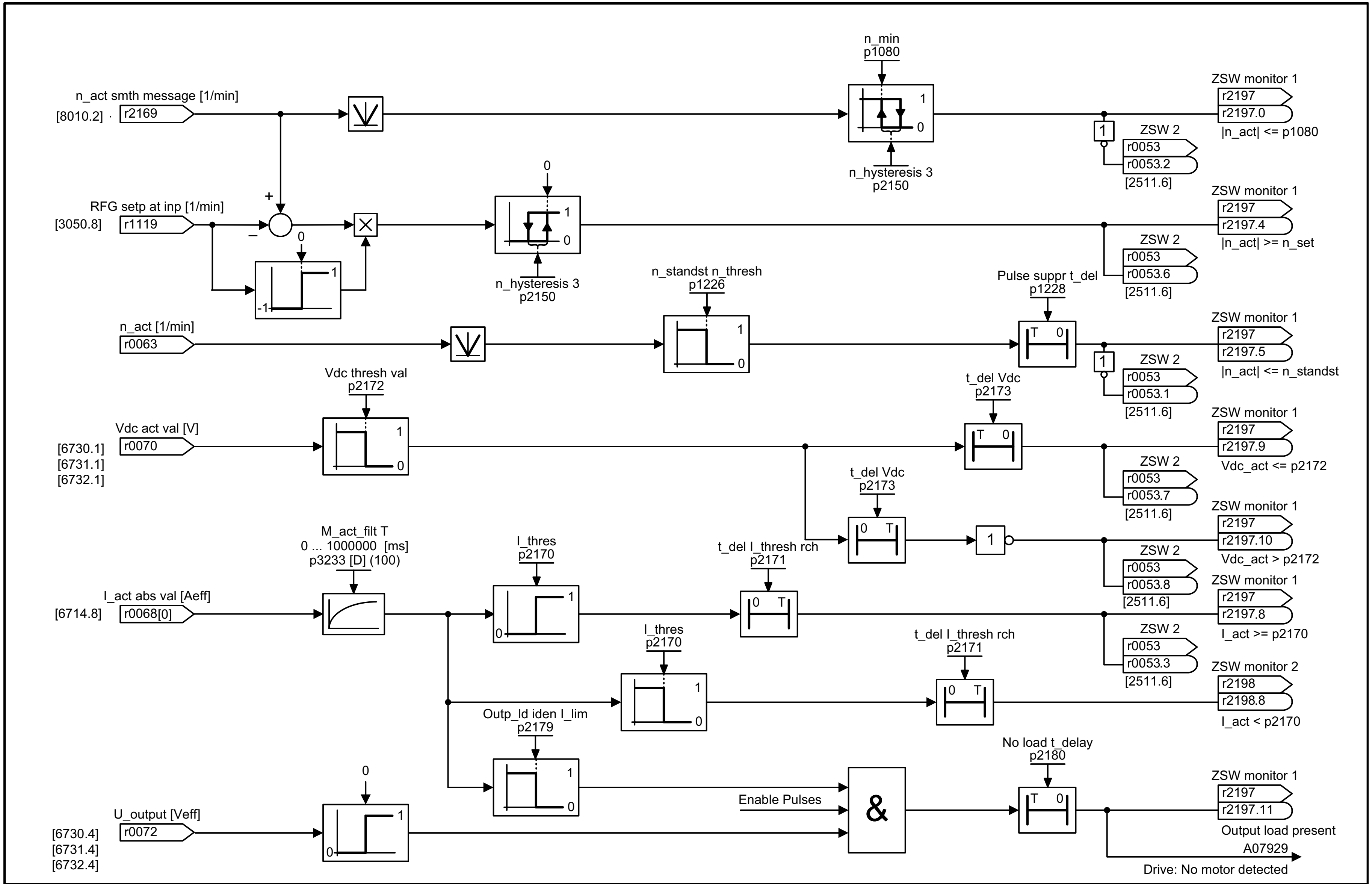


<1> Only if there is a temperature sensor (p0601 = 2).
<2> Only if <1> are not met.

1	2	3	4	5	6	7	8

Signals and monitoring functions	FP_8017_97_51.vsd	Function diagram	- 8017 -
Thermal I²t motor model (PEM, p0300 = 2xx)	13.12.2010 V4.4	G120 CU240B/E-2	

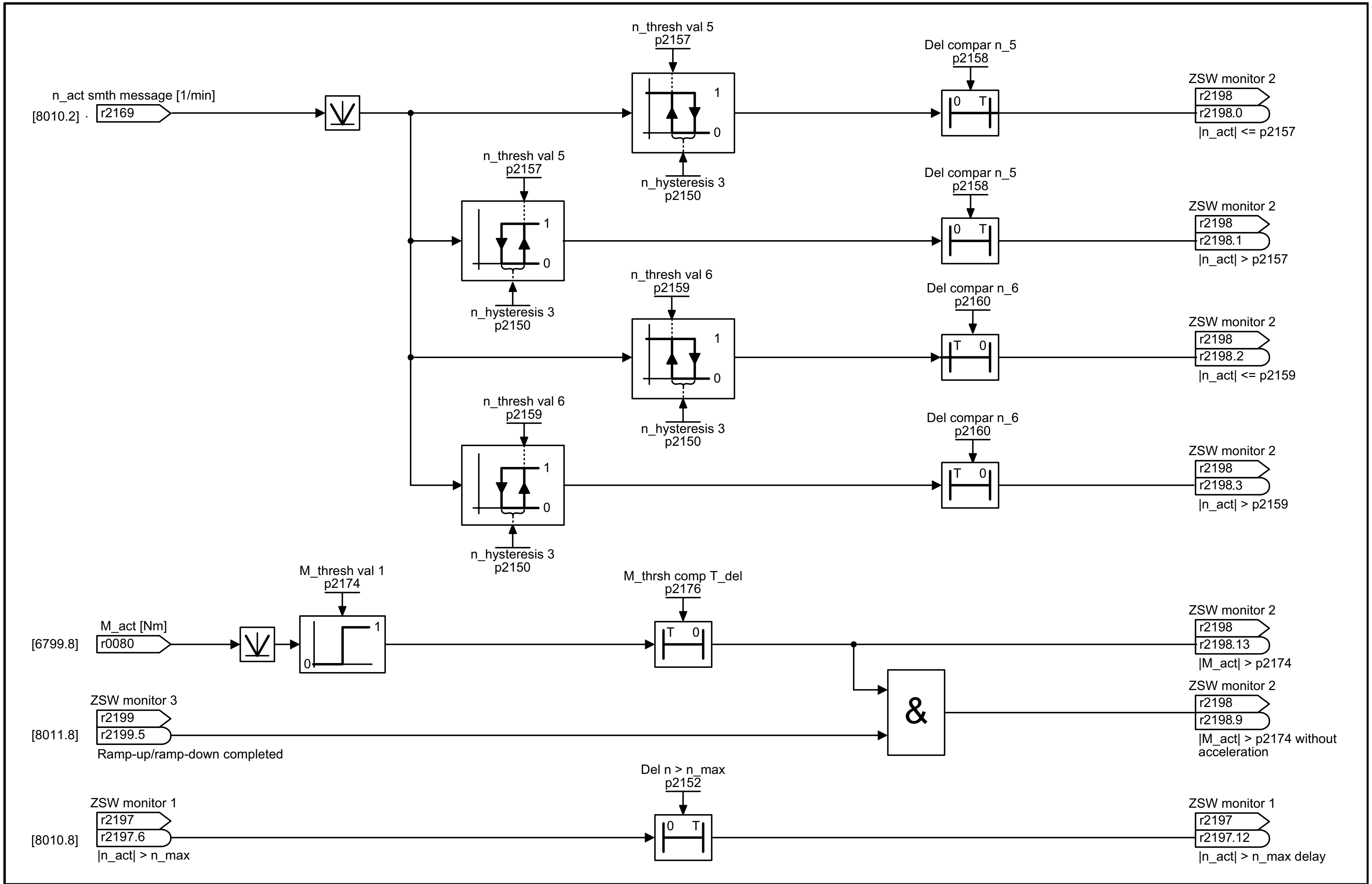
Fig. 2-133 8017 – Thermal I2t motor model (PEM, p0300 = 2xx)



Signals and monitoring functions	FP_8020_97_51.vsd	Function diagram	- 8020 -
Monitoring functions 1	13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-134 8020 – Monitoring functions 1

Fig. 2-135 8021 – Monitoring functions 2



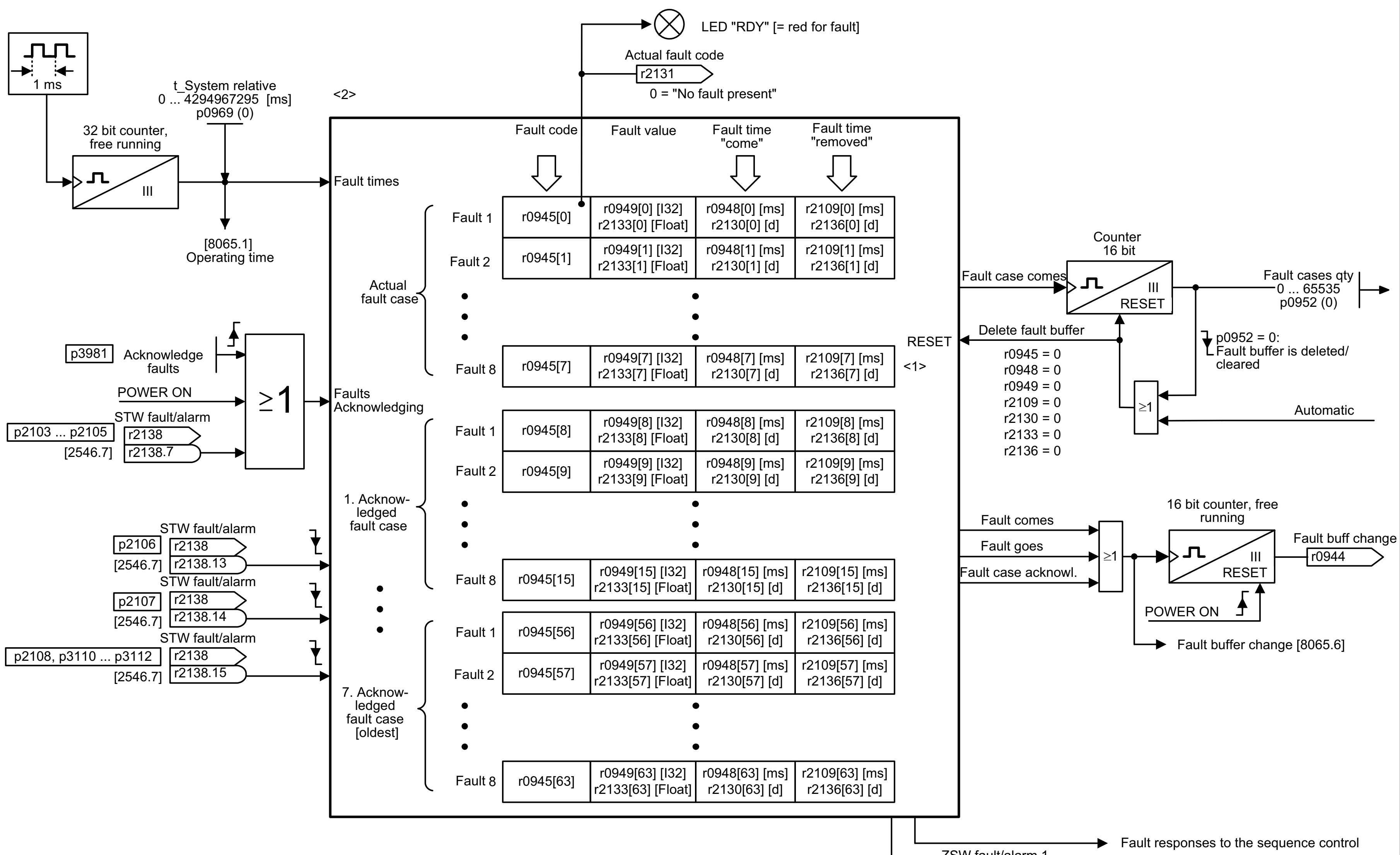
1	2	3	4	5	6	7	8

Signals and monitoring functions	FP_8021_97_51.vsd	Function diagram	- 8021 -
Monitoring functions 2	13.12.2010 V4.4	G120 CU240B/E-2	

2.16 Faults and warnings

Function diagrams

Fig. 2-136 8060 – Fault buffer



<1> This fault is overwritten when "more recent" faults occur.

<2> The buffer parameters are cyclically updated in the background (refer to the status signal in r2139).

1	2	3	4	5	6	7	8

Faults and warnings	FP_8060_97_51.vsd	Function diagram	- 8060 -
Fault buffer	13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-137 8065 – Warning buffer

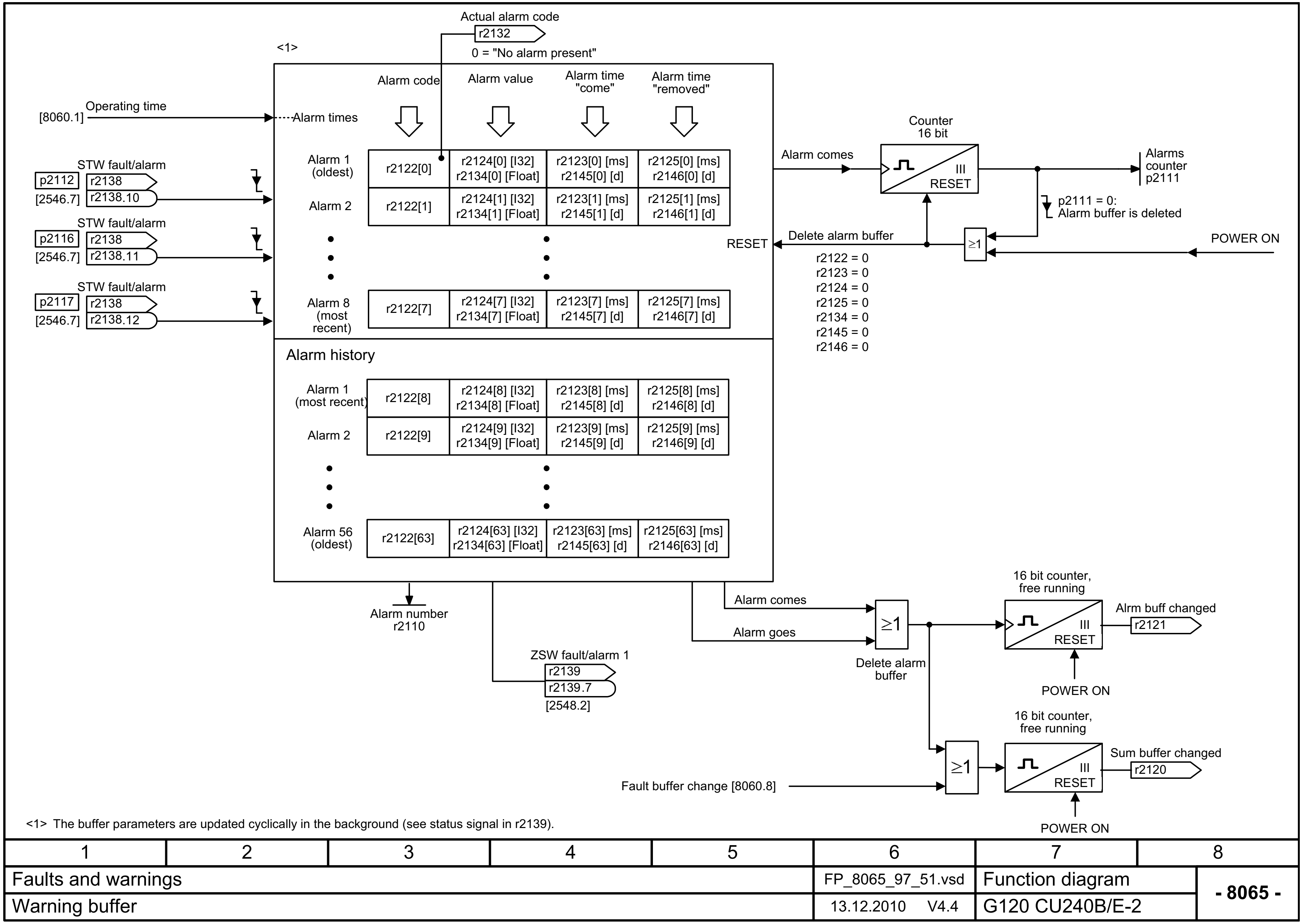
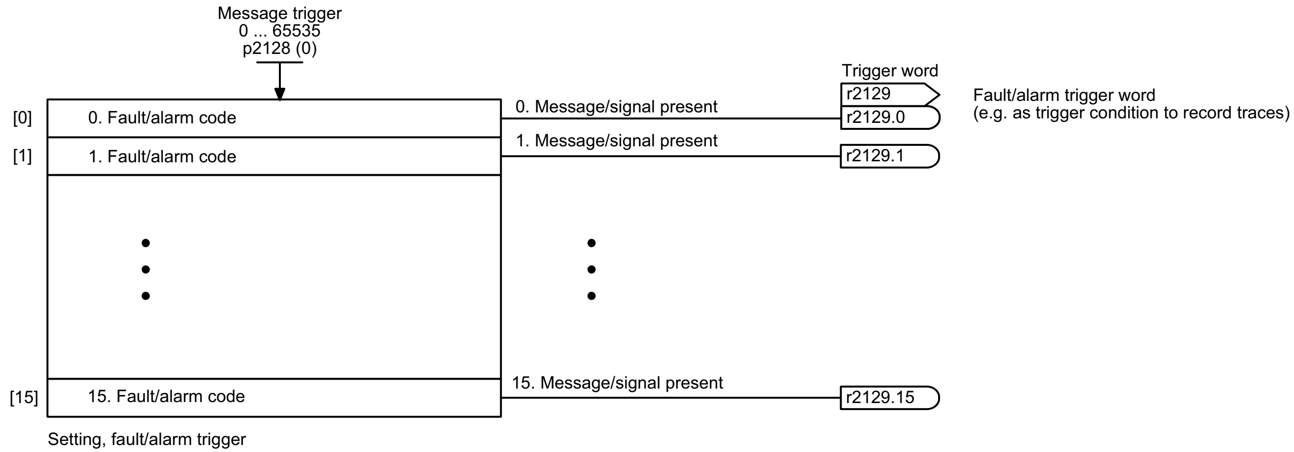
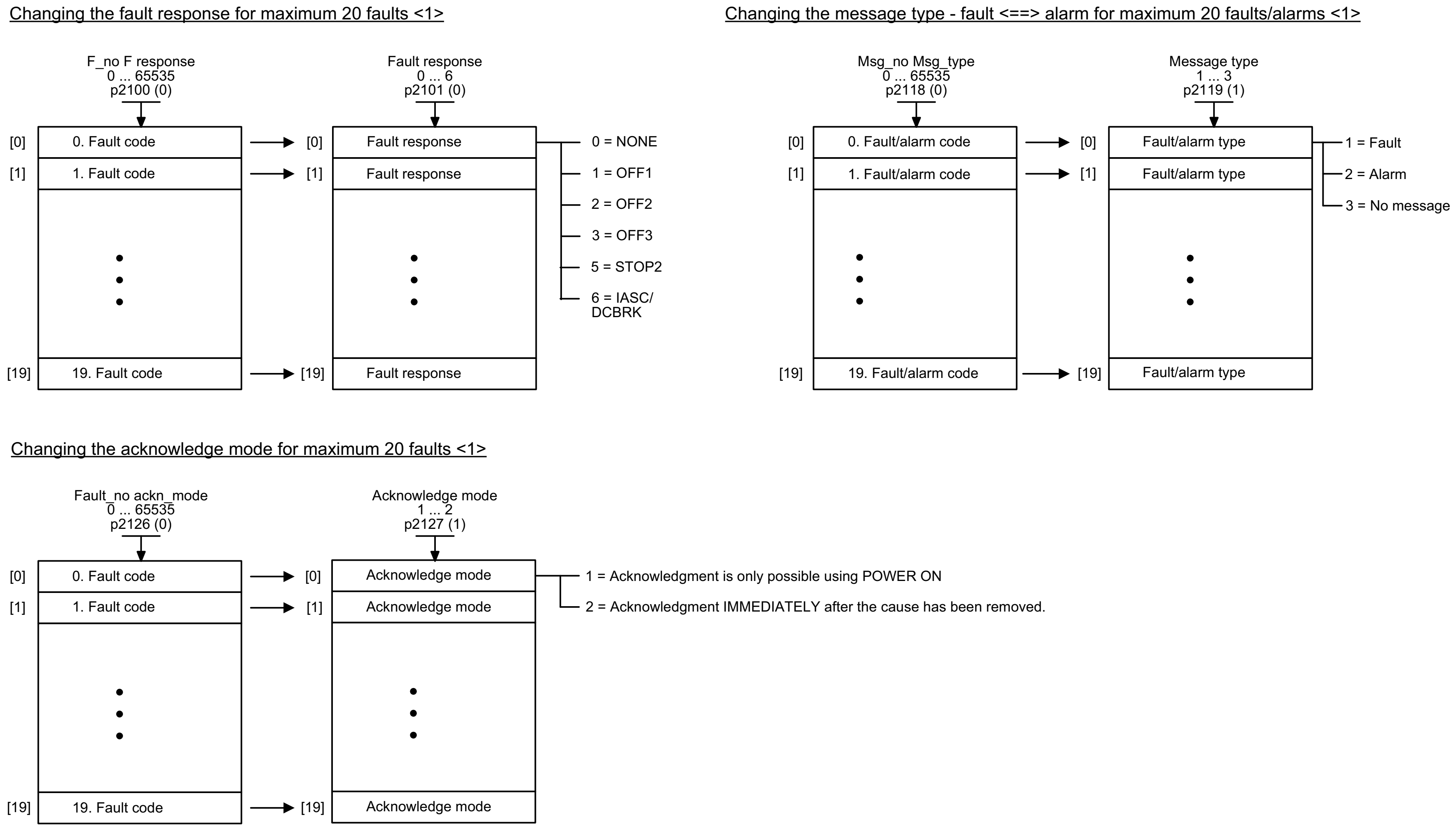


Fig. 2-138 8070 – Fault/warning trigger word (r2129)



1	2	3	4	5	6	7	8
Faults and warnings					FP_8070_97_61.vsd	Function diagram	- 8070 -
Fault/warning trigger word (r2129)					13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-139 8075 – Fault/warning configuration

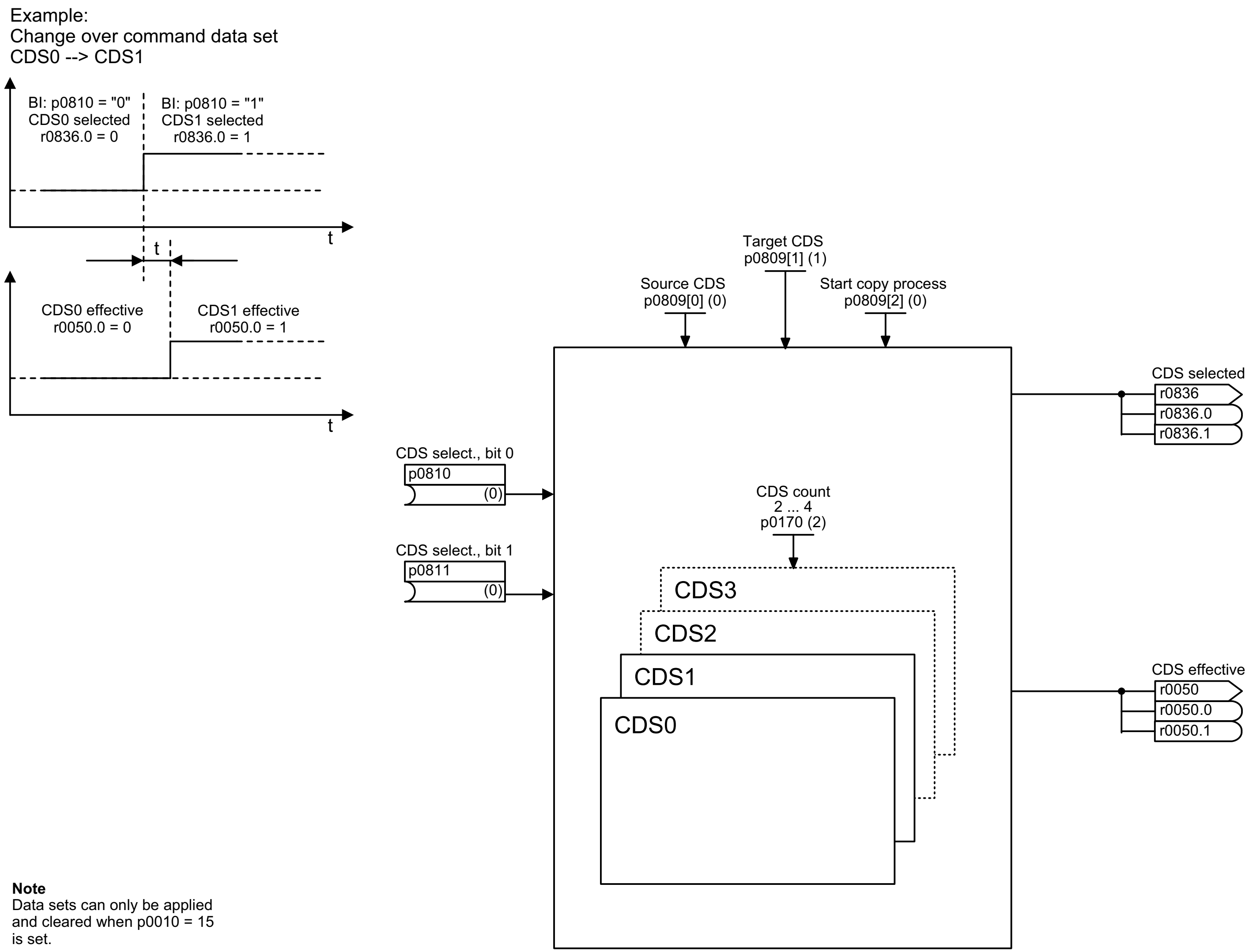


<1> The fault response, acknowledge mode and message type for all faults and alarms are set to meaningful default values in the factory setting.
Changes that may be required are only possible in specific value ranges specified by SIEMENS.
When the message type is changed, the supplementary information is tranferred from fault value r0949 to alarm value r2124 and vice versa.

1	2	3	4	5	6	7	8
Faults and warnings					FP_8075_97_51.vsd	Function diagram	- 8075 -
Fault/warning configuration					13.12.2010 V4.4	G120 CU240B/E-2	

2.17 Data sets

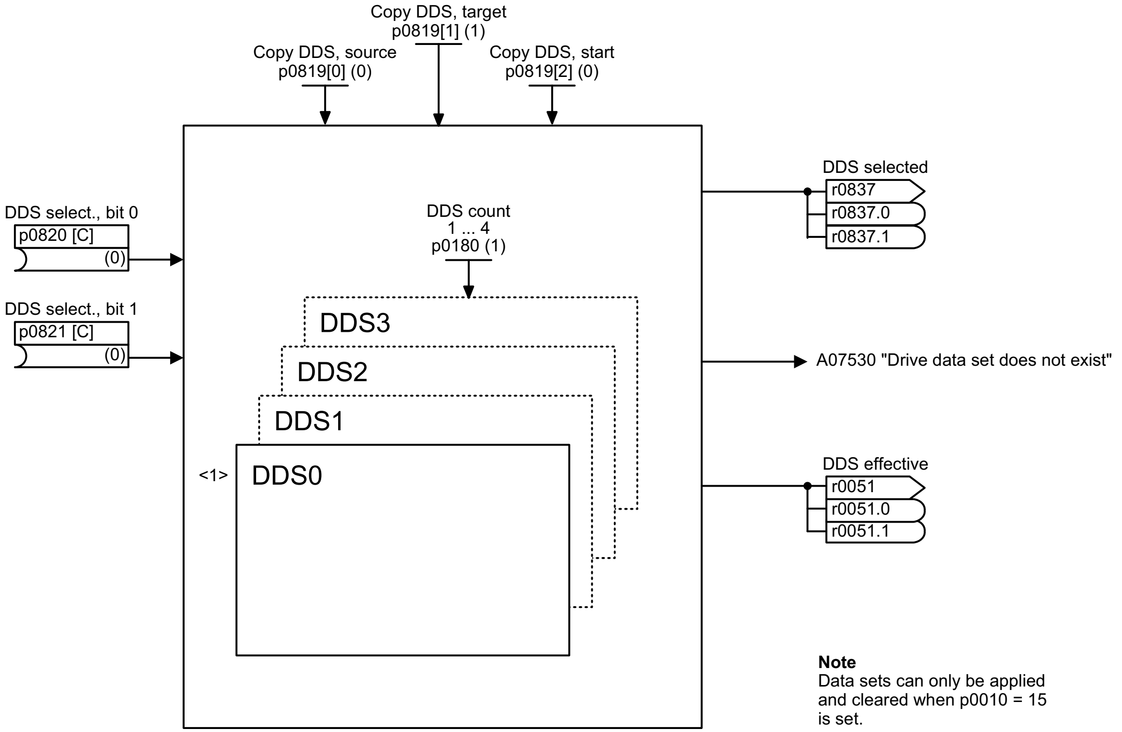
Function diagrams



1	2	3	4	5	6	7	8
Data sets					FP_8560_97_51.vsd	Function diagram	- 8560 -
Command Data Sets (CDS)					13.12.2010 V4.4	G120 CU240B/E-2	

Fig. 2-140 8560 – Command Data Sets (CDS)

Fig. 2-141 8565 – Drive Data Sets (DDS)



<1> A BICO interconnection to a parameter which is part of a drive data set always influences the currently effective data set.

1	2	3	4	5	6	7	8
Data sets					FP_8565_97_51.vsd	Function diagram	- 8565 -
Drive Data Sets (DDS)					13.12.2010 V4.4	G120 CU240B/E-2	

Faults and Alarms 3

Contents

3.1 Faults and Alarms – Overview

3.1.1 General information

Indicating fault and alarm messages (faults and alarms)

A message comprises a letter followed by the relevant number.

The letter characterizes the message type and has the following meaning:

- A means "Alarm"
- F means "Fault"
- N means "No Report" or "Internal Report"
- C means Safety message

Brackets including the letters A, F, or N indicate that the message type can be changed, e.g. A01016 (F) means that the alarm A01016 can be parameterized as a fault. The letter in brackets shows which message type can be adjusted via parameters p2118 and p2119.

Example:

p2118[5] = 1016 (alarm A01016 (F) “Firmware changed“)

p2119[5] = 1 (p2119 = 1is equivalent to fault (F))

In this case the alarm "Firmware changed" will become a fault.

Faults are stored in parameter r0945/r0947, under their code number (e.g. F01003 = 1003). The associated fault value can be found in parameter r0949. The value 0 is entered if a fault has no fault value. It is furthermore possible to read out the point in time that a fault occurred (r0948) and the number of faults (p0952).

Alarms are stored in parameter r2110/r2122, under their code number (e.g. A01503 = 1503) and can be read out from there. The associated alarm value can be found in parameter r2124 and the time of alarm occurence in r2123.

Differences between faults and alarms

The differences between faults and alarms are as follows:

Table 3-1 Differences between faults and alarms

Type	Description
Faults	What happens when a fault occurs? • The appropriate fault reaction is triggered. • Status bit ZSW1.3 is set. • The fault is entered in the fault buffer. How are faults eliminated? • Remove the original cause of the fault. • Acknowledge the fault.
Alarms	What happens when an alarm occurs? • Status bit ZSW1.7 is set. • The alarm is entered in the alarm buffer. How are alarms eliminated? • Alarms acknowledge themselves. If the cause of the alarm is no longer present, then they automatically reset themselves.

3.1.2 Fault reactions

Specifies the default reaction when a fault occurs. The optional brackets indicate whether the default fault reactions can be changed and which fault reactions can be adjusted via parameters (p2100, p2101). The following fault reactions are defined:

Table 3-2 Fault reactions

List	PROFI-drive	Reaction	Description
NONE	-	None	No reaction when a fault occurs.
OFF1	ON/ OFF	Brake along the ramp-function generator deceleration ramp followed by pulse inhibit	**Speed control** • n_set = 0 is input immediately to brake the drive along the deceleration ramp (p1121). • Zero speed is detected if the actual speed drops below the threshold in p1226 or if the monitoring time (p1227) started when speed setpoint <= speed threshold (p1226) has expired. **Closed-loop torque control (p1300 = 22)** • The following applies to closed-loop torque control mode: Reaction as for OFF2. • When changing over to closed-loop control using p1501, the following applies: There is no dedicated braking response.
OFF2	COAST STOP	Internal/external pulse inhibite	**Speed control and closed-loop torque control** • Instantaneous pulse suppression, the drive "coasts" to a standstill • Switching on inhibited is activated.
OFF3	QUICK STOP	Brake along OFF3 deceleration ramp followed by pulse inhibit	**Speed control** • n_set=0 is input immediately to brake the drive along the OFF3 deceleration ramp (p1135). • Zero speed is detected if the actual speed drops below the threshold in p1226 or if the monitoring time (p1227) started when speed setpoint <= speed threshold (p1226) has expired. • Switching on inhibited is activated. **Closed-loop torque control (p1300 = 22)** • Changeover to speed-controlled operation and other reactions as described for speed-controlled operation.
STOP2	-	n_set = 0	• n_set = 0 is input immediately to brake the drive along the OFF3 deceleration ramp (p1135). Although ramping down along the OFF3 deceleration ramp r0052 bit 5 = 1. • The drive remains in closed-loop speed control mode.
IASC/DCBRK	-	-	• When a fault occurs with this fault reaction, DC braking is triggered. • The DC brake must have been put into operation (p1230 to p1239).

3.1.3 Acknowledgement of faults

The list of faults and alarms specifies how to acknowledge each fault after the cause has been remedied. The optional brackets indicate whether the default acknowledgement can be changed and which acknowledgement can be adjusted via parameter (p2126, p2127).

Table 3-3 Acknowledgement of faults

Acknowledgement	Description
POWER ON	The fault is acknowledged by a POWER ON process (switch drive unit off and on again). **Note:** If this action has not eliminated the fault cause, the fault is displayed again immediately after power up.
IMMEDIATELY	Faults can be acknowledged as follows: 1 Acknowledge by setting parameter: p3981 = 0 --> 1 2 Acknowledge via binector inputs: p2103 BI: 1. Acknowledge faults p2104 BI: 2. Acknowledge faults p2105 BI: 3. Acknowledge faults 3 Acknowledge using PROFIBUS control signal: STW1.7 = 0 --> 1 (edge) **Note:** • These faults can also be acknowledged by a POWER ON operation. • If this action has not eliminated the fault cause, the fault is displayed again immediately after power up.

3.2 List of Faults and Alarms

Product: SINAMICS G120 CU240, Version: 4402100, Language: eng,
Objects: CU240B-2, CU240B-2 DP, CU240E-2, CU240E-2 DP, CU240E-2 DP F, CU240E-2 F

F01000 Internal software error

Reaction: OFF2

Acknowledge: 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 (power off/on) for all components.
- upgrade firmware to later version.
- contact the Hotline.
- replace the Control Unit.

F01001 FloatingPoint exception

Reaction: OFF2

Acknowledge: POWER ON

Cause: An exception occurred during an operation with the FloatingPoint data type.
The error may be caused by the base system or an OA application (e.g., FBLOCKS, DCC).
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Note:
Refer to r9999 for further information about this fault.
r9999[0]: Fault number.
r9999[1]: Program counter at the time when the exception occurred.
r9999[2]: Cause of the FloatingPoint exception.
Bit 0 = 1: Operation invalid
Bit 1 = 1: Division by zero
Bit 2 = 1: Overflow
Bit 3 = 1: Underflow
Bit 4 = 1: Imprecise result

Remedy: - carry out a POWER ON (power off/on) for all components.
- check configuration and signals of the blocks in FBLOCKS.
- check configuration and signals of DCC charts.
- upgrade firmware to later version.
- contact the Hotline.

F01002 Internal software error

Reaction: OFF2

Acknowledge: IMMEDIATELY

Cause: An internal software error has occurred.
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.

Remedy: - carry out a POWER ON (power off/on) for all components.
- upgrade firmware to later version.
- contact the Hotline.

F01003 Acknowledgement delay when accessing the memory

Reaction: OFF2

Acknowledge: 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 (power off/on) for all components.
- contact the Hotline.

N01004 (F, A) Internal software error

Reaction: NONE
Acknowledge: NONE
Cause: An internal software error has occurred.
Fault value (r0949, hexadecimal):
Only for internal Siemens troubleshooting.
Remedy: - read out diagnostics parameter (r9999).
- contact the Hotline.
See also: r9999 (Software error internal supplementary diagnostics)

F01005 File upload/download error

Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The upload or download of EEPROM data was unsuccessful.
Fault value (r0949, interpret hexadecimal):
yyxxxx hex: yy = component number, xxxx = fault cause
xxxx = 000B hex = 11 dec:
Power unit component has detected a checksum error.
xxxx = 000F hex = 15 dec:
The selected power unit will not accept the content of the EEPROM file.
xxxx = 0011 hex = 17 dec:
Power unit component has detected an internal access error.
xxxx = 0012 hex = 18 dec:
After several communication attempts, no response from the power unit component.
xxxx = 008B hex = 140 dec:
EEPROM file for the power unit component not available on the memory card.
xxxx = 008D hex = 141 dec:
An inconsistent length of the firmware file was signaled. It is possible that the download/upload has been interrupted.
xxxx = 0090 hex = 144 dec:
When checking the file that was loaded, the component detected a fault (checksum). It is possible that the file on the memory card is defective.
xxxx = 0092 hex = 146 dec:
This SW or HW does not support the selected function.
xxxx = 009C hex = 156 dec:
Component with the specified component number is not available (p7828).
xxxx = Additional values:
Only for internal Siemens troubleshooting.
Remedy: Save a suitable firmware file or EEPROM file for upload or download in folder "/ee_sac/" on the memory card.

A01009 (N) CU: Control module overtemperature

Reaction: NONE
Acknowledge: NONE
Cause: The temperature (r0037[0]) of the control module (Control Unit) has exceeded the specified limit value.
Remedy: - check the air intake for the Control Unit.
- check the Control Unit fan.
Note:
The alarm automatically disappears after the limit value has been undershot.

F01010 Drive type unknown

Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: An unknown drive type was found.
Remedy: - replace Power Module.
- carry out a POWER ON (power off/on).
- upgrade firmware to later version.
- contact the Hotline.

F01015 Internal software error

Reaction: OFF2

Acknowledge: POWER ON

Cause: An internal software error has occurred.
Fault value (r0949, decimal interpretation):
Only for internal Siemens troubleshooting.

Remedy: - carry out a POWER ON (power off/on) for all components.
- upgrade firmware to later version.
- contact the Hotline.

A01016 (F) Firmware changed

Reaction: NONE

Acknowledge: NONE

Cause: At least one firmware file in the directory /SIEMENS/SINAMICS/ has been changed without authorization with respect to the version shipped from the factory. No changes are permitted in this directory.
Alarm value (r2124, interpret decimal):
0: Checksum of one file is incorrect.
1: File missing.
2: Too many files.
3: Incorrect firmware version.
4: Incorrect checksum of the back-up file.
See also: r9925 (Firmware file incorrect)

Remedy: For the non-volatile memory for the firmware (memory card/device memory), restore the delivery condition.
Note:
The file involved can be read out using parameter r9925.
See also: r9926 (Firmware check status)

A01017 Component lists changed

Reaction: NONE

Acknowledge: NONE

Cause: On the memory card, one file in the directory /SIEMENS/SINAMICS/DATA or /ADDON/SINAMICS/DATA has been illegally changed with respect to that supplied from the factory. No changes are permitted in this directory.
Alarm value (r2124, interpret decimal):
zyx dec: x = Problem, y = Directory, x = File name
x = 1: File does not exist.
x = 2: Firmware version of the file does not match the software version.
x = 3: File checksum is incorrect.
y = 0: Directory /SIEMENS/SINAMICS/DATA/
y = 1: Directory /ADDON/SINAMICS/DATA/
z = 0: File MOTARM.ACX
z = 1: File MOTSRM.ACX
z = 2: File MOTSLM.ACX
z = 3: File ENCDATA.ACX
z = 4: File FILTDATA.ACX
z = 5: File BRKDATA.ACX
z = 6: File DAT_BEAR.ACX
z = 7: File CFG_BEAR.ACX

Remedy: For the file on the memory card involved, restore the status originally supplied from the factory.

F01018	Booting has been interrupted several times
Reaction:	NONE
Acknowledge:	POWER ON
Cause:	Module booting was interrupted several times. Possible reasons for booting being interrupted: - POWER OFF of the module. - CPU crash. - USER data invalid. After this fault is output, then the module is booted with the factory settings.
Remedy:	Power down the module and power it up again. Note: After switching on, the module reboots from the USER data (if available). If the fault situation is repeated, then this fault is again output after several interrupted boots.

A01019	Writing to the removable data medium unsuccessful
Reaction:	NONE
Acknowledge:	NONE
Cause:	The write access to the removable data medium was unsuccessful.
Remedy:	Remove and check the removable data medium. Then run the data backup again.

A01020	Write to RAM disk unsuccessful
Reaction:	NONE
Acknowledge:	NONE
Cause:	The write access to the internal RAM disk was unsuccessful.
Remedy:	Adapt the size of the system logbook (p9930) to the internal RAM disk.

F01023	Software timeout (internal)
Reaction:	NONE
Acknowledge:	IMMEDIATELY
Cause:	An internal software timeout has occurred. Fault value (r0949, decimal interpretation): Only for internal Siemens troubleshooting.
Remedy:	- carry out a POWER ON (power off/on) for all components. - upgrade firmware to later version. - contact the Hotline.

A01028	Configuration error
Reaction:	NONE
Acknowledge:	NONE
Cause:	The parameterization that was downloaded was generated with a different module type (Order No., MLFB).
Remedy:	Save parameters in a non-volatile fashion (p0971 = 1).

F01030	Sign-of-life failure for master control
Reaction:	OFF3 (IASC/DCBRAKE, NONE, OFF1, OFF2, STOP2)
Acknowledge:	IMMEDIATELY
Cause:	For active PC master control, no sign-of-life was received within the monitoring time. The master control was returned to the active BICO interconnection.
Remedy:	Set the monitoring time higher at the PC or, if required, completely disable the monitoring function. For the commissioning software, the monitoring time is set as follows: <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!

F01033 Units changeover: Reference parameter value invalid

Reaction: NONE

Acknowledge: IMMEDIATELY

Cause: When changing over the units to the referred representation type, it is not permissible for any of the required reference parameters to be equal to 0.0
Fault value (r0949, parameter):
Reference parameter whose value is 0.0.
See also: p0505 (Selecting the system of units), p0595 (Selecting technological units)

Remedy: Set the value of the reference parameter to a number different than 0.0.
See also: p0304, p0305, p0310, p0596, p2000, p2001, p2002, p2003, r2004

F01034 Units changeover: Calculation parameter values after reference value change unsuccessful

Reaction: NONE

Acknowledge: 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, p0596, 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.
See also: p0304, p0305, p0310, p0596, p2000, p2001, p2002, p2003, r2004

A01035 (F) ACX: Boot from the back-up parameter back-up files

Reaction: NONE

Acknowledge: NONE

Cause: When the Control Unit is booted, no complete data set was found from the parameter back-up files. The last time that the parameterization was saved, it was not completely carried out. Instead, a back-up data set or a back-up parameter back-up file is downloaded.
Alarm value (r2124, interpret hexadecimal):
Only for internal Siemens troubleshooting.

Remedy: If you have saved the project using the commissioning software, carry out a new download for your project. Save using the function "Copy RAM to ROM" or with p0971 = 1 so that all of the parameter files are again completely written to the non-volatile memory.

F01036 (A) ACX: Parameter back-up file missing

Reaction: NONE (OFF1, OFF2, OFF3)

Acknowledge: IMMEDIATELY

Cause: When downloading the device parameterization, a parameter back-up file associated with a drive object cannot be found. Neither a PSxxxyyy.ACX, a PSxxxyyy.NEW nor a PSxxxyyy.BAK parameter back-up file exists in the non-volatile memory for this drive object.
Fault value (r0949, interpret hexadecimal):
Byte 1: yyy in the file name PSxxxyyy.ACX
yyy = 000 --> consistency back-up file
yyy = 001 ... 062 --> drive object number
yyy = 099 --> PROFIBUS parameter back-up file
Byte 2, 3, 4:
Only for internal Siemens troubleshooting.

Remedy: If you have saved the project data using the commissioning software, carry out a new download for your project. Save using the function "Copy RAM to ROM" or with p0971 = 1 so that all of the parameter files are again completely written to the non-volatile memory.
If you have not saved the project data, then first commissioning of the system has to be carried out again.

F01037 (A) ACX: Re-naming the parameter back-up file unsuccessful

Reaction: NONE (OFF1, OFF2, OFF3)

Acknowledge: IMMEDIATELY

Cause: Re-naming after saving a parameter back-up file in the non-volatile memory was unsuccessful.
One of the parameter back-up files to be re-named had the "read only" attribute. The parameter back-up files are saved in the directory \USER\SINAMICS\DATA.
It is possible that the non-volatile memory is defective.
Fault value (r0949, interpret hexadecimal):
Byte 1: yyy in the file names PSxxxyyy.* or CAxxxyyy.* or CCxxxyyy.*
yyy = 000 --> consistency back-up file
yyy = 099 --> PROFIBUS parameter back-up file PSxxx099.*
Byte 2: xxx in the file name PSxxxyyy.*
xxx = 000 --> data save started with p0971 = 1
xxx = 010 --> data save started with p0971 = 10
xxx = 011 --> data save started with p0971 = 11
xxx = 012 --> data save started with p0971 = 12
Byte 4, 3:
Only for internal Siemens troubleshooting.

Remedy: - check whether one of the files to be overwritten has the attribute "read only" and change this file attribute to "writable". Check all of the files (PSxxxyyy.*, CCxxxyyy.*, CAxxxyyy.*) that belong to drive yyy designated in the fault value.
- replace the memory card or Control Unit.

F01038 (A) ACX: Loading the parameter back-up file unsuccessful

Reaction: NONE (OFF1, OFF2, OFF3)

Acknowledge: IMMEDIATELY

Cause: An error has occurred when downloading PSxxxyyy.ACX or PTxxxyyy.ACX files from the non-volatile memory.
Fault value (r0949, interpret hexadecimal):
Byte 1: yyy in the file name PSxxxyyy.ACX
yyy = 000 --> consistency back-up file
yyy = 001 ... 062 --> drive object number
yyy = 099 --> PROFIBUS parameter back-up file
Byte 2:
255 = incorrect drive object type
254 = topology comparison unsuccessful -> drive object type was not able to be identified
Reasons could be:
- incorrect component type in the actual topology
- component does not exist in the actual topology
- component not active
Otherwise for internal Siemens troubleshooting.
Byte 4, 3:
Only for internal Siemens troubleshooting.

Remedy: - If you have saved the project data using the commissioning software, carry out a new download for your project. Save using the function "Copy RAM to ROM" or with p0971 = 1 so that all of the parameter files are again completely written to the non-volatile memory.
- replace the memory card or Control Unit.

F01039 (A) ACX: Writing to the parameter back-up file was unsuccessful

Reaction: NONE (OFF1, OFF2, OFF3)

Acknowledge: IMMEDIATELY

Cause: Writing to at least one parameter back-up file PSxxxyyy.*** in the non-volatile memory was unsuccessful.
- In the directory /USER/SINAMICS/DATA/ at least one parameter back-up file PSxxxyyy.*** 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.
Fault value (r0949, interpret hexadecimal):
dcba hex
a = yyy in the file names PSxxxyyy.***
a = 000 --> consistency back-up file
a = 001 ... 062 --> drive object number
a = 099 --> PROFIBUS parameter back-up file
b = xxx in the file names PSxxxyyy.***
b = 000 --> data save started with p0971 = 1
b = 010 --> data save started with p0971 = 10
b = 011 --> data save started with p0971 = 11
b = 012 --> data save started with p0971 = 12
d, c:
Only for internal Siemens troubleshooting.

Remedy: - check the file attribute of the files (PSxxxyyy.***, CAxxxyyy.***, CCxxxyyy.***) and, if required, change from "read only" to "writeable".
- check the free memory space in the non-volatile memory. Approx. 80 kbyte of free memory space is required for every drive object in the system.
- replace the memory card or Control Unit.

F01040 Save parameter settings and carry out a POWER ON

Reaction: OFF2

Acknowledge: POWER ON

Cause: A parameter has been changed that requires the parameters to be backed up and the Control Unit to be switched OFF and ON again.

Remedy: - Save parameters (p0971).
- Switch Control Unit OFF/ON (POWER ON).

F01042 Parameter error during project download

Reaction: OFF2 (NONE, OFF1, OFF3)

Acknowledge: IMMEDIATELY

Cause: An error was detected when downloading a project using the commissioning software (e.g. incorrect parameter value).
For the specified parameter, it was detected that dynamic limits were exceeded that may possibly depend on other parameters.
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.
108: Unit unknown.
Additional values:
Only for internal Siemens troubleshooting.

Remedy: - 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

Reaction: OFF2 (OFF1, OFF3)

Acknowledge: IMMEDIATELY

Cause: A fatal error was detected when downloading a project using the commissioning software.
Fault value (r0949, decimal interpretation):
1: Device status cannot be changed to Device Download (drive object ON?).
2: Incorrect drive object number.
8: Maximum number of drive objects that can be generated exceeded.
11: Error while generating a drive object (global component).
12: Error while generating a drive object (drive component).
13: Unknown drive object type.
14: Drive status cannot be changed to "ready for operation" (p0947 and p0949).
15: Drive status cannot be changed to drive download.
16: Device status cannot be changed to "ready for operation".
18: A new download is only possible if the factory settings are restored for the drive unit.
20: The configuration is inconsistent.
Additional values: only for internal Siemens troubleshooting.

Remedy: - use the current version of the commissioning software.
- modify the offline project and download again (e.g. compare the motor and Power Module in the offline project and on the drive).
- change the drive state (is a drive rotating or is there a message/signal?).
- carefully note any other messages/signals and remove their cause.

F01044 CU: Descriptive data error

Reaction: OFF2

Acknowledge: POWER ON

Cause: An error was detected when loading the descriptive data saved in the non-volatile memory.

Remedy: Replace the memory card or Control Unit.

A01045 Configuring data invalid

Reaction: NONE

Acknowledge: NONE

Cause: An error was detected when evaluating the parameter files PSxxxyyy.ACX, PTxxxyyy.ACX, CAxxxyyy.ACX, or CCxxxyyy.ACX saved in the non-volatile memory.
Alarm value (r2124, interpret hexadecimal):
Only for internal Siemens troubleshooting.

Remedy: Restore the factory setting using (p0970 = 1) and re-load the project to the drive unit. Operation without any restrictions is then possible.
After downloading the project, save the parameters in STARTER using "Copy RAM to ROM" or with p0971 = 1. This overwrites the incorrect parameter files in the non-volatile memory.

A01049 It is not possible to write to file

Reaction: NONE

Acknowledge: NONE

Cause: It is not possible to write into a write-protected file (PSxxxxxx.acx). The write request was interrupted.
Alarm value (r2124, interpret decimal):
Drive object number.

Remedy: Check whether the "write protected" attribute has been set for the files in the non-volatile memory under .../USER/SINAMICS/DATA/... When required, remove write protection and save again (e.g. set p0971 to 1).

A01064 (F) CU: Internal error (CRC)

Reaction: NONE

Acknowledge: NONE

Cause: CRC error in the Control Unit program memory

Remedy: - carry out a POWER ON (power off/on) for all components.
- upgrade firmware to later version.
- contact the Hotline.

A01066 Buffer memory: 70% fill level reached or exceeded

Reaction: NONE
Acknowledge: NONE
Cause: The non-volatile buffer memory for parameter changes is filled to at least 70%.
This can also occur if the buffer memory is active (p0014 = 1) and parameters are continually changed via a fieldbus system.
Remedy: If required, de-activate and clear the buffer memory (p0014 = 0).
If required, clear the buffer memory (p0014 = 2).
In the following cases, the entries in the buffer memory are transferred into the ROM and then the buffer memory is cleared:
- p0971 = 1
- power down/power up the Control Unit

See also: p0014 (Buffer memory mode)

A01067 Buffer memory: 100 % fill level reached

Reaction: NONE
Acknowledge: NONE
Cause: The non-volatile buffer memory for parameter changes is filled to 100%.
All additional parameter changes will no longer be taken into account in the non-volatile buffer memory. However, parameter changes can still be made in the volatile memory (RAM).
This can also occur if the buffer memory is active (p0014 = 1) and parameters are continually changed via a fieldbus system.
Remedy: If required, de-activate and clear the buffer memory (p0014 = 0).
If required, clear the buffer memory (p0014 = 2).
In the following cases, the entries in the buffer memory are transferred into the ROM and then the buffer memory is cleared:
- p0971 = 1
- power down/power up the Control Unit

See also: p0014 (Buffer memory mode)

A01069 Parameter backup and device incompatible

Reaction: NONE
Acknowledge: NONE
Cause: The parameter backup on the memory card and the device type do not match (e.g. a memory card with the parameter backup of a SINAMICS CU230 is inserted in SINAMICS CU240).
The module boots with the factory settings.
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.
- remove the memory card and carry out POWER ON.
- save the parameters (p0971 = 1).

F01105 (A) CU: Insufficient memory

Reaction: OFF1
Acknowledge: POWER ON
Cause: Too many data sets are configured on this Control Unit.
Fault value (r0949, decimal interpretation):
Only for internal Siemens troubleshooting.
Remedy:
- reduce the number of data sets.

F01107 Save to memory card unsuccessful

Reaction: NONE

Acknowledge: IMMEDIATELY

Cause: A data save to the memory card was not able to be successfully carried out.
- Memory card is defective.
- Insufficient space on memory card.
Fault value (r0949, decimal interpretation):
1: The file on the RAM was not able to be opened.
2: The file on the RAM was not able to be read.
3: A new directory could not be created on the memory card.
4: A new file could not be created on the memory card.
5: A new file could not be written on the memory card.

Remedy: - try to save again.
- replace the memory card or Control Unit.

F01112 CU: Power unit not permissible

Reaction: NONE

Acknowledge: IMMEDIATELY

Cause: The connected power unit cannot be used together with this Control Unit.
Fault value (r0949, decimal interpretation):
1: Power unit is not supported (e.g. PM340).

Remedy: Replace the power unit that is not permissible by a component that is permissible.

F01120 (A) Terminal initialization has failed

Reaction: OFF1 (OFF2)

Acknowledge: IMMEDIATELY (POWER ON)

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 (power off/on) for all components.
- upgrade firmware to later version.
- contact the Hotline.
- replace the Control Unit.

F01122 (A) Frequency at the measuring probe input too high

Reaction: OFF1 (OFF2)

Acknowledge: IMMEDIATELY

Cause: The frequency of the pulses at the measuring probe input is too high.
Fault value (r0949, decimal interpretation):
1: DI 1 (term. 6)
2: DI 3 (term. 8)

Remedy: Reduce the frequency of the pulses at the measuring probe input.

F01205 CU: Time slice overflow

Reaction: OFF2

Acknowledge: POWER ON

Cause: Insufficient computation time.
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.

Remedy: Contact the Hotline.

F01250 CU: CU-EEPROM incorrect read-only data

Reaction: NONE (OFF2)

Acknowledge: POWER ON

Cause: Error when reading the read-only data of the EEPROM in the Control Unit.
Fault value (r0949, decimal interpretation):
Only for internal Siemens troubleshooting.

Remedy: - carry out a POWER ON.
- replace the Control Unit.

A01251 CU: CU-EEPROM incorrect read-write data

Reaction: NONE

Acknowledge: NONE

Cause: Error when reading the read-write data of the EEPROM in the Control Unit.
Alarm value (r2124, interpret decimal):
Only for internal Siemens troubleshooting.

Remedy: For alarm value r2124 < 256, the following applies:
- carry out a POWER ON.
- replace the Control Unit.
For alarm value r2124 >= 256, the following applies:
- clear the fault memory (p0952 = 0).
- replace the Control Unit.

F01505 (A) BICO: Interconnection cannot be established

Reaction: NONE

Acknowledge: IMMEDIATELY

Cause: A PROFIdrive telegram has been set (p0922).
An interconnection contained in the telegram was not able to be established.
Fault value (r0949, decimal interpretation):
Parameter receiver that should be changed.

Remedy: Establish another interconnection.

F01510 BICO: Signal source is not float type

Reaction: NONE

Acknowledge: IMMEDIATELY

Cause: The requested connector output does not have the correct data type. This interconnection is not established.
Fault value (r0949, decimal interpretation):
Parameter number to which an interconnection should be made (connector output).

Remedy: Interconnect this connector input with a connector output having a float data type.

F01511 (A) BICO: Interconnection with different scalings

Reaction: NONE

Acknowledge: IMMEDIATELY

Cause: The requested BICO interconnection was established. However, a conversion is made between the BICO output and BICO input using the reference values.
- the BICO output has different normalized units than the BICO input.
- message only for interconnections within a drive object.
Example:
The BICO output has, as normalized unit, voltage and the BICO input has current.
This means that the factor p2002/p2001 is calculated between the BICO output and the BICO input.
p2002: contains the reference value for current
p2001: contains the reference value for voltage
Fault value (r0949, decimal interpretation):
Parameter number of the BICO input (signal sink).

Remedy: Not necessary.

F01512 BICO: No scaling available

Reaction: OFF2

Acknowledge: POWER ON

Cause: An attempt was made to determine a conversion factor for a scaling that does not exist.
Fault value (r0949, decimal interpretation):
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 (A) BICO: Interconnection cross DO with different scalings

Reaction: NONE

Acknowledge: IMMEDIATELY

Cause: The requested BICO interconnection was established. However, a conversion is made between the BICO output and BICO input using the reference values.
An interconnection is made between different drive objects and the BICO output has different normalized units than the BICO input or the normalized units are the same but the reference values are different.
Example 1:
BICO output with voltage normalized unit, BICO input with current normalized unit, BICO output and BICO input lie in different drive objects. This means that the factor p2002/p2001 is calculated between the BICO output and the BICO input.
p2002: contains the reference value for current
p2001: contains the reference value for voltage
Example 2:
BICO output with voltage normalized unit in drive object 1 (DO1), BICO input with voltage normalized unit in drive object 2 (DO2). The reference values for voltage (p2001) of the two drive objects have different values. This means that the factor p2001(DO1)/p2001(DO2) is calculated between the BICO output and the BICO input.
p2001: contains the reference value for voltage, drive objects 1, 2
Fault value (r0949, decimal interpretation):
Parameter number of the BICO input (signal sink).

Remedy: Not necessary.

A01514 (F) BICO: Error when writing during a reconnect

Reaction: NONE

Acknowledge: 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 double word BICO input in the second index, the memory areas overlap (e.g. p8861). The parameter is then reset to the factory setting.
Alarm value (r2124, interpret decimal):
Parameter number of the BICO input (signal sink).

Remedy: Not necessary.

F01515 (A) BICO: Writing to parameter not permitted as the master control is active

Reaction: NONE

Acknowledge: 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.

A01590 (F) Drive: Motor maintenance interval expired

Reaction: NONE

Acknowledge: 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).

F01600 SI P1: STOP A initiated

Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The drive-integrated "Safety Integrated" function on processor 1 has detected an error and initiated a STOP A.
- forced checking procedure of the safety shutdown path on processor 1 unsuccessful.
- subsequent response to fault F01611 (defect in a monitoring channel).
Fault value (r0949, decimal interpretation):
0: Stop request from processor 2.
1005: Pulses suppressed although STO not selected and there is no internal STOP A present.
1010: Pulses enabled although STO is selected or an internal STOP A is present.
9999: Subsequent response to fault F01611.

Remedy: - select Safe Torque Off and de-select again.
For fault value = 9999:
- carry out diagnostics for fault F01611.
Note:
STO: Safe Torque Off

F01611 SI P1: Defect in a monitoring channel

Reaction: NONE (OFF1, OFF2, OFF3)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The drive-integrated "Safety Integrated" function on processor 1 has detected a fault in the crosswise data comparison between the two monitoring channels and has initiated a STOP F.
Fault F01600 (SI P1: STOP A initiated) is output as a consequence of this fault.
Fault value (r0949, decimal interpretation):
0: Stop request from processor 2.
1 ... 999:
Number of the cross-checked data that resulted in this fault. This number is also displayed in r9795.
2: SI enable safety functions (p9601, p9801). Crosswise data comparison is only carried out for the supported bits.
3: SI F-DI changeover tolerance time (p9650, p9850).
8: SI PROFIsafe address (p9610, p9810).
9: SI debounce time for STO (p9651, p9851).
1000: Watchdog timer has expired. Within a time of approx. 5 x p9650, too many switching operations have occurred at F-DI, or STO (also as subsequent response) was initiated too frequently via PROFIsafe.
1001, 1002: Initialization error, change timer / check timer.
2000: Status of the STO selection for both monitoring channels are different.
2001: Feedback of the safe pulse suppression on the two monitoring channels are different.
6000 ... 6999:
Error in the PROFIsafe control.
For these fault values, the failsafe control signals (failsafe values) are transferred to the safety functions.
The significance of the individual message values is described in safety message C01711.

Remedy: Re fault values 1 ... 999 described in "Cause":
- check the cross-checked data that resulted in a STOP F.
- carry out a POWER ON (power off/on).
For fault value = 1000:
- check the wiring of the F-DI (contact problems).
- PROFIsafe: Remove contact problems/faults at the PROFIBUS master/PROFINET controller.
Re fault value = 1001, 1002:
- carry out a POWER ON (power off/on).
Re fault value = 2000, 2001, 2002, 2004, 2005:
- check the tolerance time F-DI changeover and if required, increase the value (p9650/p9850).
- check the wiring of the F-DI (contact problems).
- check the causes of the STO selection in r9772. When the SI Motion functions are active (p9501 = 1), STO can also be selected using these functions.
Re fault value = 6000 ... 6999:
Refer to the description of the message values in safety message C01711.
Re fault values that are described in "Cause":
- carry out a POWER ON (power off/on).
- contact the Hotline
- replace Control Unit.
Note:
F-DI: Failsafe Digital Input
STO: Safe Torque Off

N01620 (F, A)	SI P1: Safe Torque Off active
Reaction:	NONE
Acknowledge:	NONE
Cause:	The "Safe Torque Off" (STO) function has been selected on processor 1 using the input terminal and is active. Note: This message does not result in a safety stop response.
Remedy:	Not necessary. Note: STO: Safe Torque Off

F01625	SI P1: Sign-of-life error in safety data
Reaction:	OFF2
Acknowledge:	IMMEDIATELY (POWER ON)
Cause:	The drive-integrated "Safety Integrated" function on processor 1 has detected an error in the sign-of-life of the safety data and initiated a STOP A. - there is a communication error between processor 1 and processor 2 or communication has failed. - a time slice overflow of the safety software has occurred. Fault value (r0949, decimal interpretation): Only for internal Siemens troubleshooting.
Remedy:	- select Safe Torque Off and de-select again. - carry out a POWER ON (power off/on). - check whether additional faults are present and if required, perform diagnostics. - check the electrical cabinet design and cable routing for EMC compliance

F01649	SI P1: Internal software error
Reaction:	OFF2
Acknowledge:	IMMEDIATELY (POWER ON)
Cause:	An internal error in the Safety Integrated software on processor 1 has occurred. Note: This fault results in a STOP A that cannot be acknowledged. Fault value (r0949, interpret hexadecimal): Only for internal Siemens troubleshooting.
Remedy:	- carry out a POWER ON (power off/on). - re-commission the "Safety Integrated" function and carry out a POWER ON. - contact the Hotline. - replace Control Unit.

F01650 SI P1: Acceptance test required

Reaction: OFF2

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The drive-integrated "Safety Integrated" function on processor 1 requires an acceptance test.
Note:
This fault results in a STOP A that can be acknowledged.
Fault value (r0949, decimal interpretation):
130: Safety parameters for processor 2 not available.
Note:
This fault value is always output when Safety Integrated is commissioned for the first time.
1000: Reference and actual checksum on processor 1 are not identical (booting).
- at least one checksum-checked piece of data is defective.
2000: Reference and actual checksum on processor 1 are not identical (commissioning mode).
- reference checksum incorrectly entered on processor 1 (p9799 not equal to r9798).
- when de-activating the safety functions, p9501 was not deleted.
2001: Reference and actual checksum on processor 2 are not identical (commissioning mode).
- reference checksum incorrectly entered on processor 2 (p9899 not equal to r9898).
- when de-activating the safety functions, p9501 was not deleted.
2002: Enable of safety-related functions between the processor 1 and processor 2 differ (p9601 not equal to p9801).
2003: Acceptance test is required as a safety parameter has been changed.
2004: An acceptance test is required because a project with enabled safety-functions has been downloaded.
2005: The Safety logbook has identified that a functional safety checksum has changed. An acceptance test is required.
2020: Error when saving the safety parameters for the processor 2.
9999: Subsequent response of another safety-related fault that occurred when booting that requires an acceptance test.

Remedy: For fault value = 130:
- carry out safety commissioning routine.
For fault value = 1000:
- again carry out safety commissioning routine.
- replace the memory card or Control Unit.
For fault value = 2000:
- check the safety parameters on processor 1 and adapt the reference checksum (p9799).
For fault value = 2001:
- check the safety parameters on processor 2 and adapt the reference checksum (p9899).
For fault value = 2002:
- enable the safety-related functions on processor 1 and check processor 2 (p9601 = p9801).
Re fault value = 2003, 2004, 2005:
- Carry out an acceptance test and generate an acceptance report.
The fault with fault value 2005 can only be acknowledged when the "STO" function is de-selected.
For fault value = 2020:
- again carry out safety commissioning routine.
- replace the memory card or Control Unit.
For fault value = 9999:
- carry out diagnostics for the other safety-related fault that is present.
Note:
STO: Safe Torque Off
See also: p9799 (SI setpoint checksum SI parameters (processor 1)), p9899 (SI setpoint checksum SI parameters (processor 2))

F01651 SI P1: Synchronization safety time slices unsuccessful

Reaction: OFF2

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The "Safety Integrated" function requires synchronization of the safety time slices between processor 1 and processor 2. This synchronization was unsuccessful.
Note:
This fault results in a STOP A that cannot be acknowledged.
Fault value (r0949, decimal interpretation):
Only for internal Siemens troubleshooting.

Remedy: - carry out a POWER ON (power off/on).

F01653 SI P1: PROFIBUS configuration error

Reaction: NONE (OFF1, OFF2, OFF3)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: There is a PROFIBUS configuration error for using Safety Integrated monitoring functions with a higher-level control.
Note:
For safety functions that have been enabled, this fault results in a STOP A that cannot be acknowledged.
Fault value (r0949, decimal interpretation):
200: A safety slot for receive data from the control has not been configured.
210, 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.
250: A PROFIsafe slot is configured in the higher-level F control, however PROFIsafe is not enabled in the drive.
300: A safety slot for the send data to the control has not been configured.
310, 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.
Remedy: The following generally applies:
- check and, if necessary, correct the PROFIBUS configuration of the safety slot on the master side.
- upgrade the Control Unit software.
For fault value = 250:
- remove the PROFIsafe configuring in the higher-level F control or enable PROFIsafe in the drive.
Re fault value = 231, 331:
- configure the PROFIsafe telegram matching the parameterization in the F-PLC.
The following applies for p9501.30 = 1 (F-DI via PROFIsafe is enabled): PROFIsafe telegram 900 must be configured.
The following applies for p9501.30 = 0 (F-DI via PROFIsafe is not enabled): PROFIsafe telegram 30 must be configured.

F01655 SI P1: Align monitoring functions

Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: An error has occurred when aligning the Safety Integrated monitoring functions on processor 1 and processor 2. No common set of supported SI monitoring functions was able to be determined.
- there is a communication error between processor 1 and processor 2 or communication has failed.
Note:
This fault results in a STOP A that cannot be acknowledged.
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Remedy: - carry out a POWER ON (power off/on).
- check the electrical cabinet design and cable routing for EMC compliance

F01656 SI P1: Parameter processor 2 parameter error

Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: When accessing the Safety Integrated parameters for the processor 2 in the non-volatile memory, an error has occurred.
Note:
This fault results in a STOP A that can be acknowledged.
Fault value (r0949, decimal interpretation):
129: Safety parameters for processor 2 corrupted.
131: Internal software error
132: Communication errors when uploading or downloading the safety parameters.
255: Internal software error on the Control Unit.
Remedy: - re-commission the safety functions.
- replace the memory card or Control Unit.
For fault value = 129:
- activate the safety commissioning mode (p0010 = 95).
- adapt the PROFIsafe address (p9610).
- start the copy function for SI parameters (p9700 = D0 hex).
- acknowledge data change (p9701 = DC hex).
- exit the safety commissioning mode (p0010 = 0).
- save all parameters (p0971 = 1 or "copy RAM to ROM").
- carry out a POWER ON (power off/on) for the Control Unit.
For fault value = 132:
- check the electrical cabinet design and cable routing for EMC compliance

F01659 SI P1: Write request for parameter rejected

Reaction: OFF2

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The write request for one or several Safety Integrated parameters on processor 1 was rejected.
Note:
This fault does not result in a safety stop response.
Fault value (r0949, decimal interpretation):
1: The Safety Integrated password is not set.
2: A reset of the drive parameters was selected. However, the Safety Integrated parameters were not reset, as Safety Integrated is presently enabled.
3: The interconnected STO input is in the simulation mode.
10: An attempt was made to enable the STO function although this cannot be supported.
14: An attempt was made to enable the PROFIsafe communications although this cannot be supported.
15: An attempt was made to enable the motion monitoring functions integrated in the drive although these cannot be supported.
18: An attempt was made to enable the PROFIsafe function for Basic Functions although this cannot be supported.
20: An attempt was made to simultaneously enable both the drive-integrated motion monitoring functions via integrated F-DI and STO via terminals, even though these cannot be supported at the same time.
21: An attempt was made to enable the Safety Integrated functions although these cannot be supported by the connected Power Module.
See also: p0970, p3900, r9771, r9871

Remedy: For fault value = 1:
- set the Safety Integrated password (p9761).
For fault value = 2:
- Inhibit Safety Integrated (p9501, p9601) or reset safety parameters (p0970 = 5), then reset the drive parameters again.
For fault value = 3:
- end the simulation mode for the digital input (p0795).
Re fault value = 10, 14, 15, 18, 20:
- check whether there are faults in the safety function alignment (F01655, F30655) and if required, carry out diagnostics for the faults involved.
- use a Control Unit that supports the required function.
For fault value = 21:
- use a Power Module that supports the Safety Integrated functions.
Note:
STO: Safe Torque Off
See also: p9501, p9601, p9761, p9801

F01660 SI P1: Safety-related functions not supported

Reaction: OFF2

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The Power Module does not support the safety-related functions. Safety Integrated cannot be commissioned.
Note:
This fault does not result in a safety stop response.

Remedy: - use a Power Module that supports the safety-related functions.

F01662 Error internal communications

Reaction: OFF2

Acknowledge: POWER ON

Cause: A module-internal communication error has occurred.
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.

Remedy: - carry out a POWER ON (power off/on).
- upgrade firmware to later version.
- contact the Hotline.

F01663 SI P1: Copying the SI parameters rejected

Reaction: OFF2

Acknowledge: IMMEDIATELY (POWER ON)

Cause: One of the following values is saved in p9700 or was entered offline: 87 or 208.
This is the reason that when booting, an attempt is made to copy SI parameters from processor 1 to processor 2. However, no safety-relevant function has been selected on processor 1 (p9501 = 0, p9601 = 0). This is the reason that copying is not possible.
Note:
This fault does not result in a safety stop response.
See also: p9700 (SI copy function)

Remedy: - Set p9700 to 0.
- Check p9501 and/or p9601 and if required, correct.
- Restart the copying function by entering the corresponding value into p9700.

F01665 SI P1: System is defective

Reaction: OFF2

Acknowledge: IMMEDIATELY

Cause: A system defect was detected before the last boot or in the actual one. The system might have been rebooted (reset).
Fault value (r0949, interpret hexadecimal):
200000 hex, 400000 hex, 8000yy hex (yy any):
- Fault in the actual booting/operation.
800004 hex:
- Parameters p9500/p9300 are, under certain circumstances, not the same. In addition, Safety message C01711/C30711 is displayed.
Additional values:
- defect before the last time that the system booted.

Remedy: - carry out a POWER ON (power off/on).
- upgrade firmware to later version.
- contact the Hotline.
Re fault value = 200000 hex, 400000 hex, 8000yy hex (yy any):
- ensure that the Control Unit is connected to the Power Module.
Re fault value = 800004 hex:
- Check that parameters p9500/p9300 are the same.

A01666 (F) SI Motion P1: Steady-state (static) 1 signal at the F-DI for safety-relevant acknowledgement

Reaction: NONE

Acknowledge: NONE

Cause: A logical 1 signal is present at the F-DI configured in p10006 for more than 10 seconds.
If, at the F-DI no acknowledgment was performed for safe acknowledgment, then a steady-state logical and 0 signal must be present. This avoids unintentional safety-relevant acknowledgement (or the "Internal Event Acknowledge" signal) if a wire breaks or one of the two digital inputs bounces.

Remedy: Set the fail-safe digital input (F-DI) to a logical 0 signal (10006).
Note:
F-DI: Failsafe Digital Input

A01669 (F, N) SI Motion: Unfavorable combination of motor and power unit

Reaction: NONE

Acknowledge: NONE

Cause: The combination of motor and power unit used is not suitable for using safe motion monitoring functions without an encoder.
Alarm value (r2124, interpret decimal):
Number of the motor data set, which caused the fault.

Remedy: Use a suitable power unit with a lower power rating or a motor with a higher power rating.

F01680	**SI Motion P1: Checksum error safety monitoring functions**
Reaction:	OFF2
Acknowledge:	IMMEDIATELY (POWER ON)
Cause:	The actual checksum calculated by the drive and entered in r9728 via the safety-relevant parameters does not match the reference checksum saved in p9729 at the last machine acceptance. Safety-relevant parameters have been changed or a fault is present. Note: This fault results in a STOP A that can be acknowledged. Fault value (r0949, decimal interpretation): 0: Checksum error for SI parameters for motion monitoring. 1: Checksum error for SI parameters for actual values. 2: Checksum error for SI parameters for component assignment.
Remedy:	- check the safety-relevant parameters and if required, correct. - perform a POWER ON if safety parameters requiring a POWER ON have been modified. - carry out an acceptance test.

F01681	**SI Motion P1: Incorrect parameter value**
Reaction:	OFF2
Acknowledge:	IMMEDIATELY (POWER ON)
Cause:	The parameter cannot be parameterized with this value. Note: This fault does not result in a safety stop response. Fault value (r0949, decimal interpretation): Parameter number with the incorrect value. 9522: The gear stage was set too high. 9500: p9500 not equal to p9300 9511: p9511 not equal to p9311
Remedy:	Correct the parameter value. With hysteresis/filtering enabled (p9501.16 = 1), the following applies: - Set parameters p9546/p9346 and p9547/p9347 acc. to the following rule: p9546 >= 2 x p9547; p9346 >= 2 x p9347. For fault value = 9522: - Correct parameters.

F01682	**SI Motion P1: Monitoring function not supported**
Reaction:	OFF2
Acknowledge:	IMMEDIATELY (POWER ON)
Cause:	The monitoring function enabled in p9501, p9601 or p9801 is not supported in this firmware version. Note: This fault results in a STOP A that cannot be acknowledged. Fault value (r0949, decimal interpretation): 1: Monitoring function SLP not supported (p9501.1). 2: Monitoring function SCA not supported (p9501.7 and p9501.8 ... 15). 3: Monitoring function SLS override not supported (p9501.5). 4: Monitoring function external ESR activation not supported (p9501.4). 5: Monitoring function F-DI in PROFIsafe not supported (p9501.30). 6: Enable actual value synchronization not supported (p9501.3). 9: Monitoring function not supported, enable bit reserved (p9501.2, p9501.17 ... 29, p9501.31, if required p9501.6). 11: Only encoderless monitoring functions integrated in the drive are supported. 12: Safety Integrated for SINUMERIK is not supported on this Control Unit. 20: Motion monitoring functions integrated in the drive are only supported in conjunction with PROFIsafe (p9501/p9601.1 ... 2 and p9801.1 ... 2). 21: PROFIsafe only supported in conjunction with motion monitoring functions integrated in the drive (p9501/p9601.1 ... 2 and p9801.1 ... 2). 23: CU240 does not support monitoring functions requiring an encoder. 25: Drive-integrated motion monitoring functions not supported (p9501, p9601.2).
Remedy:	De-select the monitoring function involved (p9501, p9601, p9801). Note: SCA: Safe Cam SLP: Safely-Limited Position SLS: Safely-Limited Speed SDI: Safe Direction (safe motion direction) See also: p9501 (SI Motion enable safety functions (processor 1)), r9771 (SI common functions (processor 1))

F01683 SI Motion P1: SLS enable missing

Reaction: OFF2

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The safety-relevant function "SLS" is not enabled in p9501 although other safety-relevant monitoring functions are enabled.
Note:
This fault does not result in a safety stop response.

Remedy: Enable the function "SLS" (p9501.0) and carry out a POWER ON.
Note:
SLS: Safely-Limited Speed
See also: p9501 (SI Motion enable safety functions (processor 1))

F01690 SI Motion: Data save problem for the NVRAM

Reaction: NONE (OFF1, OFF2, OFF3)

Acknowledge: POWER ON

Cause: There is not sufficient memory space in the NVRAM on the drive to save parameters r9781 and r9782 (safety logbook).
Note:
This fault does not result in a safety stop response.
Fault value (r0949, decimal interpretation):
0: There is no physical NVRAM available in the drive.
1: There is no longer any free memory space in the NVRAM.

Remedy: For fault value = 0:
- use a Control Unit NVRAM.
For fault value = 1:
- de-select functions that are not required and that take up memory space in the NVRAM.
- contact the Hotline.
Note:
NVRAM: Non-Volatile Random Access Memory (non-volatile read and write memory)

F01692 SI Motion P1: Parameter value not permitted for encoderless

Reaction: OFF2

Acknowledge: IMMEDIATELY (POWER ON)

Cause: For encoderless motion monitoring functions, the parameter cannot be parameterized with this value.
Note:
This fault does not result in a safety stop response.
Fault value (r0949, decimal interpretation):
Parameter number with the incorrect value.
See also: p9501 (SI Motion enable safety functions (processor 1))

Remedy: - Correct the parameter specified in the fault value.
See also: p9501 (SI Motion enable safety functions (processor 1))

A01693 (F) SI Motion P1: Safety parameter setting changed, POWER ON required

Reaction: NONE

Acknowledge: NONE

Cause: Safety parameters have been changed; these will only take effect following a POWER ON.
Alarm value (r2124, interpret decimal):
Parameter number of the safety parameter which has changed, necessitating a POWER ON.

Remedy: - carry out a POWER ON (power off/on).

A01696 (F) SI Motion: Testing of the motion monitoring functions selected when booting

Reaction: NONE
Acknowledge: NONE
Cause: The test of the motion monitoring functions was already illegally active when booting.
This is the reason that the test is only carried out again after selecting the forced checking procedure parameterized in p9705.
Note:
This message does not result in a safety stop response.
See also: p9705 (SI Motion: Test stop signal source)
Remedy: De-select the forced checking procedure of the safety motion monitoring functions and then select again.
The signal source for initiation is parameterized in binector input p9705.
See also: p9705 (SI Motion: Test stop signal source)

A01697 (F) SI Motion: Motion monitoring functions must be tested

Reaction: NONE
Acknowledge: NONE
Cause: The time set in p9559 for the forced checking procedure of the safety motion monitoring functions has been exceeded. A new test is required.
After next selecting the forced checking procedure parameterized in p9705, the message is withdrawn and the monitoring time is reset.
Note:
This message does not result in a safety stop response.
As the shutdown paths are not automatically checked during booting, an alarm is always issued once booting is complete.
See also: p9559 (SI Motion forced checking procedure timer (processor 1)), p9705 (SI Motion: Test stop signal source)
Remedy: Carry out the forced checking procedure of the safety motion monitoring functions.
The signal source for initiation is parameterized in binector input p9705.
See also: p9705 (SI Motion: Test stop signal source)

A01698 (F) SI P1: Commissioning mode active

Reaction: NONE
Acknowledge: 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.
See also: p0010 (Drive commissioning parameter filter)
Remedy: Not necessary.

A01699 (F) SI P1: Shutdown path must be tested

Reaction: NONE
Acknowledge: NONE
Cause: The time set in p9659 for the forced checking procedure of the safety shutdown paths has been exceeded. The safety shutdown paths must be re-tested.
After the next time the "STO" function is de-selected, the message is withdrawn and the monitoring time is reset.
Note:
This message does not result in a safety stop response.
See also: p9659 (SI forced checking procedure timer)
Remedy: Select STO and then de-select again.
Note:
STO: Safe Torque Off

C01700 SI Motion P1: STOP A initiated

Reaction: OFF2

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The drive is stopped via a STOP A (pulses are suppressed via the safety shutdown path of processor 1).
Possible causes:
- stop request from processor 2.
- Pulses not suppressed after test stop selection.
- subsequent response to the message C01706 "SI Motion P1: SAM/SBR limit exceeded".
- Subsequent response to the message C01714 "SI Motion P1: Safely-Limited Speed exceeded".
- Subsequent response to the message C01701 "SI Motion P1: STOP B initiated".

Remedy:
- remove the cause of the fault on the monitoring channel of processor 2.
- carry out a diagnostics routine for message C01706.
- carry out a diagnostics routine for message C01714.
- carry out a diagnostics routine for message C01701.
- check the shutdown path of processor 1.
- replace Power Module.
- replace Control Unit.

This message can be acknowledged without a POWER ON as follows:
- via F-DI or PROFIsafe.

Note:
F-DI: Failsafe Digital Input
SAM: Safe Acceleration Monitor (safe acceleration monitoring)
SBR: Safe Brake Ramp (safe brake ramp monitoring)

C01701 SI Motion P1: STOP B initiated

Reaction: OFF3

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The drive is stopped via a STOP B (braking along the OFF3 deceleration ramp).
As a result of this fault, after the speed threshold parameterized in p9560 is fallen below, message C01700 "STOP A initiated" is output.
Possible causes:
- stop request from processor 2.
- Subsequent response to the message C01714 "SI Motion P1: Safely-Limited Speed exceeded".
- subsequent response to the message C01711 "SI Motion P1: Defect in a monitoring channel".
- subsequent response to the message C01707 "SI Motion P1: tolerance for safe operating stop exceeded".

Remedy:
- remove the cause of the fault on the monitoring channel of processor 2.
- carry out a diagnostics routine for message C01714.
- carry out a diagnostics routine for message C01711.
- carry out a diagnostics routine for message C01707.

This message can be acknowledged without a POWER ON as follows:
- motion monitoring functions integrated in the drive: F-DI or PROFIsafe.

Note:
F-DI: Failsafe Digital Input

C01706 SI Motion P1: SAM/SBR limit exceeded

Reaction: NONE

Acknowledge: IMMEDIATELY (POWER ON)

Cause: Motion monitoring functions with set acceleration monitoring (p9506 = 3):
SAM - safe acceleration monitoring. After initiating STOP B (SS1) the velocity has exceeded the selected tolerance.
Motion monitoring functions with set brake ramp monitoring (p9506 = 1):
SBR - Safe brake ramp monitoring. After initiating STOP B (SS1) or SLS changeover to the lower speed stage, the speed has exceeded the selected tolerance.
The drive is shut down by the message C01700 "SI Motion: STOP A initiated".

Remedy: Check the braking behavior and, if necessary, adapt the tolerance for the parameter settings of the "SAM" or the "SBR" function.
This message can be acknowledged without a POWER ON as follows:
- motion monitoring functions integrated in the drive: via F-DI or PROFIsafe.

Note:
F-DI: Failsafe Digital Input
SAM: Safe Acceleration Monitor (safe acceleration monitoring)
SBR: Safe Brake Ramp (safe brake ramp monitoring)
See also: p9548 (SI Motion SAM actual velocity tolerance (Control Unit)), p9581 (SI Motion brake ramp reference value (processor 1)), p9582 (SI Motion brake ramp delay time (processor 1)), p9583 (SI Motion brake ramp monitoring time (processor 1))

C01711	**SI Motion P1: Defect in a monitoring channel**
Reaction:	NONE
Acknowledge:	IMMEDIATELY (POWER ON)

Cause: When cross-checking and comparing the two monitoring channels, the drive detected a difference between the input data or results of the monitoring functions and initiated a STOP F. One of the monitoring functions no longer reliably functions - i.e. safe operation is no longer possible.
If at least one monitoring function is active, then message C01701 "SI Motion: STOP B initiated" is output.
The message value that resulted in a STOP F is displayed in r9725. The message values described involve the crosswise data comparison between processor 1 and processor 2.
The following message values may also occur in the following cases if the cause that is explicitly mentioned does not apply:
- synchronization error between processor 1 and processor 2.
Message value (r2124, interpret decimal):
0 to 999: Number of the cross-checked data that resulted in this fault.
0: Stop request from the other monitoring channel.
1: Status image of monitoring functions SLS or SAM/SBR (result list 1) (r9710[0], r9710[1]).
2: Status image of monitoring function n < nx (result list 2) (r9711[0], r9711[1]).
3: The position actual value differential (r9713) between the two monitoring channels is greater than the tolerance in p9542/p9342.
4: Error when synchronizing the crosswise data comparison between the two channels.
5: Function enable signals (p9501/p9301)
6: Limit value for SLS1 (p9531[0]/p9331[0])
7: Limit value for SLS2 (p9531[1]/p9331[1])
8: Limit value for SLS3 (p9531[2]/p9331[2])
9: Limit value for SLS4 (p9531[3]/p9331[3])
31: Position tolerance (p9542/p9342).
42: Shutdown speed, pulse canc. (p9560/p9360)
43: Memory test, stop response (STOP A).
44 ... 57: General
Possible cause 1 (during commissioning or parameter modification)
The tolerance value for the monitoring function is not the same on the two monitoring
channels.
Possible cause 2 (during active operation)
The limit values are based on the current actual value (r9713). If the safe actual values on the two monitoring channels do not match, the limit values, which have been set at a defined interval, will also be different (i.e. corresponding to fault value 3). This can be ascertained by checking the safe actual positions.
44: Position actual value (r9713) + limit value for SLS1 (p9531[0]/p9331[0])
45: Position actual value (r9713) - limit value for SLS1 (p9531[0]/p9331[0])
46: Position actual value (r9713) + limit value for SLS2 (p9531[1]/p9331[1])
47: Position actual value (r9713) - limit value for SLS2 (p9531[1]/p9331[1])
48: Position actual value (r9713) + limit value for SLS3 (p9531[2]/p9331[2])
49: Position actual value (r9713) - limit value for SLS3 (p9531[2]/p9331[2])
50: Position actual value (r9713) + limit value for SLS4 (p9531[3]/p9331[3])
51: Position actual value (r9713) - limit value for SLS4 (p9531[3]/p9331[3])
54: Position actual value (r9713) + limit value nx (p9546/p9346) + tolerance (p9542/p9342)
55: Position actual value (r9713) + limit value nx (p9546/p9346)
56: Position actual value (r9713) - limit value nx (p9546/p9346)
57: Position actual value (r9713) - limit value nx (p9546/p9346) - tolerance (p9542/p9342)
58: Actual stop request.
75: Velocity limit nx (p9546, p9346).
76: Stop response for SLS1 (p9563[0]/p9363[0])
77: Stop response for SLS2 (p9563[1]/p9363[1])
78: Stop response for SLS3 (p9563[2]/p9363[2])
79: Stop response for SLS4 (p9563[3]/p9363[3])
81: Velocity tolerance for SAM (p9548/p9348)
83: Acceptance test timer (p9558/p9358)
230: Filter time constant for n < nx.
231: Hysteresis tolerance for n < nx.
232: Smoothed velocity actual value.
233: Smoothed velocity actual value + limit value nx / safety monitoring clock cycle + hysteresis tolerance.
234: Smoothed velocity actual value + limit value nx / safety monitoring clock cycle.
235: Smoothed velocity actual value - limit value nx / safety monitoring clock cycle.
236: Smoothed velocity actual value - limit value nx / safety monitoring clock cycle - hysteresis tolerance.
237: SGA n < nx.
238: Speed limit value for SAM (p9568/p9368).
239: Acceleration for SBR (p9581/p9381 and p9583/p9383).
240: Inverse value of acceleration for SBR (p9581/p9381 and p9583/p9383).
241: Deceleration time for SBR (p9582/p9382).
244: Encoderless actual value sensing filter time (p9587/p9387).

245: Encoderless actual value sensing minimum current (p9588/p9388).
246: Voltage tolerance acceleration (p9589/p9389).
247: SDI tolerance (p9564/p9364).
248: SDI positive upper limit (0x7fffffff).
249: Position actual value (r9713) - SDI tolerance.
250: Position actual value (r9713) + SDI tolerance.
251: SDI negative lower limit (0x80000001).
252: SDI stop response (p9566/p9366).
253: SDI delay time (p9565/p9365).
254: Setting, behavior during pulse suppression (p9509/p9309).
1000: Watchdog timer has expired. Too many signal changes have occurred at the F-DI.
1001: Initialization error of watchdog timer.
1005: Pulses already suppressed for test stop selection.
1011: Acceptance test status between the monitoring channels differ.
1020: Cyc. communication failure between the monit. cycles.
1041: Current absolute value too low (encoderless)
1042: Current/voltage plausibility error
1043: Too many acceleration phases
1044: Actual current values plausibility error.
6000 ... 6166:
PROFIsafe message values (PROFIsafe driver for PROFIBUS DP V1/V2 and PROFINET).
For these fault values, the failsafe control signals (failsafe values) are transferred to the safety functions.
6000: An internal software error has occurred (only for internal Siemens troubleshooting).
6064 ... 6071: Error when evaluating the F parameters. The values of the transferred F parameters do not match the expected values in the PROFIsafe driver.
6064: Destination address and PROFIsafe address are different (F_Dest_Add).
6065: Destination address not valid (F_Dest_Add).
6066: Source address not valid (F_Source_Add).
6067: Watchdog time not valid (F_WD_Time).
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.
6165: A communications error was identified when receiving the PROFIsafe telegram. The fault may also occur if an inconsistent or out-of-date PROFIsafe telegram has been received after switching the Control Unit off and on or after plugging in the PROFIBUS/PROFINET cable.
6166: A time monitoring error (timeout) was identified when receiving the PROFIsafe telegram.
Message values that have not been listed are only for internal Siemens troubleshooting.
See also: r9725 (SI Motion, diagnostics STOP F)

Remedy: Re message value = 0:
- no error was identified in this monitoring channel. Note the error message of the other monitoring channel (for processor 2: C30711).
Re message value = 3:
Commissioning phase:
- check the setting of the gear parameters on both monitoring channels (p9521/p9321, p9522/p9322).
- check the numerator of the gear ratio to ensure that it takes into account the motor pole pair number (p9522/p9322).
In operation:
- increase the ramp-function generator ramp-up/down time (p1120/p1121), reduce the dynamic performance of the drive.
Re message value = 1 ... 999:
- if the message value is listed under cause: Check the crosswise-compared parameters to which the message value refers.
- copy the safety parameters.
- carry out a POWER ON (power off/on).
- upgrade the Control Unit software.
Re message value = 1000:
- investigate the signal associated with the F-DI (contact problems).
Re message value = 1001:
- carry out a POWER ON (power off/on).
- upgrade the Control Unit software.
Re message value = 1005:
- check the conditions for pulse enable.
Re message value = 1011:
- for diagnostics, refer to parameter (r9571).
Re message value = 1020:
- carry out a POWER ON (power off/on).
- replace Control Unit.
Re message value = 1041:

- reduce the minimum current (p9588).
Re message value = 1042:
- increase the ramp-function generator ramp-up/down time (p1120/p1121).
- check that the current/speed control is set correctly (torque-generating/field-generating current and actual speed value may not fluctuate).
- reduce the dynamic response of the setpoint value.
- increase the minimum current (p9588).
Re message value = 1043:
- increase the voltage tolerance (p9589).
- increase the ramp-function generator ramp-up/down time (p1120/p1121).
- check that the current/speed control is set correctly (torque-generating/field-generating current and actual speed value may not fluctuate).
- reduce the dynamic response of the setpoint value.
Re message value = 6000:
- carry out a POWER ON (power off/on).
- upgrade firmware to later version.
- contact the Hotline.
- replace Control Unit.
Re message value = 6064:
- check the setting of the value in the F parameter F_Dest_Add at the PROFIsafe slave.
- check the setting of the PROFIsafe address on processor 1 (p9610) and on processor 2 (p9810).
Re message value = 6065:
- check the setting of the value in the F parameter F_Dest_Add at the PROFIsafe slave. It is not permissible for the destination address to be either 0 or FFFF!
Re message value = 6066:
- check the setting of the value in the F parameter F_Source_Add at the PROFIsafe slave. It is not permissible for the source address to be either 0 or FFFF!
Re message value = 6067:
- check the setting of the value in the F parameter F_WD_Time at the PROFIsafe slave. It is not permissible for the watch time to be 0!
Re message value = 6068:
- check the setting of the value in the F parameter F_SIL at the PROFIsafe slave. The SIL level must correspond to SIL2!
Re message value = 6069:
- check the setting of the value in the F parameter F_CRC_Length at the PROFIsafe slave. The setting of the CRC2 length is 2-byte CRC in the V1 mode and 3-byte CRC in the V2 mode!
Re message value = 6070:
- check the setting of the value in the F parameter F_Par_Version at the PROFIsafe slave. The value for the F parameter version is 0 in the V1 mode and 1 in the V2 mode!
Re message value = 6071:
- check the settings of the values of the F parameters and the F parameter CRC (CRC1) calculated from these at the PROFIsafe slave and, if required, update.
Re 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 = 2-byte CRC and F_Par_Version = 0
F_CRC_Length = 3-byte CRC and F_Par_Version = 1
Re 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 slave.
- check the setting of the value for F parameter F_WD_Time on the PROFIsafe slave and increase if necessary.
Re message value = 6166:
- check the configuration and communication at the PROFIsafe slave.
- check the setting of the value for F parameter F_WD_Time on the PROFIsafe slave and increase if necessary.
- evaluate diagnostic information in the F host.
- check PROFIsafe connection.
This message can be acknowledged as follows:
- motion monitoring functions integrated in the drive: via F-DI or PROFIsafe

C01712 SI Motion P1: Defect in F-IO processing

Reaction: NONE

Acknowledge: IMMEDIATELY (POWER ON)

Cause: When cross checking and comparing the two monitoring channels, the drive detected a difference between parameters or results of the F-IO processing and initiated a STOP F. One of the monitoring functions no longer reliably functions - i.e. safe operation is no longer possible.
The safety message C01711 with message value 0 is also displayed due to initiation of STOP F.
If at least one monitoring function is active, then safety message C01701 "SI Motion: STOP B initiated" is output.
Message value (r2124, interpret decimal):
Number of the cross-checked data that resulted in this message.
1: SI discrepancy monitoring time inputs (p10002, p10102).
2: SI acknowledgement internal event input terminal (p10006, p10106).
3: SI STO input terminal (p10022, p10122).
4: SI SS1 input terminal (p10023, p10123).
7: SI SLS input terminal (p10026, p10126).
13: Different states for static inactive signal sources (p10006, p10022 ... p10026).
14: SI discrepancy monitoring time outputs (p10002, p10102).
15: SI acknowledgment internal event (p10006, p10106).
46: SI digital inputs debounce time (p10017, p10117)
47: Selection F-DI for PROFIsafe (p10050, p10150)
48: Selection F-DI for PROFIsafe (p10050, p10150)
49: SI SDI positive input terminal (p10030, p10130).
50: SI SDI negative input terminal (p10031, p10131).

Remedy: - check parameterization in the parameters involved and correct if required.
- ensure equality by copying the SI data to processor 2 and then carry out an acceptance test.
Note:
This message can be acknowledged via F-DI or PROFIsafe.
Note:
F-DI: Failsafe Digital Input
SLS: Safely-Limited Speed
SS1: Safe Stop 1
STO: Safe Torque Off

C01714 SI Motion P1: Safely-Limited Speed exceeded

Reaction: NONE

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The drive has moved faster than that specified by the velocity limit value (p9531). The drive is stopped as a result of the configured stop response (p9563).
Message value (r2124, 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 "Safely-Limited Speed (SLS) and if required, adapt (p9531).
This message can be acknowledged as follows:
- via F-DI or PROFIsafe.
Note:
SLS: Safely-Limited Speed
See also: p9531 (SI Motion SLS limit values (processor 1)), p9563 (SI Motion SLS-specific stop response (processor 1))

C01716 SI Motion P1: Tolerance for safe motion direction exceeded

Reaction: NONE

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The tolerance for the "safe motion direction" function was exceeded. The drive is stopped as a result of the configured stop response (p9566).
Message value (r9749, interpret decimal):
0: Tolerance for the "safe motion direction positive" function exceeded.
1: Tolerance for the "safe motion direction positive negative" function exceeded.

Remedy: - check the traversing/motion program in the control.
- check the tolerance for "SDI" function and if required, adapt (p9564).
This message can be acknowledged as follows:
Via F-DI or PROFIsafe
Note:
SDI: Safe Direction (safe motion direction)
SI: Safety Integrated
See also: p9564 (SI Motion SDI tolerance (processor 1)), p9565 (SI Motion SDI delay time (processor 1)), p9566 (SI Motion SDI stop response (processor 1))

C01770 SI Motion P1: Discrepancy error of the failsafe inputs

Reaction: NONE

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The fail-safe digital inputs (F-DI) show a different state longer than that parameterized in p10002 / p10102.
Fault value (r0949, interpret binary):
Bit 0: Discrepancy error for F-DI 0
Bit 1: Discrepancy error for F-DI 1
...
Note:
If several discrepancy errors occur consecutively, then this fault is only signaled for the first error that occurs.

Remedy: - check the wiring of the F-DI (contact problems).
Note:
This message can be acknowledged via F-DI or PROFIsafe.
Discrepancy errors of an F-DI can only be completely acknowledged if safe acknowledgement was carried out once the cause of the error was resolved (p10006 or acknowledgment via PROFIsafe). As long as safety acknowledgement was not carried out, the corresponding F-DI stays in the safe state internally.
For cyclic switching operations at the F-DI, it may be necessary to adapt the discrepancy time to the switching frequency.
If the period of a cyclic switching pulse has the order of magnitude of double the value of p10002, then the following formulas must be checked.
p10002 < (tp / 2) - td (discrepancy time must be less than half the period minus the actual discrepancy time)
p10002 >= p9500 (discrepancy time must be no less than P9500)
p10002 > td (discrepancy time must be greater than the switch discrepancy time which may actually apply)
td = possible actual discrepancy time (in ms) that can occur with a switching operation. This must correspond to at least 1 SI sampling cycle (see p9500).
tp = period for a switching operation in ms.
When debounce p10017 is active, the discrepancy time is directly specified by the debounce time.
If the period of a cyclic switching pulse has the order of magnitude of twice the debounce time, then the following formulas should be checked.
p10002 < p10017 + 1 ms - td
p10002 > td
p10002 >= p9500
Example:
For a 12 ms SI sampling cycle and a switching frequency of 110 ms (p10017 = 0), the maximum discrepancy time which can be set is as follows:
p10002 <= (110/2 ms) - 12 ms = 43 ms
Rounded-off, p10002 <= 36 ms is obtained (since the discrepancy time can only be accepted as a whole SI sampling cycle, the value will need to be rounded up or down to a whole SI sampling time value if the result is not an exact multiple of an SI sampling cycle).
Note:
F-DI: Failsafe Digital Input

C01798 SI Motion P1: Test stop running

Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The test stop is active.
Remedy: Not necessary.
The message is withdrawn when the test stop is finished.

C01799 SI Motion P1: Acceptance test mode active

Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The acceptance test mode is active.
Remedy: Not necessary.
The message is withdrawn when exiting the acceptance test mode.

A01900 (F) PROFIBUS: Configuration telegram error

Reaction: NONE
Acknowledge: NONE
Cause: A PROFIBUS master 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/p2051.
3: Uneven number of bytes for input or output.
501: PROFIsafe parameter error (e.g. F_dest).
502: PROFIsafe telegram does not match.
Remedy: Check the bus configuration on the master and slave sides.
Re alarm value = 2:
Check the number of data words for output and input.
Re alarm value = 501:
Check the set PROFIsafe address (p9610).
Re alarm value = 502:
Check the enable signal F-DI (p9501.30).

F01910 (N, A) Fieldbus interface setpoint timeout

Reaction: OFF3 (IASC/DCBRAKE, NONE, OFF1, OFF2, STOP2)
Acknowledge: IMMEDIATELY
Cause: The reception of setpoints from the fieldbus interface has been interrupted.
- bus connection interrupted.
- communication partner switched off.
For PROFIBUS:
- PROFIBUS master set into the STOP state.
See also: p2040 (Fieldbus interface monitoring time), p2047 (PROFIBUS additional monitoring time)
Remedy: Ensure bus connection has been established and switch on communication peer.
- if required, adapt p2040.
For PROFIBUS:
- set the PROFIBUS master to the RUN state.
- slave redundancy: For operation on a Y link, it must be ensured that "DP alarm mode = DPV1" is set in the slave parameterization.
See also: p2040 (Fieldbus interface monitoring time), p2047 (PROFIBUS additional monitoring time)

A01920 (F) PROFIBUS: Interruption cyclic connection

Reaction: NONE
Acknowledge: NONE
Cause: The cyclic connection to the PROFIBUS master is interrupted.
Remedy: Establish the PROFIBUS connection and activate the PROFIBUS master in the cyclic mode.

A01945 PROFIBUS: Connection to the Publisher failed

Reaction: NONE
Acknowledge: NONE
Cause: For PROFIBUS peer-to-peer data transfer, the connection to at least one Publisher has failed.
Alarm value (r2124, binary interpretation):
Bit 0 = 1: Publisher with address in r2077[0], connection failed.
...
Bit 15 = 1: Publisher with address in r2077[15], connection failed.
Remedy: Check the PROFIBUS cables.
See also: r2077 (PROFIBUS diagnostics peer-to-peer data transfer addresses)

F01946 (A) PROFIBUS: Connection to the Publisher aborted

Reaction: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The connection to at least one Publisher for PROFIBUS peer-to-peer data transfer in cyclic operation has been aborted.
Fault value (r0949, interpret binary):
Bit 0 = 1: Publisher with address in r2077[0], connection aborted.
...
Bit 15 = 1: Publisher with address in r2077[15], connection aborted.
Remedy: - check the PROFIBUS cables.
- check the state of the Publisher that has the aborted connection.
See also: r2077 (PROFIBUS diagnostics peer-to-peer data transfer addresses)

F01951 CU SYNC: Synchronization application clock cycle missing

Reaction: OFF2 (NONE)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: Internal synchronization of the application cycles unsuccessful.
Fault value (r0949, decimal interpretation):
Only for internal Siemens troubleshooting.
Remedy: - carry out a POWER ON (power off/on) for all components.
- upgrade the Control Unit software.

A01953 CU SYNC: Synchronization not completed

Reaction: NONE
Acknowledge: NONE
Cause: After the drive system was powered up, synchronization between the basic 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 (power off/on).

F02080 Trace: Parameterization deleted due to unit changeover

Reaction: NONE
Acknowledge: 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.

A02150 OA: Application cannot be loaded

Reaction: NONE
Acknowledge: NONE
Cause: The system was not able to load an OA application.
Alarm value (r2124, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Remedy: - carry out a POWER ON (power off/on) for all components.
- upgrade firmware to later version.
- contact the Hotline.
Note:
OA: Open Architecture

F02151 (A) OA: Internal software error

Reaction: OFF2 (NONE, OFF1, OFF3)

Acknowledge: IMMEDIATELY (POWER ON)

Cause: An internal software error has occurred within an OA application.
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.

Remedy: - carry out a POWER ON (power off/on) for all components.
- upgrade firmware to later version.
- contact the Hotline.
- replace the Control Unit.
Note:
OA: Open Architecture

F02152 (A) OA: Insufficient memory

Reaction: OFF1

Acknowledge: IMMEDIATELY (POWER ON)

Cause: Too many functions have been configured on this Control Unit (e.g. too many drives, function modules, data sets, OA applications, blocks, etc).
Fault value (r0949, decimal interpretation):
Only for internal Siemens troubleshooting.

Remedy: - change the configuration on this Control Unit (e.g. fewer drives, function modules, data sets, OA applications, blocks, etc).
- use an additional Control Unit.
Note:
OA: Open Architecture

F03000 NVRAM fault on action

Reaction: NONE

Acknowledge: IMMEDIATELY

Cause: A fault occurred during execution of action p7770 = 1, 2 for the NVRAM data.
Fault value (r0949, interpret hexadecimal):
yyxx hex: yy = fault cause, xx = application ID
yy = 1:
The action p7770 = 1 is not supported by this version if Drive Control Chart (DCC) is activated for the drive object concerned.
yy = 2:
The data length of the specified application is not the same in the NVRAM and the backup.
yy = 3:
The data checksum in p7774 is not correct.
yy = 4:
No data available to load.

Remedy: Perform the remedy according to the results of the troubleshooting.
If necessary, start the action again.

F03001 NVRAM checksum incorrect

Reaction: NONE

Acknowledge: IMMEDIATELY

Cause: A checksum error occurred when evaluating the non-volatile data (NVRAM) on the Control Unit.
The NVRAM data affected was deleted.

Remedy: POWER ON all components (switch the power off and then back on again).

F03505 (N, A) CU: Analog input wire breakage

Reaction: OFF1 (NONE, OFF2)

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The input current of the analog input has undershot the threshold value parameterized in p0761[0...3].
This fault only occurs when p0756[0...1] = 1 (2 ... 10 V with monitoring) or p0756[0...2] = 3 (4 ... 20 mA with monitoring) is set.
p0756[0]: Analog input 0
p0756[1]: Analog input 1
p0756[2]: Analog input 2
Fault value (r0949, decimal interpretation):
The component number (p0151) of the component involved is specified at the units, tens and hundreds digit.
The thousands digit specifies the relevant analog input: 0: analog input 0 (AI 0), 1: analog input 1 (AI 1), 2: analog input 2 (AI 2)

Remedy: Check the connection to the signal source for interruptions.
Check the magnitude of the injected current - it is possible that the infed signal is too low.
The input current measured by the analog input can be read in r0752[x].

A03510 (F, N) CU: Calibration data not plausible

Reaction: NONE

Acknowledge: 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: - power down/power up the power supply for the Control Unit.
If it reoccurs, replace the module.
In principle, operation could continue.
The analog channel involved possibly does not achieve the specified accuracy.

A05000 (N) Power unit: Overtemperature heat sink AC inverter

Reaction: NONE

Acknowledge: NONE

Cause: The alarm threshold for overtemperature at the inverter heat sink has been reached. The response is set using p0290.
If the temperature of the heat sink increases by an additional 5 K, then fault F30004 is initiated.

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?

A05001 (N) Power unit: Overtemperature depletion layer chip

Reaction: NONE

Acknowledge: NONE

Cause: Alarm threshold for overtemperature of the power semiconductor in the AC converter has been reached.
Note:
- The response is set using p0290.
- If the depletion layer temperature increases by an additional 15 K, then fault F30025 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 cooling failed?
- pulse frequency too high?
See also: r0037 (Power unit temperatures), p0290 (Power unit overload response)

A05002 (N) Power unit: Air intake overtemperature

Reaction: NONE

Acknowledge: NONE

Cause: For chassis power units, the following applies:
The alarm threshold for the air intake overtemperature has been reached. For air-cooled power units, the threshold is 42 °C (hysteresis 2 K). The response is set using p0290.
If the air intake temperature increases by an additional 13 K, then fault F30035 is output.

Remedy: Check the following:
- is the ambient temperature within the defined limit values?
- has the fan failed? Check the direction of rotation.

A05004 (N) Power unit: Rectifier overtemperature

Reaction: NONE

Acknowledge: NONE

Cause: The alarm threshold for the overtemperature of the rectifier has been reached. The response is set using p0290.
If the temperature of the rectifier increases by an additional 5 K, then fault F30037 is triggered.

Remedy: Check the following:
- is the ambient temperature within the defined limit values?
- have the load conditions and the 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?

A05006 (N) Power unit: Overtemperature thermal model

Reaction: NONE

Acknowledge: NONE

Cause: The temperature difference between the chip and heat sink has exceeded the permissible limit value (blocksize power units only).
Depending on p0290, an appropriate overload response is initiated.
See also: r0037 (Power unit temperatures)

Remedy: Not necessary.
The alarm disappears automatically once the limit value is undershot.
Note:
If the alarm does not disappear automatically and the temperature continues to rise, this can result in fault F30024.
See also: p0290 (Power unit overload response)

F06310 (A) Supply voltage (p0210) incorrectly parameterized

Reaction: NONE (OFF1, OFF2)

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The measured DC voltage lies outside the tolerance range after pre-charging has been completed: 1.16 * p0210 < r0070 < 1.6 * p0210.
The fault can only be acknowledged when the drive is powered down.
See also: p0210 (Drive unit line supply voltage)

Remedy: - check the parameterized supply voltage and if required change (p0210).
- check the line supply voltage.
See also: p0210 (Drive unit line supply voltage)

A06921 (N) Braking resistor phase unsymmetry

Reaction: NONE

Acknowledge: NONE

Cause: The three resistors of the braking chopper are not symmetrical.

Remedy: - check the feeder cables to the braking resistors.
- increase p1364.

F06922	**Braking resistor phase failure**
Reaction:	NONE
Acknowledge:	IMMEDIATELY
Cause:	Phase failure of a braking resistor detected. Fault values: 11 = phase U 12 = phase V 13 = phase W See also: p3235 (Phase failure signal motor monitoring time)
Remedy:	Check the feeder cables to the braking resistors.

F07011	**Drive: Motor overtemperature**
Reaction:	OFF2 (NONE, OFF1, OFF3, STOP2)
Acknowledge:	IMMEDIATELY
Cause:	KTY: The motor temperature has exceeded the fault threshold (p0605) or the timer (p0606) after the alarm threshold was exceeded (p0604) has expired. The response parameterized in p0610 becomes active. The alarm is withdrawn if the response threshold for wire breakage or sensor not connected is exceeded (R > 2120 Ohm). PTC or bimetallic NC contact: The response threshold of 1650 Ohm was exceeded or the NC contact opened and the timer (p0606) has expired. The response parameterized in p0610 becomes active. Possible causes: - Motor is overloaded - motor ambient temperature too high. - Wire break or sensor not connected Fault value (r0949, decimal interpretation): 200: The I2t motor model signals an overtemperature (p0612.0 = 1, p0611 > 0). See also: p0604 (Motor temperature alarm threshold), p0605 (Motor temperature fault threshold), p0606 (Motor temperature timer), p0610 (Motor overtemperature response)
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. See also: p0604 (Motor temperature alarm threshold), p0605 (Motor temperature fault threshold), p0606 (Motor temperature timer)

A07012 (N)	**Drive: I2t motor model overtemperature**
Reaction:	NONE
Acknowledge:	NONE
Cause:	The thermal I2t motor model (for synchronous motors) identified that the temperature alarm threshold was exceeded. See also: r0034 (Motor utilization), p0605 (Motor temperature fault threshold), p0611 (I2t motor model thermal time constant)
Remedy:	- check the motor load and if required, reduce. - check the motor ambient temperature. - check the thermal time constant p0611. - check the overtemperature fault threshold p0605 (= alarm threshold for the I2t motor model, see p0612)

A07015	**Drive: Motor temperature sensor alarm**
Reaction:	NONE
Acknowledge:	NONE
Cause:	An error was detected when evaluating the temperature sensor set in 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 > 2120 Ohm). - measured resistance too low (PTC: R < 20 Ohm, KTY: R < 50 Ohm).
Remedy:	- make sure that the sensor is connected correctly. - check the parameterization (p0601). See also: r0035 (Motor temperature), p0601 (Motor temperature sensor type), p0607 (Temperature sensor fault timer)

F07016	**Drive: Motor temperature sensor fault**
Reaction:	OFF1 (NONE, OFF2, OFF3, STOP2)
Acknowledge:	IMMEDIATELY
Cause:	An error was detected when evaluating the temperature sensor set in p0601. Possible causes: - wire breakage or sensor not connected (KTY: R > 2120 Ohm). - measured resistance too low (PTC: R < 20 Ohm, KTY: R < 50 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. See also: p0607 (Temperature sensor fault timer)
Remedy:	- make sure that the sensor is connected correctly. - check the parameterization (p0601). - induction motors: De-activate temperature sensor fault (p0607 = 0). See also: r0035 (Motor temperature), p0601 (Motor temperature sensor type), p0607 (Temperature sensor fault timer)

F07080	**Drive: Incorrect control parameter**
Reaction:	NONE
Acknowledge:	IMMEDIATELY (POWER ON)
Cause:	The closed-loop control parameters have been parameterized incorrectly (e.g. p0356 = L_spread = 0). Fault value (r0949, decimal interpretation): The fault value includes the parameter number involved. The following parameter numbers only occur as fault values for vector drives: p0310, for synchronous motors: p0341, p0344, p0350, p0357 The following parameter numbers do not occur as fault values for synchronous motors: p0354, p0358, p0360 See also: p0310, p0311, p0341, p0344, p0350, p0354, p0356, p0357, p0358, p0360, 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, p0640, p1082

F07082	**Macro: Execution not possible**
Reaction:	NONE
Acknowledge:	IMMEDIATELY
Cause:	The macro cannot be executed. Fault value (r0949, interpret hexadecimal): ccccbbaa hex: cccc = preliminary parameter number, bb = supplementary information, aa = fault cause Fault causes for the trigger parameter itself: 19: Called file is not valid for the trigger parameter. 20: Called file is not valid for parameter 15. 21: Called file is not valid for parameter 700. 22: Called file is not valid for parameter 1000. 23: Called file is not valid for parameter 1500. 24: Data type of a TAG is incorrect (e.g. Index, number or bit is not U16). Fault causes for the parameters to be set: 25: Error level has an undefined value. 26: Mode has an undefined value. 27: A value was entered as string in the tag value that is not "DEFAULT". 31: Entered drive object type unknown. 32: A device was not able to be found for the determined drive object number. 34: A trigger parameter was recursively called. 35: It is not permissible to write to the parameter via macro. 36: Check, writing to a parameter unsuccessful, parameter can only be read, not available, incorrect data type, value range or assignment incorrect. 37: Source parameter for a BICO 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 BitOperation. 43: Reading the parameter to be changed by the BitOperation 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 BICO interconnection. See also: p0015, p0700, p1000, p1500

F07083 Macro: ACX file not found

Reaction: NONE

Acknowledge: IMMEDIATELY

Cause: The ACX file (macro) to be executed was not able to be found in the appropriate directory.
Fault value (r0949, decimal interpretation):
Parameter number with which the execution was started.
See also: p0015, p0700, p1000, p1500

Remedy: - check whether the file is saved in the appropriate directory on the memory card.

F07084 Macro: Condition for WaitUntil not fulfilled

Reaction: NONE

Acknowledge: IMMEDIATELY

Cause: The WaitUntil condition set in the macro was not fulfilled in a certain number of attempts.
Fault value (r0949, decimal interpretation):
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

Reaction: NONE

Acknowledge: 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 representation (cause: e.g. the steady-state minimum/maximum limit or that defined in the application was violated). The values of the parameters were set to the corresponding violated minimum/maximum limit or to the factory setting.
Fault value (r0949, parameter):
Diagnostics parameter r9450 to display the parameters that were not able to be re-calculated.
See also: p0304, p0305, p0310, p0596, p2000, p2001, p2002, p2003, r2004

Remedy: Check the adapted parameter value and if required correct.

F07088 Units changeover: Parameter limit violation due to units changeover

Reaction: NONE

Acknowledge: IMMEDIATELY

Cause: A changeover of units was initiated.
Possible causes for the violation of a parameter limit are:
- when rounding off a parameter corresponding to its decimal places, the steady-state minimum or maximum limit was violated.
- inaccuracies for the data type "FloatingPoint".
In these cases, when the minimum limit is violated then the parameter value is rounded up and when the maximum limited is violated the parameter value is rounded down.
Fault value (r0949, decimal interpretation):
Diagnostics parameter r9451 to display all parameters whose value had to be adapted.
See also: p0100 (IEC/NEMA mot stds), p0505 (Selecting the system of units), p0595 (Selecting technological units)

Remedy: Check the adapted parameter values and if required correct.
See also: r9451 (Units changeover adapted parameters)

A07089 Changing over units: Function module activation is blocked because the units have been changed over

Reaction: NONE

Acknowledge: NONE

Cause: An attempt was made to activate a function module. This is not permissible if the units have already been changed over.
See also: p0100 (IEC/NEMA mot stds), p0505 (Selecting the system of units)

Remedy: Restore units that have been changed over to the factory setting.

A07200	**Drive: Master control ON command present**
Reaction:	NONE
Acknowledge:	NONE
Cause:	The ON/1 command is present (no 0 signal). The command is either influenced via binector input p0840 (current CDS) or control word bit 0 via the master control.
Remedy:	Switch the signal via binector input p0840 (aktueller CDS) or control word bit 0 via the master control to 0.

F07220 (N, A)	**Drive: Master control by PLC missing**
Reaction:	OFF1 (NONE, OFF2, OFF3, STOP2)
Acknowledge:	IMMEDIATELY
Cause:	The "master control by PLC" signal was missing in operation. - interconnection of the binector input for "master control by PLC" is incorrect (p0854). - the higher-level control has withdrawn the "master control by PLC" signal. - data transfer via the fieldbus (master/drive) was interrupted.
Remedy:	- check the interconnection of the binector input for "master control by PLC" (p0854). - check the "master control by PLC" signal and, if required, switch in. - check the data transfer via the fieldbus (master/drive). Note: If the drive should continue to operate after withdrawing "master control by PLC" then fault response must be parameterized to NONE or the message type should be parameterized as alarm.

F07320	**Drive: Automatic restart interrupted**
Reaction:	OFF2
Acknowledge:	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. - there is no active ON command. - the monitoring time for the power unit has expired (p0857). - when exiting commissioning or at the end of the motor identification routine or the speed controller optimization, the drive unit is not automatically powered up 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 delay time in p1212 and/or the monitoring time in p1213. - issue an ON command (p0840). - either increase or disable the monitoring time of the power unit (p0857). - Reduce the delay time for resetting the start counter p1213[1] so that fewer faults are registered in the time interval.

A07321	**Drive: Automatic restart active**
Reaction:	NONE
Acknowledge:	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, the alarm after the line supply returns is also displayed if there is no fault and there is no ON command. 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 power-on command (BI: p0840). - for p1210 = 26: by withdrawing the OFF2- / OFF3 control commands.

F07330	**Flying restart: Measured search current too low**
Reaction:	OFF2 (NONE, OFF1)
Acknowledge:	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.

F07331	Flying restart: Function not supported
Reaction:	OFF2 (NONE, OFF1)
Acknowledge:	IMMEDIATELY
Cause:	It is not possible to power up with the motor rotating (no flying restart). In the following cases, the "flying restart" function is not supported: Perm.-magnet synch. motors (PEM): operation with U/f char. and sensorless vector control.
Remedy:	Cancel the "flying restart" function (p1200 = 0).

A07400 (N)	Drive: DC link voltage maximum controller active
Reaction:	NONE
Acknowledge:	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 (vector control)), 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.

A07401 (N)	Drive: DC link voltage maximum controller de-activated
Reaction:	NONE
Acknowledge:	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. - check whether the load duty cycle and load limits are within the permissible limits.

A07402 (N)	Drive: DC link voltage minimum controller active
Reaction:	NONE
Acknowledge:	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 (vector control)), p1280 (Vdc controller or Vdc monitoring configuration (U/f))
Remedy:	The alarm disappears when power supply returns.

F07405 (N, A)	Drive: Kinetic buffering minimum speed not reached
Reaction:	OFF2 (IASC/DCBRAKE, NONE, OFF1, OFF3, STOP2)
Acknowledge:	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))

F07406 (N, A) Drive: Kinetic buffering maximum time exceeded

Reaction: OFF3 (IASC/DCBRAKE, NONE, OFF1, OFF2, STOP2)

Acknowledge: 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))

A07409 Drive: U/f control, current limiting controller active

Reaction: NONE

Acknowledge: NONE

Cause: The current limiting controller of the U/f control was activated because the current limit was exceeded.

Remedy: The alarm automatically disappears after one of the following measures:
- increase current limit (p0640).
- reduce the load.
- slow down the ramp up to the setpoint speed.

F07410 Drive: Current controller output limited

Reaction: OFF2 (NONE, OFF1)

Acknowledge: IMMEDIATELY

Cause: The condition "I_act = 0 and Uq_set_1 longer than 16 ms at its limit" is present and can be caused by the following:
- motor not connected or motor contactor open.
- motor data and motor configuration (star-delta) do not match.
- no DC link voltage present.
- power unit defective.
- 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 controller output limited

Reaction: OFF2

Acknowledge: IMMEDIATELY

Cause: When quick magnetizing is configured (p1401.6 = 1) the specified flux setpoint is not reached although 90% of the maximum current is specified.
- incorrect motor data.
- motor data and motor configuration (star-delta) do not match.
- the current limit has been set too low for the motor.
- induction motor (encoderless, open-loop controlled) in I2t limiting.
- power unit is too small.
- the magnetizing time is too short.

Remedy:
- correct the motor data. Perform motor data identification and rotating measurement.
- check the motor configuration.
- correct the current limits (p0640).
- reduce the induction motor load.
- if necessary, use a larger power unit.
- check motor supply cable.
- check power unit.
- increase p0346.

A07416 Drive: Flux controller configuration

Reaction: NONE

Acknowledge: 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).
3: Quick magnetizing (p1401.6) for Rs identification after restart (p0621 = 2).

Remedy: Re fault cause = 1:
- Shut down soft start (p1401.0 = 0).
- Shut down quick magnetizing (p1401.6 = 0).
Re fault cause = 3:
- Re-parameterize Rs identification (p0621 = 0, 1)
- Shut down quick magnetizing (p1401.6 = 0).

F07426 (A) Technology controller actual value limited

Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)

Acknowledge: IMMEDIATELY

Cause: The actual value for the technology controller, interconnected via connector input p2264, has reached a limit.
Fault value (r0949, decimal interpretation):
1: upper limit reached.
2: lower limit reached.

Remedy: - adapt the limits to the signal level (p2267, p2268).
- check the scaling of the actual value (p2264).
See also: p2264 (Technology controller actual value), p2267 (Technology controller upper limit actual value), p2268 (Technology controller lower limit actual value)

F07435 (N) Drive: Setting the ramp-function generator for sensorless vector control

Reaction: OFF2 (IASC/DCBRAKE, NONE, OFF1, OFF3)

Acknowledge: IMMEDIATELY

Cause: During operation with sensorless vector control (r1407.1) the ramp-function generator was stopped (p1141). An internal setting command of the ramp-function generator output caused the set setpoint speed to be frozen.

Remedy: - de-activate the holding command for the ramp-function generator (p1141).
- suppress the fault (p2101, p2119). This is necessary if the ramp-function generator is held using jogging and the speed setpoint is simultaneously inhibited (r0898.6).

F07439 Drive: Higher current controller dynamic performance not possible

Reaction: OFF2 (NONE)

Acknowledge: IMMEDIATELY

Cause: The function "Current controller dynamics higher" (p1810.11 = 1) is selected, however is not supported by the power unit (r0192.27 = 0) or by the safety technology without encoder (9506 = 1).
Fault value (r0949, decimal interpretation):
1:
- firmware of the booksize power unit is not up-to-date.
- blocksize or S120 combi power unit was used.
2:
- a sine-cosine encoder with encoderless safety technology is used.

Remedy: In general:
- Deselect the function "Current controller dynamics higher" (p1810.11 = 0) and if required, set the current, speed and position controller again or calculate (p0340 = 4).
For fault value = 1:
- If necessary, upgrade the firmware of the booksize power unit to a later version (version >= 4.4).
- Use a booksize power unit (version >= 4.4).
For fault value = 2:
- Re-parameterize encoderless safety technology (9506 = 1) to safety technology with an encoder (p9506 = 0).
See also: p1810 (Modulator configuration), p9506 (SI Motion function specification (processor 1))

A07530 Drive: Drive Data Set DDS not present

Reaction: NONE

Acknowledge: NONE

Cause: The selected drive data set is not available (p0837 > p0180). The drive data set was not changed over.
See also: p0180 (Number of Drive Data Sets (DDS)), p0820 (Drive Data Set selection DDS bit 0), p0821 (Drive Data Set selection DDS bit 1), r0837 (Drive Data Set DDS selected)

Remedy:
- select the existing drive data set.
- set up additional drive data sets.

A07531 Drive: Command Data Set CDS not present

Reaction: NONE

Acknowledge: NONE

Cause: The selected command data set is not available (p0836 > p0170). The command data set was not changed over.
See also: p0810 (Command data set selection CDS bit 0), p0811 (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.

F07800 Drive: No power unit present

Reaction: NONE

Acknowledge: IMMEDIATELY

Cause: The power unit parameters cannot be read or no parameters are stored in the power unit.
Connection between Control Unit and power unit was interrupted or is defective.
Note:
This fault also occurs if an incorrect topology was selected in the commissioning software and this parameterization is then downloaded to the Control Unit.
See also: r0200 (Power unit code number actual)

Remedy:
- connect the data line to power unit and restart the CU (POWER ON).
- check or replace the CU.
- Check the cable between the CU and power unit.
- after correcting the topology, the parameters must be again downloaded using the commissioning software.

F07801 Drive: Motor overcurrent

Reaction: OFF2 (NONE, OFF1, OFF3)

Acknowledge: IMMEDIATELY

Cause: The permissible motor limit current was exceeded.
- effective current limit set too low.
- current controller not correctly set.
- U/f operation: Up ramp was set too short or the load is too high.
- U/f operation: Short-circuit in the motor cable or ground fault.
- U/f operation: Motor current does not match current of power unit.
- Switch to rotating motor without flying restart function (p1200).

Note:
Limit current = 2 x minimum (p0640, 4 x p0305 x p0306) >= 2 x p0305 x p0306

Remedy:
- check the current limits (p0640).
- vector control: Check the current controller (p1715, p1717).
- U/f control: Check the current limiting controller (p1340 ... p1346).
- increase the up ramp (p1120) or reduce the load.
- check the motor and motor cables for short-circuit and ground fault.
- check the motor for the star-delta configuration and rating plate parameterization.
- check the power unit and motor combination.
- Choose "flying restart" function (p1200) if switched to rotating motor.

F07802 Drive: Infeed or power unit not ready

Reaction: OFF2 (NONE)

Acknowledge: IMMEDIATELY

Cause: After an internal power-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.
- replace the associated infeed or drive of the signaling component.
- check the line supply voltage setting (p0210).

See also: p0857 (Power unit monitoring time)

A07805 (N) Drive: Power unit overload I2t

Reaction: NONE

Acknowledge: NONE

Cause: Alarm threshold for I2t overload (p0294) of the power unit exceeded.
The response parameterized in p0290 becomes active.
See also: p0290 (Power unit overload response)

Remedy:
- reduce the continuous load.
- adapt the load duty cycle.
- check the assignment of the motor and power unit rated currents.

F07806 Drive: Regenerative power limit exceeded (F3E)

Reaction: OFF2 (IASC/DCBRAKE)

Acknowledge: IMMEDIATELY

Cause: For blocksize power units, types PM250 and PM260, the regenerative rated power r0206[2] was exceeded for more than 10 s.
See also: r0206 (Rated power unit power), p1531 (Power limit regenerative)

Remedy:
- increase the down ramp.
- reduce the driving load.
- use a power unit with a higher regenerative feedback capability.
- for vector control, the regenerative power limit in p1531 can be reduced so that the fault is no longer triggered.

F07807 Drive: Short-circuit detected

Reaction: OFF2 (NONE)

Acknowledge: IMMEDIATELY

Cause: A phase-phase short-circuit was detected at the motor-side output terminals of the converter.
Note:
Also when interchanging the line and motor cables is identified as a motor-side short circuit.

Remedy:
- check the motor-side converter connection for a phase-phase short-circuit.
- rule-out interchanged line and motor cables.

F07808 (A) HF damping module: damping not ready

Reaction: OFF2 (NONE, OFF1, OFF3)

Acknowledge: IMMEDIATELY

F07810 Drive: Power unit EEPROM without rated data

Reaction: NONE

Acknowledge: IMMEDIATELY

Cause: No rated data are stored in the power unit EEPROM.
See also: p0205 (Power unit application), r0206 (Rated power unit power), r0207 (Rated power unit current), r0208 (Rated power unit line supply voltage), r0209 (Power unit, maximum current)

Remedy: Replace the power unit or inform Siemens Customer Service.

A07850 (F) External alarm 1

Reaction: NONE
Acknowledge: NONE
Cause: The BICO signal for "external alarm 1" was triggered.
The condition for this external alarm is fulfilled.
See also: p2112 (External alarm 1)
Remedy: Eliminate the causes of this alarm.

A07851 (F) External alarm 2

Reaction: NONE
Acknowledge: NONE
Cause: The BICO signal for "external alarm 2" was triggered.
The condition for this external alarm is fulfilled.
See also: p2116 (External alarm 2)
Remedy: Eliminate the causes of this alarm.

A07852 (F) External alarm 3

Reaction: NONE
Acknowledge: NONE
Cause: The BICO signal for "external alarm 3" was triggered.
The condition for this external alarm is fulfilled.
See also: p2117 (External alarm 3)
Remedy: Eliminate the causes of this alarm.

F07860 (A) External fault 1

Reaction: OFF2 (IASC/DCBRAKE, NONE, OFF1, OFF3, STOP2)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The BICO signal "external fault 1" was triggered.
See also: p2106 (External fault 1)
Remedy: Eliminate the causes of this fault.

F07861 (A) External fault 2

Reaction: OFF2 (IASC/DCBRAKE, NONE, OFF1, OFF3, STOP2)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The BICO signal "external fault 2" was triggered.
See also: p2107 (External fault 2)
Remedy: Eliminate the causes of this fault.

F07862 (A) External fault 3

Reaction: OFF2 (IASC/DCBRAKE, NONE, OFF1, OFF3, STOP2)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The BICO signal "external fault 3" was triggered.
See also: p2108 (External fault 3), p3111 (External fault 3, enable), p3112 (External fault 3 enable negated)
Remedy: Eliminate the causes of this fault.

F07900 (N, A) Drive: Motor blocked

Reaction: OFF2 (NONE, OFF1, OFF3, STOP2)
Acknowledge: IMMEDIATELY
Cause: Motor has been operating at the torque limit longer than the time specified in p2177 and below the speed threshold set 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 locked speed threshold), p2177 (Motor locked delay time)
Remedy:
- check that the motor can rotate freely.
- check the torque limit: For a positive direction of rotation r1538, for a negative direction of rotation r1539.
- check the parameter, message "Motor locked" and if required, correct (p2175, p2177).

F07901 Drive: Motor overspeed

Reaction: OFF2 (IASC/DCBRAKE)

Acknowledge: IMMEDIATELY

Cause: The maximum permissible speed was either positively or negatively exceeded.
The maximum permissible positive speed is formed as follows: Minimum (p1082, CI: p1085) + p2162
The maximum permissible negative speed is formed as follows: Maximum (-p1082, CI: 1088) - p2162

Remedy: The following applies for a positive direction of rotation:
- check r1084 and if required, correct p1082, CI:p1085 and p2162.
The following applies for a negative direction of rotation:
- check r1087 and if required, correct p1082, CI:p1088 and p2162.
Activate pre-control 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

Reaction: OFF2 (IASC/DCBRAKE, NONE, OFF1, OFF3, STOP2)

Acknowledge: IMMEDIATELY

Cause: For a vector drive the system has identified that the motor has stall for a time longer than is set in p2178.
Fault value (r0949, decimal interpretation):
1: Reserved.
2: Stall detection using r1408.12 (p1745).
See also: p2178 (Motor stalled delay time)

Remedy: Steps should always be taken to ensure that both motor data identification and the rotating measurement were carried out (see p1900, r3925).
- check whether the drive stalls solely due to the load in controlled mode or when the speed setpoint is still zero. If yes, then increase the current setpoint using p1610.
- if the motor excitation time (p0346) was significantly reduced and the drive stalls when it is switched on and run immediately, p0346 should be increased again.
- check the current limits (p0640, r0067, r0289). If the current limits are too low, then the drive cannot be magnetized.
- check whether a line phase failure is affecting power unit PM230, PM250, PM260.
- check whether the motor cables are disconnected (see A07929).
If there is no fault, then the fault tolerance (p1745) or the delay time (p2178) can be increased.

A07903 Drive: Motor speed deviation

Reaction: NONE

Acknowledge: NONE

Cause: The absolute value of the speed difference from the setpoint (p2151) and the speed actual value (r2169) exceeds the tolerance threshold (p2163) longer than tolerated (p2164, p2166).
The alarm is only enabled for p2149.0 = 1.
Possible causes could be:
- 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 Imax 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.
- de-activate alarm with p2149.0 = 0.

A07910 (N) Drive: Motor overtemperature

Reaction: NONE

Acknowledge: NONE

Cause: KTY or no sensor:
The measured motor temperature or the temperature of the thermal model has exceeded the alarm threshold (p0604). The response parameterized in p0610 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 (Motor temperature alarm threshold), p0610 (Motor overtemperature response)

Remedy: - check the motor load.
- check the motor ambient temperature.
- check KTY84.
- check temperatures of the thermal model (p0626 ... p0628).

A07920 Drive: Torque/speed too low

Reaction: NONE

Acknowledge: 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 (refer to p3230) 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

Reaction: NONE

Acknowledge: 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 (refer to p3230) 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

Reaction: NONE

Acknowledge: NONE

Cause: For p2193 = 1:
The torque deviates from the torque/speed envelope characteristic.
For p2193 = 2:
The speed signal from the external encoder (refer to p3230) 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

Reaction: OFF1 (NONE, OFF2, OFF3)

Acknowledge: 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 (refer to p3230) 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**
Reaction:	OFF1 (NONE, OFF2, OFF3)
Acknowledge:	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 (refer to p3230) 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**
Reaction:	OFF1 (NONE, OFF2, OFF3)
Acknowledge:	IMMEDIATELY
Cause:	For p2193 = 1: The torque deviates from the torque/speed envelope characteristic. For p2193 = 2: The speed signal from the external encoder (refer to p3230) deviates from the speed (r2169).
Remedy:	- check the connection between the motor and load. - adapt the parameterization corresponding to the load.

A07927	**DC braking active**
Reaction:	NONE
Acknowledge:	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 in p1233. If the standstill threshold p1226 is undershot, then braking is prematurely canceled. 2) DC braking has been activated at binector input p1230 with the DC braking set (p1230 = 4). Braking current p1232 is injected until this binector input becomes inactive.
Remedy:	Not necessary. The alarm automatically disappears once DC braking has been executed.

A07929 (F)	**Drive: No motor detected**
Reaction:	NONE
Acknowledge:	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).

F07935 (N)	**Drv: Motor holding brake detected**
Reaction:	NONE (OFF1, OFF2, OFF3)
Acknowledge:	IMMEDIATELY
Cause:	A motor holding brake was detected where the brake control has not been configured (p1215 = 0). Fault value (r0949, decimal interpretation): 0: The brake control configuration was set to "motor holding brake the same as sequence control" (p1215 = 1) (only when commissioning for the first time). 1: The brake control configuration was left at "No motor holding brake available" (p1215 = 0).
Remedy:	For fault value = 0: - No remedy required. For fault value = 1: - If required change the motor holding brake configuration (p1215 = 1, 2). - If this fault value unexpectedly occurs, then the motor connections should be checked in order to rule out that they have been interchanged. See also: p1215 (Motor holding brake configuration)

F07936 Drive: load failure

Reaction: OFF1 (NONE, OFF2, OFF3)

Acknowledge: IMMEDIATELY

Cause: The load monitoring has detected a load failure.

Remedy:
- check the sensor.
- if necessary, de-activate the load monitoring (p2193).

See also: p2193 (Load monitoring configuration), p3232 (Load monitoring failure detection)

F07950 (A) Motor parameter incorrect

Reaction: NONE

Acknowledge: IMMEDIATELY

Cause: The motor parameters were incorrectly entered while commissioning (e.g. p0300 = 0, no motor)
Fault value (r0949, decimal interpretation):
Parameter number involved.
See also: p0300, p0301, p0304, p0305, p0307, p0310, p0311, p0314, p0316, p0320, p0322, p0323

Remedy: Compare the motor data with the rating plate data and if required, correct.
See also: p0300, p0301, p0304, p0305, p0307, p0310, p0311, p0314, p0316, p0320, p0322, p0323

F07967 Drive: Pole position identification internal fault

Reaction: OFF2 (NONE, OFF1)

Acknowledge: IMMEDIATELY

Cause: A fault has occurred during the pole position identification routine.
Only for internal Siemens troubleshooting.

Remedy: Carry out a POWER ON.

F07968 Drive: Lq-Ld measurement incorrect

Reaction: OFF2

Acknowledge: IMMEDIATELY

Cause: A fault has occurred during the Lq-Ld measurement.
Fault value (r0949, decimal interpretation):
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.
De-activate technique (p1909).
For fault value = 12:
Check whether motor data have been correctly entered.
De-activate technique (p1909).
For fault value = 16:
De-activate technique (p1909).
For fault value = 17:
Repeat technique.

F07969	**Drive: Incorrect pole position identification**
Reaction:	OFF2
Acknowledge:	IMMEDIATELY
Cause:	A fault has occurred during the pole position identification routine. Fault value (r0949, decimal interpretation): 1: Current controller limited 2: Motor shaft locked. 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: Bring the motor into a no-load condition. 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. 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. Motor not sufficiently anisotropic, change the technique (p1980 = 1 or 10). For fault value = 16: Change the technique (p1980). For fault value = 17: Repeat 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).

A07980 Drive: Rotating measurement activated

Reaction: NONE

Acknowledge: NONE

Cause: The rotating measurement (automatic speed controller optimization) is activated.
The rotating measurement is carried out at the next power-on command.
See also: p1960 (Rotating measurement selection)

Remedy: Not necessary.
The alarm disappears automatically after the speed controller optimization has been successfully completed or for the setting p1900 = 0.

A07981 Drive: Enable signals for the rotating measurement missing

Reaction: NONE

Acknowledge: NONE

Cause: The rotating measurement cannot be started due to missing enable signals.

Remedy: - acknowledge faults that are present.
- establish missing enable signals.
See also: r0002 (Drive operating display), r0046 (Missing enable sig)

F07983 Drive: Rotating measurement saturation characteristic

Reaction: OFF1 (NONE, OFF2)

Acknowledge: IMMEDIATELY

Cause: A fault has occurred while determining the saturation characteristic.
Fault value (r0949, decimal interpretation):
1: The speed did not reach a steady-state condition.
2: The rotor flux did not reach a steady-state condition.
3: The adaptation circuit did not reach a steady-state condition.
4: The adaptation circuit was not enabled.
5: Field weakening active.
6: The speed setpoint was not able to be approached as the minimum limiting is active.
7: The speed setpoint was not able to be approached as the suppression (skip) bandwidth is active.
8: The speed setpoint was not able to be approached as the maximum limiting is active.
9: Several values of the determined saturation characteristic are not plausible.
10: Saturation characteristic could not be sensibly determined because load torque too high.

Remedy: For fault value = 1:
- the total drive moment of inertia is far higher than that of the motor (p0341, p0342).
De-select rotating measurement (p1960), enter the moment of inertia p0342, re-calculate the speed controller p0340 = 4 and repeat the measurement.
Re fault value = 1 ... 2:
- increase the measuring speed (p1961) and repeat the measurement.
Re fault value = 1 ... 4:
- check the motor parameters (rating plate data). After the change: Calculate p0340 = 3.
- check the moment of inertia (p0341, p0342). After the change: Calculate p0340 = 3.
- 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).
Re 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

Reaction: OFF1 (NONE, OFF2)
Acknowledge: IMMEDIATELY
Cause: A fault has occurred while identifying the moment of inertia.
Fault value (r0949, decimal interpretation):
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.
Remedy: For fault value = 1:
- check the motor parameters (rating plate data). After the change: Calculate p0340 = 3.
- check the moment of inertia (p0341, p0342). After the change: Calculate p0340 = 3.
- carry out a motor data identification routine (p1910).
- if required, reduce the dynamic factor (p1967 < 25 %).
Re fault value = 2, 5:
- adapt the speed setpoint (p1965) or adapt the minimum limit (p1080).
Re fault value = 3, 6:
- adapt the speed setpoint (p1965) or suppression (skip) bandwidths (p1091 ... p1094, p1101).
Re 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). De-select rotating measurement (p1960), enter the moment of inertia p0342, re-calculate the speed controller p0340 = 4 and repeat the measurement.
For fault value = 9:
- check the moment of inertia (p0341, p0342). After the change, re-calculate (p0340 = 3 or 4).
For fault value = 10:
- check the moment of inertia (p0341, p0342). After the change: Calculate p0340 = 3.
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)

Reaction: OFF1 (NONE, OFF2)
Acknowledge: IMMEDIATELY
Cause: A fault has occurred during the vibration test.
Fault value (r0949, decimal interpretation):
1: The speed did not reach a steady-state condition.
2: The speed setpoint was not able to be approached as the minimum limiting is active.
3: The speed setpoint was not able to be approached as the suppression (skip) bandwidth is active.
4: The speed setpoint was not able to be approached as the maximum limiting is active.
5: Torque limits too low for a torque step.
6: No suitable speed controller setting was found.
Remedy: For fault value = 1:
- check the motor parameters (rating plate data). After the change: Calculate p0340 = 3.
- check the moment of inertia (p0341, p0342). After the change: Calculate p0340 = 3.
- 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:
- 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

Reaction: OFF1 (NONE, OFF2)

Acknowledge: IMMEDIATELY

Cause: During the rotating measurements, problems with the ramp-function generator occurred.
Fault value (r0949, decimal interpretation):
1: The positive and negative directions are inhibited.

Remedy: For fault value = 1:
Enable the direction (p1110 or p1111).

F07988 Drive: Rotating measurement, no configuration selected

Reaction: OFF2 (NONE, OFF1)

Acknowledge: 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)

F07990 Drive: Incorrect motor data identification

Reaction: OFF2 (NONE, OFF1)

Acknowledge: IMMEDIATELY

Cause: A fault has occurred during the identification routine.
Fault value (r0949, decimal interpretation):
1: Current limit value reached.
2: Identified stator resistance lies outside the expected range 0.1 ... 100% of Zn.
3: Identified rotor resistance lies outside the expected range 0.1 ... 100% of Zn.
4: Identified stator reactance lies outside the expected range 50 ... 500% of Zn.
5: Identified magnetizing reactance lies outside the expected range 50 ... 500% of Zn.
6: Identified rotor time constant lies outside the expected range 10 ms ... 5 s.
7: Identified total leakage reactance lies outside the expected range 4 ... 50% of Zn.
8: Identified stator leakage reactance lies outside the expected range 2 ... 50% of Zn.
9: Identified rotor leakage reactance lies outside the expected range 2 ... 50% of Zn.
10: Motor has been incorrectly connected.
11: Motor shaft rotates.
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.

Remedy: For fault value = 0:
- check whether the motor is correctly connected. Observe configuration (star-delta).
Re 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 configuration (star-delta).
Re fault value = 4, 7:
- check whether inductances are correctly entered in p0233.
- check whether motor has been correctly connected (star-delta).

A07991 (N) Drive: Motor data identification activated

Reaction: NONE

Acknowledge: NONE

Cause: The motor data ident. routine is activated.
The motor data identification routine is carried out at the next power-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 de-activated, the option to save the parameter assignment will be made available again.
See also: p1910 (Motor data identification selection)

Remedy: Not necessary.
The alarm automatically disappears after the motor data identification routine has been successfully completed or for the setting p1900 = 0.

A07994 (N) Drive: motor data identification not performed

Reaction: NONE

Acknowledge: NONE

Cause: Motor data identification has not yet been performed with the actual data set.
The alarm is only initiated when changing the data set (see r0051) in the following cases:
- vector control is parameterized in the data set that has been newly selected (p1300 >= 20).
- a motor data identification run has still not been performed in the newly selected data set (see r3925).

Remedy: - Perform motor data identification (see p1900).
- Return data set.
- Parameterize U/f control (p1300 < 20).

F08010 (N, A) CU: Analog-to-digital converter

Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3, STOP1, STOP2)

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The analog-to-digital converter on the Control Unit has not supplied any converted data.

Remedy: - check the power supply.
- replace Control Unit.

F08700 (A) CAN: Communications error

Reaction: OFF3 (NONE, OFF1, OFF2)

Acknowledge: IMMEDIATELY

Cause: A CAN communications error has occurred.
Fault value (r0949, decimal interpretation):
1: The error counter for the send telegrams has exceeded the BUS OFF value 255. The bus disables the CAN controller.
- bus cable short circuit.
- incorrect baud rate.
- incorrect bit timing.
2: The master no longer interrogated the CAN node status longer than for its "life time". The "life time" is obtained from the "guard time" (p8604[0]) multiplied by the "life time factor" (p8604[1]).
- bus cable interrupted.
- bus cable not connected.
- incorrect baud rate.
- incorrect bit timing.
- master fault.
Note:
The fault response can be set as required using p8641.

Remedy: - check the bus cable
- check the baud rate (p8622).
- check the bit timing (p8623).
- check the master.
The CAN controller must be manually restarted with p8608 = 1 after the cause of the fault has been resolved!

F08701 CAN: NMT state change

Reaction: OFF3

Acknowledge: IMMEDIATELY

Cause: A CANopen NMT state transition from "operational" to "pre-operational" or after "stopped".
Fault value (r0949, decimal interpretation):
1: CANopen NMT state transition from "operational" to "pre-operational".
2: CANopen NMT state transition from "operational" to "stopped".
Note:
In the NMT state "pre-operational", process data cannot be transferred and in the NMT state "stopped", no process data and no service data can be transferred.

Remedy: Not necessary.
Acknowledge the fault and continue operation.

F08702 (A)	CAN: RPDO Timeout
Reaction:	OFF3 (NONE, OFF1, OFF2)
Acknowledge:	IMMEDIATELY
Cause:	The monitoring time of the CANopen RPDO telegram has expired because the bus connection was either interrupted or the CANopen Master was switched-off.
Remedy:	- check the bus cable - check the master. - If required, increase the monitoring time (p8699).

A08751	CAN: Telegram loss
Reaction:	NONE
Acknowledge:	NONE
Cause:	The CAN controller has lost a receive message (telegram).
Remedy:	Reduce the cycle times of the receive messages.

A08752	CAN: Error counter for error passive exceeded
Reaction:	NONE
Acknowledge:	NONE
Cause:	The error counter for the send or receive telegrams has exceeded the value 127.
Remedy:	- check the bus cable - set a higher baud rate (p8622). - check the bit timing and if required optimize (p8623).

A08753	CAN: Message buffer overflow
Reaction:	NONE
Acknowledge:	NONE
Cause:	A message buffer overflow. Alarm value (r2124, interpret decimal): 1: Non-cyclic send buffer (SDO response buffer) overflow. 2: Non-cyclic receive buffer (SDO receive buffer) overflow. 3: Cyclic send buffer (PDO send buffer) overflow.
Remedy:	- check the bus cable. - set a higher baud rate (p8622). - check the bit timing and if required optimize (p8623). Re alarm value = 2: - reduce the cycle times of the SDO receive messages. - SDO request from master only after SDO feedback for previous SDO request.

A08754	CAN: Incorrect communications mode
Reaction:	NONE
Acknowledge:	NONE
Cause:	In the "operational" mode, an attempt was made to change parameters p8700 ... p8737.
Remedy:	Change to the "pre-operational" or "stopped" mode.

A08755	CAN: Obj cannot be mapped
Reaction:	NONE
Acknowledge:	NONE
Cause:	The CANopen object is not provided for the Process Data Object (PDO) Mapping.
Remedy:	Use a CANopen object intended for the PDO mapping or enter 0. The following objects can be mapped in the Receive Process Data Object (RPDO) or Transmit Process Data Object (TPDO): - RPDO: 6040 hex, 6060 hex, 60FF hex, 6071 hex; 5800 hex - 580F hex; 5820 hex - 5827 hex - TPDO: 6041 hex, 6061 hex, 6063 hex, 6069 hex, 606B hex, 606C hex, 6074 hex; 5810 hex - 581F hex; 5830 hex - 5837 hex Only sub-index 0 of the specified objects can be mapped. Note: As long as A08755 is present, the COB-ID cannot be set to valid.

A08757 CAN: Set COB-ID invalid

Reaction: NONE
Acknowledge: NONE
Cause: For online operation, the appropriate COB-ID must be set invalid before mapping.
Example:
Mapping for RPDO 1 should be changed (p8710[0]).
--> set p8700[0] = C00006E0 hex (invalid COB-ID)
--> set p8710[0] as required.
--> p8700[0] enter a valid COB-ID
Remedy: Set the COB-ID to invalid.

A08759 CAN: PDO COB-ID already available

Reaction: NONE
Acknowledge: NONE
Cause: An existing PDO COB-ID was allocated.
Remedy: Select another PDO COB-ID.

F30001 Power unit: Overcurrent

Reaction: OFF2
Acknowledge: 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 current of motor much greater than that of power unit.
- High discharge and post-charging current for line supply voltage interruptions.
- High post-charging currents for overload when motoring and DC link voltage dip.
- Short-circuit currents at power-on due to the missing line reactor.
- power cables are not correctly connected.
- power cables exceed the maximum permissible length.
- power unit defective.
- line phase interrupted.
Fault value (r0949, interpret bitwise binary):
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.
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 assignment of rated currents of motor and power unit.
- check the line supply quality.
- Reduce motor load.
- Correct connection of line reactor.
- check the power cable connections.
- check the power cables for short-circuit or ground fault.
- check the length of the power cables.
- replace power unit.
- check the line supply phases.

F30002 Power unit: DC link voltage, overvoltage

Reaction: OFF2

Acknowledge: IMMEDIATELY

Cause: The power unit has detected an overvoltage condition in the DC link.
- motor regenerates too much energy.
- line supply voltage too high.
- line phase interrupted.
- DC-link voltage control switched off.
- dynamic response of DC-link voltage controller excessive or insufficient.
Fault value (r0949, decimal interpretation):
DC link voltage at the time of trip [0.1 V].

Remedy: -increase the ramp-down time (p1121).
- 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.
- Activate the DC link voltage controller (p1240, p1280).
- adapt the dynamic response of the DC-link voltage controller (p1243, p1247, p1283, p1287).
- check the line supply voltage and setting in p0210.
- check and correct the phase assignment at the power unit.
- check the line supply phases.
See also: p0210 (Drive unit line supply voltage), p1240 (Vdc controller or Vdc monitoring configuration (vector control))

F30003 Power unit: DC link voltage, undervoltage

Reaction: OFF2

Acknowledge: 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 phase interrupted.
Note:
The monitoring threshold for the DC link undervoltage is the minimum of the following values:
- for a calculation, refer to p0210.

Remedy: - check the line supply voltage
- check the line supply phases.
See also: p0210 (Drive unit line supply voltage)

F30004 Power unit: Overtemperature heat sink AC inverter

Reaction: OFF2

Acknowledge: 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):
Temperature [1 bit = 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 this alarm threshold for alarm A05000 has been undershot.
See also: p1800 (Pulse frequency setpoint)

F30005 Power unit: Overload I2t

Reaction: OFF2

Acknowledge: IMMEDIATELY

Cause: The power unit was overloaded (r0036 = 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, decimal interpretation):
I2t [100 % = 16384].

Remedy: - reduce the continuous load.
- adapt the load duty cycle.
- check the motor and power unit rated currents.
- reduce the current limit (p0640).
- during operation with U/f characteristic: reduce the integral time of the current limiting controller (p1341).
See also: r0036 (Power unit overload I2t), r0206 (Rated power unit power), p0307 (Rated motor power)

F30011 Power unit: Line phase failure in main circuit

Reaction: OFF2 (OFF1)

Acknowledge: IMMEDIATELY

Cause: A line phase failure was detected at the power unit.
- the fuse of a phase of a main circuit has ruptured.
- the DC link voltage ripple has exceeded the permissible limit value.
Note:
The cause may also be a phase failure in the motor feeder cable.

Remedy: - check the main circuit fuses.
- check the motor feeder cables.

F30012 Power unit: Temperature sensor heat sink wire breakage

Reaction: OFF1 (OFF2)

Acknowledge: IMMEDIATELY

Cause: The connection to a heat sink temperature sensor in the power unit is interrupted.
Fault value (r0949, interpret hexadecimal):
Bit 0: Module slot (electronics slot)
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 1
Bit 9: Rectifier 2

Remedy: Contact the manufacturer.

F30013 Power unit: Temperature sensor heat sink short-circuit

Reaction: OFF1 (OFF2)

Acknowledge: IMMEDIATELY

Cause: The heat sink temperature sensor in the power unit is short-circuited.
Fault value (r0949, interpret hexadecimal):
Bit 0: Module slot (electronics slot)
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 1
Bit 9: Rectifier 2

Remedy: Contact the manufacturer.

F30015 (N, A) Power unit: Phase failure motor cable

Reaction: OFF2 (NONE, OFF1, OFF3)

Acknowledge: IMMEDIATELY

Cause: A phase failure in the motor feeder cable was detected.
The signal can also be output in the following cases:
- The motor is correctly connected, but the drive has stalled in V/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 V/f control.
- check the speed controller settings.

A30016 (N) Power unit: Load supply switched out

Reaction: NONE

Acknowledge: NONE

Cause: The DC link voltage is too low.
Alarm value (r2124, interpret decimal):
DC link voltage at the time of trip [0.1 V].

Remedy: Under certain circumstances, the AC line supply is not switched on.

F30017 Power unit: Hardware current limit has responded too often

Reaction: OFF2

Acknowledge: 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.
- 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

Remedy:
- check the motor data.
- 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.

F30021 Power unit: Ground fault

Reaction: OFF2

Acknowledge: IMMEDIATELY

Cause: Power unit has detected a ground fault.
- ground fault in the power cables.
- winding fault or ground fault at the motor.
- CT defective.
- when the brake is applied, this causes the hardware DC current monitoring to respond.

Fault value (r0949, decimal interpretation):
Absolute value, summation current [32767 = 271 % rated current].

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).

See also: p0287 (Ground fault monitoring thresholds)

F30022 Power unit: Monitoring U_ce

Reaction: OFF2

Acknowledge: 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.
- power supply of the IGBT gating module 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: Light transmitter enable defective
Bit 4: U_ce group fault signal interrupted
See also: r0949 (Fault value)

Remedy:
- check the fiber-optic cable and if required, replace.
- check the power supply of the IGBT gating module (24 V).
- check the power cable connections.
- select the defective semiconductor and replace.

F30024 Power unit: Overtemperature thermal model

Reaction: OFF2

Acknowledge: IMMEDIATELY

Cause: The temperature difference between the heat sink and chip has exceeded the permissible limit value.
- the permissible load duty cycle was not maintained.
- insufficient cooling, fan failure.
- overload.
- ambient temperature too high.
- pulse frequency too high.
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

Reaction: OFF2

Acknowledge: IMMEDIATELY

Cause: Chip temperature of the semiconductor has exceeded the permissible limit value.
- the permissible load duty cycle was not maintained.
- insufficient cooling, fan failure.
- overload.
- ambient temperature too high.
- pulse frequency too high.
Fault value (r0949):
Temperature difference between the heat sink and chip [1 Bit = 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.
Notice:
This fault can only be acknowledged after this alarm threshold for alarm A05001 has been undershot.
See also: r0037 (Power unit temperatures)

F30027 Power unit: Precharging DC link time monitoring

Reaction: OFF2

Acknowledge: IMMEDIATELY

Cause: The power unit DC link was not able to be pre-charged 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 pre-charging resistors are overheated as there were too many pre-charging operations per time unit.
6) The pre-charging 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) Pre-charging circuit may be defective.
Fault value (r0949, interpret binary):
yyyyxxxx hex:
yyyy = power unit state
0: Fault status (wait for OFF and fault acknowledgement).
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 bypass contactor to open -> change into the fault state.
5: Wait for bypass contactor to open -> change into restart inhibit.
6: Commissioning.
7: Ready for pre-charging.
8: Pre-charging started, DC link voltage less than the minimum switch-on voltage.
9: Pre-charging, DC link voltage end of pre-charging still not detected.
10: Wait for the end of the de-bounce time of the main contactor after pre-charging has been completed.
11: Pre-charging completed, ready for pulse enable.
12: Reserved.
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 pre-charging, ready for pulse enable.
Bit 9: Reserved.
Bit 10: Overcurrent detected.
Bit 11: Reserved.
Bit 12: Reserved.
Bit 13: Vce fault detected, transistor de-saturated due to overcurrent/short-circuit.
Bit 14: Undervoltage detected.
See also: p0210 (Drive unit line supply voltage)

Remedy: In general:
- check the line supply voltage at the input terminals.
- check the line supply voltage setting (p0210).
- wait until the pre-charging resistors have cooled down. For this purpose, preferably disconnect the infeed unit from the line supply.
Re 5):
- carefully observe the permissible pre-charging frequency (refer to the appropriate Equipment Manual).
Re 6):
- check the capacitance of the DC link and, if necessary, reduce it in accordance with the maximum permissible DC link capacitance (see relevant Equipment Manual).
Re 7):
- check the DC link for a ground fault or short circuit.
See also: p0210 (Drive unit line supply voltage)

A30031	**Power unit: Hardware current limiting, phase U**
Reaction:	NONE
Acknowledge:	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. Note: Alarm A30031 is always output if, for a Power Module, the hardware current limiting of phase U, V or W responds.
Remedy:	- check the motor data and if required, recalculate the controller parameters (p0340 = 3). 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, phase V**
Reaction:	NONE
Acknowledge:	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. Note: Alarm A30031 is always output if, for a Power Module, the hardware current limiting of phase U, V or W responds.
Remedy:	Check the motor data and if required, recalculate the controller parameters (p0340 = 3). 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, phase W**
Reaction:	NONE
Acknowledge:	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. Note: Alarm A30031 is always output if, for a Power Module, the hardware current limiting of phase U, V or W responds.
Remedy:	- check the motor data and if required, recalculate the controller parameters (p0340 = 3). 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

Reaction: NONE

Acknowledge: NONE

Cause: The alarm threshold for internal overtemperature has been reached.
If the temperature inside the unit continues to increase, fault F30036 may be triggered.
- ambient temperature might be too high.
- insufficient cooling, fan failure.
Fault value (r0949, interpret binary):
Bit 0 = 1: Control electronics range.
Bit 1 = 1: Power electronics range.

Remedy: - check the ambient temperature.
- check the fan for the inside of the unit.

F30035 Power unit: Air intake overtemperature

Reaction: OFF1 (OFF2)

Acknowledge: IMMEDIATELY

Cause: The air intake in the power unit has exceeded the permissible temperature limit.
For air-cooled power units, the temperature limit is at 55 °C.
- ambient temperature too high.
- insufficient cooling, fan failure.
Fault value (r0949, decimal interpretation):
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.
Notice:
This fault can only be acknowledged after this alarm threshold for alarm A05002 has been undershot.

F30036 Power unit: Internal overtemperature

Reaction: OFF2

Acknowledge: IMMEDIATELY

Cause: For chassis power units, the following applies:
The temperature inside the drive converter has exceeded the permissible temperature limit.
- insufficient cooling, fan failure.
- overload.
- ambient temperature too high.
Fault value (r0949, interpret binary):
Bit 0 = 1: Overtemperature in the control electronics range.
Bit 1 = 1: Overtemperature in the power electronics range.

Remedy: - check whether the fan is running.
- 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

Reaction: OFF2

Acknowledge: 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, decimal interpretation):
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 this alarm threshold for alarm A05004 has been undershot.

A30042 Power unit: Fan operating time reached or exceeded

Reaction: NONE
Acknowledge: NONE
Cause: The maximum operating time of the fan in the power unit is set in p0252.
This message indicates the following:
Fault value (r0949, decimal interpretation):
0: The maximum fan operating time is 500 hours.
1: The maximum fan operating time has been exceeded.
Remedy: Replace the fan in the power unit and reset the operating hours counter to 0 (p0251 = 0).

A30049 Power unit: Internal fan faulty

Reaction: NONE
Acknowledge: NONE
Cause: The internal fan has failed.
Remedy: Check the internal fan and replace if necessary.

F30052 EEPROM data error

Reaction: NONE
Acknowledge: POWER ON
Cause: EEPROM data error of the power unit module.
Fault value (r0949, interpret hexadecimal):
0: The EEPROM data read in from the power unit module is inconsistent.
1: The EEPROM data is not compatible with the CU firmware.
Remedy: For fault value = 0:
Replace power unit module.
For fault value = 1:
Replace power unit module.

A30054 (F) Power unit: Undervoltage when opening the brake

Reaction: NONE
Acknowledge: NONE
Cause: When the brake is being opened, it is detected that the power supply voltage is less than 24 V - 10% = 21.6V.
Alarm value (r2124, interpret decimal):
Supply voltage fault [0.1 V].
Example:
Alarm value = 212 --> voltage = 21.2 V
Remedy: Check the 24V power supply for stability and value.

F30055 Power unit: Braking chopper overcurrent

Reaction: OFF2
Acknowledge: 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.

F30059 Power unit: Internal fan faulty

Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The internal power unit fan has failed and is possibly defective.
Remedy: Check the internal fan and replace if necessary.

F30071 No new actual values received from the Power Module

Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: More than one actual value telegram from the power unit module has failed.
Remedy: Check the interface (adjustment and locking) to the power unit module.

F30072 Setpoints can no longer be transferred to the Power Module

Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: More than one setpoint telegram was not able to be transferred to the power unit module.
Remedy: Check the interface (adjustment and locking) to the power unit module.

F30074 (A) Communication error between the Control Unit and Power Module

Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: Communications between the Control Unit and Power Module via the interface no longer possible. The Control Unit may have been withdrawn or is incorrectly inserted.
Fault value (r0949, interpret hexadecimal):
0 hex:
The Control Unit was withdrawn from the Power Module during operation.
1 hex:
The Control Unit was withdrawn from the Power Module during operation, although the encoderless safe motion monitoring functions are enabled. This is not supported. After re-inserting the Control Unit in operation, communications to the Power Module no longer possible.
20A hex:
The Control Unit was inserted on a Power Module, which has another code number.
20B hex:
The Control Unit was inserted on a Power Module, which although it has the same code number, has a different serial number. The Control Unit executes an automatic warm restart to accept the new calibration data.
Remedy: For fault value = 0 and 20A hex:
Insert the Control Unit on an appropriate Power Module and continue operation. If required, carry out a POWER ON of the Control Unit.
For fault value = 1 hex:
Carry out a POWER ON of the Control Unit.

F30080 Power unit: Current increasing too quickly

Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The power unit has detected an excessive rate of rise in the overvoltage range.
- 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 current of motor much greater than that of power unit.
- power cables are not correctly connected.
- power cables exceed the maximum permissible length.
- power unit defective.

Fault value (r0949, interpret bitwise binary):
Bit 0: Phase U.
Bit 1: Phase V.
Bit 2: Phase W.

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 assignment of rated currents of motor and power unit.
- 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.

F30081	**Power unit: Switching operations too frequent**
Reaction:	OFF2
Acknowledge:	IMMEDIATELY
Cause:	The power unit has executed too many switching operations for current limitation. - closed-loop control is incorrectly parameterized. - motor has a short-circuit or fault to ground (frame). - U/f operation: Up ramp set too low. - U/f operation: rated current of motor much greater than that of power unit. - power cables are not correctly connected. - power cables exceed the maximum permissible length. - power unit defective. Fault value (r0949, interpret bitwise binary): Bit 0: Phase U. Bit 1: Phase V. Bit 2: Phase W.
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 assignment of rated currents of motor and power unit. - 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.

F30105	**PU: Actual value sensing fault**
Reaction:	OFF2
Acknowledge:	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.

A30502	**Power unit: DC link overvoltage**
Reaction:	NONE
Acknowledge:	NONE
Cause:	The power unit has detected overvoltage in the DC link on a pulse inhibit. - device connection voltage too high. - line reactor incorrectly dimensioned. Fault value (r0949, decimal interpretation): 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 (Drive unit line supply voltage)

F30600	**SI P2: STOP A initiated**
Reaction:	OFF2
Acknowledge:	IMMEDIATELY (POWER ON)
Cause:	The drive-integrated "Safety Integrated" function on processor 2 has detected an error and initiated a STOP A. - forced checking procedure of the safety shutdown path via processor 2 unsuccessful. - subsequent response to fault F30611 (defect in a monitoring channel). Fault value (r0949, decimal interpretation): 0: Stop request from processor 1. 1005: Pulses suppressed although STO not selected and there is no internal STOP A present. 1010: Pulses enabled although STO is selected or an internal STOP A is present. 9999: Subsequent response to fault F30611.
Remedy:	Select Safe Torque Off and de-select again. For fault value = 9999: - carry out diagnostics for fault F30611. Note: STO: Safe Torque Off

F30611 SI P2: Defect in a monitoring channel

Reaction: NONE (OFF1, OFF2, OFF3)

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The drive-integrated "Safety Integrated" function on processor 2 has detected a fault in the crosswise data comparison between the two monitoring channels and has initiated a STOP F.
As a consequence of this fault, fault F30600 (SI P2: STOP A initiated) is output.
Fault value (r0949, decimal interpretation):
0: Stop request from processor 1.
1 ... 999:
Number of the cross-checked data that resulted in this fault. This number is also displayed in r9795.
2: SI enable safety functions (p9601, p9801). Crosswise data comparison is only carried out for the supported bits.
3: SI F-DI changeover tolerance time (p9650, p9850).
8: SI PROFIsafe address (p9610, p9810).
9: SI debounce time for STO (p9651, p9851).
1000: Watchdog timer has expired. Within a time of approx. 5 x p9850, too many switching operations have occurred at F-DI, or STO (also as subsequent response) was initiated too frequently via PROFIsafe.
1001, 1002: Initialization error, change timer / check timer.
2000: Status of the STO selection for both monitoring channels are different.
2001: Feedback of the safe pulse suppression on the two monitoring channels are different.
6000 ... 6999:
Error in the PROFIsafe control.
For these fault values, the failsafe control signals (failsafe values) are transferred to the safety functions.
The significance of the individual message values is described in safety message C01711.

Remedy: Re fault values 1 ... 999 described in "Cause":
- check the cross-checked data that resulted in a STOP F.
- carry out a POWER ON (power off/on).
For fault value = 1000:
- check the wiring of the F-DI (contact problems).
- PROFIsafe: Remove contact problems/faults at the PROFIBUS master/PROFINET controller.
Re fault value = 1001, 1002:
- carry out a POWER ON (power off/on).
Re fault value = 2000, 2001, 2002, 2004, 2005:
- check the tolerance time F-DI changeover and if required, increase the value (p9650/p9850).
- check the wiring of the F-DI (contact problems).
- check the causes of the STO selection in r9772. When the SI Motion functions are active (p9501 = 1), STO can also be selected using these functions.
Re fault value = 6000 ... 6999:
Refer to the description of the message values in safety message C01711.
Re fault values that are described in "Cause":
- carry out a POWER ON (power off/on).
- contact the Hotline
- replace Control Unit.
Note:
F-DI: Failsafe Digital Input
STO: Safe Torque Off

N30620 (F, A) SI P2: Safe Torque Off active

Reaction: NONE

Acknowledge: NONE

Cause: The "Safe Torque Off" (STO) function has been selected on processor 2 using the input terminal and is active.
Note:
This message does not result in a safety stop response.

Remedy: Not necessary.
Note:
STO: Safe Torque Off

F30625 SI P2: Sign-of-life error in safety data

Reaction: OFF2

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The drive-integrated "Safety Integrated" function on processor 2 has detected an error in the sign-of-life of the safety data and initiated a STOP A.
- there is a communication error between processor 1 and processor 2 or communication has failed.
- a time slice overflow of the safety software has occurred.
Fault value (r0949, decimal interpretation):
Only for internal Siemens troubleshooting.

Remedy: - select Safe Torque Off and de-select again.
- carry out a POWER ON (power off/on).
- check whether additional faults are present and if required, perform diagnostics.
- check the electrical cabinet design and cable routing for EMC compliance

F30649 SI P2: Internal software error

Reaction: OFF2

Acknowledge: IMMEDIATELY (POWER ON)

Cause: An internal error in the Safety Integrated software on processor 2 has occurred.
Note:
This fault results in a STOP A that cannot be acknowledged.
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.

Remedy: - carry out a POWER ON (power off/on).
- re-commission the "Safety Integrated" function and carry out a POWER ON.
- contact the Hotline.
- replace Control Unit.

F30650 SI P2: Acceptance test required

Reaction: OFF2

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The drive-integrated "Safety Integrated" function on processor 2 requires an acceptance test.
Note:
This fault results in a STOP A that can be acknowledged.
Fault value (r0949, decimal interpretation):
130: Safety parameters for processor 2 not available.
Note:
This fault value is always output when Safety Integrated is commissioned for the first time.
1000: Reference and actual checksum on processor 2 are not identical (booting).
- at least one checksum-checked piece of data is defective.
2000: Reference and actual checksum on processor 2 are not identical (commissioning mode).
- reference checksum incorrectly entered on processor 2 (p9899 not equal to r9898).
2003: Acceptance test is required as a safety parameter has been changed.
9999: Subsequent response of another safety-related fault that occurred when booting that requires an acceptance test.

Remedy: For fault value = 130:
- carry out safety commissioning routine.
For fault value = 1000:
- again carry out safety commissioning routine.
- replace the memory card or Control Unit.
For fault value = 2000:
- check the safety parameters on processor 2 and adapt the reference checksum (p9899).
For fault value = 2003:
- Carry out an acceptance test and generate an acceptance report.
For fault value = 9999:
- carry out diagnostics for the other safety-related fault that is present.
See also: p9799 (SI setpoint checksum SI parameters (processor 1)), p9899 (SI setpoint checksum SI parameters (processor 2))

F30651 SI P2: Synchronization with Control Unit unsuccessful

Reaction: OFF2

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The drive-integrated "Safety Integrated" function requires synchronization of the safety time slices on processor 1 and processor 2. This synchronization was unsuccessful.
Note:
This fault results in a STOP A that cannot be acknowledged.
Fault value (r0949, decimal interpretation):
Only for internal Siemens troubleshooting.

Remedy: - carry out a POWER ON (power off/on).

F30655 SI P2: Align monitoring functions

Reaction: OFF2

Acknowledge: IMMEDIATELY (POWER ON)

Cause: An error has occurred when aligning the Safety Integrated monitoring functions on processor 1 and processor 2. No common set of supported SI monitoring functions was able to be determined.
- there is a communication error between processor 1 and processor 2 or communication has failed.
Note:
This fault results in a STOP A that cannot be acknowledged.
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.

Remedy: - carry out a POWER ON (power off/on).
- check the electrical cabinet design and cable routing for EMC compliance

F30656 SI P2: Parameter processor 2 parameter error

Reaction: OFF2

Acknowledge: IMMEDIATELY (POWER ON)

Cause: When accessing the Safety Integrated parameters for the processor 2 in the non-volatile memory, an error has occurred.
Note:
This fault results in a STOP A that can be acknowledged.
Fault value (r0949, decimal interpretation):
129: Safety parameters for processor 2 corrupted.
131: Internal software error on processor 1.
255: Internal software error on processor 2.

Remedy: - re-commission the safety functions.
- replace the memory card or Control Unit.

F30659 SI P2: Write request for parameter rejected

Reaction: OFF2

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The write request for one or several Safety Integrated parameters on processor 2 was rejected.
Note:
This fault does not result in a safety stop response.
Fault value (r0949, decimal interpretation):
10: An attempt was made to enable the STO function although this cannot be supported.
15: An attempt was made to enable the motion monitoring functions integrated in the drive although these cannot be supported.
16: An attempt was made to enable the PROFIsafe communications although this cannot be supported.
18: An attempt was made to enable the PROFIsafe function for Basic Functions although this cannot be supported.
20: An attempt was made to simultaneously enable both the drive-integrated motion monitoring functions via integrated F-DI and STO via terminals, even though these cannot be supported at the same time.
See also: r9771, r9871

Remedy: Re fault value = 10, 15, 16, 18:
- check whether there are faults in the safety function alignment (F01655, F30655) and if required, carry out diagnostics for the faults involved.
- use a Control Unit that supports the required function.
Note:
STO: Safe Torque Off

F30662 Error in internal communications

Reaction: OFF2

Acknowledge: POWER ON

Cause: A module-internal communication error has occurred.
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.

Remedy: - carry out a POWER ON (power off/on).
- upgrade firmware to later version.
- contact the Hotline.

F30664 Error while booting

Reaction: OFF2

Acknowledge: POWER ON

Cause: An error has occurred during booting.
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.

Remedy: - carry out a POWER ON (power off/on).
- upgrade firmware to later version.
- contact the Hotline.

F30665 SI P2: System is defective

Reaction: OFF2

Acknowledge: IMMEDIATELY

Cause: A system defect was detected before the last boot or in the actual one. The system might have been rebooted (reset).
Fault value (r0949, interpret hexadecimal):
200000 hex, 400000 hex:
- Fault in the actual booting/operation.
Additional values:
- defect before the last time that the system booted.

Remedy: - carry out a POWER ON (power off/on).
- upgrade firmware to later version.
- contact the Hotline.
Re fault value = 400000 hex:
- ensure that the Control Unit is connected to the Power Module.

A30666 (F) SI Motion P2: Steady-state (static) 1 signal at the F-DI for safety-relevant acknowledgement

Reaction: NONE

Acknowledge: NONE

Cause: A logical 1 signal is present at the F-DI configured in p10106 for more than 10 seconds.
If, at the F-DI no acknowledgment was performed for safe acknowledgment, then a steady-state logical and 0 signal must be present. This avoids unintentional safety-relevant acknowledgement (or the "Internal Event Acknowledge" signal) if a wire breaks or one of the two digital inputs bounces.

Remedy: Set the fail-safe digital input (F-DI) to a logical 0 signal (p10106).
Note:
F-DI: Failsafe Digital Input

F30680 SI Motion P2: Checksum error safety monitoring functions

Reaction: OFF2

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The actual checksum calculated by processor 2 and entered in r9398 over the safety-relevant parameters does not match the reference checksum saved in p9399 at the last machine acceptance.
Safety-relevant parameters have been changed or a fault is present.
Note:
This fault results in a STOP A that can be acknowledged.
Fault value (r0949, decimal interpretation):
0: Checksum error for SI parameters for motion monitoring.
1: Checksum error for SI parameters for component assignment.

Remedy: - check the safety-relevant parameters and if required, correct.
- set the reference checksum to the actual checksum.
- perform a POWER ON if safety parameters requiring a POWER ON have been modified.
- carry out an acceptance test.

F30681 SI Motion P2: Incorrect parameter value

Reaction: OFF2

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The parameter cannot be parameterized with this value.
Note:
This message does not result in a safety stop response.
Fault value (r0949, decimal interpretation):
Parameter number with the incorrect value.

Remedy: Correct the parameter value.

F30682 SI Motion P2: Monitoring function not supported

Reaction: OFF2

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The monitoring function enabled in p9301, p9501, p9601 or p9801 is not supported in this firmware version.
Note:
This message does not result in a safety stop response.
Fault value (r0949, decimal interpretation):
1: Monitoring function SLP not supported (p9301.1).
2: Monitoring function SCA not supported (p9301.7 and p9301.8 ... 15).
3: Monitoring function SLS override not supported (p9301.5).
4: Monitoring function external ESR activation not supported (p9301.4).
5: Monitoring function F-DI in PROFIsafe not supported (p9301.30).
6: Enable actual value synchronization not supported (p9301.3).
9: Monitoring function not supported, enable bit reserved (p9301.2, p9301.17 ... 29, p9301.31, if required p9301.6).
24: Monitoring function SDI not supported.

Remedy: - de-select the monitoring function involved.
Note:
SCA: Safe Cam
SLP: Safely-Limited Position
SLS: Safely-Limited Speed
SDI: Safe Direction (safe motion direction)
See also: p9301, p9501, p9601, p9801, r9871

F30683 SI Motion P2: SLS enable missing

Reaction: OFF2

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The safety-relevant function "SLS" is not enabled in p9301 although other safety-relevant monitoring functions are enabled.
Note:
This message does not result in a safety stop response.

Remedy: Enable the function "SLS" (p9301.0).
Note:
SLS: Safely-Limited Speed
See also: p9301 (SI Motion enable safety functions (processor 2))

F30692	SI Motion P2: Incorrect parameter value encoderless
Reaction:	OFF2
Acknowledge:	IMMEDIATELY (POWER ON)
Cause:	For encoderless motion monitoring functions, the parameter cannot be parameterized with this value. Note: This message does not result in a safety stop response. Fault value (r0949, decimal interpretation): Parameter number with the incorrect value. See also: p9301 (SI Motion enable safety functions (processor 2))
Remedy:	Correct the parameter value or de-select encoderless motion monitoring functions. See also: p9301 (SI Motion enable safety functions (processor 2)), p9501 (SI Motion enable safety functions (processor 1))

A30693 (F)	SI P2: Safety parameter settings changed, POWER ON required
Reaction:	NONE
Acknowledge:	NONE
Cause:	Safety parameters have been changed; these will only take effect following a POWER ON. Alarm value (r2124, interpret decimal): Parameter number of the safety parameter which has changed, necessitating a POWER ON.
Remedy:	- carry out a POWER ON (power off/on).

C30700	SI Motion P2: STOP A initiated
Reaction:	OFF2
Acknowledge:	IMMEDIATELY (POWER ON)
Cause:	The drive is stopped via a STOP A (pulses are suppressed via the safety shutdown path of processor 1). Possible causes: - stop request from processor 1. - Pulses not suppressed after test stop selection. - subsequent response to the message C30706 "SI Motion P2: SAM/SBR limit exceeded". - subsequent response to the message C30714 "SI Motion P2: Safely-Limited Speed exceeded". - subsequent response to the message C30701 "SI Motion P2: STOP B initiated".
Remedy:	- remove the cause of the fault on the monitoring channel of processor 1. - check the shutdown path of processor 2. - carry out a diagnostics routine for message C30706. - carry out a diagnostics routine for message C30714. - carry out a diagnostics routine for message C30701. - replace Power Module. - replace Control Unit. This message can be acknowledged via F-DI or PROFIsafe. F-DI: Failsafe Digital Input SAM: Safe Acceleration Monitor (safe acceleration monitoring) SBR: Safe Brake Ramp (safe brake ramp monitoring)

C30701	SI Motion P2: STOP B initiated
Reaction:	OFF3
Acknowledge:	IMMEDIATELY (POWER ON)
Cause:	The drive is stopped via a STOP B (braking along the OFF3 deceleration ramp). As a result of this fault, after the speed threshold parameterized in p9360 is fallen below, message C30700 "STOP A initiated" is output. Possible causes: - stop request from processor 1. - subsequent response to the message C30714 "SI Motion P2: Safely-Limited Speed exceeded". - subsequent response to the message C30711 "SI Motion P2: Defect in a monitoring channel". - subsequent response to the message C30707 "SI Motion P2: tolerance for safe operating stop exceeded".
Remedy:	- remove the cause of the fault on the monitoring channel of processor 1. - carry out a diagnostics routine for message C30714. - carry out a diagnostics routine for message C30711. - carry out a diagnostics routine for message C30707. This message can be acknowledged via F-DI or PROFIsafe. Note: F-DI: Failsafe Digital Input

C30706 SI Motion P2: SAM/SBR limit exceeded

Reaction: NONE

Acknowledge: IMMEDIATELY (POWER ON)

Cause: Motion monitoring functions with set acceleration monitoring (p9306 = 3):
SAM - safe acceleration monitoring. After initiating STOP B (SS1) the velocity has exceeded the selected tolerance.
Motion monitoring functions with set brake ramp monitoring (p9306 = 1):
SBR - Safe brake ramp monitoring. After initiating STOP B (SS1) or SLS changeover to the lower speed stage, the speed has exceeded the selected tolerance.
The drive is shut down by the message C30700 "SI Motion P2: STOP A initiated".

Remedy: Check the braking behavior and, if necessary, adapt the tolerance for the parameter settings of the "SAM" or the "SBR" function.
This message can be acknowledged without a POWER ON as follows:
- motion monitoring functions integrated in the drive: via F-DI or PROFIsafe.
Note:
F-DI: Failsafe Digital Input
SAM: Safe Acceleration Monitor (safe acceleration monitoring)
SBR: Safe Brake Ramp (safe brake ramp monitoring)
See also: p9348 (SI Motion SAM actual velocity tolerance (Motor Module)), p9381 (SI Motion brake ramp reference value (processor 2)), p9382 (SI Motion brake ramp delay time (processor 2)), p9383 (SI Motion brake ramp monitoring time (processor 2)), p9548 (SI Motion SAM actual velocity tolerance (Control Unit))

C30711 SI Motion P2: Defect in a monitoring channel

Reaction: NONE

Acknowledge: IMMEDIATELY (POWER ON)

Cause: When cross-checking and comparing the two monitoring channels, the drive detected a difference between the input data or results of the monitoring functions and initiated a STOP F. One of the monitoring functions no longer reliably functions - i.e. safe operation is no longer possible.
If at least one monitoring function is active, then message C30701 "SI Motion: STOP B initiated" is output.
The following message values may also occur in the following cases if the cause that is explicitly mentioned does not apply:
- synchronization error between processor 1 and processor 2.
Message value (r2124, interpret decimal):
0 ... 999: Number of the cross-checked data that resulted in this message. The significance of the individual message values is described in safety message C01711.
1000: Watchdog timer has expired. Too many signal changes have occurred at the F-DI.
1001: Initialization error of watchdog timer.
1005: Pulses already suppressed for test stop selection.
1011: Acceptance test status between the monitoring channels differ.
1020: Cyc. communication failure between the monit. cycles.
1040: Pulses suppressed with active encoderless monitoring functions.
1041: Current absolute value too low (encoderless)
1042: Current/voltage plausibility error
1043: Too many acceleration phases
1044: Actual current values plausibility error.
6000 ... 6166:
PROFIsafe message values (PROFIsafe driver for PROFIBUS DP V1/V2 and PROFInet).
For these fault values, the failsafe control signals (failsafe values) are transferred to the safety functions.
The significance of the individual message values is described in safety message C01711 of the Control Unit.
See also: r9725 (SI Motion, diagnostics STOP F)

Remedy: Re message value = 1040:
- de-select encoderless monitoring functions, select and de-select STO.
- if monitoring function is active, issue "SLS" pulse enable within 5 s of de-selecting STO.
Re other message values:
- the significance of the individual message values is described in safety message C01711.
Note:
This message can be acknowledged via F-DI or PROFIsafe.

C30712 SI Motion P2: Defect in F-IO processing

Reaction: NONE

Acknowledge: IMMEDIATELY (POWER ON)

Cause: When cross checking and comparing the two monitoring channels, the drive detected a difference between parameters or results of the F-IO processing and initiated a STOP F. One of the monitoring functions no longer reliably functions - i.e. safe operation is no longer possible.
The safety message C30711 with message value 0 is also displayed due to initiation of STOP F.
If at least one monitoring function is active, then safety message C30701 "SI Motion: STOP B initiated" is output.
Message value (r2124, interpret decimal):
Number of the cross-checked data that resulted in this message.
See safety message C01712 for a description of the message values.

Remedy: - check parameterization in the parameters involved and correct if required.
- ensure equality by copying the SI data to processor 2 and then carry out an acceptance test.
Note:
This message can be acknowledged via F-DI or PROFIsafe.

C30714 SI Motion P2: Safely-Limited Speed exceeded

Reaction: NONE

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The drive had moved faster than that specified by the velocity limit value (p9331). The drive is stopped as a result of the configured stop response (p9363).
Message value (r2124, 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" function and if required, adapt (p9331).
Note:
This message can be acknowledged via F-DI or PROFIsafe.
SLS: Safely-Limited Speed
See also: p9331 (SI Motion SLS limit values (processor 2)), p9363 (SI Motion SLS stop response (processor 2))

C30716 SI Motion P2: Tolerance for safe motion direction exceeded

Reaction: NONE

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The tolerance for the "safe motion direction" function was exceeded. The drive is stopped as a result of the configured stop response (p9366).
Message value (r9749, interpret decimal):
0: Tolerance for the "safe motion direction positive" function exceeded.
1: Tolerance for the "safe motion direction positive negative" function exceeded.

Remedy: - check the traversing/motion program in the control.
- check the tolerance for "SDI" function and if required, adapt (p9364).
This message can be acknowledged as follows:
Via F-DI or PROFIsafe
Note:
SDI: Safe Direction (safe motion direction)
SI: Safety Integrated
See also: p9364 (SI Motion SDI tolerance (processor 2)), p9365 (SI Motion SDI delay time (processor 2)), p9366 (SI Motion SDI stop response (processor 2))

C30770 SI Motion P2: Discrepancy error affecting the failsafe inputs

Reaction: NONE

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The fail-safe digital inputs (F-DI) show a different state longer than that parameterized in p10002 / p10102.
Fault value (r0949, interpret binary):
Bit 0: Discrepancy error for F-DI 0
Bit 1: Discrepancy error for F-DI 1
...
Note:
If several discrepancy errors occur consecutively, then this fault is only signaled for the first error that occurs.

Remedy: - check the wiring of the F-DI (contact problems).
Note:
This message can be acknowledged via F-DI or PROFIsafe.
Discrepancy errors of an F-DI can only be completely acknowledged if safe acknowledgement was carried out once the cause of the error was resolved (p10006 or acknowledgment via PROFIsafe). As long as safety acknowledgement was not carried out, the corresponding F-DI stays in the safe state internally.
For cyclic switching operations at the F-DI, it may be necessary to adapt the discrepancy time to the switching frequency.
If the period of a cyclic switching pulse has the order of magnitude of double the value of p10002, then the following formulas must be checked.
p10002 < (tp / 2) - td (discrepancy time must be less than half the period minus the actual discrepancy time)
p10002 >= p9500 (discrepancy time must be no less than P9500)
p10002 > td (discrepancy time must be greater than the switch discrepancy time which may actually apply)
td = possible actual discrepancy time (in ms) that can occur with a switching operation. This must correspond to at least 1 SI sampling cycle (see p9500).
tp = period for a switching operation in ms.
When debounce p10017 is active, the discrepancy time is directly specified by the debounce time.
If the period of a cyclic switching pulse has the order of magnitude of twice the debounce time, then the following formulas should be checked.
p10002 < p10017 + 1 ms - td
p10002 > td
p10002 >= p9500
Example:
For a 12 ms SI sampling cycle and a switching frequency of 110 ms (p10017 = 0), the maximum discrepancy time which can be set is as follows:
p10002 <= (110/2 ms) - 12 ms = 43 ms
Rounded-off, p10002 <= 36 ms is obtained (since the discrepancy time can only be accepted as a whole SI sampling cycle, the value will need to be rounded up or down to a whole SI sampling time value if the result is not an exact multiple of an SI sampling cycle).
Note:
F-DI: Failsafe Digital Input

C30798 SI Motion P2: Test stop running

Reaction: NONE

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The test stop is active.

Remedy: Not necessary.
The message is withdrawn when the test stop is finished.

C30799 SI Motion P2: Acceptance test mode active

Reaction: NONE

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The acceptance test mode is active.

Remedy: Not necessary.
The message is withdrawn when exiting the acceptance test mode.

N30800 (F)	**Power unit: Group signal**
Reaction:	OFF2
Acknowledge:	NONE
Cause:	The power unit has detected at least one fault.
Remedy:	Evaluate the other messages that are presently available.

F30802	**Power unit: Time slice overflow**
Reaction:	OFF2
Acknowledge:	IMMEDIATELY
Cause:	A time slice overflow has occurred.
Remedy:	- carry out a POWER ON (power off/on) for all components. - upgrade firmware to later version. - contact the Hotline.

A30804 (F)	**Power unit: CRC**
Reaction:	NONE
Acknowledge:	NONE
Cause:	CRC error actuator
Remedy:	- carry out a POWER ON (power off/on) for all components. - upgrade firmware to later version. - contact the Hotline.

F30805	**Power unit: EPROM checksum error**
Reaction:	OFF2
Acknowledge:	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**
Reaction:	OFF2
Acknowledge:	IMMEDIATELY
Cause:	For 3P gating unit: 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 (power off/on) for all components. - upgrade firmware to later version. - contact the Hotline.

A30810 (F)	**Power unit: Watchdog timer**
Reaction:	NONE
Acknowledge:	NONE
Cause:	When booting it was detected that the cause of the previous reset was an SAC watchdog timer overflow.
Remedy:	- carry out a POWER ON (power off/on) for all components. - upgrade firmware to later version. - contact the Hotline.

F30850	**Power unit: Internal software error**
Reaction:	OFF1 (NONE, OFF2, OFF3)
Acknowledge:	POWER ON
Cause:	An internal software error has occurred in the power unit. Fault value (r0949, decimal interpretation): Only for internal Siemens troubleshooting.
Remedy:	- replace power unit. - if required, upgrade the firmware in the power unit. - contact the Hotline.

F30903 Power unit: I2C bus error occurred

Reaction: OFF2 (IASC/DCBRAKE, NONE, OFF1, OFF3, STOP2)
Acknowledge: IMMEDIATELY
Cause: Communications error with an EEPROM or A/D converter.
Fault value (r0949, interpret hexadecimal):
80000000 hex:
- internal software error.
00000001 hex ... 0000FFFF hex:
- module fault.

Remedy: Re fault value = 80000000 hex:
- upgrade firmware to later version.
Re fault value = 00000001 hex ... 0000FFFF hex:
- replace the module.

A30920 (F) Temperature sensor fault

Reaction: NONE
Acknowledge: NONE
Cause: When evaluating the temperature sensor, an error occurred.
Alarm value (r2124, interpret decimal):
1: Wire breakage or sensor not connected (KTY: R > 2120 Ohm).
2: Measured resistance too low (PTC: R < 20 Ohm, KTY: R < 50 Ohm).

Remedy: - make sure that the sensor is connected correctly.
- replace the sensor.

A30999 (F, N) Power unit: Unknown alarm

Reaction: NONE
Acknowledge: NONE
Cause: An alarm occurred on the power unit that cannot be interpreted by the Control Unit firmware.
This can occur if the firmware on this component is more recent than the firmware on the Control Unit.
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 Control Unit.

Remedy: - replace the firmware on the power unit by an older firmware version (r0128).
- upgrade the firmware on the Control Unit (r0018).

F50510 FBLOCKS: Logon of the run-time group rejected

Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: When the run-time groups of the free function blocks attempted to log on with the sampling time management, the logon of at least one run-time group was rejected.
Too many different hardware sampling times may have been assigned to the free function blocks.

Remedy: - Check number of available hardware sampling times (T_sample < 8 ms) (r7903).

F50511 FBLOCKS: Memory no longer available for free function blocks

Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: When the free function blocks were activated, more memory was requested than was available on the Control Unit.
Remedy: Not necessary.

A50513 (F) FBLOCKS: Run sequence value already assigned

Reaction: NONE
Acknowledge: NONE
Cause: An attempt was made to assign a run sequence value already assigned to a function block on this drive object to another additional function block on the same drive object. A run sequence value can only be precisely assigned to one function block on one drive object.
Remedy: Set another value that is still available on this drive object for the run sequence.

A50517	**FBLOCKS: Int. meas. active**
Reaction:	NONE
Acknowledge:	NONE
Cause:	A Siemens internal measurement has been activated.
Remedy:	Carry out a POWER ON (power off/on) for the Control Unit involved.

F50518	**FBLOCKS: Sampling time of free run-time group differs at download**
Reaction:	NONE
Acknowledge:	IMMEDIATELY
Cause:	In the STARTER/SCOUT project that was downloaded, the hardware sampling time of a free run-time group (1 <= p20000[i] <= 256) was set to a value that was either too low or too high. The sampling time must be between 1 ms and the value r20003 - r20002. If the sampling time of the selected free run-time group is < 1 ms, the equivalent value of 1 ms is used. If the value >= r20003, then the sampling time is set to the next higher or the same software sampling time >= r21003. Fault value (r0949, decimal interpretation): Number of the p20000 index of the run-time group where the sampling time is incorrectly set. Number of the run-time group = fault value + 1 Note: For SIMOTION D410, r20003 (unlike all the other Control Units) is automatically set the same as the PROFIBUS sampling time.
Remedy:	- correctly set the sampling time of the run-time group. - if required, take all of the blocks from the run-time group. Note: Fault F50518 only detects an incorrectly parameterized run-time group. If, after correcting p20000[i] in the project, this error occurs again at download, then the run-time group involved should be identified using the fault value (r0949) and the sampling time correctly set.

Appendix A

Contents

A.1 ASCII Table (excerpt)

The following table contains the decimal and hexadecimal notation of selected ASCII indications.

Table A-1 ASCII-Table (excerpt)

Character	Decimal	Hexadecimal	Character	Decimal	Hexadecimal
Space	32	20	H	72	48
-	45	2D	I	73	49
0	48	30	J	74	4A
1	49	31	K	75	4B
2	50	32	L	76	4C
3	51	33	M	77	4D
4	52	34	N	78	4E
5	53	35	O	79	4F
6	54	36	P	80	50
7	55	37	Q	81	51
8	56	38	R	82	52
9	57	39	S	83	53
A	65	41	T	84	54
B	66	42	U	85	55
C	67	43	V	86	56
D	68	44	W	87	57
E	69	45	X	88	58
F	70	46	Y	89	59
G	71	47	Z	90	5A

A.2 List for motor code

Table A-2 Motor code for synchronous motors

Order number	Motor type (p0300)	Motor code (p0301)
1LE400x-1ABxx-xxxx	204	20401
1LE400x-1BBxx-xxxx	204	20402

List of Abbreviations

B

Abbreviations used with the SINAMICS G120 Products:

Abbreviation	Meaning
A	
AC	Alternating Current
A/D	Analog Digital Converter
ADR	Address
AFM	Additional Frequency Modification
AG	Automation Unit
AI	Analog Input
AK	Request Identifier
AO	Analog Output
AOP	Advanced Operator Panel
ASIC	Application Specific Integrated Circuit
ASP	Analog Setpoint
ASVM	Asymmetric Space Vector Modulation
B	
BCC	Block Check Character
BCD	Binary-Coded Decimal Code
BI	Binector Input
BIA	Berufsgenossenschaftliches Institut für Arbeitssicherheit
BICO	Binector Connector Technology
BO	Binector Output
BOP	Basic Operator Panel
C	
C	Commissioning
CB	Communication Board
CCW	Counter-Clockwise
CDS	Command Data Set
CI	Connector Input
CM	Configuration Management
CMD	Command
CO	Connector Output
CO/BO	Connector Output/Binector Output
COM	Common contact of a change-over relay (terminal is connected to NO or NC)

Abbreviation	Meaning
CU	Control Unit
CW	Clockwise
D	
D/A	Digital Analog Converter
DC	Digital Current
DDS	Drive Data Set
DI	Digital Input
DIP	DIP Switch
DO	Digital Output
DP	Distributed I/Os
DS	Drive State
E	
ECD	Equivalent Circuit Diagram
EEC	European Economic Community
EEPROM	Electrical Erasable Programmable Read-Only Memory
ELCB	Earth Leakage Circuit Breaker
EMC	Electromagnetic Compatibility
EMF	Electromagnetic Force
ES	Engineering System
F	
FAQ	Frequently Asked Question
FB	Function Block
FCC	Flux Current Control
FCL	Fast Current Limiting
FF	Fixed Frequency
FFB	Free Function Block
FLB	Flat Top Modulation
FOC	Field Orientated Control
FP	Function Diagram
FREQ	Frequency
FSA	Frame Size A
FSB	Frame Size B
FSC	Frame Size C
FSD	Frame Size D
FSE	Frame Size E
FSF	Frame Size F
G	
GSD	Device Data File (Geräte Stamm Datei)
GSG	Getting Started Guide
GUI ID	Global Unique Identifier

Abbreviation	Meaning
H	
HIW	Main Actual Value
HMI	Human Machine Interface
HO	High Overload (Constant Torque)
HSW	Main Setpoint
HTL	High-Threshold Logic
I	
IASC	Internal Armature Short-Circuit
IBN	Commissioning
IGBT	Insulated Gate Bipolar Transistor
I/O	Input/Output
IOP	Intelligent Operator Panel
J	
JOG	Jogging
K	
KDV	Data Cross Check
KIB	Kinetic Buffering
L	
LCD	Liquid Crystal Display
LED	Light Emitting Diode
LGE	Length
LO	Light Overload (Variable Torque)
LSTO	Latched Safe Torque Off
LWL	Fiber Optic Conductor
M	
MHB	Motor Holding Brake
MLP	Multi-Language Pack
MOP	Motor Operated Potentiometer
N	
NC	Normally Closed Contact
NEMA	National Electrical Manufacturers Association
NO	Normally Open Contact
O	
OLM	Optical Link Module
OLP	Optical Link Plug
OP	Operator Panel
OPI	Operating Instruction
P	
P1	Processor 1
P2	Processor 2

Abbreviation	Meaning
PID	Proportional Integral Differential
PKE	Parameter ID
PKW	Parameter ID Value Area (Parameter Kennung Wert)
PLC	Programmable Logic Control
PM	Power Module
PM-IF	Power Module Interface
PPO	Parameter Process Data Object
PTC	Positive Temperature Coefficient
PWE	Parameter Value
PWM	Pulse Width Modulation
pxxxx	Write parameter
PZD	Process Data Area (Prozessdaten)
Q	
QC	Quick Commissioning
R	
RAM	Random Access Memory
RCCB	Residual Current Circuit Breaker
RCD	Residual Current Device
RFG	Ramp-Function Generator
RFI	Radio Frequency Interference
ROM	Read-Only Memory
RPM	Revolutions Per Minute
rxxxx	Read-only parameters of analogue signals
S	
SBC	Safe Break Control
SLS	Safe-Limited Speed
SLVC	Sensorless Vector Control
SOL	Serial Option Link
SS1	Safe Stop 1
STO	Safe Torque Off
STW	Control Word
STX	Start of Text
SVM	Space Vector Modulation
T	
TTL	Transistor-Transistor Logic
U	
USS	Universal Serial Interface
V	
VC	Vector Control
V/f	Voltage/frequency
VT	Variable Torque

Abbreviation	Meaning
W	
WEA	Automatic Restart
Z	
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Numbers

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