SIEMENS

Industrial Controls

SIMOCODE pro
PCS 7 Library SIMOCODE pro
Migration Legacy V10.0 SP1

Programming and Operating Manual

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04/2025

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1 Introduction

1.1 Cybersecurity information

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

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

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

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

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

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

1.2 Information on data protection

Siemens observes standard data protection principles, in particular the principle of privacy by design.

For this product this means:

This product does not process or store any personal data, only technical function data (e.g. time stamps). If you link this data with other data (e.g. shift schedules) or store personal data on the same storage medium (e.g. hard disk), and thus establish a link to a person or persons, then you are responsible for ensuring compliance with the relevant data protection regulations.

1.3 Product specific security information

Product specific security information

This library is designed to run under the PCS 7 environment. Therefore, it is recommended to follow the security principles for PCS 7 to support a secure operation, such as:

- User rights
- Password protection of
  - WinCC
  - SIRIUS devices

For more information, click here (https://support.industry.siemens.com/cs/document/109973483).

1.4 Components of the software package

This library integrates SIMOCODE pro C / S / V devices into the PCS 7 environment.

This software package contains the following components:

No.	Supported Hardware	Functions	Block Name	Block Number
1	SIMOCODE pro C, S, V	Diagnostic block for SIMOCODE pro	SMC_DIAG	FB2000
2		Block for measured values	SMC_MEAS	FB2002
3		Block for statistic data	SMC_STAT	FB2003
4		Direct starter / Soft starter	SMC_DIR	FB2004
5		Reversing starter / Reversing Soft starter	SMC_REV	FB2005
6		Star-delta starter	SMC_STAR	FB2006
7		Star-delta reversing starter	SMC_REVS	FB2007
8		Dahlander starter	SMC_DAHL	FB2008
9		Dahlander reversing starter	SMC_REVD	FB2009
10		Solenoid valve	SMC_VAL	FB2010
11		Positioner	SMC_POS	FB2011
12		Overload	SMC_OVL	FB2012
13		Circuit breaker	SMC_CB	FB2013
14		Alarms with time stamp	SMC_TIME	FB2014

- Online help in German and English
- Installation program
- Readme file for installation
- Readme_OSS

1.5 Configuration steps

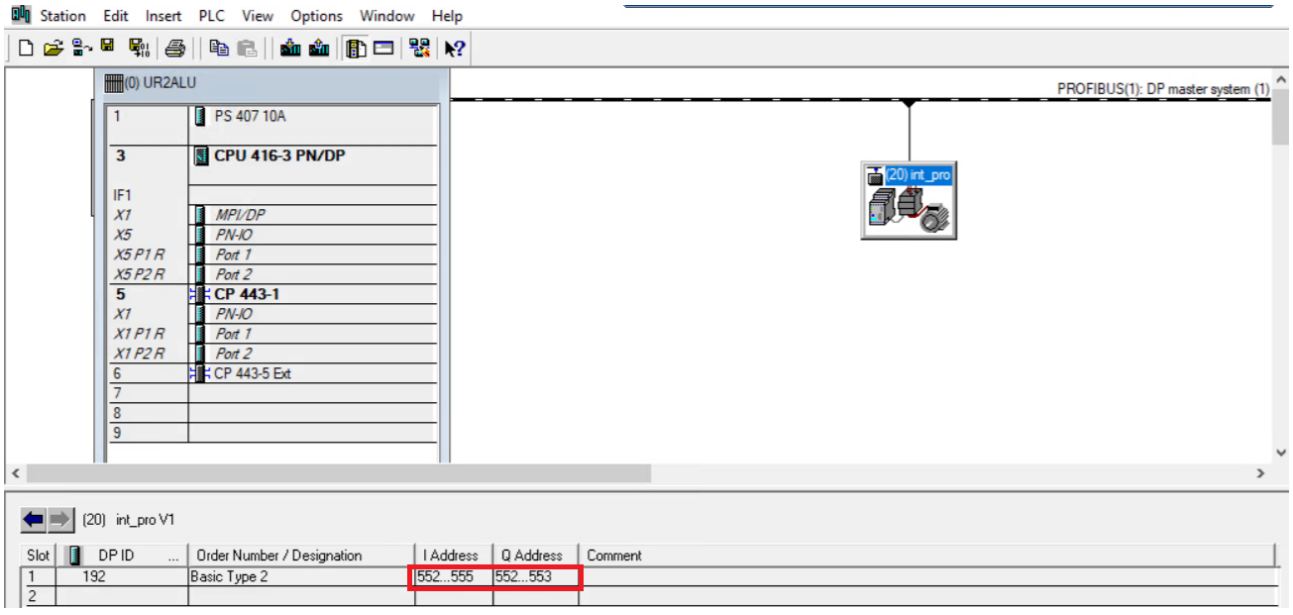
1.5.1 Configuring in HW Config

1.5.1.1 Configuring in HW Config

Drag and drop the desired SIMOCODE pro device (OM, EDD, GSD) from the HW catalog to PROFIBUS network.

NOTICE
Please note that SIMOCODE pro is used in interrupt mode "DPV1" with enabled diagnostic interrupt and process interrupt.

The addresses of inputs and outputs must be located in the process image partition that is assigned to the watchdog interrupt OB in which the signal block is called.



The parameter inputs `IN_01` (2 bytes of binary data) and `IN_23` (2 bytes of motor current) as well as the parameter outputs `O_01` (2 bytes of binary data) of the signal blocks must be connected with the associated inputs or outputs of the SIMOCODE pro device.

The parameter inputs `IN_01` (2 bytes of binary data), `IN_45`, `IN_67` and `IN_89` (2 bytes of analog send values when using basic type 1) as well as the parameter output `O_23`

(2 bytes of analog receive data when using basic type 1) of the measured value block must be connected with the associated inputs or outputs of the SIMOCODE pro device.

Note

The assignment of the cyclic interface is included in the description of the signal blocks and the measured value block.

1.5.1.2 Modifying the System during operation via CiR

Adding a SIMOCODE Pro device in the system during operation via CiR is possible. For further information refer Modifying the System during Operation via CiR from the following link (https://support.industry.siemens.com/cs/document/45531308)

1.5.2 Configuring in CFC

The two bytes of the Process Image Inputs (PII) are transferred from the SIMOCODE pro device based on the logical address configured for the module. This is a manual configuration that a user has to configure.

Procedure

Configuring with HW Config:

1. Configure the SIMOCODE pro device at HW config.
2. Open CFC-Editor.
3. If not yet done, instantiate an appropriate functional block (SMC_DIR, SMC_REV, etc.,).
4. Refer to the input/output address of the SIMOCODE pro device at HW Config and assign this address to the "Input/Output WORD address of SIMOCODE pro Module (IW x)" at the "`IN_01`" input parameter and "O_01" Output parameter in the respective control function block.

Compile the CFC chart using the "Generate Module Driver" function.

Refer "Configuring library blocks (Page 28)" for further information on interconnections.

Reference

Additional information is available in the "SIMATIC Process Control System PCS 7 Compendium Part A - Configuration Guidelines" Operating Manual on the Internet (https://support.industry.siemens.com/cs/document/109809015).

1.6 Driver generator

1.6.1 Generate Module Drivers

The "Generate Module Drivers" function is available for signal processing in PCS 7. Once the hardware has been configured in HW Config and the technological functions have been configured in the CFC, this function automatically generates, interconnects, and parameterizes the required module driver blocks, to the extent possible. These module driver blocks are responsible for diagnosing and reporting errors during signal processing.

The setup program installs XML files for connecting SIMOCODE pro with the driver generator.

Purpose of the driver generator

A functional block is inserted for each SIMOCODE pro device. The connection to the hardware is established using symbolic addressing.

The "Generate Module Driver" option inserts the additional required blocks, connects them and assigns the corresponding parameters.

Generate module driver settings

These options can be used to disable / enable all diagnostic alarm messages at the MOD_SWT / MOD_SWTL block.

- Default setting at the blocks : Enabled
- Set the "Leave unchanged" option (default) to retain current settings.

Note

- To have similar behavior between this library and the PCS 7 Basis Library, a PCS 7 Basis Library version supporting this functionality needs to be installed as well.
- LADDR of OB_DIAG1/OB_DIAG1_PN update the lowest logical address of SIMOCODE pro device

Reference

- SIMOCODE pro GSD files (https://support.industry.siemens.com/cs/document/113630)
- SIMOCODE pro EDD files (https://support.industry.siemens.com/cs/document/109750844)

In case of incorrect links, please follow this link (https://support.industry.siemens.com) and search for

- SIMOCODE pro EDD or
- PROFIBUS GSD files : SWITCHGEARS

Schematic diagram of the interconnections of the driver generator

The white blocks must be positioned in the CFC by the user. SMC_MEAS, SMC_STAT and SMC_TIME are optional.

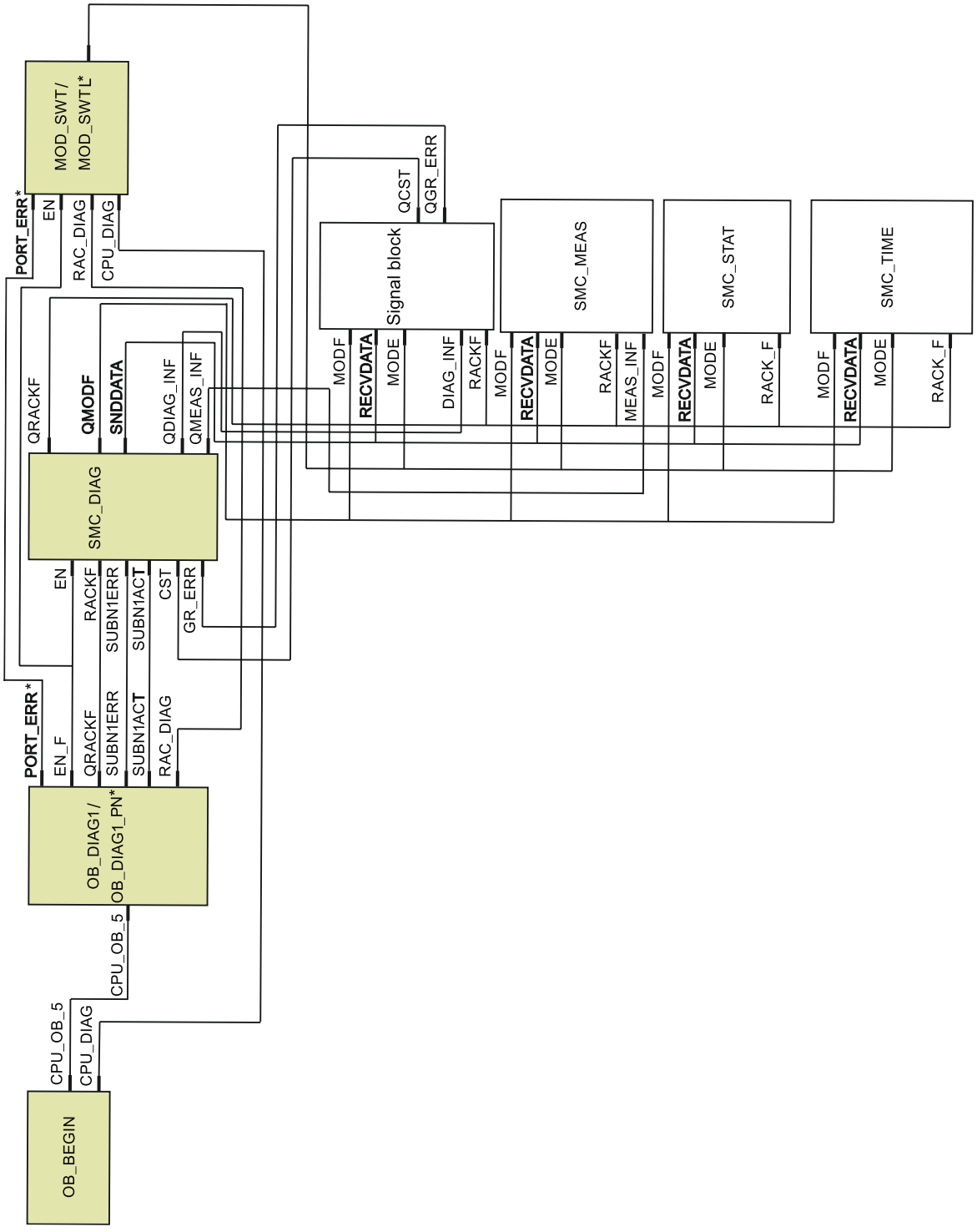


Figure 1-1 * Only applicable for SIMOCODE pro devices connected behind Y Link, IE/PB LINK PN IO and IE/PB LINK HA.

The green blocks are inserted by the driver generator.

1.6.2 Requirements for generating the module drivers

The following SIMOCODE pro modules are permitted for the PCS 7 Library V10.0 SP1:

Article number	SIMOCODE pro	Compatible modules
3UF7000-1A*00-0	SIMOCODE pro C (PROFIBUS DP)	Yes
3UF7010-1A*00-0	SIMOCODE pro V Basic unit 1 and 2 (PROFIBUS DP)	Yes
3UF7020-1A*01-0	SIMOCODE pro S Basic unit 1 and 2	Yes

The required control function block is inserted into the CFC from the PCS 7 Library SIMOCODE pro Migration Legacy V10.0 SP1 library.

Logical Address can be assigned directly to the blocks.

Refer to the section "Configuring library blocks (Page 28)" for further information.

1.6.3 Driver blocks

Generating the driver blocks

Module driver generation for the signal blocks will insert driver blocks depending on the HW Configuration.

The action includes the following steps:

- Determining and assigning the diagnostics address of the SIMOCODE pro device.
- Assigning the primary subnet address and module rack number for the SIMOCODE pro device.
- Instantiating the OB_DIAG1 / OB_DIAG1_PN driver block for the SIMOCODE pro device.
- Instantiating the SMC_DIAG driver block for reading the diagnostics information of the SIMOCODE pro device.
- Setting the address of the device at the OB_DIAG1 / OB_DIAG1_PN, SMC_DIAG and MOD_SWT/MOD_SWTL blocks.
- Creating interconnections between the OB_DIAG1 / OB_DIAG1_PN, SMC_DIAG and MOD_SWT/MOD_SWTL blocks.
- Assigning the diagnostic address in the `DADDR` parameter.
- Making interconnections between the functional blocks (SMC_DIR, SMC_REV, etc.,), SMC_STAT, SMC_MEAS and SMC_TIME blocks and the SMC_DIAG and MOD_SWT/MOD_SWTL blocks.

Note

MOD_SWTL blocks are used only for SIMOCODE pro device configured behind Y-Link, IE/PB Link PN IO and IE/PB Link HA

1.6.4 Object lists and action lists

Hardware modules, among other things, are configured in HW Config.

Description

The object lists and the action lists are used to generate the module drivers for these hardware modules.

The object list contains a unique object identification number for each of these hardware modules. Each object list is assigned to a particular hardware configuration.

The action list contains a list of actions. These actions must be executed for the object identification numbers that appear in the object list. Examples of such actions include:

- Assigning the device address
- Interconnecting the input and output parameters of the driver block

The "Generate Module Driver" function generates the module drivers when the CFC is compiled.

1.6.5 Supported modules and configurations

The Setup program installs xml files for the connection between the SIMOCODE pro modules and the driver generator.

The following modules and configurations are supported:

1. SIMOCODE pro C (integrated via GSD SI0180fd.gs?)
2. SIMOCODE pro V (integrated via GSD SI1180fd.gs? / SI1380fd.gs?)
3. SIMOCODE pro S (integrated via GSD SI0181a7.gs?)
4. SIMOCODE pro C (integrated with PDM via GSD SI2180fd.gs?)
5. SIMOCODE pro V (integrated with PDM via GSD SI3180fd.gs? / SI3380fd.gs?)
6. SIMOCODE pro S (integrated with PDM via GSD SI0181a7.gs?)
7. SIMOCODE pro C, SIMOCODE pro S / SIMOCODE pro V (integrated via the Object Manager (OM) SIMOCODE pro)

With SIMOCODE pro V, both basic types (basic type 1 and basic type 2) are supported.

From the user's perspective, SIMOCODE pro is inserted in the hardware configuration via GSD (SI0180fd.gs? or SI1180fd.gs? or SI0181a7.gs?) with basic type 2 compact or as an S7 slave. In doing so, all of the inputs and outputs used must be within the process image.

In the CFC, a signal processing block is inserted for each SIMOCODE pro and the connection to the hardware is established using symbolic addressing.

If the "Generate module driver" option is selected when compiling the CFC, all additionally required blocks are inserted, and the relevant parameters are linked and parameterized.

1.6.6 Supported Configurations

The following modules and configurations are supported:

Device	GSD/PDM			OM	
	DP master	**Y-link DPV1**	**IE/PB Link PNIO and IE/PB Link HA**	**DP master**	**IE/PB Link PNIO and IE/PB Link HA**
SIMOCODE pro C	X	X	X	X	X
SIMOCODE pro V	X	X	X	X	X
SIMOCODE pro S	X	X	X	X	X

The following I/O configurations (default) are supported for SIMOCODE pro C / V / S:

- Outputs: 2 bytes of digital receive data
- Inputs: 4 bytes of send data (2 bytes of digital feedback messages; 2 bytes of analog send data, e.g. motor current)

This configuration corresponds to basic type 2 for SIMOCODE pro V / S.

Alternatively, SIMOCODE pro V can also have the following I/O configuration:

- Outputs:
  4 bytes of receive data (2 bytes of digital receive data, 2 bytes of analog receive data)
- Inputs:
  10 bytes of send data (2 bytes of digital feedback messages; 8 bytes of analog send data, e.g. motor current, power factor, conductor voltage)

This configuration corresponds to basic type 1. The additional data of basic type 1 is analyzed or described in the measured value block.

1.7 Example configurations

SIMOCODE pro PROFIBUS configurations

Note

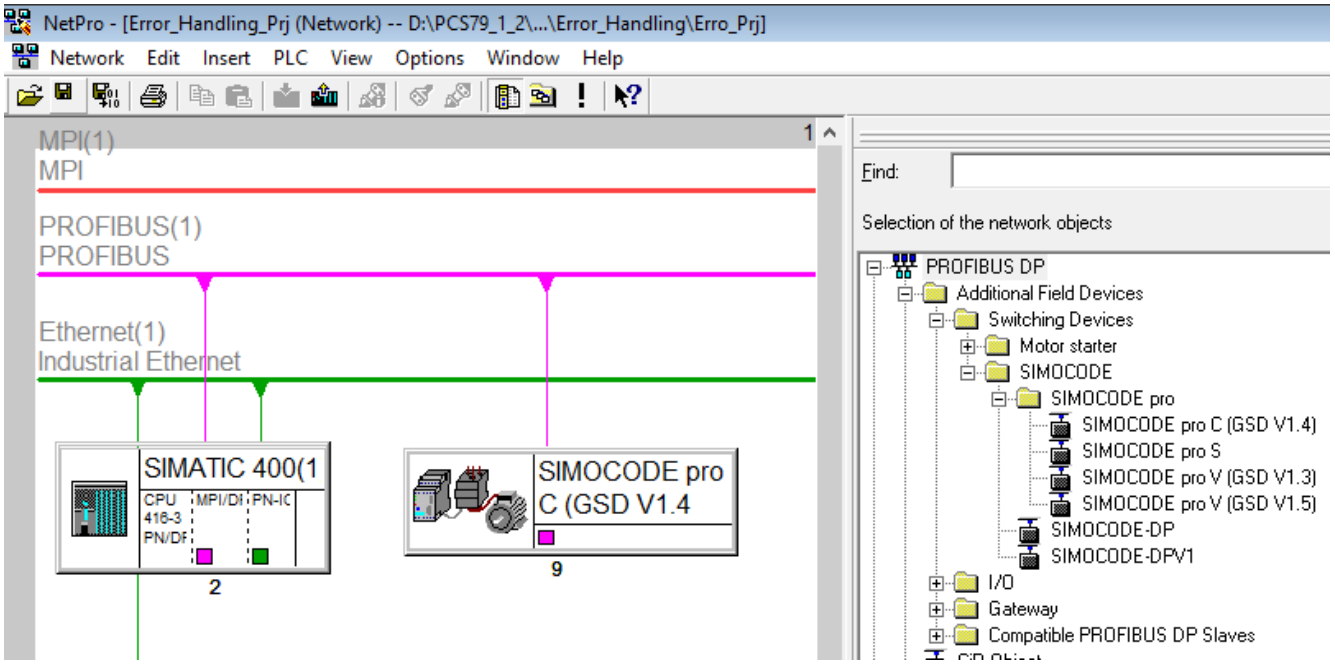
SIMOCODE pro is used in DP mode DPV1 with activated diagnostics and process interrupt.

The SIMOCODE pro PROFIBUS devices along with their associated components are inserted and configured in HW Config.

The following graphics show example configurations of SIMOCODE pro at HW Config in the Netpro View.

1.7.1 SIMOCODE pro at the DP Master System

Open STEP 7 HW Config.
From the Hardware catalog, Profile standard, navigate to PROFIBUS-DP → Additional Field Device → Switching Devices → SIMOCODE → SIMOCODE pro → SIMOCODE pro C. Place this device on the PROFIBUS network.

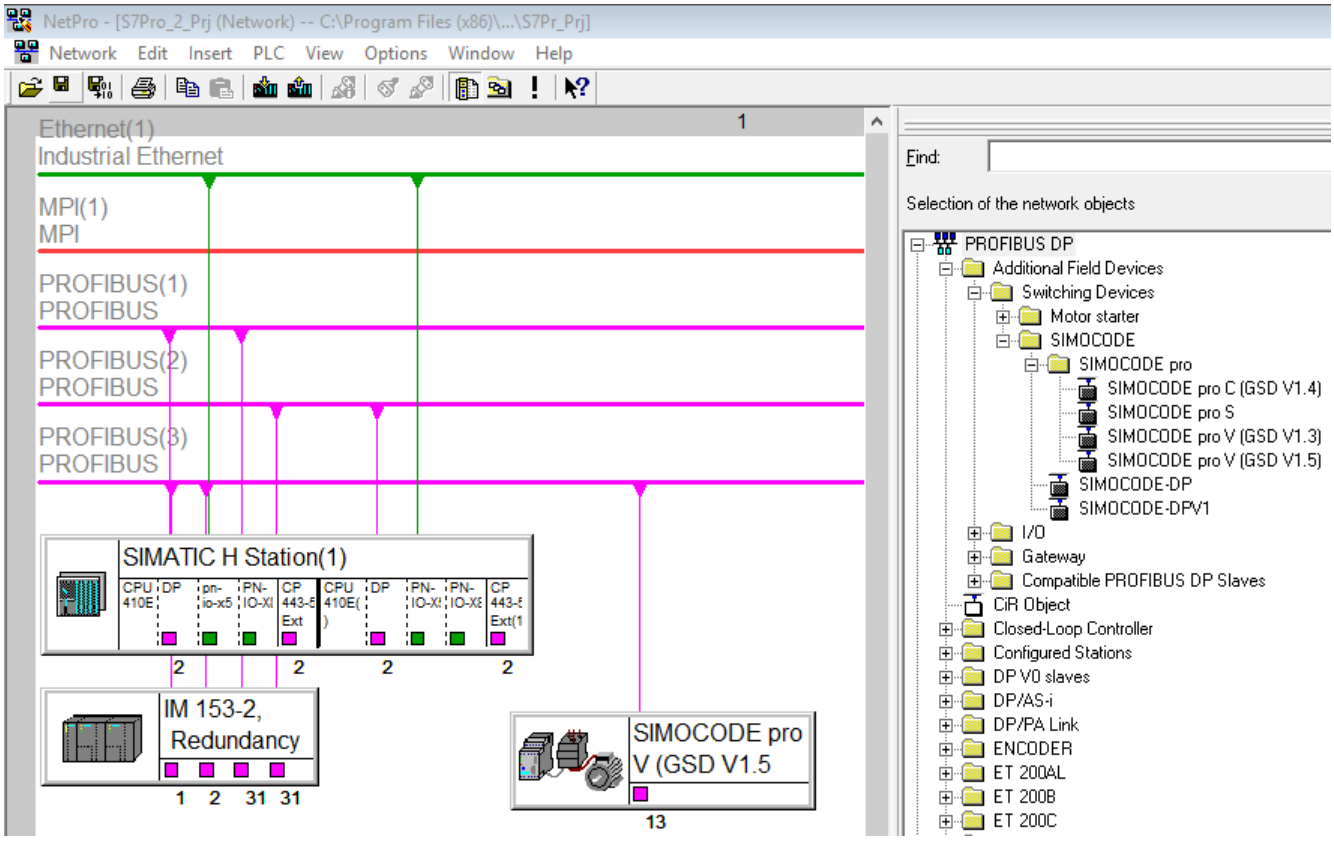


1.7.2 SIMOCODE pro configuration behind Link system

1.7.2.1 SIMOCODE pro behind the Y-Link

Open STEP 7 HW Config.

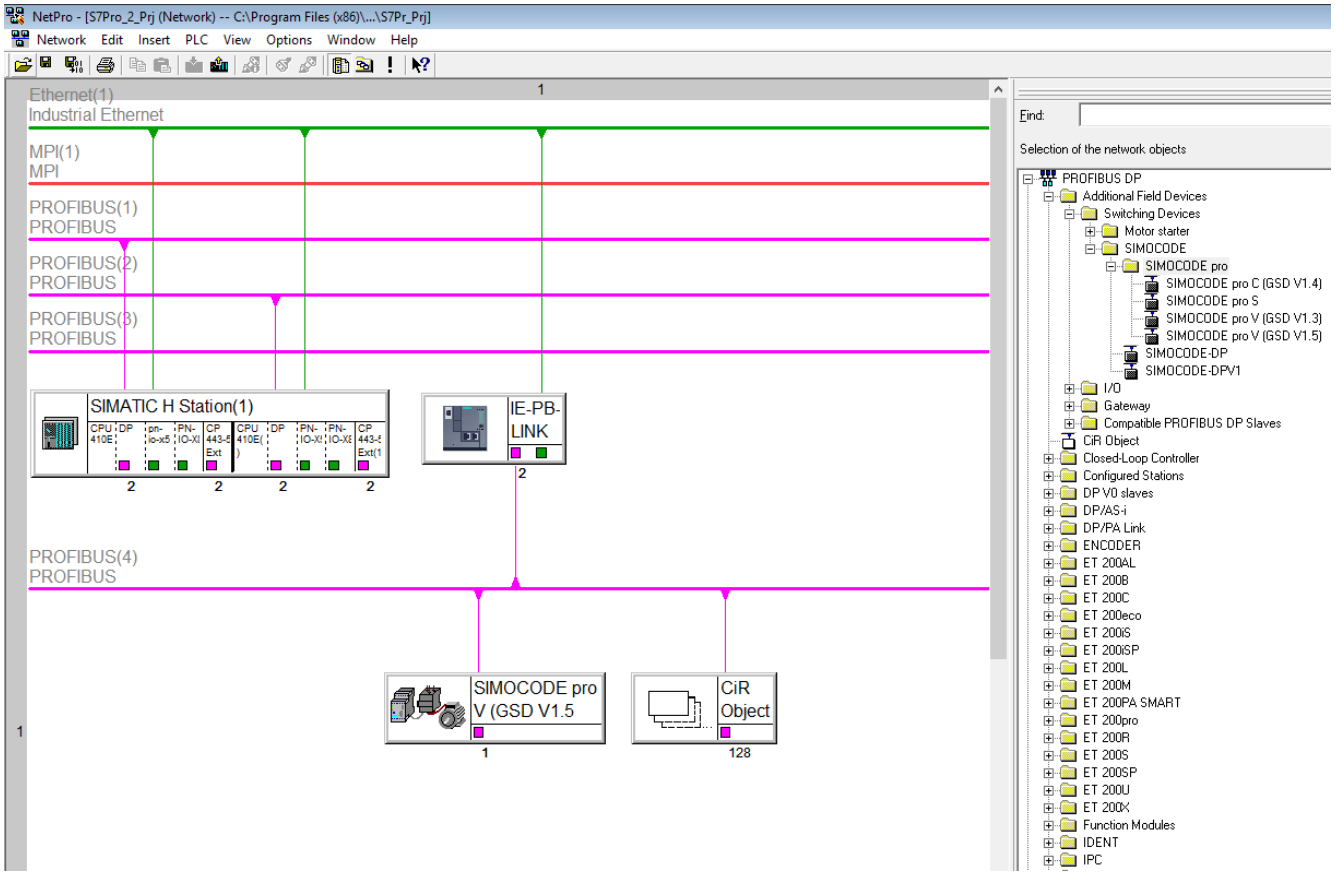
From the Hardware catalog, Profile standard, navigate to PROFIBUS DP→ Additional Field Devices→ Switching Devices → SIMOCODE → SIMOCODE pro → SIMOCODE pro V (GSD V1.5). Place this device on the PROFIBUS network.



1.7.2.2 SIMOCODE pro behind the IE/PB Link HA

Open STEP 7 HW Config.

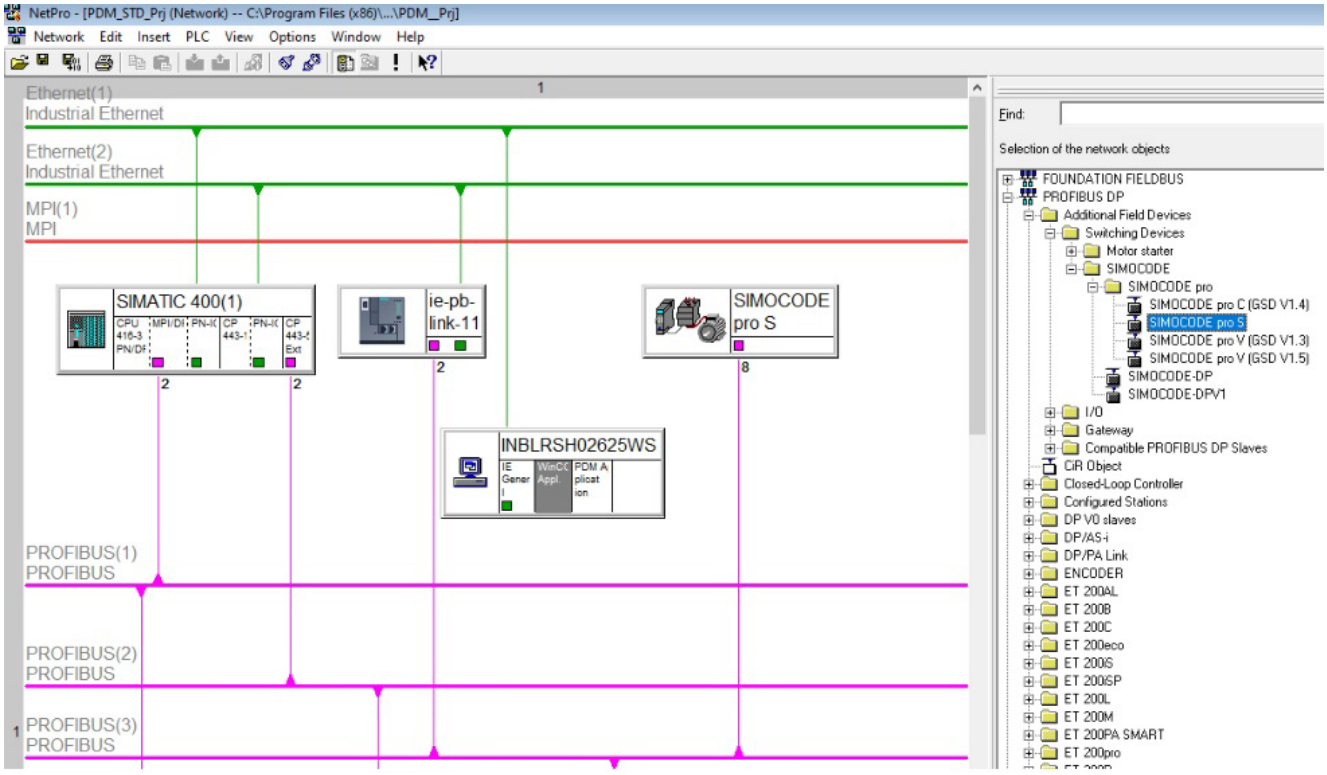
From the Hardware catalog, Profile standard, navigate to PROFIBUS DP→ Additional Field Devices→ Switching Devices → SIMOCODE → SIMOCODE pro → SIMOCODE pro V (GSD V1.5). Place this device on the PROFIBUS network.



1.7.2.3 SIMOCODE pro behind the IE/PB Link PN IO

Open STEP 7 HW Config.

From the Hardware catalog, Profile standard, navigate to PROFIBUS-DP → Additional Field Device → Switching Devices → SIMOCODE → SIMOCODE pro → SIMOCODE pro S (Basic Type 2) . Place this device on the PROFIBUS network.



1.7.3 Hardware configurations

The driver concept for SIMOCODE pro C / S / V modules takes into account the operation of various SIMOCODE control functions:

- As a DP slave direct on the DP master system (connection via GSD, PDM object, or S7 module via OM SIMOCODE pro)
- As a DP slave behind a Y-Link (connection via GSD or PDM object)
- As a DP slave behind IE/PB Link PN IO and IE/PB Link HA (connection via GSD, PDM object, or S7 module via OM SIMOCODE pro).

Operation as S7 slave direct on the DP master system continues to be supported.

SIMOCODE pro C / V / S can be integrated both as a standard slave (via GSD) and as an S7 slave (via the Object Manager). There are also appropriate GSD files available for integration as PDM object.

1.8 Parameterization softwares

1.8.1 Configuring in SIMOCODE ES

For the signal blocks to function correctly, a range of SIMOCODE pro parameters must have quite specific settings. Those parameters that define the assignment of the cyclic I/O interface are especially affected.

These parameters are represented in **bold**.

In addition, the overview below represents the parameters that are already preset for the control function in the templates for application selection in the SIMOCODE ES software. The settings are suggestions and depend heavily on the actual wiring of the SIMOCODE pro inputs and outputs.

These parameters are represented in *italics*.

Other parameters must also be set, e.g. for motor protection. These are not described here.

General settings (valid for all control functions)

These parameters are valid for all control functions:

Device parameters → Bus parameters		
DP address	**Appropriately**	**—**
Diagnosis triggered by device fault	**Active**	**—**
Diagnosis triggered by trip	**Active**	**—**
Diagnosis triggered by warning	**Active**	—
Diagnosis triggered by event	*Not active*	—
Startup parameter block	**Active**	**Parameter assignment takes place with SIMOCODE ES or SIMATIC PDM**

Standard functions → Test/reset		
Test 1	**Cyclic receive bit 0.3**	**—**
Reset 1	**Cyclic receive bit 0.6**	**—**
Emergency start	**Cyclic receive bit 0.4**	**—**

1.9 Configuring of the fail-safe, digital PROFIsafe module

From event status E06, SIMOCODE pro V supports the fail-safe module DM-F PROFIsafe with which safety-oriented tripping of the motor is possible from an F-CPU via PROFIBUS / PROFIsafe.

From the perspective of the fail-safe section of the controller that transfers fail-safe signals via PROFIBUS / PROFIsafe, the DM-F PROFIsafe represents a digital output with which the two relay enabling circuits of the DM-F PROFIsafe modules can be switched on simultaneously or tripped with fail-safety .

To enable fail-safe tripping of the DM-F PROFIsafe by the F-CPU, the PROFIsafe module must be configured in addition to the module for basic type 1 or 2 when integrating via GSD or PDM. When integrating via OM SIMOCODE pro, configuring must be carried out with PROFIsafe.

Address assignment

Of the addresses assigned on the DM-F PROFIsafe module, the following output address in the F-CPU is reserved for user data:

Byte in F-CPU	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
x+0	—	—	—	—	—	—	—	Output

Note

You are only allowed to access the address reserved for user data (output byte x, bit 0). The other address areas assigned to the DM-F PROFIsafe are reserved for safety-oriented communication between the DM-F PROFIsafe module and the F-CPU in accordance with PROFIsafe.

Additional information

You can find detailed information on accessing the F I/O in the manual S7 F / FH Systems, Configuring and Programming (https://support.industry.siemens.com/cs/document/109802562)".

Assignment of the PROFIsafe address

PROFIsafe address

Each failsafe DM-F PROFIsafe digital module has its own PROFIsafe address. You must set the PROFIsafe address before you start up the module.

PROFIsafe address assignment

The PROFIsafe addresses (F_Source_Add, F_Dest_Add) are automatically assigned when you configure the DM-F PROFIsafe module in STEP 7.

You can find the PROFIsafe address that must be set on the DM-F PROFIsafe in HWConfig under the object properties for the PROFIsafe module; it is shown in decimal and hexadecimal notation in the F_Dest_Add parameter. After converting this address to binary notation, you can use the DIP address switch to set it and store it on the DM-F PROFIsafe.

Please refer to the manual "SIMOCODE pro - Fail-Safe Digital Modules (https://support.industry.siemens.com/cs/document/50564852)" for further information on using the fail-safe digital modules.

An icon for the fail-safe output must be entered in HW Config. In conjunction with F systems, this icon is then connected in CFC with the fail-safe channel driver (output VALUE). When

integrating SIMOCODE pro V with GSD file via the Object Manager (OM), the F_CH_BO block is used as the channel driver.

1.10 Configuration for Fail-Safe expansion module

In conjunction with the fail-safe expansion module DM-F PROFIsafe for SIMOCODE pro V, the PROFIsafe module configurations with PROFIsafe slot for GSD, GSD - PDM and OM SIMOCODE pro are also supported (1 F-DO).

1.11 Update an existing PCS 7 project

Performing a project update

Refer "ReadMe (Section 3.2- Upgrade Procedure)" provided with the library.

See also

Further documentation (Page 25)

1.12 Further documentation

Please find an overview of all versions, manuals, readmes, readme_oss and additional information on the internet (https://support.industry.siemens.com/cs/document/109760422).

Please refer the below link for more information

- System Manual SIMOCODE pro on the Internet (https://support.industry.siemens.com/cs/document/109743957)
- Getting Started for SIMOCODE pro PCS 7 Library on the Internet (https://support.industry.siemens.com/cs/document/109762483).

Overview of control functions

2

2.1 Supported control functions

The library supports all SIMOCODE pro control functions. SIMOCODE pro C / S supports only some control functions. Only the appropriate signal processing blocks (motor blocks) can therefore be used in conjunction with SIMOCODE pro C / S.

This library supports the following control functions:

Block name	Control function	SIMOCODE pro V	SIMOCODE pro C	SIMOCODE pro S
SMC_OVL	Overload relay	Supported	Supported	Supported
SMC_DIR	Direct starter	Supported	Supported	Supported
SMC_DIR	Soft starter	Supported	Not supported	Supported
SMC_REV	Reversing starter	Supported	Supported	Supported
SMC_REV	Soft starter with reversing contactor	Supported	Not supported	Not supported
SMC_CB	Circuit breaker	Supported	Supported	Supported
SMC_STAR	Star-delta starter	Supported	Not supported	Supported
SMC_REVS	Star-delta reversing starter	Supported	Not supported	Not supported
SMC_DAHL	Dahlander/ pole-changing starter	Supported	Not supported	Not supported
SMC_REVD	Dahlander/ pole-changing reversing starter	Supported	Not supported	Not supported
SMC_VAL	Valve	Supported	Not supported	Not supported
SMC_POS	Positioner	Supported	Not supported	Not supported

2.2 Overview of the blocks

The blocks of this library can be adopted unchanged to implement control functions in your project. The blocks thus simplify the engineering for configuring and they support their problem-free functioning.

The interconnections that must then be created manually can be found in the available blocks.

Blocks for the control functions

The table below assigns the possible control functions to the associated block:

Block type	Control functions	Name	Number
Diagnostics block	—	SMC_DIAG	FB2000
Measured value block	—	SMC_MEAS	FB2002
Statistics block	—	SMC_STAT	FB2003
Block for timestamping	—	SMC_TIME[1]	FB2014
Signal processing blocks for:			
Direct starter	DIR, SOFT	SMC_DIR[1]	FB2004
Reversing starter	REV, SOFT	SMC_REV[1]	FB2005
Star-delta starter	STAR	SMC_STAR[1]	FB2006
Star-delta reversing starter	REVS	SMC_REVS[1]	FB2007
Dahlander/pole-changing switch	DAHL, POL	SMC_DAHL[1]	FB2008
Dahlander/pole-changing reversing starter	DAHL REV, POL REV	SMC_REVD[1]	FB2009
Solenoid valve	VALVE	SMC_VAL[1]	FB2010
Positioner	POS	SMC_POS[1]	FB2011
Overload	OVL	SMC_OVL[1]	FB2012
Circuit breaker	CB	SMC_CB[1]	FB2013

[1] Block icon available

2.3 Configuring library blocks

The blocks for the control functions are located in the SIMOCODE pro Library under:

PCS7 SMCproLibMig V10SP1> Blocks\ Blocks > SMC > Select a block, e.g., SMC_DIR, Direct Starter, and drag and drop it to the CFC chart.

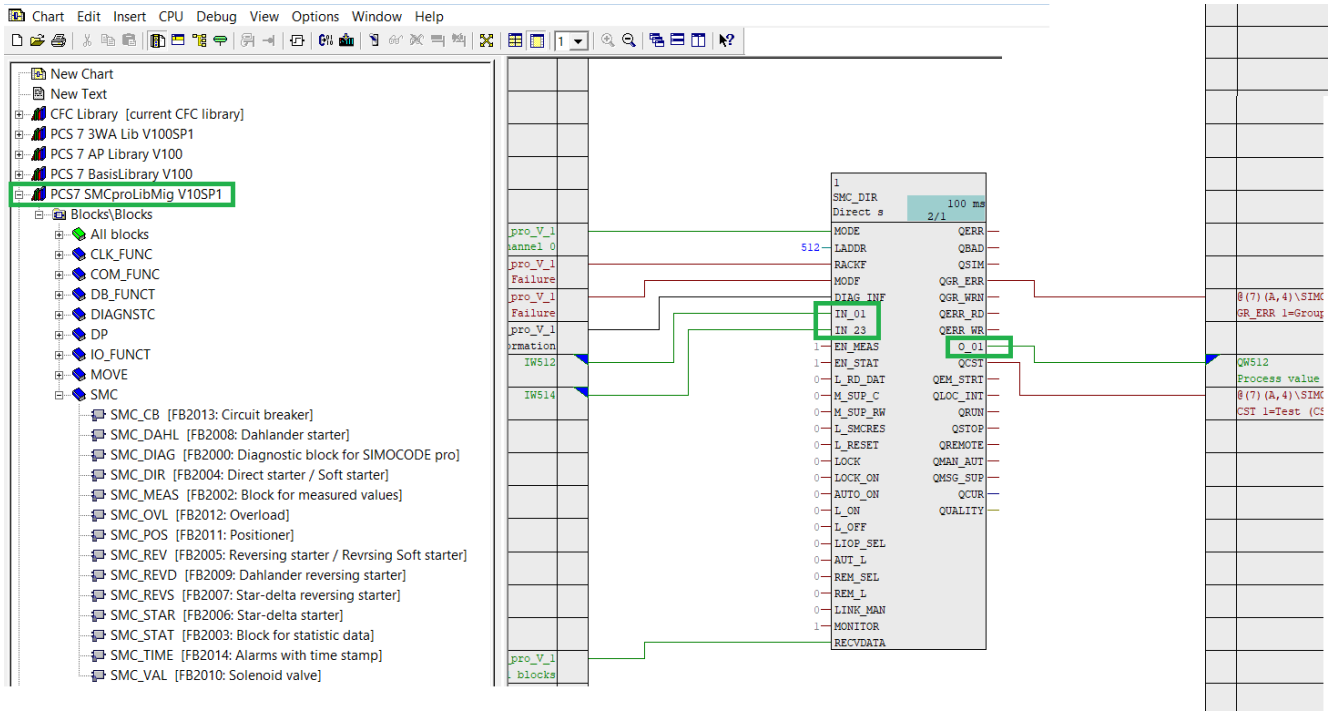
Alternatively, you can also copy the block direct to the chart container or to the required location in the technological hierarchy view.

Manual interconnections

The input logical address of the base module can be directly connected to the input parameter "`IN_01`" and output logical address of the base module can be directly connected to the output parameter "`O_01`".

This can be achieved in following ways:

- via the already created symbolic name
- via direct input of the calculated address.



Automatic interconnections

If the option "Generate Block Driver" is activated in the "Compile Program" dialog, the necessary interconnections that are not available will be executed automatically.

Inputs	Input word of the basic module. MODE from MOD_SWT / MOD_SWTL. RACK_F from SMC_DIAG. MOD_F from SMC_DIAG. DIAG_INF from SMC_DIAG. RECVDATA from SMC_DIAG.
Outputs	Output word of the basic module. QGR_ERR to SMC_DIAG. QCST to SMC_DIAG.

Block icons and faceplate views

3

3.1 Faceplates

Faceplates are configured with Graphics Designer using the templates and PCS 7-specific standard views (Trend, Batch and Alarm) provided by Faceplate Designer. If other user objects and functions are required, they can be added.

The faceplates described are provided as functional and tested examples and can be adapted by the user.

An icon and group display/loop display with all the necessary screens is created for the different signal blocks and the block for timestamping. The relevant group display is called using the icon. The faceplates for the measured value and the statistics block can be called from the faceplate of the signal block. The call buttons are only visible if the relevant blocks are available (the inputs `EN_MEAS` and `EN_STAT` must be parameterized by the user).

A description that allows the user to adapt the faceplates (description of interface to the SIMOCODE blocks, description of operating and display functions) is provided along with the faceplates.

Overview

The display forms part of the "@PG_SMC_xxx_OVERVIEW.PDL / @PL_SMC_xxx_OVERVIEW.PDL" basic displays.

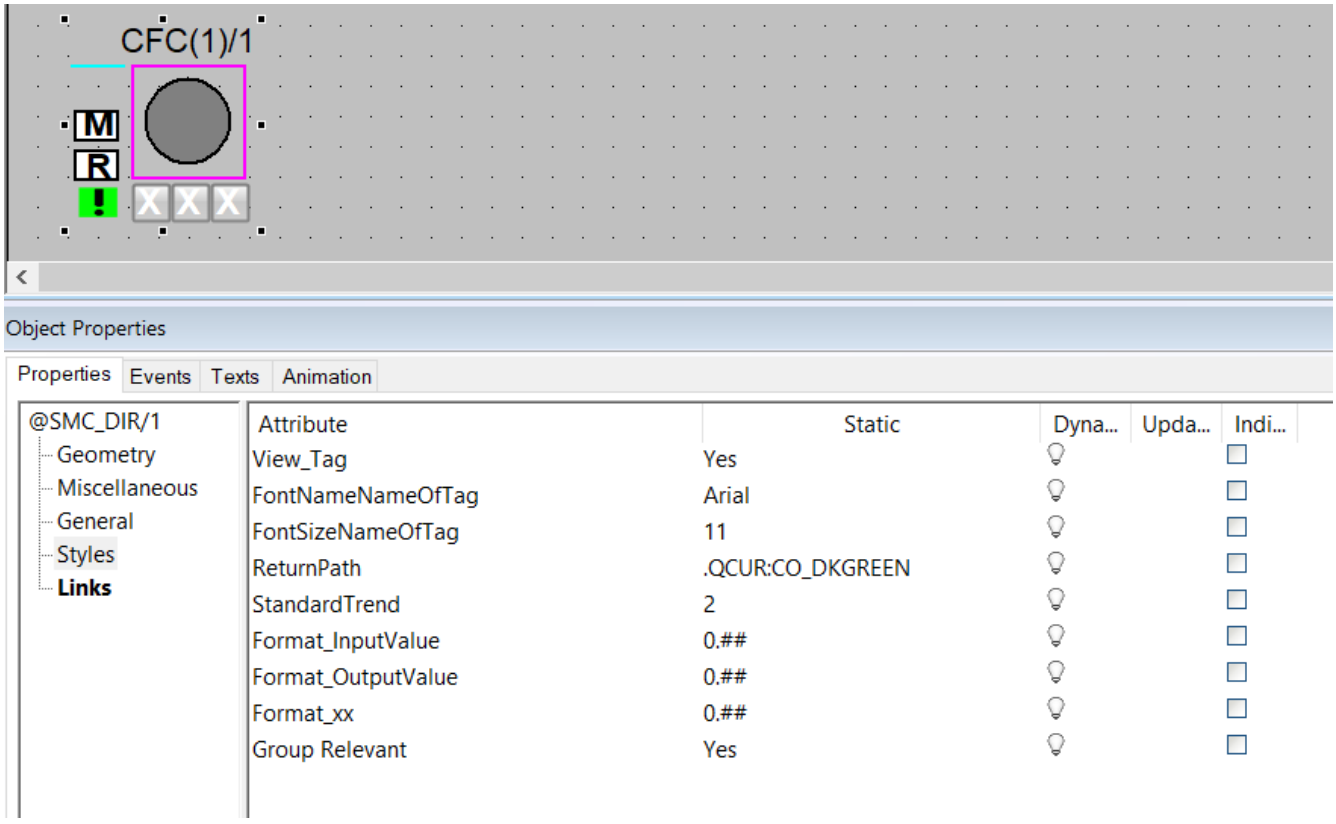


① Group display
② Message lock (`MSG_LOCK`)
③ Message acknowledgment
④ Message suppression (`QMSG_SUP`)
⑤ Batch (`OCCUPIED`)
⑥ Read/Write Error (`QER_RD, QER_WR`)

Trend (@PCS7_trend.pdl)

The "ReturnPath" and "StandardTrend" properties must be parameterized on the icon to incorporate a trend in a faceplate.

• StandardTrend	2	Online values with 5 min. time axis
	> 2	Archive values with time axis of the value entered (in min.)
• ReturnPath	.QCUR	Structural element name starting with a full stop
	:	Separator
	CO_GREEN	Color for trend



3.2 Symbols

The process picture icons are based on the process icons provided by Faceplate Designer. The diagrams are schematic diagrams.

Template diagrams @PCS7_Typicals_SMC.pdl / @Template_SMC.pdl

The icons can be found in the template diagrams @PCS7Typicals_SMC.pdl and @Template_SMC.pdl. To be able to use the functions "Create/Update Block Icons" in the SIMATIC Manager or "Update Block Icons" in Graphics Designer, you must copy the icons of the file @PCS7Typicals_SMC.pdl into the file @PCS7Typicals.pdl or those of the file @Template_SMC.pdl into @Template.pdl.

When using the "Create/Update Block Icons" function, PCS 7 accesses the file @PCS7Typicals.pdl.

When manually copying the icons into a process picture, you must use the icons from the @Template_SMC.pdl file.

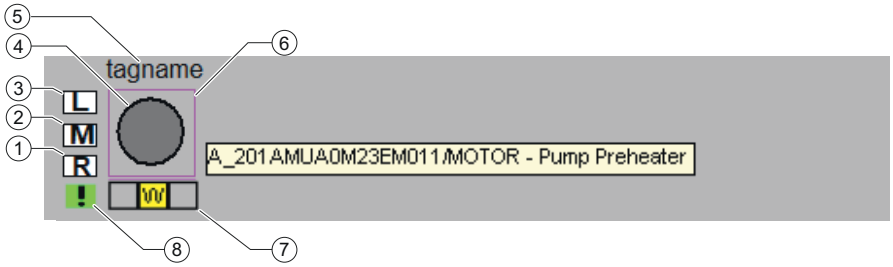
Different variants of block icons

There may be several variants of block icons for one measuring point. These variants are distinguished by the "type" attribute: The value of this attribute describes the variant. For example, if you look at a variant of the block icon for a valve, you will find the value "@Valve/2". You use the part of the value displayed after the "/" to control which variant of the block icon is produced. You therefore have to enter this part in the object properties for the block instance. If you do not enter any parameters in the object properties for the block instance, the standard block icon is produced automatically: This is the block icon with the "/1" label for the "type" attribute, e.g. "@Valve/1".

Connection to the measuring point

For the different blocks, there is one icon that is linked to the associated measuring point using the "Connect picture block to tag structure" function.

The icons contain the following visible information:



① Operator control modality (`QREMOTE`)
② Operating mode (`QMAN_AUT`)
③ Interlocking (`LOCK / LOCK_ON / V_LOCK / VL_xxx`)
④ Technological icon (`VSTATUS`)
⑤ Equipment identifier (tag name)
⑥ Simulation (`QSIM`): Magenta
Test mode (`QCST`): Yellow
⑦ Group display (EventState)
⑧ Read/Write error (`QER_RD, QER_WR`)

Description of the blocks

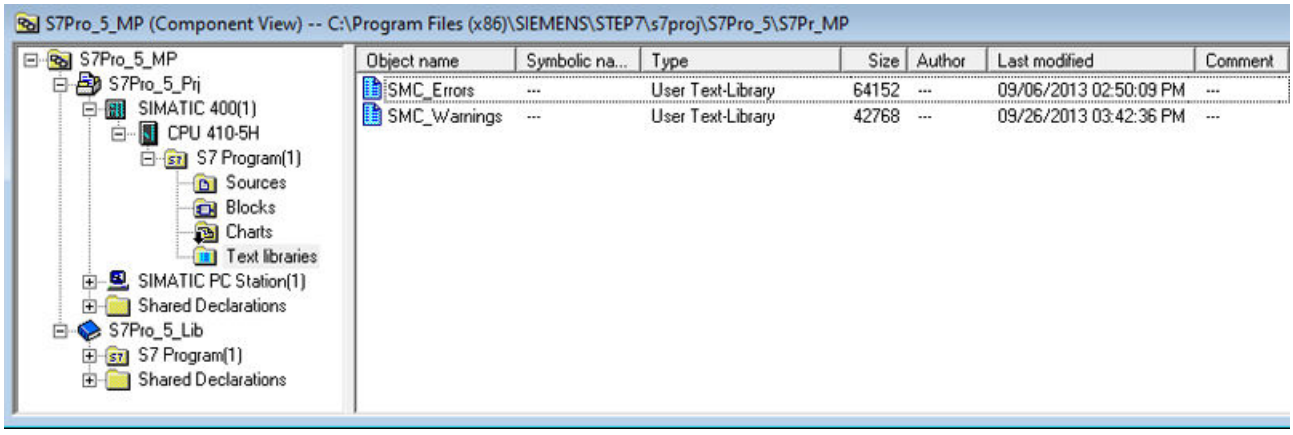
4

4.1 Functions for all blocks

4.1.1 User text libraries

The user text libraries SMC_Errors and SMC_Warnings are available in the Text Libraries folder of the library. They contain the texts for the fault and warning messages that are integrated into the messages of the signal blocks.

For integration of the text into WinCC OS messages, the user text libraries from the library needs to be copied and then pasted into the respective CPU of the desired project.



The texts are inserted into the messages in accordance with the following syntax:

@<No. of the auxiliary value><Element type><Specified format>@

Example: @4W%t#SMC_Warnings@

- Number of the auxiliary value = 4
- Element type = W (= WORD)
- Specified format = %t#<Name of the text library>

You can only integrate texts from user text libraries into messages if you have selected to assign message numbers to the CPU (CPU-oriented message numbers).

4.1.2 SMC_Warnings

Sl No.	Index	Description
1	1000	Pre-Warning Overload
2	1001	Unbalance
3	1002	Overload
4	1003	Overload + Loss of Phase
5	1004	Internal Earth Fault
6	1005	External Earth Fault
7	1006	-
8	1007	Thermistor Trip level
9	1008	Thermistor Short Circuit
10	1009	Thermistor Open Circuit
11	1010	T-Module Warning level T>
12	1011	-
13	1012	T-Module Sensor Fault
14	1013	T-Module Out of Range
15	1014	EM+ -Open Circuit
16	1015	EM+ -Short Circuit
17	1016	Warning level I>
18	1017	Warning level I<
19	1018	Warning level P>
20	1019	Warning level P<
21	1020	Warning level cos phi<
22	1021	Warning level U<
23	1022	Warning level 0/4-20mA>
24	1023	Warning level 0/4-20mA<
25	1024	Stalled Rotor
26	1025	-
27	1026	-
28	1027	No Start possible
29	1028	No. of starts >
30	1029	just one Start possible
31	1030	Operating Hours Motor >
32	1031	Motor Stop Time >
33	1032	External Fault 1
34	1033	External Fault 2
35	1034	External Fault 3
36	1035	External Fault 4
37	1036	External Fault 5
38	1037	External Fault 6
39	1038	External Fault 7
40	1039	External Fault 8

Sl No.	Index	Description
41	1040	A-Module Open Circuit
42	1041	Safety Switch-off
43	1042	Safety Test required
44	1043	-
45	1044	-
46	1045	-
47	1046	Safety Feedback circuit
48	1047	Safety Simultaneity

4.1.3 SMC_Errors

Sl No.	Index	Description
1	1000	Fault F9
2	1001	Parameterizing Fault F16
3	1002	Bus / PLC
4	1003	-
5	1004	-
6	1005	-
7	1006	-
8	1007	-
9	1008	Execution On-command
10	1009	Execution Stop-command
11	1010	Feedback On
12	1011	Feedback Off
13	1012	Stalled Actuator
14	1013	Double 0
15	1014	Double 1
16	1015	End Position
17	1016	Antivalence
18	1017	Test Position Feedback (TPF)
19	1018	Power Failure (UVO)
20	1019	Operational Protection Off (OPO)
21	1020	-
22	1021	-
23	1022	-
24	1023	-
25	1024	-
26	1025	Unbalance
27	1026	Overload
28	1027	Overload + Loss of Phase

Sl No.	Index	Description
29	1028	Internal Earth Fault
30	1029	External Earth Fault
31	1030	-
32	1031	Thermistor Trip level
33	1032	Thermistor Short Circuit
34	1033	Thermistor Open Circuit
35	1034	-
36	1035	T-Module Trip level T>
37	1036	T-Module Sensor Fault
38	1037	T-Module Out of Range
39	1038	EM+ -Open Circuit
40	1039	EM+ -Short Circuit
41	1040	Trip level I>
42	1041	Trip level I<
43	1042	Trip level P>
44	1043	Trip level P<
45	1044	Trip level cos phi<
46	1045	Trip level U<
47	1046	Trip level 0/4-20mA>
48	1047	Trip level 0/4-20mA<
49	1048	Stalled Rotor
50	1049	-
51	1050	-
52	1051	-
53	1052	No. of starts >
54	1053	-
55	1054	-
56	1055	-
57	1056	External Fault 1
58	1057	External Fault 2
59	1058	External Fault 3
60	1059	External Fault 4
61	1060	External Fault 5
62	1061	External Fault 6
63	1062	External Fault 7
64	1063	External Fault 8
65	1064	A-Module Open Circuit
66	1065	Test shutdown
67	1066	Safety Switch-off
68	1067	Safety Wiring error
69	1068	Safety Cross circuit
70	1069	-

Sl No.	Index	Description
71	1070	-
72	1071	-

4.1.4 Reading and writing data records

Reading and writing data records

The blocks use SFB 52 "RDREC" function to read and process values from data records, and the SFB 53 "WRREC" function to process and write values to data records of the SIMOCODE pro device.

The "Read Data" button in the faceplates is used to update the displayed values by calling the "RDREC" at the function block.

Reading data records is performed irrespective of the current mode and write function is only possible if the block is in REMOTE mode.

It is possible to write data records for current limits and statistical data (SMC_STAT block), irrespective of the current mode.

To write current limits at the signal processing blocks, the SIMOCODE pro module must be configured with a current measuring module.

Note

1. Before writing any values in the data record, make sure a valid Read Data has been triggered at least once.
2. Write function requires a successful read record after Full download or Cold restart.

Error Code Information

The following errors can occur during SFB/SFC call execution.

Error code (W#16#...)	Description
7001	Initial Call, Data record transfer has started.
7002	Initial Call, Data record transfer already active.
8085	Due to a problem in the system, information is not currently available (for example, due to a lack of resources).
80A2	DP protocol error at layer 2
80A3	PROFIBUS DP: DP protocol error with Direct-Data-Link-Mapper or user interface/user
80A4	Bus communication disrupted
80A7	DP slave or modules is occupied (temporary error)
80A9	Application – Feature/Function is not supported. DPV1 service <> DS-Read/ DS-Write

Error code (W#16#...)	Description
80C0	The module has the data record, however there are no read data yet.
80C2	The module currently processes the maximum possible jobs for a CPU.
80C3	The required operating resources (memory, etc.) are currently occupied.
80C4	Internal temporary error. Job could not be carried out. Repeat the job. If this error occurs often, check your installation for sources of electrical interference.
80C5	Distributed I/O's not available
80C6	Data record transfer was canceled due to priority class cancellation.
80C7	Job cancelled due to restart (warm restart) or cold restart of DP master.

Note

SFB/SFC call refers to SFC 51 "RDSYSST", SFB 52 "RDREC" and SFB 53 "WRREC".

Handling temporary errors:

If any of the above mentioned errors are detected, the function calls are executed again. Such persistent calls might lead to loading of the CPU work memory. To prevent this, following reset mechanisms are provided.

Dynamic reset:

To prevent loading of CPU work memory, the handling of temporary errors has been enhanced such that the maximum count of reading and writing repetitive calls is configured by the user input parameter "RESFXTRCNT", beyond which the error is reset by terminating read or write data record function call dynamically with a return code 16#7000 at the output parameter "RDSTATUS/QRD_STAT/QWR_STAT".

If the return code is not equal to 16#7000 then the termination will be repeated for the number of user configured cycle times at the input parameter "RESFXFLCNT".

Manual reset:

The manual reset of temporary error is possible only before the user defined repeat cycle has not elapsed.

Parameter	Value selection	Setting Value	Description
CALLRST	Default	16#00	Default value
	ManRead	16#01	Read record manual reset
	ManWrite	16#02	Write record manual reset
	ManRdsys	16#03	RDSYSST manual reset

Exclusive Reset

Exclusive reset can be triggered irrespective of temporary/permanent error, if the user wants to make sure that the SFB/SFC call is not occupying the CPU work memory.

Parameter	Value selection	Setting Value	Description
CALLRST	Default	16#00	Default value
	ExlRead	16#06	Read record exclusive reset
	ExlWrite	16#07	Write record exclusive reset
	ExlRdsys	16#08	RDSYSST exclusive reset

Note

The exclusive reset function will be disabled if the termination call is active.

Handling permanent error:

Any error other than a temporary error is considered as a permanent error.

On detection of permanent errors during SFB/SFC calls, the error status is transferred to output parameters `QERR_RD/ QERR_WR/ QRD_STAT/ QWR_STAT/ RDSTATUS.`

System status information at SMC_DIAG Block

The Read System Status information(SFC51"RDSYSST") is executed on Warm restart of PLC or ACC_ID trigger. The RDSYSST call return code will be transferred to `RDSTATUS` output parameter. If RDSYSST call returns a temporary error then this call is set to be repeated to user entered value from `RESFXTRCNT` input parameter, beyond which the error is reset by terminating RDSYSST call dynamically.

User configurable SFB/SFC call execution and termination counter:

Parameter	Description	Default Range Value
RESFXTRCNT	Configurable repeat count for read/write/RDSYSST call execution	10-300
RESFXFLCNT	Configurable repeat count for read/write/RDSYSST call termination	1-20

- The configurable execution counter "`RESFXTRCNT`" count value will be used to define number of cycle the SFB/SFC call repeated in case of temporary error. The default value of "`RESFXTRCNT`" is 300.
- The configurable termination counter "`RESFXFLCNT`" count value will be used for define number of cycle the SFB/SFC call repeated until the output status returns to 16#7000. The default value of "`RESFXFLCNT`" is 20.
- The counter value will be reverted to its last valid value when the input value is out of range or when the execution/termination of SFB/SFC call is active.

Note

- When a permanent error is encountered, the user entered parameter value will be reverted with last valid value immediately whereas for a temporary error, the value will be reverted with last valid value after user configured repeat cycles.
- A successful reset operation (Dynamic reset, Manual reset, Exclusive reset) ends with a return code 16#7000 at the respective "QRD_STAT/QWR_STAT" output parameters.
- If the output parameter is not 16#7000, the user has to execute an exclusive reset until the output parameters reflects 16#7000.

Monitoring Temporary and Permanent errors:

- SFB/SFC call error status is transferred to output parameters QRD_STAT/ QWR_STAT/RDSTATUS at the blocks.
- The failure of read/write call is displayed as a symbol at respective faceplate overview bar and SIMOCODE block icon.
- During temporary error, "Read Data" button at all faceplate views will be disabled and the operator cannot write current limits (for signal processing blocks) or statistical data (for SMC_STAT block).
- If Temporary/Permanent error occurs during writing of data set, the old valid values will be retained (current limits for signal processing blocks/ statistical data in SMC_STAT block).
- Respective alarm based on Read Failure/Write Failure will be displayed at respective alarm message window

Suppression of SFB/SFC call:

The following input parameters can be used to suppress respective block SFB/SFC call.

Block	Parameter	Description	Default Value	SFC/SFB call
SMC_DAG	RDSYSSUP	Read RDSYSST call suppress	0	SFC51 "RDSYSST"
	EN_RDIAG	Enable reading of diagnostic data DS92	1	SFB52 "RDREC"
SMC_CB SMC_DAHL SMC_DIR SMC_OVL SMC_POS SMC_REV SMC_REVD SMC_REVS SMC_STAR	EN_RWLIM	Enable read / write basic device parameters DS130	1	SFB52 "RDREC" SFB53 "WRREC"
	EN_WLIM	Enable Write basic device parameters DS130	1	
SMC_MEAS	EN_RMEAS	Enable reading of Measurement data	1	SFB52 "RDREC"

Block	Parameter	Description	Default Value	SFC/SFB call
SMC_STAT	EN_RWSTAT	Enable read / write Statistical data DS95	1	SFB52 "RDREC" SFB53 "WRREC"
	EN_WSTAT	Enable Write Statistical data DS95	1	
SMC_TIME	M_SUP_RD	Suppress Read alarms	0	SFB52 "RDREC"

1. The SFB/SFC call can be suppressed by setting the above parameter to its respective value.
2. During Permanent error condition if the user suppresses the respective data record call, the error will remain in the same state. The user would need to enable it to reset the error and suppress it again.
3. In the event of a temporary error condition, if the user chooses to suppress the respective data record call, the call will be terminated.

4.1.5 Simulation

The simulation mode is activated using the input `SIM_ON` and takes priority over all other operating modes. If `SIM_ON` = TRUE, the block processes the simulation values (`SIM_I01`: binary data, `SIM_I23`: motor current) instead of the process values of SIMOCODE pro (`IN_01`, `IN_23`). `QSIM`, `QUALITY` and `QBAD` are output accordingly. The process output (`O_01`) is output with "0" if simulation is active. The command status is combined with the output `QSTATUS`.

A block must be programmed for the simulation. The output `QSTATUS` can be evaluated and this information can be used to form the simulation feedback message (`SIM_I01`, `SIM_I23`). Assignment corresponds to assignment of the process inputs/process output and the following table provides the assignment topic reference with respect to the blocks:

SMC_DIR (Page 86)	SMC_REVD (Page 156)
SMC_REV (Page 103)	SMC_VAL (Page 168)
SMC_STAR (Page 115)	SMC_POS (Page 179)
SMC_REVS (Page 127)	SMC_OVL (Page 189)
SMC_DAHL (Page 141)	SMC_CB (Page 197)

Note

Simulation value - `SIM_I23`: motor current and process value - `IN_23` are not available in SMC_VAL block.

4.1.6 Interlocking

LOCK and LOCK_ON

The interlocks LOCK and LOCK_ON are only effective in REMOTE mode and are valid in the operating mode MANUAL and AUTO for all control stations of the respective block.

An active lock input prevents switching and disables control stations for MANUAL and AUTO. The control bit is set permanently.

LOCK always takes priority over LOCK_ON.

SMC_REV, SMC_REVS	The input LOCK_DIR(TRUE = counter-clockwise, FALSE = clockwise) determines the desired option for LOCK_ON.
SMC_DAHL	The input LOCK_SPD (TRUE = Motor FAST, FALSE = Motor SLOW) determines the desired option for LOCK_ON.
SMC_REVD	The inputs LOCK_DIR (TRUE = counter-clockwise, FALSE = clockwise) and LOCK_SPD (TRUE =Motor FAST, FALSE = Motor SLOW) determine the desired option for LOCK_ON.

Revoking of LOCK_ON switches the motor to the operating mode AUTO corresponding to the control station for AUTO. In MANUAL, the motor is switched off.

Applicable blocks

SMC_DIR	SMC_REVD
SMC_REV	SMC_STAR
SMC_REVS	SMC_DAHL
SMC_CB	

V_LOCK, VL_CLOS and VL_OPEN

The interlocks V_LOCK, VL_CLOS and VL_OPEN are only effective in REMOTE mode and are valid in the operating mode MANUAL and AUTO for all control stations of the SMC_VAL and SMC_POS block.

An active lock input prevents switching and disables control stations for MANUAL and AUTO. The control bit is set permanently.

The input SS_POS (TRUE = Open, FALSE = Closed) corresponds to the safe position and determines control in the case of V_LOCK.

The priorities range from high to low in the following order:

- SMC_VAL block : V_LOCK → VL_CLOS → CL_OPEN
- SMC_POS block : V_LOCK → VL_CLOS → CL_OPEN → VL_HOLD

Revoking of the interlock input switches the valve to the operating mode AUTO corresponding to the control station for AUTO. In MANUAL, the valve is moved to the safe position.

Applicable blocks

SMC_VAL	SMC_POS

4.1.7 Local Interruption

The output QLOC_INT indicates in REMOTE that operation via the local control station (connected direct to SIMOCODE pro) has changed the current switching state.

QLOC_INT is also set if the switching state requested via REMOTE has not been reached within the monitoring time set using TIME_MON and no general fault has occurred (e.g. due to a higher-priority Off command at the SIMOCODE pro general control station). This monitoring is switched off with TIME_MON = 0 or MONITOR = FALSE.

Note

For blocks SMC_REVS, SMC_DAHL and SMC_REVD:

The monitoring time is not started until the interlocking time has expired.

If QLOC_INT = TRUE, the control outputs are reset.

QLOC_INT is reset via the inputs RESET (operator controllable) / L_RESET (interconnectable). The input RESET is reset after acknowledgment. If L_RESET is active permanently, QLOC_INT is set for the duration of the cycle if the requirements given above are met.

Monitoring will be deactivated (MONITOR = FALSE) during startup or first cycle of execution, this will be done using input parameter RESET_MON.

Applicable blocks

SMC_DIR	SMC_REVD
SMC_REV	SMC_VAL
SMC_STAR	SMC_POS
SMC_REVS	SMC_CB
SMC_DAHL	

4.1.8 Current and current limit monitoring

Current

The motor current is transferred via the input parameter IN_23 as an unsigned 2-byte value. SIMOCODE pro always transfers the current here as a percentage of the set current in a range from 0 to 1020% with increments of 4%.

Current limits

The current limit values are read out from the data set DS130. Reading of the data set is initiated either via the interconnectable input parameter L_RD_DATA, in the OS when selecting the limit value view, or by OS operation (RD_DATA).

The data read is output to the in/out parameters Alarm high (CUR_AH), Alarm low (CUR_AL), Warning high (CUR_WH) and Warning low (CUR_WL).

If a fault occurs, the values remain as previous value and the output QERR_RD = TRUE is set.

The limit values can also be parameterized in the faceplate. If the values are changed, they are written to SIMOCODE pro.

The signaling response in the case of limit value violations are parameterized with SIMOCODE ES or SIMATIC PDM. Under Monitoring functions → Current limits, the response to trip level/warning level is set for this purpose as follows:

Trip level: disabled or tripping
Warning level: disabled or warning

If a fault occurs when writing, the values are set to previous values and the output QERR_WR = TRUE is set.

Overshooting or undershooting of the limit values results in transmission of the relevant message provided the limit value message has not been completely switched off via the parameter M_SUP_C (default is: switched off). Limit value violation messages are generated in the SIMOCODE pro and evaluated in the block. The outputs QCUR_AH, QCUR_AL, QCUR_WH and QCUR_WL are set accordingly.

Range limits

The range limits for the limit bars are parameterized using the function inputs MO_PVHR and MO_PVLR and can be adjusted in the OS.

Applicable blocks

SMC_DIR	SMC_REVD
SMC_REV	SMC_POS
SMC_STAR	SMC_OVL
SMC_REVS	SMC_CB
SMC_DAHL	

4.1.9 Signaling response

Table 4-1 Message block MsgEvId1, MsgEvId2

Message block	Message number	Block parameter	Message text	Message class*
MSG_EVID1	1	QGR_WRN	$$BlockComment$$ General warning: @4W%t#SMC_Warnings@ @5W%t#SMC_Warnings@ @6W%t#SMC_Warnings@	WH
	2	QGR_ERR	$$BlockComment$$ General fault: @7W%t#SMC_Errors@	AH
	3	QCUR_AH	$$BlockComment$$ Current alarm high	AH
	4	QCUR_WH	$$BlockComment$$ Current warning high	WH
	5	QCUR_WL	$$BlockComment$$ Current warning low	WL
	6	QCUR_AL	$$BlockComment$$ Current alarm low	AL
	7	QCST	$$BlockComment$$ Feedback test	WH
	8	MSG_8	$$BlockComment$$ Message Input 8	—
MSG_EVID2	1	MSG_9	$$BlockComment$$ Message Input 9	—
	2	MSG_10	$$BlockComment$$ Message Input 10	—
	3	MSG_11	$$BlockComment$$ Message Input 11	—
	4	MSG_12	$$BlockComment$$ Message Input 12	—
	5	MSG_13	$$BlockComment$$ Message Input 13	—
	6	MSG_14	$$BlockComment$$ Message Input 14	—
	7	MSG_15	$$BlockComment$$ Message Input 15	—
	8	MSG_16	$$BlockComment$$ Message Input 16	—
MSG_EVID3	1	MODF	$$BlockComment $$ SIMOCODE pro module failure	S
	2	RECVDATA.BIT29	$$BlockComment$$ SIMOCODE pro Diagnostic read failure	S
	3	QERR_RD	$$BlockComment$$ Device Parameterset read failure	S
	4	QERR_WR	$$BlockComment$$ Device Parameterset write failure	S
	5	STAT_RDER	$$BlockComment$$ Statistical values read failure	S
	6	STAT_WRER	$$BlockComment$$ Statistical values write failure	S
	7	-	$$BlockComment$$ Reserved	-
	8	-	$$BlockComment$$ Reserved	-

* S = AS, OS process control fault.

The free message inputs can be activated using the parameters message `MSG_x`(x=8 to 16) on the respective blocks.

Applicable blocks: SMC_DIR, SMC_REV, SMC_STAR, SMC_REVS, SMC_DAHL, SMC_REVD, SMC_POS, SMC_OVL, SMC_CB

Table 4-2 Message block MsgEvId1, MsgEvId2

Message block	Message number	Block parameter	Message text	Message class
MSG_EVID1	1	QGR_WRN	$$BlockComment$$ General warning: @4W%t#SMC_Warnings@ @5W%t#SMC_Warnings@ @6W%t#SMC_Warnings@	WH
	2	QGR_ERR	$$BlockComment$$ General fault: @7W%t#SMC_Errors@	AH
	3	QCST	$$BlockComment$$ Feedback test	WH
	4	MSG_4	$$BlockComment$$ Message Input 4	—
	5	MSG_5	$$BlockComment$$ Message Input 5	—
	6	MSG_6	$$BlockComment$$ Message Input 6	—
	7	MSG_7	$$BlockComment$$ Message Input 7	—
	8	MSG_8	$$BlockComment$$ Message Input 8	—
MSG_EVID2	1	MSG_9	$$BlockComment$$ Message Input 9	—
	2	MSG_10	$$BlockComment$$ Message Input 10	—
	3	MSG_11	$$BlockComment$$ Message Input 11	—
	4	MSG_12	$$BlockComment$$ Message Input 12	—
	5	MSG_13	$$BlockComment$$ Message Input 13	—
	6	MSG_14	$$BlockComment$$ Message Input 14	—
	7	MSG_15	$$BlockComment$$ Message Input 15	—
	8	MSG_16	$$BlockComment$$ Message Input 16	—

The free message inputs can be activated using the parameters message MSG_x(x=4 to 16) on the SMC_VAL blocks
Applicable blocks: SMC_VAL

Table 4-3 The ALARM_8P auxiliary values are assigned as follows:

Message block	Message number	Auxiliary value	Block parameter	Meaning
MSG_EVID1	—	1	BA_NA	Batch name
	—	2	STEP_NO	Batch step number
	—	3	BA_ID	Batch ID
	1	4	WRN_NO1	Warning number 1
		5	WRN_NO2	Warning number 2
	2	6	WRN_NO3	Warning number 3
		7	ERR_NO1	Fault number 1
		8	ERR_NO2	Fault number 2
		9	ERR_NO3	Fault number 3
		10	AUX_PR110	Auxiliary process value 110

Message block	Message number	Auxiliary value	Block parameter	Meaning
MSG_EVID2 and MSG_EVID3	—	1	BA_NA	Batch name
	—	2	STEP_NO	Batch step number
	—	3	BA_ID	Batch ID
	—	4	AUX_PR204	Auxiliary process value 204
	—	5	AUX_PR205	Auxiliary process value 205
	—	6	AUX_PR206	Auxiliary process value 206
	—	7	AUX_PR207	Auxiliary process value 207
	—	8	AUX_PR208	Auxiliary process value 208
	—	9	AUX_PR209	Auxiliary process value 209
	—	10	AUX_PR210	Auxiliary process value 210

The auxiliary values AUX_PR204...AUX_PR210 are freely available.

The limit value messages can be suppressed via the input M_SUP_C. The default value of the input M_SUP_C is FALSE, that is, message suppression is not active.

The read or write failure message can be suppressed via the input parameter "M_SUP_RW=True" .

For the messages "General warning" and "General fault", the diagnostics block SMC_DIAG supplies the detailed information that is interconnected via the structure DIAG_INF to the respective block.

For the messages " Statistical values read failure" and " Statistical values write failure", from the SMC_STAT QER_RD and QER_WR to STAT_RDER and STAT_WRER has to be manually interconnected to respective signal processing blocks.

"Diagnostic data read failure" information is received from SMC_DIAG block through input parameter RECVDATA at bit 2. Further, this information is used to display the alarm in technological block faceplate and alarm views .

General warning (message number 1)

The message General warning is derived from the diagnostics structure DIAG_INF formed by the block SMC_DIAG.

Three auxiliary values are transferred as additional information together with the message General warning. The auxiliary values correspond to the contents of the warning numbers WRN_NO1, WRN_NO2 and WRN_NO3 and contain the first three warning causes found.

The user text library SMC_Warnings is available for the warnings. This contains the precise fault texts and is supplemented dynamically in the message.

General fault (message number 2)

The message General fault is derived from the diagnostics structure DIAG_INF formed by the block SMC_DIAG.

One auxiliary value is transferred as additional information together with the message General fault. The auxiliary value corresponds to the contents of the fault number ERR_NO1 and contains the first fault cause found.

The auxiliary values 8 and 9 are interconnected with the parameters ERR_NO2 and ERR_NO3 and can be appended to the message if required.

The user text library SMC_Errors is available for the faults. This contains the precise error texts and is supplemented dynamically in the message.

Current limit messages (message number 3 to 6)

The current limit messages are formed by the SIMOCODE pro and are contained in the diagnostics structure DIAG_INF.

Test feedback (message number 7)

The message "Test feedback" is derived direct from the SIMOCODE pro information (DP 1.1 Send).

Dataset Read/Write Failure

If reading from Dataset 130 fails, a message stating ' Device Parameter set read failure' will be triggered. Similarly, if writing to Dataset 130 fails, a 'Device Parameter set write failure' alarm message will be activated.

These alarm messages will be displayed at the signal processing block by setting the output parameters QERR_RD and QERR_WR.

Free messages (message number 8 of the message block 1, message numbers 1 to 8 of message block 2)

There is no block-internal assignment to a specific function for these messages. It can be activated via a parameter input (MSG_8 to MSG_16) and can be used, for example, for reporting of Local_Interruption, the operating mode SIMULATION, or any other signal.

Applicable blocks

SMC_DIR	SMC_REVD
SMC_REV	SMC_VAL
SMC_STAR	SMC_POS
SMC_REVS	SMC_OVL
SMC_DAHL	SMC_CB

4.1.10 Reset response

In principle, every fault detected by SIMOCODE pro must be acknowledged. This is done via the bit DP0.6 Recv. Reset is only carried out by SIMOCODE pro if there is no active On command. Reset either resets the General fault (QGR_ERR) if the cause of the fault no longer exists, or it results in acknowledgment of the fault if the cause of the fault still exists. An acknowledged fault automatically results in resetting of the general fault following removal of the fault cause.

Reset can be carried out either via the interconnectable function input L_SMCRESET or via the OS operator controllable function input SMCRESET.

L_SMCRESET is level-active. SMCRESET is reset by the block following evaluation.

The reset function is transparent from the block's perspective, that is, there is no logical combination with other signals, and independent of the operating mode (LOCAL / REMOTE).

Applicable blocks

SMC_DIR	SMC_REVD
SMC_REV	SMC_VAL
SMC_STAR	SMC_POS
SMC_REVS	SMC_OVL
SMC_DAHL	SMC_CB

4.1.11 Time response

The block must be called via a watchdog interrupt OB. The sampling time of the block is entered in the parameter SAMPLE_T.

Applicable blocks

SMC_DIR	SMC_REVD
SMC_REV	SMC_VAL
SMC_STAR	SMC_POS
SMC_REVS	SMC_OVL
SMC_DAHL	SMC_CB

4.2 Diagnostics block SMC_DIAG

4.2.1 Description of SMC_DIAG

FB2000

Calling OBs

The block must be installed in the processing sequence in the following OBs (occurs automatically in the CFC):

OB1	Cyclic program
OB40	Process alarm

OB82	Diagnostic interrupt
OB83	Insert/remove interrupt
OB85	Program execution error
OB86	Rack fault
OB100	Warm restart

Calling OBs Installation is performed automatically by means of the function "Generate Module Driver".

Called blocks

The block calls the following blocks:

SFB52	RDREC
SFB54	RALRM
SFC6	RD_SINFO
SFC51	RDSYSST

4.2.2 Function

The SMC_DIAG block is responsible for the diagnosis of the SIMOCODE pro device. The block evaluates the acyclic events that are relevant for SIMOCODE pro (start-up, DP station failure, module fault), generates quality code and diagnostic information for the Technological blocks.

4.2.3 Signaling response

The block has no signaling response. The messages for DP station failure and module fault are generated by the MOD_SWT/MOD_SWTL block (in cases of direct connection to the DP master system and connection following the Y-Link).

4.2.4 Failure of the DP master/DP slave

A failure in the DP Master or DP Slave is detected by OB86 interrupt and indicated by the OB_DIAG1 block connected in series. Inputs `RACKF`, `SUBN1ERR` and `SUBN1ACT` are evaluated in the SMC_DIAG

In the event of a fault, the identifier for "higher-level fault" (`OMODE` = 16#40xxxxxx) is entered for output `OMODE`.

4.2.5 I/O access error

From the perspective of the I/O configuration, SIMOCODE pro is a "compact" DP slave, that is, it always has a fixed I/O configuration. It can therefore be assumed that if an I/O access error (OB85 interrupt) occurs, the entire DP slave must have failed (usually reported shortly afterwards).

I/O access errors are not evaluated any further, for this reason.

4.2.6 Module fault

Following a restart and when ACC_ID = TRUE, the module addressed with LADDR is checked. SZL ID xC91 is read for this purpose. If the module addressed with LADDR does not exist, the output QMODF is set and the identifier for "higher-level fault" (OMODE = 16#40xxxxxx) is entered for the output OMODE.

A "SIMOCODE pro module failure" alarm message displayed at the signal processing block when the output QMODF is set to 1.

The RDSYSST (SFC51) call return value will be passed to output parameter RDSTATUS. The module fault (QMODF) is reported when OB83 is triggered and is detected by the event number 16#61 and event class 16#39.

Note

Behind IE/PB HA system, the return status “0” during REQ "0" or Exclusive reset also indicates the call is not blocked.

- RDSYSST Call is excluded for configurations behind Y-Link systems as it does not return the desired value of module availability. The device availability is evaluated with the OB_DIAG1 block output parameter SUBN1ACT.

4.2.7 Reading the SIMOCODE pro diagnostics data

If the SIMOCODE pro outputs a process interrupt, the system function block RALRM (SFB54) will activate reading of the device-specific diagnostics data.

Following a CPU restart and rack restore, diagnostics data set DS92 is read out with system function block RDREC (SFB52). At CPU restart and rack restore when operating the SIMOCODE pro following the Y-Link, the read-out takes place with a delay of 1 minute to ensure that all available components have completed power-up.

The diagnostics data can also be displayed on a Maintenance Station (MS).

Diagnostic events are assigned to the maintenance status as follows:

Diagnostics event	Maintenance status	QUALITY	PA_DIAG
Status – TPF	Local operation/function check	16#8C	16#0000_0200
Warnings	Maintenance requirement is medium	16#68	16#0020_0000
Faults	Maintenance requirement is high	16#24	16#0000_0100

4.2.8 Diagnostic read failure

Diagnostic read failure

The message "SIMOCODE pro Diagnostic read failure" is derived at signal processing block from the interconnection SNDDATA to 29 bit of RECVDATA formed by the block SMC_DIAG block.

4.2.9 Start-up characteristics

In OB100, the identifier for "start-up" (OMODE = 16#xx01xxxx)" is passed to output parameter OMODE.

OB1 first run identification is done at the SMC_DIAG block and this information is passed to all the other technological blocks via the output parameter SNDDATA.

4.3 Block for measured value function SMC_MEAS

4.3.1 Description of SMC_MEAS

FB2002

Calling OBs

The OB watchdog interrupt in which you install the block (e.g. OB32). Also in OB100 (see start-up characteristics).

SMC_MEAS must be installed in the same chart as the associated signal block and have the name MEAS. The information as to whether or not the measured value block is available is parameterized in the signal block at input parameter EN_MEAS.

Called blocks

The block calls the following blocks:

SFB35	ALARM_8P
SFB52	RDREC
SFC6	RD_SINFO
SFC20	BLKMOV

4.3.2 Parameter assignment in SIMOCODE ES

To be able to read or write measured values via the cyclic I/O interface, some SIMOCODE pro parameters must have quite specific settings. This especially affects the parameters that define the assignment of the cyclic I/O interface.

This functionality is only available on basic type 1.

Outputs → Cyclic send data	
Byte 4 to 5	e.g. power factor (only if current/voltage measuring module available)
Byte 6 to 7	e.g. temperature module – max. temperature (only if module available)
Byte 8 to 9	e.g. analog module – input 1 (only if module available)

Outputs → Analog module	
Assigned analog output value:	Cyclic receive analog value (only if analog module available)
Start value of value range:	0 (corresponds to 0/4 mA)
End value of value range:	1728 (corresponds to 20 mA)

Please note that when outputting the analog control value via the SMC_MEAS block, the value output is standardized already in the block. For this reason, the user needs to parameterize the above-named values as the start or end value of the value range.

4.3.3 Function

The block reads measured values from the SIMOCODE pro via data set DS94 and reads limit value data with data set DS130 and DS132.

Reading of data set 94 supplies only the measured values actually provided by the basic unit or the modules used, depending on the type of the (SIMOCODE pro C / V / S) basic unit, and depending on the modules used in the case of SIMOCODE pro V.

Measured value	**SIMOCODE pro C** **SIMOCODE pro V E01**	**SIMOCODE pro V** **from event status E02**	**SIMOCODE pro S**
Thermal motor model	Available	Available	Available
Phase unbalance	Available	Available	Available
Cos φ	Not available	Available with UM	Not available
Max. current I_max	Available	Available	Available
Current I_L1	Available	Available	Available
Current I_L2	Available	Available	Available
Current I_L3	Available	Available	Available
Last trip current	Available	Available	Available
Time to trip	Available	Available	Available
Recovery time	Available	Available	Available
Voltage U_L1	Not available	Available with UM	Not available
Voltage U_L2	Not available	Available with UM	Not available
Voltage U_L3	Not available	Available with UM	Not available

Measured value	SIMOCODE pro C SIMOCODE pro V E01	SIMOCODE pro V from event status E02	SIMOCODE pro S
A-module - output	Not available	Available with AM	Not available
A-module – input 1	Not available	Available with AM	Not available
A-module – input 2	Not available	Available with AM	Not available
T module – max. temperature	Not available	Available with TM	Available with TM
T module - temperature 1	Not available	Available with TM	Available with TM
T module – temperature 2	Not available	Available with TM	Available with TM
T module – temperature 3	Not available	Available with TM	Available with TM
Active power P	Not available	Available with UM	Not available
Apparent power S	Not available	Available with UM	Not available
Ground fault current	Not available	Available with EM+	Available with EM+
Ground fault - last trip current	Not available	Available with EM+	Available with EM+

Note

Measured values "Active power PA" and "Active power PB" are not supported in this library.

4.3.4 Assignment of the cyclic process image

When using basic type 1, bytes 2 to 3 of the cyclic receive data and bytes 4 to 9 of the cyclic send data can also be assigned.

Table 4-4 Assignment of O_23: Analog value output to SIMOCODE pro

Byte	Control interface
2 ... 3	Analog value 1

Table 4-5 Assignment of IN_45, IN_67 and IN_89: Feedback messages from SIMOCODE pro

Byte	Cyclic send data	Block parameter
4 ... 5	Values parameterized in SIMO-CODE ES	IN_45
6 ... 7		IN_67
8 ... 9		IN_89

4.3.5 Reading of measured values

Mode

For inputs IN_45, IN_67 and IN_89, there are parameter inputs MODEIN45, MODEIN67 and MODEIN89 that can be used to determine whether the measured values are read cyclically (MODEINxx <> 0) or acyclically (MODEINxx = 0).

This additionally includes the information for the inputs concerning which measured value is to be connected in the case of cyclic communication.

Table 4-6 Assignment of MODExxxx

MODE16#xx	Meaning for input	
0	Measured value is read out from the data set	
1	Cyclic measured value	Voltage U_L1
2		Voltage U_L2
3		Voltage U_L3
4		Power factor
5		Active power
6		Analog input 1
7		Analog input 2
8		Max. temperature
9		Temperature T1
A		Temperature T2
B		Temperature T3
C		Thermal motor model
D		Phase unbalance
E		Current I_L1
F		Current L2
10		Current I_L3
11		Time to trip
12		Cooling down period
13		Maximum current
14		Ground fault current
15		Ground fault - last trip current
16		Apparent power

If the active power is to read in cyclically, two consecutive inputs with the same value have to be configured, e.g. MODEIN45 and MODEIN67 or MODEIN67 and MODEIN89 has to be configured to 5 as the active power is assigned a double word in SIMOCODE pro. If this is not the case, QP 0 is output.

Acyclic reading

Reading of data set 94 is initiated either via the interconnectable input parameter L_RD_DATA, in the OS when selecting the faceplate, or by OS operation (RD_DATA).

The read data is output in standardized form at the output parameters QUL1-3 (voltage UL1-3), QCPHI (power factor), QP (active power), QS (Apparent power), QAI1-2 (analog input 1 and 2), QTM (max. temperature), QT1-3 (temperature 1 to 3), QTR (thermal motor model), QPU (phase unbalance), QCUR (maximum current), QCUR_L1 (current L1), QCUR_L2 (current L2), QCUR_L3 (current L3), TRIP_CUR (last trip current), TRIP_T (time to trip), COOL_T (cooling down period), ETRP_CUR (ground fault current) and ELTRP_CUR (ground fault - last trip current).

If a fault occurs, the values are set to zero and the output QERR_RD = TRUE is set.

4.3.6 Writing to the analog output

The analog output can be written cyclically to the SIMOCODE pro.

The switch LINK_ON is used to parameterize whether the operator controllable input AO_OP (LINK_ON = FALSE) or the interconnectable input AO (LINK_ON = TRUE) is used.

If the interconnectable input is selected, the operator input is adjusted to the interconnectable input.

4.3.7 Reading of limit values

Reading of data set 132 is initiated either via the interconnectable input parameter L_RD_DATA, in the OS when selecting the faceplate, or by OS operation (RD_DATA).

The data read is output in a standardized form (analog values) at the output parameters:

- U_WL, U_AL (limit values min. voltage) / QU_WL QU_AL (limit value violations voltage)
- CPHI_WL, CPHI_AL (limit values power factor) / QCPHI_WL, QCPHI_AL (limit value violations power factor)
- P_AH, P_WH, P_WL, P_AL (limit values active power), QP_AH, QP_WH, QP_WL, QP_AL (limit value violations active power)
- AI1_AH, AI1_WH, AI1_WL, AI1_AL (limit values analog input 1), QAI1_AH, QAI1_WH, QAI1_WL, QAI1_AL (limit value violations analog input 1)
- TM_AH, TM_WH (limit values max. temperature), QTM_AH, QTM_WH (limit value violations max. temperature)
- EF_WH, EF_AH (limit values ground-fault current), QEF_WH, QEF_AH (limit value violation ground-fault current)

If a fault occurs, the values are set to zero and the output QERR_RD = TRUE is set.

4.3.8 Signaling response

Table 4-7 Message block MsgEvId1, MsgEvId2

Message block	Message number	Block parameter	Message text	Message class
MSG_EVID1	1	QU_WL	$$BlockComment$$ Min. voltage warning low	WL
	2	QU_AL	$$BlockComment$$ Min. voltage alarm low	AL
	3	QCPHI_WL	$$BlockComment$$ Power factor warning low	WL
	4	QCPHI_AL	$$BlockComment$$ Power factor alarm low	AL
	5	QP_AH	$$BlockComment$$ Active power alarm high	AH
	6	QP_WH	$$BlockComment$$ Active power warning high	WH
	7	QP_WL	$$BlockComment$$ Active power warning low	WL
	8	QP_AL	$$BlockComment$$ Active power alarm low	AL
MSG_EVID2	9	QAI1_AH	$$BlockComment$$ Analog input 1 alarm high	AH
	10	QAI1_WH	$$BlockComment$$ Analog input 1 warning high	WH
	11	QAI1_WL	$$BlockComment$$ analog input 1 warning low	WL
	12	QAI1_AL	$$BlockComment$$ Analog input 1 alarm low	AL
	13	QTM_AH	$$BlockComment$$ Max. temperature alarm high	AH
	14	QTM_WH	$$BlockComment$$ Max. temperature warning high	WH
	15	QEF_WH	$$BlockComment$$ External ground fault warning high	WH
	16	QEF_AH	$$BlockComment$$ External ground fault alarm high	AH
MSG_EVID3	1	QERR_RD	$$BlockComment$$ Measured values read failure	S
	2-8		Reserved	

Table 4-8 The ALARM_8P auxiliary values are assigned as follows:

Message block	Message number	Auxiliary value	Block parameter	Meaning
MSG_EVID1	—	1	BA_NA	Batch name
	—	2	STEP_NO	Batch step number
	—	3	BA_ID	Batch ID
	—	4	AUX_PR104	Auxiliary process value 104
	—	5	AUX_PR105	Auxiliary process value 105
	—	6	AUX_PR106	Auxiliary process value 106
	—	7	AUX_PR107	Auxiliary process value 107
	—	8	AUX_PR108	Auxiliary process value 108
	—	9	AUX_PR109	Auxiliary process value 109
	—	10	AUX_PR110	Auxiliary process value 110
MSG_EVID2 and MSG_EVID3	—	1	BA_NA	Batch name
	—	2	STEP_NO	Batch step number
	—	3	BA_ID	Batch ID
	—	4	AUX_PR204	Auxiliary process value 204
	—	5	AUX_PR205	Auxiliary process value 205
	—	6	AUX_PR206	Auxiliary process value 206
	—	7	AUX_PR207	Auxiliary process value 207
	—	8	AUX_PR208	Auxiliary process value 208
	—	9	AUX_PR209	Auxiliary process value 209
	—	10	AUX_PR210	Auxiliary process value 210

Auxiliary values AUX_PR104 to AUX_PR110 and AUX_PR204 to AUX_PR210 are freely available.

The messages can be switched off separately for each measured value using the inputs M_SUP_xx. The default value of the inputs M_SUP_xx is TRUE, that is, message suppression is active.

The read failure message can be suppressed via the input parameter "M_SUP_RD=True".

4.3.9 Start-up characteristics

During OB100 (warm restart) or the first start of the block, the alarm messages are suppressed in the OB100 for the RUNUPCYC no. of times.

All Measured Values output at the block is re-initialized to "0".

OB1 first run identification information is received from SMC_DIAG block through IN-OUT parameter RECVDATA at bit 24. Further, this information is used as an entry condition for RDREC processing.

4.3.10 Description of the faceplate

The faceplate is called from the "LIMITS" view of the signal processing block SMC_xxx.

The following views are available:

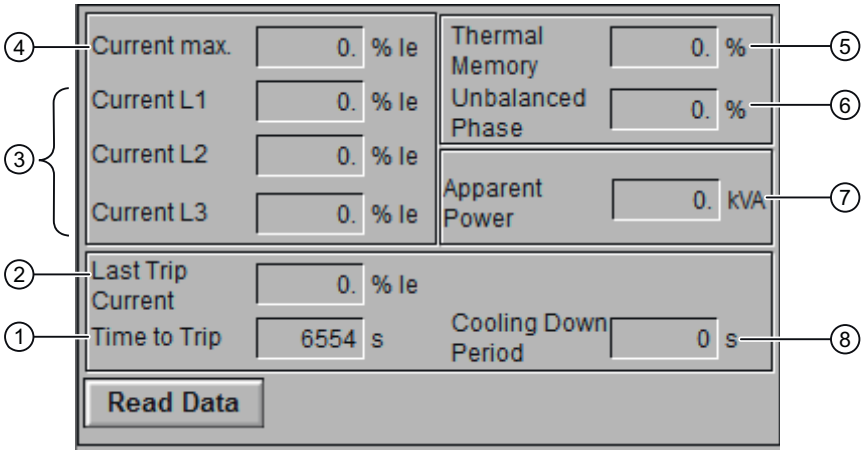
Overview	OVERVIEW
Standard	STANDARD
Voltage	STANDARD_2
Power factor	STANDARD_3
Active power	STANDARD_4
Analog input	STANDARD_5
Analog output	STANDARD_6
Temperature	STANDARD_7
Ground fault	STANDARD_8
Messages	—

The file name is composed as follows: @PG_SMC_MEAS_<View>.PDL

The PCS 7 standard display is used for the Messages views.

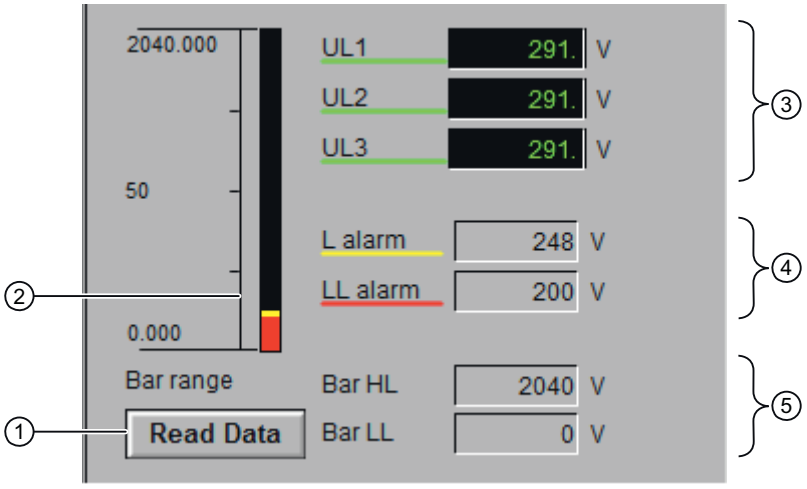
The structure of the individual views of faceplates is described below.

Standard (STANDARD)



① Time to trip (TRIP_T)
② Last trip current (TRIP_CUR)
③ Phase currents (QCUR_L1, QCUR_L2, QCUR_L3)
④ Maximum current (QCUR)
⑤ Thermal motor model (QTR)
⑥ Unbalanced Phase (QPU)
⑦ Apparent Power (QS)
⑧ Cooling down period (COOL_T)

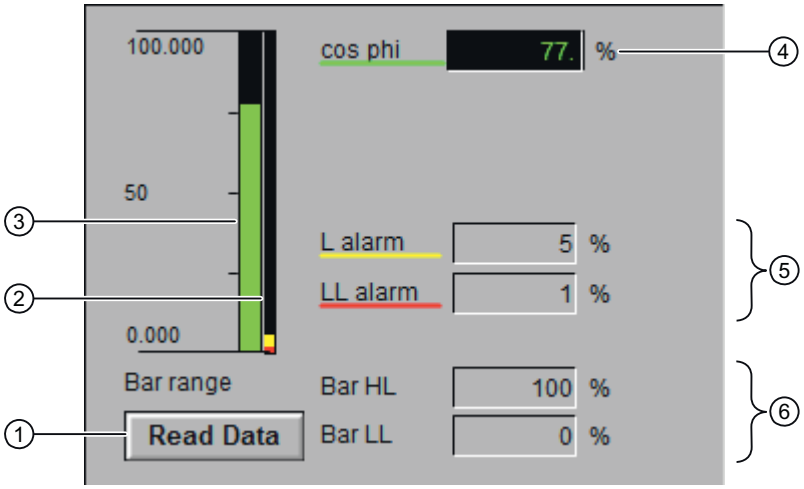
Voltage (STANDARD_2)



① Read Data (`RD_DATA`)
② Limit value display (`U_WL`, `U_AL`)
③ Voltage values (`QULx`, `QULx#unit`, `QULx`#shortcut, x = 1-3)
④ Limits (`U_WL`, `U_AL`)
⑤ Bar range (`MO_UHR`, `MO_ULR`)

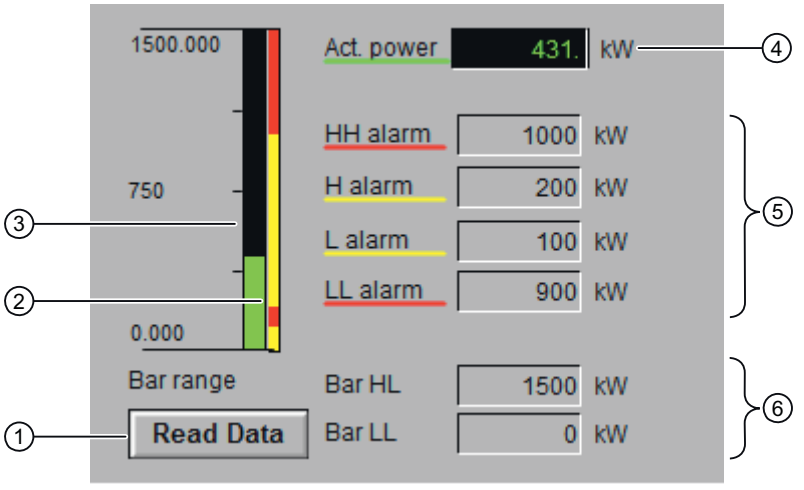
To adapt the labeling of the voltage values to the type of voltage (line-to-line voltage/phase voltage), the texts U Lx at the attributes S7_shortcut of the block parameter QULx can be changed.

Power factor (STANDARD_3)



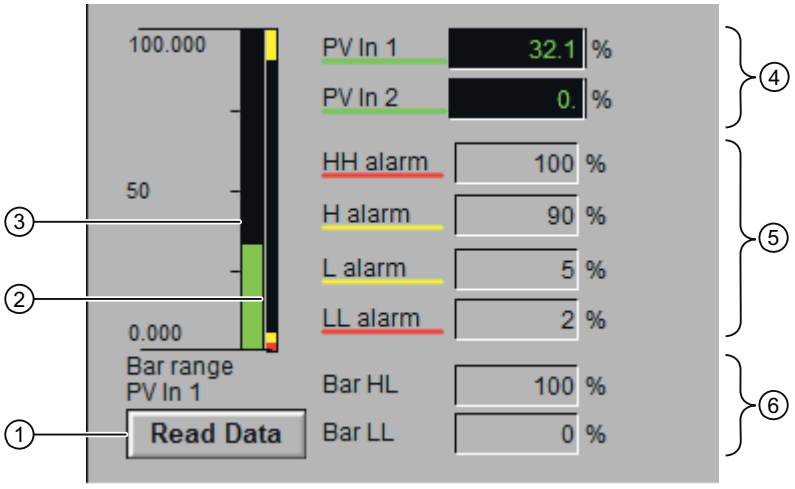
① Read Data (RD_DATA)
② Limit value display (CPHI_WL, CPHI_AL)
③ Actual value bar (QCPHI, MO_CPHR, MO_CPLR)
④ Power factor (QPHI, QCPHI#unit, QCPHI#shortcut)
⑤ Limits (CPHI_WL, CPHI_AL)
⑥ Bar range (MO_CPHR, MO_CPLR)

Active power (STANDARD_4)



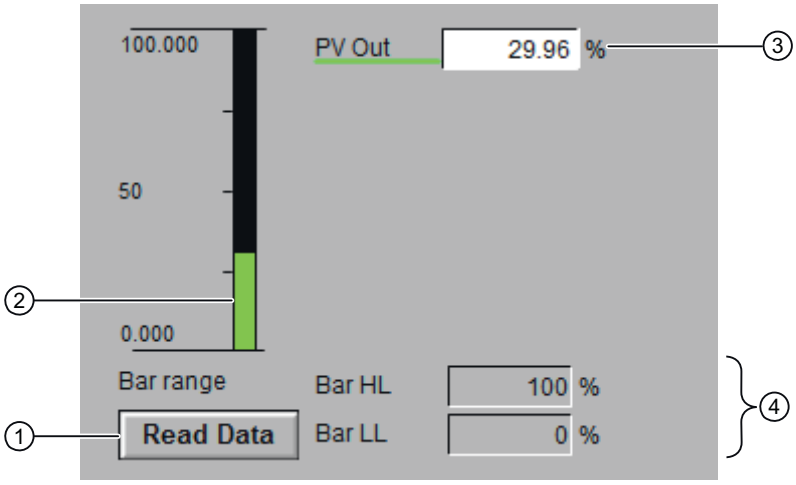
① Read Data (RD_DATA)
② Limit value display (P_AH, P_WH, P_WL, P_AL)
③ Actual value bar (QP, MO_PHR, MO_PLR)
④ Power value (QP, QP#unit, QP#shortcut)
⑤ Limits (P_AH, P_WH, P_WL, P_AL)
⑥ Bar range (MO_PHR, MO_PLR)

Analog input (STANDARD_5)



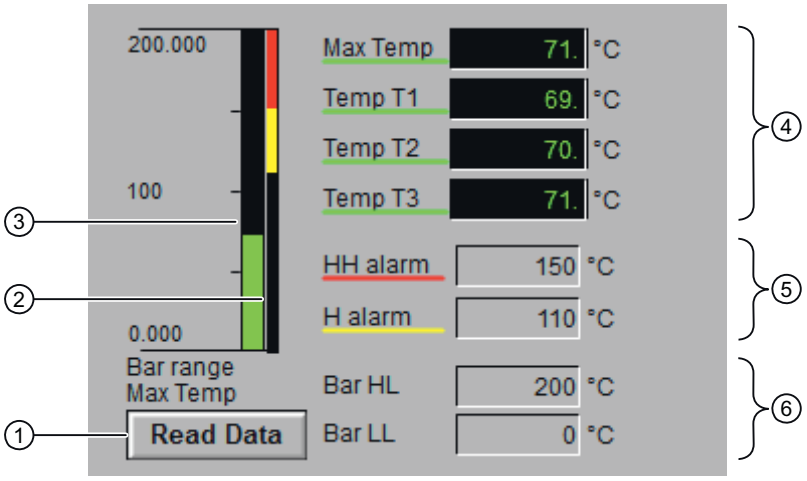
1. Read Data (`RD_DATA`)
2. Limit value display (`AI1_AH, AI1_WH, AI1_WL, AI1_AL`)
3. Actual value bar (`QAI1, MO_AIHR, MO_AILR`)
4. Analog values(`QAIx`, `QAIx`#unit, `QAIx`#shortcut, x = 1-2)
5. Limits (`AI1_AH, AI1_WH, AI1_WL, AI1_AL`)
6. Bar range (`MO_AIHR, MO_AILR`)

Analog output (STANDARD_6)



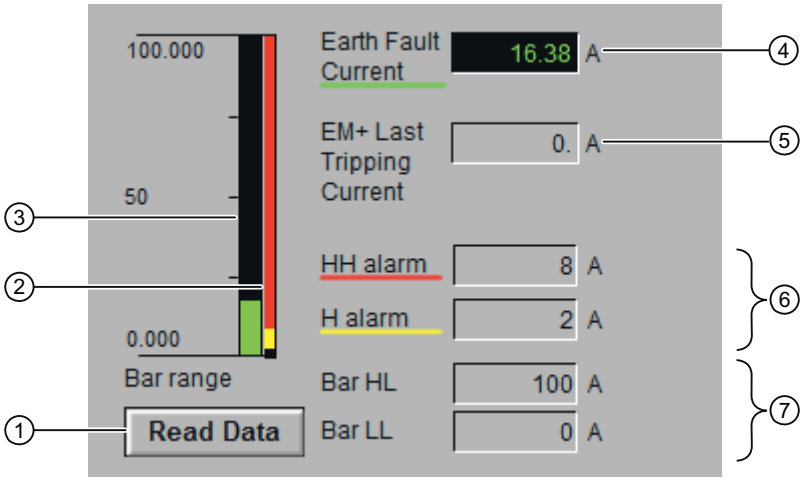
1. Read Data (`RD_DATA`)
2. Actual value bar (`QAO, MO_AOHR, MO_AOLR`)
3. Analog value (`QAO`, `QAO`#unit, `QAO`#shortcut)
4. Bar range (`MO_AOHR, MO_AOLR`)

Temperature (STANDARD_7)



① Read Data (RD_DATA)
② Limit value display (TM_AH, TM_WH)
③ Actual value bar (QTM, MO_THR, MO_TLR)
④ Temperature values (QTx, QTx, QTx#unit, QTx#shortcut, x = M, 1-3)
⑤ Limits (TM_AH, TM_WH)
⑥ Bar range (MO_THR, MO_TLR)

Ground fault (STANDARD_8)



① Read Data (RD_DATA)
② Limit value display (EF_AH, EF_WH)
③ Actual value bar (ETRP_CUR, MO_EHR, MO_ELR)
④ Ground fault value (ETRP_CUR)
⑤ Last trip current (ELTRP_CUR)
⑥ Limits (EF_AH, EF_WH)
⑦ Bar range (MO_EHR, MO_ELR)

4.4 Block for statistical function SMC_STAT

4.4.1 Description of SMC_STAT

FB2003

Calling OBs

The watchdog interrupt OB in which you install the block (e.g. OB32). Also in OB100 (see start-up characteristics).

SMC_STAT must be installed in the same chart as the associated signal block and have the name STAT. The information as to whether or not the statistics block is available is parameterized in the signal block at input EN_STAT.

Called blocks

The block calls the following blocks:

SFB52	RDREC
SFB53	WRREC
SFC6	RD_SINFO

4.4.2 Function

The block reads and writes statistical information from SIMOCODE pro via the data sets DS94 and DS95.

Reading of data set 95 supplies only the values supported by the type of (SIMOCODE pro C / V / S) basic unit. Unsupported values are read and displayed as zero.

Value	SIMOCODE pro C	SIMOCODE pro V	SIMOCODE pro S
Operating hours	Yes	Yes	Yes
Internal Motor Operating Hours	Yes	Yes	Yes
Device Operating Hours	Yes	Yes	Yes
Downtime	Yes	Yes	Yes
Permissible starts	Yes	Yes	Yes
Number of overload trips	Yes	Yes	Yes
Number of starts	Yes	Yes	Yes
Number of Parameterizations	Yes	Yes	Yes
Time Until test Required	No	Yes	No
Cooling down period	Yes	Yes	Yes
Last trip current	Yes	Yes	Yes
Timer 1 Actual value	Yes	Yes	Yes
Timer 2 Actual value	Yes	Yes	Yes
Timer 3 Actual value	Not available	Yes	Not available
Timer 4 Actual value	Not available	Yes	Not available
Counter 1 - Actual value	Yes	Yes	Yes
Counter 2 - Actual value	Yes	Yes	Yes
Counter 3 - Actual value	Not available	Yes	Not available
Counter 4 - Actual value	Not available	Yes	Not available
Energy counter	Not available	Yes	Not available
Calculation Module 1- Output	Not available	Yes	Not Available
Calculation Module 2- output	Not Available	Yes	Not Available

4.4.3 Reading statistical data

Reading of data sets 94 and 95 is initiated either via the interconnectable input parameter `L_RD_DATA`, in the OS when selecting the faceplate, or by OS operation (`RD_DATA`).

The read data is output at the output parameters or in/out parameters OPH / QOPH (Motor Operating Hours), N_STRT / QN_STRT (Number of Starts), P_STRT / QP_STRT (Permissible Starts), COUNTx (Counter statuses 1 to 4), TIMERx (Timers 1 to 4), COOL_T (Cooling Down Period), TRIP_CUR (Last Trip Current), N_OVL / QN_OVL (Number of Overload Trips), STOP_T / QSTOP_T (Motor Stopped Time) and EGY / QEGY (Energy), QDOPH (Device Operating Hours), QIOPH (Internal Motor Operating Hours), QTTST_REQ (Time until Test Required), QN_PARAM (Number of Parametrization).

If a fault occurs, the last valid value will be retained and the output QERR_RD = TRUE is set.

4.4.4 Writing statistical data

The Motor Operating Hours (OPH), Number of Starts (N_STRT), Permissible Starts (P_STRT), Number of Overload Trips (N_OVL), Motor Stopped Time (STOP_T) and Energy Consumed (EGY) can be written via data set DS95 to the SIMOCODE pro.

The block initiates writing of the data set when these values change. Successful writing update the display in the faceplate, and the in/out and output parameters OPH, QOPH, N_STRT, QN_STRT, P_STRT, QP_STRT, N_OVL, QN_OVL, STOP_T, QSTOP_T, EGY and QEGY are adjusted to the effective values.

If writing was not possible, the output QERR_WR = TRUE is set.

4.4.5 Signaling response

The block has no signaling response.

When an error occurs while reading the measured values from Dataset 94 or the statistical data from Dataset 95, a message stating 'Statistical value read failure' will be generated.

Similarly, if the writing of statistical data to Dataset 95 is unsuccessful, a message stating 'Statistical value write failure' will be produced.

These messages are generated within the technological blocks by linking the output parameters QERR_RD and QERR_WR of the SMC_STAT block with the input parameters STAT_RDER and STAT_WRER of the signal processing block.

4.4.6 Start-up characteristics

During OB100 (warm restart) or the first start of the block, The following Statistical output parameter is re-initialized from the Input (QOPH, QSTOP_T, QN_STRT, QP_STRT, QN_OVL, QEGY).

OB1 first run identification information is received from SMC_DIAG block through IN-OUT parameter RECVDATA at bit 24. Further, this information is used as an entry condition for RDREC/WRREC processing.

4.4.7 Description of the faceplate

The faceplate is called from the "MAINTENANCE" view of the signal processing block SMC_xxx.

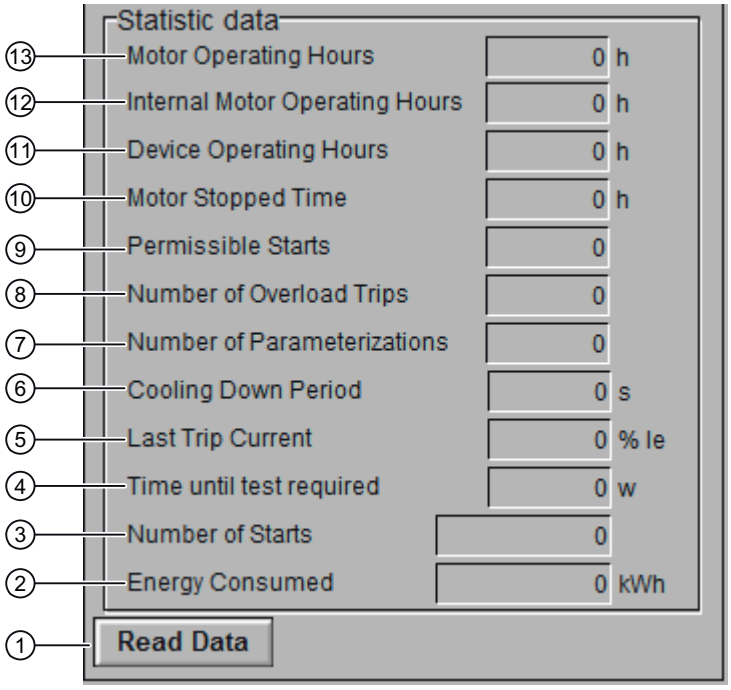
The following views are available:

Overview	OVERVIEW
Standard	STANDARD
Maintenance	MAINTENANCE

The file name is composed as follows: @PG_SMC_STAT_<View>.PDL

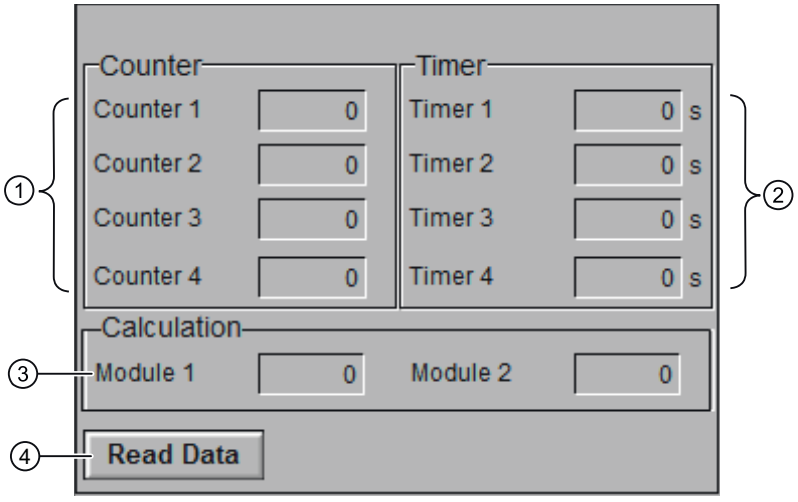
The structure of the individual views of faceplates is described below.

Standard (STANDARD)



① Read data sets (RD_DATA)
② Energy consumed (EGY)
③ Number of starts (N_STRT)
④ Time Until test required (QTTST_REQ)
⑤ Last trip current (TRIP_CUR)
⑥ Cooling down period (COOL_T)
⑦ Number of Parametrizations (QN_PARAM)
⑧ Number of overload trips (N_OV L)
⑨ Permissible starts (P_STRT)
⑩ Motor stop time (STOP_T)
⑪ Device Operating Hours (QDOPH)
⑫ Internal Motor Operating Hours (QIOPH)
⑬ Motor Operating hours (OPH)

Maintenance (MAINTENANCE)



① Counter value x (COUNTx)
② Timer value x (TIMERx)
③ Calculation Module Output (CALCx)
④ Read data sets

4.5 Block for timestamping SMC_TIME

4.5.1 Description of SMC_TIME

FB2014

Calling OBs

The watchdog interrupt OB in which you install the block (e.g. OB32). Also in OB100 (see start-up characteristics) and OB40 (hardware interrupt OB).

SMC_TIME must be installed in the same chart as the associated signal block.

Called blocks

The block calls the following blocks:

SFB35	ALARM_8P
SFB52	RDREC
SFB54	RALRM
SFC6	RD_SINFO
SFC20	BLKMOV

4.5.2 Configuration for Time Stamping

Please note that the use of SIMOCODE pro V timestamping function is possible with:

- DP Master System
- At a redundant master system in DPV1 mode only with a configuration of IM 153-2 interface module from 6ES7153-2B..1-0XB0.

Note

Time stamping function is not supported behind IE/PB Link PN IO and IE/PB Link HA.

4.5.3 Configuring for the use of the SIMOCODE pro V timestamping

On the SIMOCODE pro V, the timestamped information is transferred analogously to SIMATIC S7 IM 153-2.

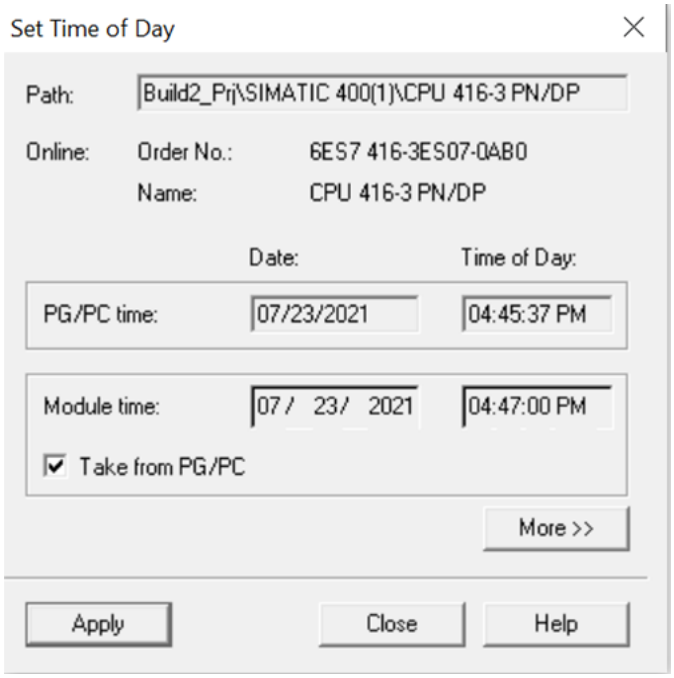
Please note also the configuring information given in Chapters 4.1 to 4.3 of the manual "PCS 7 Process Control System, 10 ms Timestamping".

Requirement

To use the SIMOCODE pro V timestamping, the DP master used must support the function for time-of-day synchronization via PROFIBUS.

PLC Time of Day

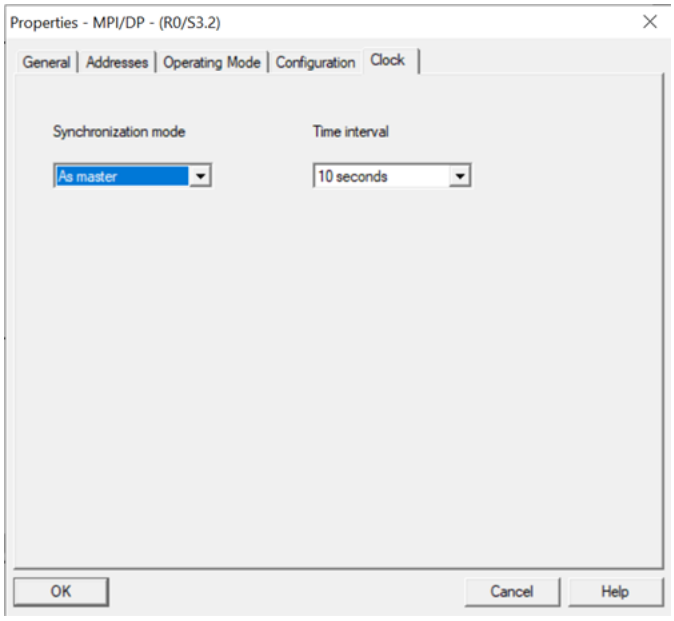
Time of Day for PLC is set in Step7 HW configuration from PLC tab, select Set Time of Day and enable "Take from PG/PC" and click apply.



Time of Day synchronization for Master

The time of synchronization for master can be activated in STEP 7 HW Config in DP master property under Clock. Select synchronization mode "As master".

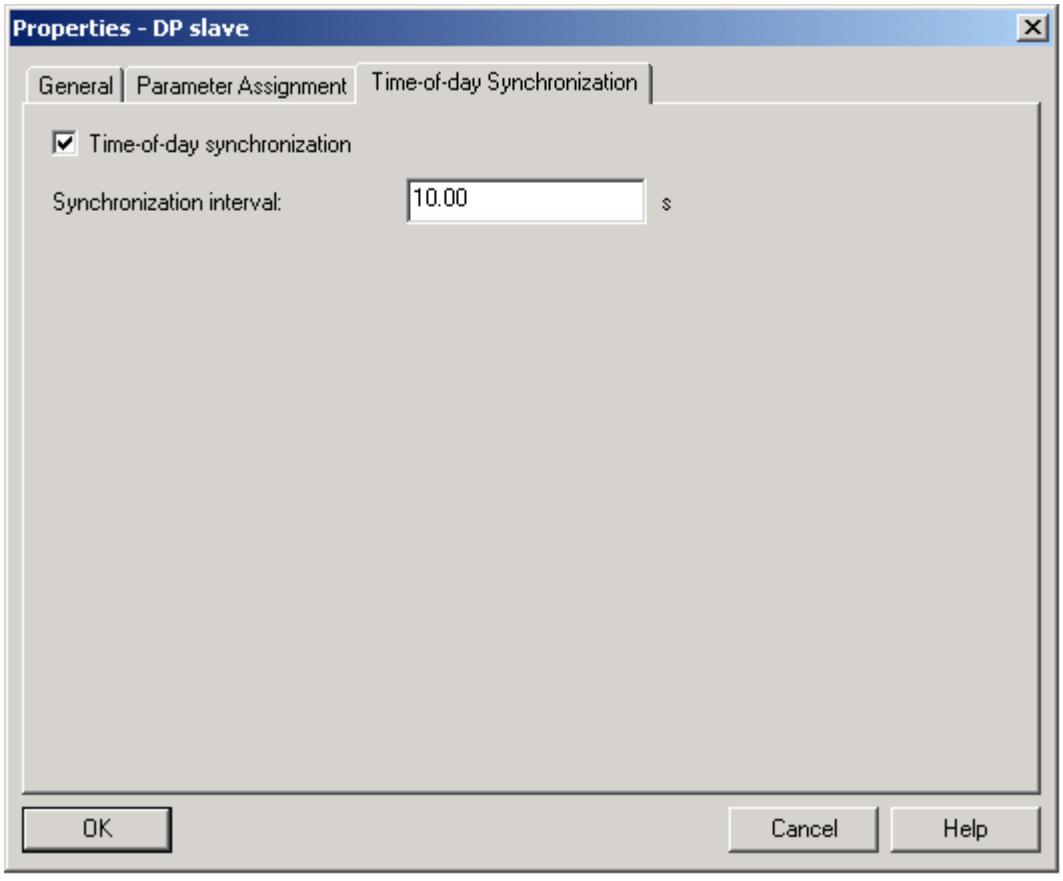
The set time interval must agree with the configuring of the time-of-day slave.



Time of Day synchronization for Slave

Time-of-day synchronization for SIMOCODE pro V is activated in STEP 7 HW Config in the slave properties under "Time-of-day Synchronization".

The set synchronization interval must agree with the configuring of the time-of-day master.



Note

- Enable "Time-of-day synchronization" from the SIMOCODE pro base unit properties and set Time interval as master/slave property configured in STEP 7 HW config.
- If time stamp functionality is active, the output parameters `QTSTACT` and `QSYNC_OK` will be high.

4.5.4 Parameter assignment in SIMOCODE ES

SIMOCODE pro V can timestamp up to 8 digital signals with high temporal precision (10 ms). In the process, every change in the state of the digital signals will be recorded.

Standard functions → Timestamping	
Timestamping active	**Active**
Timestamping – Input 0	Freely assignable, e.g. status - group fault
Timestamping – Input 1	Freely assignable
Timestamping – Input 2	Freely assignable
Timestamping – Input 3	Freely assignable

Standard functions → Timestamping	
Timestamping – Input 4	Freely assignable
Timestamping – Input 5	Freely assignable
Timestamping – Input 6	Freely assignable
Timestamping – Input 7	Freely assignable

4.5.5 Function

The block evaluates the alarm information of the calling hardware interrupt OB that contains the status of timestamping, the data set number (DS12, DS13 or DS14) of the message buffer in which the initiating events were entered with timestamp, and the number of entries.

If the data is available, the block reads the data set and reports the events with the supplied timestamp.

Information of up to 17 hardware interrupts can be stored. if the maximum number is exceeded, the information is lost. The hardware interrupts are processed sequentially, that is, only when all entered events of a data set have been reported is the next data set read.

4.5.6 Reading events with timestamping

Reading of data sets 12, 13 or 14 is initiated if the interrupt information of the hardware interrupt OB40 contains a pointer to entries in a message buffer for interrupt timestamping.

The signal status and the timestamps of the individual events transferred by SIMOCODE pro are reported to WinCC using the block ALARM_8P of the type 'alarm_t'. As a result, the generated message contains the timestamp from the entry in the message buffer.

In the case of the events, a distinction is made between signal messages and special messages.

The signal messages are output to the outputs `QMSG_0` to `QMSG_7`. The meaning of the signal messages can be parameterized in SIMOCODE ES.

Table 4-9 There are 5 special messages:

Identifier	**Meaning**
0x01	Startup data
0x02	Time-of-day frame failure
0x04	Time-of-day difference between frame and int. clock > 1 second
0x05	STOP of the timestamping functionality
0x06	Buffer full

If a fault occurs, the signal messages and special messages contain the last value and the output `QERR_RD` = TRUE is set.

4.5.7 Signaling response

The message blocks are only called if a status change is detected in the special messages or signal messages.

Table 4-10 Message block MsgEvId1, MsgEvId2 and MsgEvId3

Message block	Message number	Block parameter	Message text	Message class
MSG_EVID1	1	—	$$BlockComment$$ Restart	S
	2	—	$$BlockComment$$ Failure of time stamp telegram	S
	3	—	$$BlockComment$$ Time stamp diff. between telegram and int. clock >1sec	S
	4	—	$$BlockComment$$ Stop of time stamp functionality	S
	5	QOFLOW	$$BlockComment$$ Buffer overflow	S
MSG_EVID2	1	QMSG_0	$$BlockComment$$ Signal 0	—
	2	QMSG_1	$$BlockComment$$ Signal 1	—
	3	QMSG_2	$$BlockComment$$ Signal 2	—
	4	QMSG_3	$$BlockComment$$ Signal 3	—
	5	QMSG_4	$$BlockComment$$ Signal 4	—
	6	QMSG_5	$$BlockComment$$ Signal 5	—
	7	QMSG_6	$$BlockComment$$ Signal 6	—
	8	QMSG_7	$$BlockComment$$ Signal 7	—
MSG_EVID3	1	QERR_RD	$$BlockComment$$ Time stamp read failure	S

The time stamp read failure alarms can be suppressed via the input parameter "`M_SUP_RD` = True". By default "`M_SUP_RD` = False"

Each signal message can be individually suppressed via the inputs `M_SUP_Sx`.

Table 4-11 The ALARM_8P auxiliary values are assigned as follows:

Message block	Message number	Auxiliary value	Block parameter	Meaning
MSG_EVID1	—	1	—	Timestamp for messages in ISP format
	—	2	BA_NA	Batch name
	—	3	STEP_NO	Batch step number
	—	4	BA_ID	Batch ID
	—	5	AUX_PR105	Auxiliary process value 105
	—	6	AUX_PR106	Auxiliary process value 106
	—	7	AUX_PR107	Auxiliary process value 107
	—	8	AUX_PR108	Auxiliary process value 108
	—	9	AUX_PR109	Auxiliary process value 109
	—	10	AUX_PR110	Auxiliary process value 110

Message block	Message number	Auxiliary value	Block parameter	Meaning
MSG_EVID2	—	1	—	Timestamp for messages in ISP format
	—	2	BA_NA	Batch name
	—	3	STEP_NO	Batch step number
	—	4	BA_ID	Batch ID
	—	5	AUX_PR105	Auxiliary process value 105
	—	6	AUX_PR106	Auxiliary process value 106
	—	7	AUX_PR107	Auxiliary process value 107
	—	8	AUX_PR108	Auxiliary process value 108
	—	9	AUX_PR109	Auxiliary process value 109
	—	10	AUX_PR110	Auxiliary process value 110
MSG_EVID3	—	1	BA_NA	Batch name
	—	2	STEP_NO	Batch step number
	—	3	BA_ID	Batch ID

The auxiliary values AUX_PR105 ... AUX_PR110 are freely available.

4.5.8 Start-up characteristics

During OB100 (warm restart) or the first start of the block, the alarm messages are suppressed in the OB100 for the `RUNUPCYC` no. of times.
All the SMC_TIME block output are re-initialized to "0".
OB1 first run identification information is received from SMC_DIAG block through IN-OUT parameter `RECVDATA` at bit 24. Further, this information is used as an entry condition for RDREC processing.

4.5.9 Description of the faceplate

The faceplate has its own icon that is used to call it up.



① Timestamping active (`QTSTACT`)
② Read Error (`QER_RD`)

The following views are available:

Overview	OVERVIEW
Messages	—

4.6 SMC_DIR: Signal processing block for direct starter/soft starter control function

4.6.1 Description of SMC_DIR

Block Number

FB2004

Calling OBs

The watchdog interrupt OB in which you install the block (e.g. OB32). Also in OB100 (see start-up characteristics).

Called blocks

The block calls the following blocks:

SFB35	ALARM_8P
SFB52	RDREC
SFB53	WRREC
SFC6	RD_SINFO
SFC20	BLKMOV

4.6.2 Parameter assignment in SIMOCODE ES

For the signal blocks to function correctly, a range of SIMOCODE pro parameters must have quite specific settings. Those parameters that define the assignment of the cyclic I/O interface are especially affected.

These parameters are represented in **bold**.

In addition, the overview below represents the parameters that are already preset for the control function in the templates for application selection in the SIMOCODE ES software. The settings are suggestions and depend heavily on the actual wiring of the SIMOCODE pro inputs and outputs.

These parameters are represented in *italics*.

Other parameters must also be set, e.g. for motor protection. These are not described here. Parameter assignment for the extended I/O interface of basic type 1 is represented in the following chapter: Parameter assignment in SIMOCODE ES (Page 55)

Direct starter control function

Motor control → Control stations		
Operation mode selector S1	**Cyclic receive bit 0.5**	—
Operation mode selector S2	*Fixed level 1*	—

Local control [LC]		
OFF	*BU - Input 2*	—
ON	*BU - Input 1*	—
Operator enable local 2 OFF	*Active*	—
Operator enable local 2 ON	*Active*	—
Operator enable remote OFF	**Not active**	—
Operator enable remote ON	**Not active**	—

PLC/PCS [DP]		
OFF	**Cyclic receive – bit 0.1**	—
ON	**Cyclic receive – bit 0.2**	—
Operator enable local 2 OFF	**Not active**	—
Operator enable local 2 ON	**Not active**	—
Operator enable remote OFF	**Active**	—
Operator enable remote ON	**Active**	—

Operator Panel [OP]		
OFF	*OP button 4*	—
ON	*OP button 3*	—
Operator enable local 2 OFF	*Active*	—
Operator enable local 2 ON	*Active*	—
Operator enable remote OFF	**Not active**	—
Operator enable remote ON	**Not active**	—

Motor control → Control function → Control commands		
OFF	**Enabled control command - OFF**	—
ON>	**Enabled control command – ON>**	—

Motor control → Control function → Operating mode		
Non-maintained command mode	*Not active*	*The setting of the parameter influences the parameter JOG_ON in the SIMOCODE signal block:* *Non-maintained command mode not active: JOG_ON = FALSE* *Non-maintained command mode active: JOG_ON = TRUE*

Motor control → Control function → Auxiliary control inputs		
Feedback ON	**Status - Motor current flowing**	—

Timings	
Feedback time	0.5s
Execution time	1.0s

Outputs → Basic unit		
BU – Output 1	*Contactor control QE1*	—

Outputs → Operator panel LEDs		
LED green 3	*Display QLE> (ON>)*	—
LED green 4	*Display QLA (OFF)*	—

Outputs → Cyclic send data		
Byte 0, bit 0	**Not connected**	—
Byte 0, bit 1	**Status - OFF**	—
Byte 0, bit 2	**Status – ON>**	—
Byte 0, bit 3	**Event - overload operation (I>115%Is)**	—
Byte 0, bit 4	**Not connected**	—
Byte 0, bit 5	**Status – Remote mode**	—
Byte 0, bit 6	**Status – Group fault**	—
Byte 0, bit 7	**Status - Group warning**	—
Byte 1, bit 0	Not connected	Freely assignable
Byte 1, bit 1	Not connected	—
Byte 1, bit 2	Not connected	Freely assignable
Byte 1, bit 3	Not connected	Freely assignable
Byte 1, bit 4	Not connected	Freely assignable
Byte 1, bit 5	Not connected	Freely assignable
Byte 1, bit 6	Not connected	Freely assignable
Byte 1, bit 7	Not connected	Freely assignable
Bytes 2 to 3	**Max. current Imax**	—

Standard functions→ Test/reset		
Test 1	Cyclic receive – bit 0.3	—
Reset 1	Cyclic receive – bit 0.6	—

Standard functions→ Test/reset		
Test 1	Cyclic receive – bit 0.3	—
Reset 1	Cyclic receive – bit 0.6	—

Standard functions→ Emergency Start		
Emergency start – Input	Cyclic receive – bit 0.4	—

Soft starter control function

Motor control → Control stations		
Operation mode selector S1	**Cyclic receive bit 0.5**	—
Operation mode selector S2	*Fixed level 1*	—

Local control [LC]		
OFF	*BU - Input 2*	—
ON	*BU - Input 1*	—
Operator enable local 2 OFF	*Active*	—
Operator enable local 2 ON	*Active*	—
Operator enable remote OFF	**Not active**	—
Operator enable remote ON	**Not active**	—

PLC/PCS [DP]		
OFF	**Cyclic receive – bit 0.1**	—
ON	**Cyclic receive – bit 0.2**	—
Operator enable local 2 OFF	**Not active**	—
Operator enable local 2 ON	**Not active**	—
Operator enable remote OFF	**Active**	—
Operator enable remote ON	**Active**	—

Operator Panel [OP]		
OFF	*OP button 4*	—
ON	*OP button 3*	—
Operator enable local 2 OFF	*Active*	—
Operator enable local 2 ON	*Active*	—
Operator enable remote OFF	**Not active**	—
Operator enable remote ON	**Not active**	—

Motor control → Control function → Control commands		
OFF	**Enabled control command - OFF**	—
ON>	**Enabled control command – ON>**	—

Motor control → Control function → Operating mode		
Non-maintained command mode	*Not active*	*The setting of the parameter influences the parameter JOG_ON in the SIMOCODE signal block:* *Non-maintained command mode not active: JOG_ON = FALSE* *Non-maintained command mode active: JOG_ON = TRUE*

Timings	
Feedback time	0.5s
Execution time	10s

Motor control → Control function → Auxiliary control inputs		
Feedback ON	**Status - Motor current flowing**	—

Motor control → Control function → Timings		
Execution time	**Greater than soft ramp-down time**	—

Outputs → Basic unit		
BU – Output 1	*Contactor control QE1*	—
BU – Output 2	Signal conditioning 4 output	—
BU – Output 3	Contactor control *QE4*	—

Outputs → Operator panel LEDs		
LED green 3	*Display QLE> (ON>)*	—
LED green 4	*Display QLA (OFF)*	—

Outputs → Cyclic send data		
Byte 0, bit 0	**Not connected**	—
Byte 0, bit 1	**Status - OFF**	—
Byte 0, bit 2	**Status – ON>**	—
Byte 0, bit 3	**Event - Overload Operation (I>115%Is)**	—
Byte 0, bit 4	**Not connected**	—
Byte 0, bit 5	**Status – Remote mode**	—

Outputs → Cyclic send data		
Byte 0, bit 6	**Status – Group fault**	—
Byte 0, bit 7	**Status - Group warning**	—
Byte 1, bit 0	Not connected	Freely assignable
Byte 1, bit 1	Not connected	—
Byte 1, bit 2	Not connected	Freely assignable
Byte 1, bit 3	Not connected	Freely assignable
Byte 1, bit 4	Not connected	Freely assignable
Byte 1, bit 5	Not connected	Freely assignable
Byte 1, bit 6	Not connected	Freely assignable
Byte 1, bit 7	Not connected	Freely assignable
Bytes 2 to 3	Max. current Imax	—

Standard functions → External faults		
External fault 1	Truth table 8 2I/1Q - output	Signal output soft starter fault
External fault 1 – Response	Tripping	—

Standard functions→ Test/reset		
Test 1	Cyclic receive – bit 0.3	—
Reset 1	Cyclic receive – bit 0.6	—

Standard functions→ Emergency Start		
Emergency start – Input	Cyclic receive – bit 0.4	—

Logic blocks → Truth table 8 2I / 1Q → Truth table 8		
Input 1 BU	input 4	—
Input 2 Signal conditioning 3	output	Logic 0010

Logic blocks → Signal conditioning 4		
Signal conditioning – Type	*Edge rising with memory*	—
Signal conditioning – Input	*Contactor control 3 – QE3*	—
Signal conditioning – Reset	*Timer 4 output*	—

Soft starter control function 3RW405 / 3RW407

Motor control → Control stations		
Operation mode selector S1	**Cyclic receive bit 0.5**	—
Operation mode selector S2	*Fixed level 1*	—

Local control [LC]		
OFF	*BU - Input 2*	—
ON	*BU - Input 1*	—
Operator enable local 2 OFF	*Active*	—
Operator enable local 2 ON	*Active*	—
Operator enable remote OFF	**Not active**	—
Operator enable remote ON	**Not active**	—

PLC/PCS [DP]		
OFF	**Cyclic receive – bit 0.1**	—
ON	**Cyclic receive – bit 0.2**	—
Operator enable local 2 OFF	**Not active**	—
Operator enable local 2 ON	**Not active**	—
Operator enable remote OFF	**Active**	—
Operator enable remote ON	**Active**	—

Operator Panel [OP]		
OFF	*OP button 4*	—
ON	*OP button 3*	—
Operator enable local 2 OFF	*Active*	—
Operator enable local 2 ON	*Active*	—
Operator enable remote OFF	**Not active**	—
Operator enable remote ON	**Not active**	—

Motor control → Control function → Control commands		
OFF	**Enabled control command - OFF**	—
ON>	**Enabled control command – ON>**	—

Motor control → Control function → Operating mode		
Non-maintained command mode	*Not active*	*The setting of the parameter influences the parameter JOG_ON in the SIMOCODE signal block:* *Non-maintained command mode not active: JOG_ON = FALSE* *Non-maintained command mode active: JOG_ON = TRUE*

Motor control → Control function → Auxiliary control inputs		
Feedback ON	**Status - Motor current flowing**	—

Motor control → Control function → Timings		
Execution time	**Greater than soft ramp-down time**	—

Timings	
Feedback time	0.5s
Execution time	10s

Outputs → Basic unit		
BU – Output 1	*Contactor control QE1*	—
BU – Output 2	*Contactor control QE3*	—
BU – Output 3	Contactor control *QE4*	—

Outputs → Operator panel LEDs		
LED green 3	*Display QLE> (ON>)*	—
LED green 4	*Display QLA (OFF)*	—

Outputs → Cyclic send data		
Byte 0, bit 0	**Not connected**	—
Byte 0, bit 1	**Status - OFF**	—
Byte 0, bit 2	**Status – ON>**	—
Byte 0, bit 3	**Event - Overload Operation (I>115%Is)**	—
Byte 0, bit 4	**Not connected**	—
Byte 0, bit 5	**Status – Remote mode**	—
Byte 0, bit 6	**Status – Group fault**	—
Byte 0, bit 7	**Status - Group warning**	—
Byte 1, bit 0	Not connected	Freely assignable
Byte 1, bit 1	Not connected	—
Byte 1, bit 2	Not connected	Freely assignable
Byte 1, bit 3	Not connected	Freely assignable
Byte 1, bit 4	Not connected	Freely assignable
Byte 1, bit 5	Not connected	Freely assignable
Byte 1, bit 6	Not connected	Freely assignable
Byte 1, bit 7	Not connected	Freely assignable
Bytes 2 to 3	**Max. current Imax**	—

Standard functions→ Test/reset		
Test 1	Cyclic receive – bit 0.3	—
Reset 1	Cyclic receive – bit 0.6	—

Standard functions → External faults		
External fault 1	BU - Input 4	Signal output soft starter fault
External fault 1 – Response	Trip	—

Standard functions→ Emergency Start		
Emergency start – Input	Cyclic receive – bit 0.4	—

4.6.3 Function

The block is installed by the user in a cyclic watchdog interrupt OB (e.g. OB32). Parameter inputs `IN_01` and `IN_23` as well as parameter output `O_01` are also interconnected by the user with the associated icons for inputs or outputs of the associated SIMOCODE pro device.

SMC_DIR accesses the data provided by SIMOCODE pro via inputs `IN_01` (2 bytes of binary data) and `IN_23` (2 bytes of motor current).

Data is transferred to SIMOCODE pro via the output `O_01` (2 bytes of binary data).

The configuration of the inputs and outputs are determined here by SIMOCODE pro basic type 2.

Access to the inputs and outputs takes place exclusively via the process image.

The block uses the input parameter `MODE` to determine whether the inputs `IN_01` and `IN_23` are valid. In the case of a higher-level fault, all inputs are read by SIMOCODE pro with "0" and output to the relevant outputs of the block.

4.6.4 Assignment of the cyclic process image

Table 4-12 Assignment of O_01: Output commands to SIMOCODE pro

Bit	Control interface
0.0	—
0.1	Off
0.2	On> → Forward On
0.3	Test 1
0.4	Emergency start
0.5	Local/remote control station
0.6	Reset
0.7	—
1.0 ... 1.7	User-specific outputs

Table 4-13 Assignment of IN_01: Feedback messages from SIMOCODE pro

Bit	Cyclic send data	Block parameter
0.0	—	—
0.1	Status – Off	QSTOP
0.2	Status – On	QRUN
0.3	Message – Pre-warning overload	—
0.4	—	—
0.5	Status – Remote mode	QREMOTE
0.6	Status - Group fault	QGR_ERR
0.7	Status - Group warning	QGR_WRN
1.0	—	—
1.1	Status - Test position (TPF)	QCST
1.2 ... 1.7	—	—

The input parameter IN_01 is additionally copied to the output Q_IN_01.

The motor current is transferred via the input parameter IN_23 as an unsigned 2-byte value. SIMOCODE pro always transfers the current here as a percentage of the set current in a range from 0 to 1020%. The motor current is output via QCUR.

Assignment of bytes 2 / 3 of the analog control interface and bytes 4 to 9 of the cyclic send data when using basic type 1 is described in the following chapter: Assignment of the cyclic process image (Page 56)

4.6.5 Operating modes

Changing the control station (REMOTE, LOCAL)

The control station is changed via the interconnectable function input REM_L if the input REM_SEL is set, or via the function input REM_ON_OP set by the OS.

The function input (REMOP_EN) influences the operator enable (QLOCOP) for operating via the OS.

The operating mode of the control station is output via QREMOTE (1 = REMOTE, 0 = LOCAL). QREMOTE corresponds here to the bit DP 0.5 of the SIMOCODE pro.

In LOCAL mode, the controller is completely switched off via the SMC_DIR block. Control is then only possible via a control station connected direct to the SIMOCODE pro. It is still possible to acknowledge the fault.

Changing the operating modes (MANUAL, AUTO) when REMOTE is selected

If QREMOTE = TRUE, changeover between the two operating modes MANUAL and AUTOMATIC takes place either via OS operation using AUT_ON_OP (LIOP_SEL = 0) or via the interconnection of the input AUT_L (LIOP_SEL = 1).

The function inputs (MANOP_EN, AUTOP_EN) influence the operator enables (QMANOP, QAUTOP) for operating via the OS.

The operating mode is output at output QMAN_AUT (1 = AUTO, 0 = MANUAL).

Changing the control station for MANUAL

In REMOTE mode, the operating mode MANUAL can be controlled either via the OS or via the interconnectable function inputs. The changeover for this takes place via the interconnectable function input LINK_MAN.

4.6.6 Control stations for MANUAL and AUTOMATIC mode

General information

The PLC/DP control station of the SIMOCODE pro (that is, DP0.1 and DP0.2) is level-active. The On command is stored in the SIMOCODE pro. The Off command (DP0.1) takes priority over the On command (DP0.2).

Control of the SIMOCODE pro via AS/OS is only possible in REMOTE mode.

AUTOMATIC

In automatic mode, the SIMOCODE pro control functions are controlled via the interconnectable function input AUTO_ON (TRUE = On, FALSE = Off).

Control without non-maintained command mode (JOG_ON = FALSE)

At one edge of the command input, the associated control bit is set in the interface until the SIMOCODE pro sends the relevant feedback message, or a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again if a command is active at the automatic interface.

Control with non-maintained command mode (JOG_ON = TRUE)

The corresponding control bit in the interface is set as long as the command input = TRUE or if a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again if a command is active at the automatic interface. The Stop command is not necessary for switching the device off but is nevertheless set by the block if no On command is active.

MANUAL

In manual mode, the SIMOCODE pro is controlled either via the function input MAN_ON (TRUE = On, FALSE = Off set by the OS or via the interconnectable function inputs L_ON and L_OFF).

The inputs for the operator enables ON_OP_EN / OFFOP_EN set the outputs QON_OP / QOFF_OP for operation using the OS.

At one edge of the command input, the associated control bit is set in the interface until the SIMOCODE pro sends the relevant feedback message, or a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again if a command is active at the interconnectable manual interface.

The Off command takes priority over the On command (no edge evaluation!).

After changing to manual mode, the commands are not forwarded to the inputs until there is a positive edge change when L_ON / L_OFF is active.

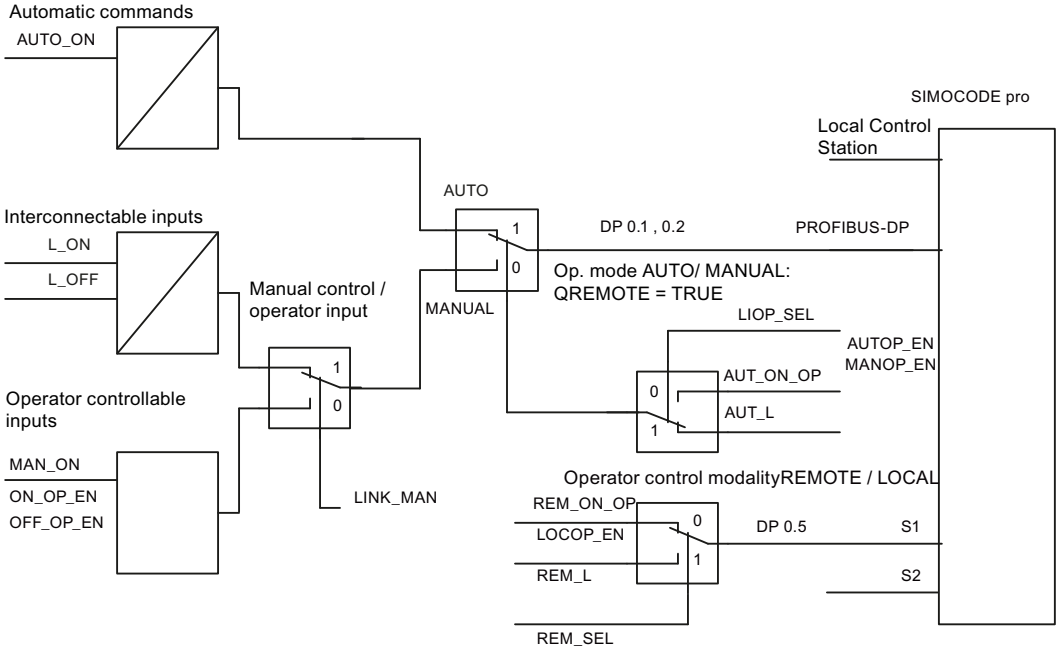
Control without non-maintained command mode (JOG_ON = FALSE)

At one edge of the command input, the associated control bit is set in the interface until the SIMOCODE pro sends the relevant feedback message, or a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again if a command is active at the interconnectable inputs. The operator controllable input MAN_ON is adjusted when tripped.

Control with non-maintained command mode (JOG_ON = TRUE)

The corresponding control bit in the interface is set as long as the command input = TRUE or if a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again if a command is active at the automatic interface. The Stop command is not necessary for switching the device off but is nevertheless set by the block if no On command is active.

4.6.7 Overview of control stations, operating modes, and operator control modalities



4.6.8 Start-up characteristics

During OB100 (warm restart) or the first start of the block, the block is switched to manual mode and the Off command is output. For this purpose, the block must be called from the startup OB. After OB 100 (Warm Restart) startup, the messages are suppressed for the number of cycles parameterized in the RUNUPCYC value.

Following Output parameters from the block are re-initialized to "0" (`RESET`, `SMCRESET` and `QLOC_INT`). Motor Outputs like `QRUN`, `QCST` and `QSTOP` are reinitialized from its process data value IN_01.

OB1 first run identification information is received from SMC_DIAG block through IN-OUT parameter `RECVDATA` at bit 24. Further, this information is used as an entry condition for RDREC/WRREC processing.

4.6.9 Status displays for icons

Status	Parameter	View
Off	QSTOP = 1	
On	QRUN = 1	
Not available	QBAD = 1	

4.6.10 Description of faceplates

The available faceplates are described in this chapter.

The following views are available:

Overview	OVERVIEW
Standard	STANDARD
Limits	LIMITS
Maintenance	MAINTENANCE
Faults	MESSAGE1
Warnings	MESSAGE2
Messages	—
Trend	—
Batch	—

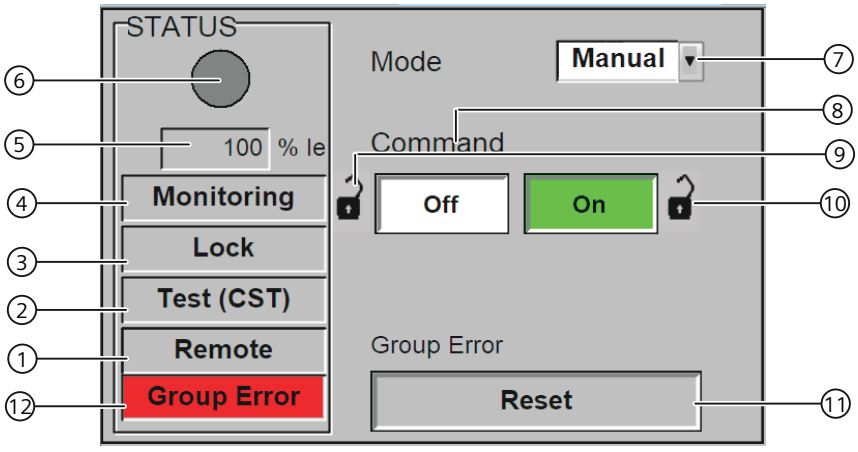
The file name is composed as follows: @PG_SMC_DIR_<View>.PDL

The PCS 7 standard displays are used for the message, trend and batch views.

The structure of the individual views of faceplates is described below.

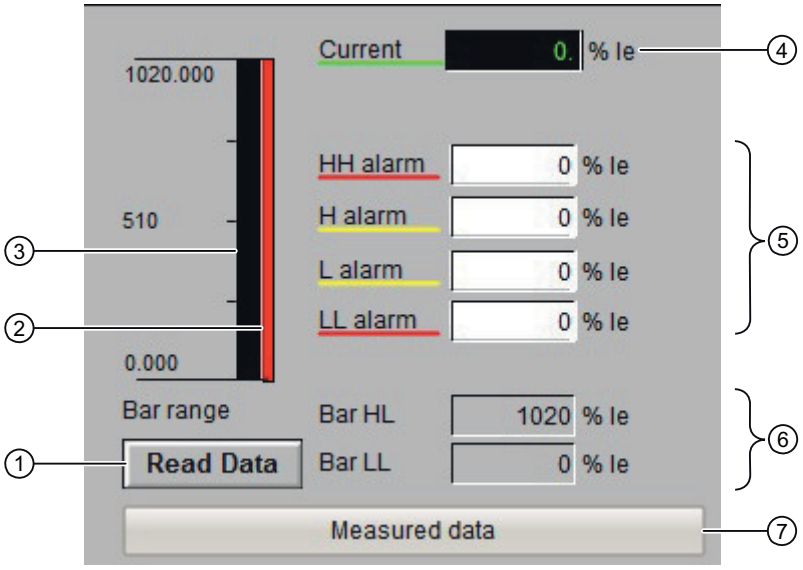
Standard (STANDARD)

The status display is a user object comprising several status displays. The status display corresponds to the representation from the process image icon.



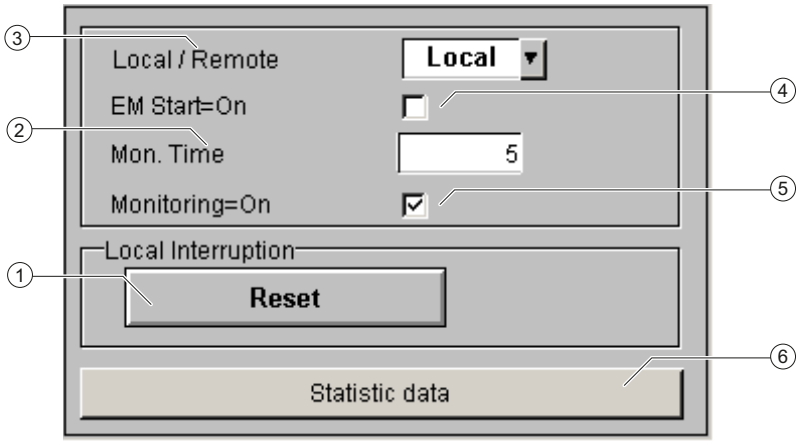
① Operator control modality (QREMOTE)
② Test (QCST)
③ Interlocking (LOCK / LOCK_ON)
④ Local Interruption (QLOC_INT)
⑤ Current (QCUR) / unit (QCUR#unit)
⑥ Status display (VSTATUS)
⑦ Operating mode (QMAN_AUT, AUT_ON_OP)
⑧ Command (MAN_ON)
⑨ Lock to Off (LOCK)
⑩ Lock to On (LOCK_ON)
⑪ Acknowledgement (RESET)
⑫ Status (QGR_ERR)

Limits (LIMITS)



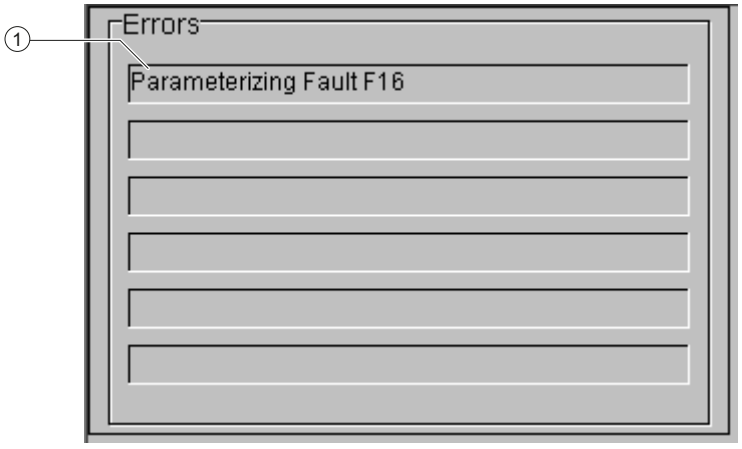
① Read Data (RD_DATA)
② Limit value display (CUR_AH, CUR_WH, CUR_WL, CUR_AL)
③ Actual value bar (QCUR, MO_PVHR, MO_PVLR)
④ Current value (QCUR, QCUR#unit)
⑤ Limits (CUR_AH, CUR_WH, CUR_WL, CUR_AL)
⑥ Bar range (MO_PVHR, MO_PVLR)
⑦ Call faceplate SMC_MEAS, visible if EN_MEAS = TRUE

Maintenance (MAINTENANCE)



① Acknowledge Local Interruption (`RESET`)
② Monitoring time for Local Interruption (`TIME_MON`)
③ Operator control modality Local / Remote (`REM_ON_OP`)
Operator needs to have Authorization level 6 to access this command area.
④ Activation Emergency Start (`EM_START`)
⑤ Activation Monitoring (`MONITOR`)
⑥ Call faceplate `SMC_STAT`, visible if `EN_STAT` = TRUE

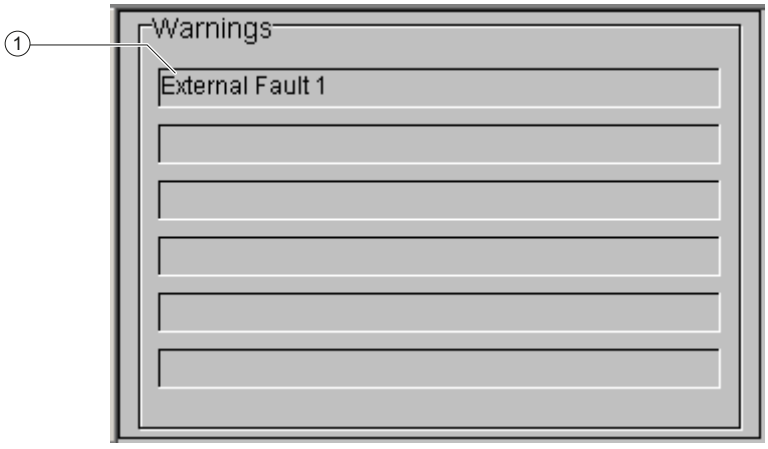
Faults (MESSAGE1)



① Text list with error description (`ERR_NOx`)

For error number 0, the text field is switched to invisible.

Warnings (MESSAGE2)



① Text list with error description (WRN_NOx)

For error number 0, the text field is switched to invisible.

4.7 SMC_REV: Signal processing block for reversing starter/soft reversing starter control function

4.7.1 Description of SMC_REV

Block Number

FB2005

Calling OBs

The watchdog interrupt OB in which you install the block (e.g. OB32). Also in OB100 (see start-up characteristics).

Called blocks

The block calls the following blocks:

SFB35	ALARM_8P
SFB52	RDREC
SFB53	WRREC
SFC6	RD_SINFO
SFC20	BLKMOV

4.7.2 Parameter assignment in SIMOCODE ES

For the signal blocks to function correctly, a range of SIMOCODE pro parameters must have quite specific settings. Those parameters that define the assignment of the cyclic I/O interface are especially affected.

These parameters are represented in **bold**.

In addition, the overview below represents the parameters that are already preset for the control function in the templates for application selection in the SIMOCODE ES software. The settings are suggestions and depend heavily on the actual wiring of the SIMOCODE pro inputs and outputs.

These parameters are represented in *italics*.

Other parameters must also be set, e.g. for motor protection. These are not described here. Parameter assignment for the extended I/O interface of basic type 1 is represented in the following chapter: Parameter assignment in SIMOCODE ES (Page 55)

Reversing starter control function

Motor control → Control stations		
Operation mode selector S1	**Cyclic receive bit 0.5**	—
Operation mode selector S2	*Fixed level 1*	—

Local control [LC]		
ON<	*BU - Input 3*	—
OFF	*BU - Input 2*	—
ON>	*BU - Input 1*	—
Operator enable local 2 off	*Active*	—
Operator enable local 2 on	*Active*	—
Operator enable remote off	**Not active**	—
Operator enable remote on	**Not active**	—

PLC/PCS [DP]		
ON<	**Cyclic receive – bit 0.0**	—
OFF	**Cyclic receive – bit 0.1**	—
ON>	**Cyclic receive – bit 0.2**	—
Operator enable local 2 OFF	**Not active**	—
Operator enable local 2 ON	**Not active**	—
Operator enable remote OFF	**Active**	—
Operator enable remote ON	**Active**	—

Operator Panel [OP]		
ON>	*OP button 3*	—
OFF	*OP button 4*	—

Operator Panel [OP]		
ON<	*OP button 2*	—
Operator enable local 2 off	*Active*	—
Operator enable local 2 on	*Active*	—
Operator enable remote off	**Not active**	—
Operator enable remote on	**Not active**	—

Motor control → Control function → Control commands		
ON<	**Enabled control command – ON<**	—
OFF	**Enabled control command - OFF**	—
ON>	**Enabled control command – ON>**	—

Motor control → Control function → Operating mode		
Non-maintained command mode	*Not active*	*The setting of the parameter influences the parameter JOG_ON in the SIMOCODE signal block:* *Non-maintained command mode not active: JOG_ON = FALSE* *Non-maintained command mode active: JOG_ON = TRUE*
Saving change-over command	**Not Active**	—

Motor control → Control function → Auxiliary control inputs		
Feedback ON	**Status - Motor current flowing**	—

Timings	
Feedback time	0.5s
Execution time	1.0s

Outputs → Basic unit		
BU – Output 1	*Contactor control QE1*	—
BU – Output 2	*Contactor control QE2*	—

Outputs → Operator panel LEDs		
LED green 2	*Display QLE< (ON<)*	—
LED green 3	*Display QLE> (ON>)*	—
LED green 4	*Display QLA (OFF)*	—

Outputs → Cyclic send data		
Byte 0, bit 0	**Status – ON<**	—
Byte 0, bit 1	**Status - OFF**	—
Byte 0, bit 2	**Status – ON>**	—
Byte 0, bit 3	**Event - Overload Operation (I>115%Is)**	—
Byte 0, bit 4	**Status – Interlocking time active**	—
Byte 0, bit 5	**Status – Remote mode**	—
Byte 0, bit 6	**Status – Group fault**	—
Byte 0, bit 7	**Status - Group warning**	—
Byte 1, bit 0	Not connected	Freely assignable
Byte 1, bit 1	Status - Test position (TPF)	—
Byte 1, bit 2	Not connected	Freely assignable
Byte 1, bit 3	Not connected	Freely assignable
Byte 1, bit 4	Not connected	Freely assignable
Byte 1, bit 5	Not connected	Freely assignable
Byte 1, bit 6	Not connected	Freely assignable
Byte 1, bit 7	Not connected	Freely assignable
Bytes 2 to 3	**Max. current Imax**	—

Standard functions→ Test/reset		
Test 1	Cyclic receive – bit 0.3	—
Reset 1	Cyclic receive – bit 0.6	—

Standard functions→ Emergency Start		
Emergency start – Input	Cyclic receive – bit 0.4	—

Soft starter control function with reversing contactor 3RW402 / 3RW403 / 3RW404 / 3RW52

Motor control → Control stations		
Operation mode selector S1	**Cyclic receive bit 0.5**	—
Operation mode selector S2	*Fixed level 1*	—

Local control [LC]		
ON<	*BU - Input 3*	—
OFF	*BU - Input 2*	—
ON>	*BU - Input 1*	—
Operator enable local 2 OFF	*Active*	—
Operator enable local 2 ON	*Active*	—
Operator enable remote OFF	**Not active**	—
Operator enable remote ON	**Not active**	—

PLC/PCS [DP]		
ON<	**Cyclic receive – bit 0.0**	—
OFF	**Cyclic receive – bit 0.1**	—
ON>	**Cyclic receive – bit 0.2**	—
Operator enable local 2 OFF	**Not active**	—
Operator enable local 2 ON	**Not active**	—
Operator enable remote OFF	**Active**	—
Operator enable remote ON	**Active**	—

Operator Panel [OP]		
ON>	*OP button 3*	—
OFF	*OP button 4*	—
ON<	*OP button 2*	—
Operator enable local 2 OFF	*Active*	—
Operator enable local 2 ON	*Active*	—
Operator enable remote OFF	**Not active**	—
Operator enable remote ON	**Not active**	—

Motor control → Control function → Control commands		
ON<	**Enabled control command – ON<**	—
OFF	**Enabled control command - OFF**	—
ON>	**Enabled control command – ON>**	—

Motor control → Control function → Operating mode		
Non-maintained command mode	*Not active*	*The setting of the parameter influences the parameter JOG_ON in the SIMOCODE signal block:* *Non-maintained command mode not active: JOG_ON = FALSE* *Non-maintained command mode active: JOG_ON = TRUE*
Saving change-over command	**Not active**	—

Motor control → Control function → Auxiliary control inputs		
Feedback ON	**Status - Motor current flowing**	—

Motor control → Control function → Timings		
Execution time	**Greater than soft ramp-down time**	—
Feedback time	**0.5s**	

Timings	
Feedback time	0.5s
Execution time	10.0s

Outputs → Basic unit		
BU – Output 1	*Contactor control -1 QE1*	—
BU – Output 2	*Contactor control -2 QE2*	—
BU – Output 3	*Contactor control - 4 QE4*	

Outputs → Operator panel LEDs		
LED green 2	*Display QLE< (ON<)*	—
LED green 3	*Display QLE> (ON>)*	—
LED green 4	*Display QLA (OFF)*	—

Outputs → Digital module 1		
DM – Output 1	Signal conditioning 4 - Output	—

Outputs → Cyclic send data		
Byte 0, bit 0	**Status – ON<**	—
Byte 0, bit 1	**Status - OFF**	—
Byte 0, bit 2	**Status – ON>**	—
Byte 0, bit 3	**Event - Overload Operation (I>115%Is)**	—
Byte 0, bit 4	**Status – Interlocking time active**	—
Byte 0, bit 5	**Status – Remote mode**	—
Byte 0, bit 6	**Status – Group fault**	—
Byte 0, bit 7	**Status - Group warning**	—
Byte 1, bit 0	Not connected	Freely assignable
Byte 1, bit 1	Not connected	—
Byte 1, bit 2	Not connected	Freely assignable
Byte 1, bit 3	Not connected	Freely assignable
Byte 1, bit 4	Not connected	Freely assignable
Byte 1, bit 5	Not connected	Freely assignable
Byte 1, bit 6	Not connected	Freely assignable
Byte 1, bit 7	Not connected	Freely assignable
Bytes 2 to 3	**Max. current Imax**	—

Standard functions→ Test/reset		
Test 1	Cyclic receive – bit 0.3	—
Reset 1	Cyclic receive – bit 0.6	—

Standard functions → External faults		
External fault 1	BU - Truth table 8 2I/1Q - Output	Signal output soft starter fault
External fault 1 – Response	Trip	—

Standard functions→ Emergency Start		
Emergency start – Input	Cyclic receive – bit 0.4	—

Logic modules → Signal conditioning 4		
Signal conditioning	Type Edge rising with memory	—
Signal conditioning	Input Contactor control 3 – QE3	—
Signal conditioning	Reset Timer 4 output	—

Logic blocks → Truth table 8 2I / 1Q → Truth table 8		
Input 1 BU	input 4	—
Input 2 Signal conditioning 3	output -Logic 0010	—

Soft starter control function with reversing contactor 3RW405 / 3RW407

Motor control → Control stations		
Operation mode selector S1	**Cyclic receive bit 0.5**	—
Operation mode selector S2	*Fixed level 1*	—

Local control [LC]		
ON<	*BU - Input 3*	—
OFF	*BU - Input 2*	—
ON>	*BU - Input 1*	—
Operator enable local 2 OFF	*Active*	—
Operator enable local 2 ON	*Active*	—
Operator enable remote OFF	**Not active**	—
Operator enable remote ON	**Not active**	—

PLC/PCS [DP]		
ON<	**Cyclic receive – bit 0.0**	—
OFF	**Cyclic receive – bit 0.1**	—
ON>	**Cyclic receive – bit 0.2**	—
Operator enable local 2 OFF	**Not active**	—
Operator enable local 2 ON	**Not active**	—
Operator enable remote OFF	**Active**	—
Operator enable remote ON	**Active**	—

Operator Panel [OP]		
ON>	*OP button 3*	
OFF	*OP button 4*	—
ON<	*OP button 2*	—
Operator enable local 2 OFF	*Active*	—
Operator enable local 2 ON	*Active*	—
Operator enable remote OFF	**Not active**	—
Operator enable remote ON	**Not active**	—

Motor control → Control function → Control commands		
ON<	**Enabled control command – ON<**	—
OFF	**Enabled control command - OFF**	—
ON>	**Enabled control command – ON>**	—

Motor control → Control function → Operating mode		
Non-maintained command mode	*Not active*	*The setting of the parameter influences the parameter JOG_ON in the SIMOCODE signal block:* *Non-maintained command mode not active: JOG_ON = FALSE* *Non-maintained command mode active: JOG_ON = TRUE*
Saving change-over command	**Not active**	—

Motor control → Control function → Auxiliary control inputs		
Feedback ON	Status - Motor current flowing	—

Motor control → Control function → Timings		
Execution time	**Greater than soft ramp-down time**	—
Feedback time	**0.5s**	—

Timings	
Feedback time	0.5s
Execution time	10.0s

Outputs → Basic unit		
BU – Output 1	*Contactor control -1 QE1*	—
BU – Output 2	*Contactor control -2 QE2*	—
BU – Output 3	Contactor control *-4 QE4*	—

Outputs → Operator panel LEDs		
LED green 2	*Display QLE< (ON<)*	—
LED green 3	*Display QLE> (ON>)*	—
LED green 4	*Display QLA (OFF)*	—

Outputs → Digital module 1		
DM – Output 1	Contactor control -3 QE3	—

Outputs → Cyclic send data		
Byte 0, bit 0	Status – ON<	—
Byte 0, bit 1	**Status - OFF**	—
Byte 0, bit 2	**Status – ON>**	—
Byte 0, bit 3	**Message – Pre-warning overloadEvent - Overload Operation (I>115%Is)**	—
Byte 0, bit 4	**Status – Interlocking time active**	—
Byte 0, bit 5	**Status – Remote mode**	—
Byte 0, bit 6	**Status – Group fault**	—
Byte 0, bit 7	**Status - Group warning**	—
Byte 1, bit 0	Not connected	Freely assignable
Byte 1, bit 1	Not connected	—
Byte 1, bit 2	Not connected	Freely assignable
Byte 1, bit 3	Not connected	Freely assignable
Byte 1, bit 4	Not connected	Freely assignable
Byte 1, bit 5	Not connected	Freely assignable
Byte 1, bit 6	Not connected	Freely assignable
Byte 1, bit 7	Not connected	Freely assignable
Bytes 2 to 3	**Max. current Imax**	—

Standard functions→ Test/reset		
Test 1	Cyclic receive – bit 0.3	—
Reset 1	Cyclic receive – bit 0.6	—

Standard functions → External faults		
External fault 1	BU - Input 4	Signal output soft starter fault
External fault 1 – Response	Trip	—

Standard functions→ Emergency Start		
Emergency start – Input	Cyclic receive – bit 0.4	—

4.7.3 Function

The block is installed by the user in a cyclic watchdog interrupt OB (e.g. OB32). Parameter inputs IN_01 and IN_23 as well as parameter output O_01 are also interconnected by the user with the associated icons for inputs or outputs of the associated SIMOCODE pro device.

SMC_REV accesses the data provided by SIMOCODE pro via inputs IN_01 (2 bytes of binary data) and IN_23 (2 bytes of motor current).

Data is transferred to SIMOCODE pro via the output O_01 (2 bytes of binary data).

The configuration of the inputs and outputs are determined here by SIMOCODE pro basic type 2.

Access to the inputs and outputs takes place exclusively via the process image.

The block uses the input parameter MODE to determine whether the inputs IN_01 and IN_23 are valid. In the case of a higher-level fault, all inputs are read by SIMOCODE pro with "0" and output to the relevant outputs of the block.

4.7.4 Assignment of the cyclic process image

Table 4-14 Assignment of O_01: Output commands to SIMOCODE pro

Bit	Control interface
0.0	On< → Reverse On
0.1	Off
0.2	On> → Forward On
0.3	Test 1
0.4	Emergency start
0.5	Local/remote control station
0.6	Reset
0.7	—
1.0 ... 1.7	User-specific outputs

Table 4-15 Assignment of IN_01: Feedback messages from SIMOCODE pro

Bit	Cyclic send data	Block parameter
0.0	Status – On<	QRUN / QDIR = TRUE
0.1	Status – Off	QSTOP
0.2	Status – On>	QRUN / QDIR = FALSE
0.3	Message – Pre-warning overload	—
0.4	Status - Interlocking time active	QLTA
0.5	Status – Remote mode	QREMOTE
0.6	Status - Group fault	QGR_ERR
0.7	Status - Group warning	QGR_WRN
1.0	—	—

Bit	Cyclic send data	Block parameter
1.1	Status - Test position (TPF)	QCST
1.2 ... 1.7	—	—

The input parameter IN_01 is additionally copied to the output Q_IN_01.

The motor current is transferred via the input parameter IN_23 as an unsigned 2-byte value. SIMOCODE pro always transfers the current here as a percentage of the set current in a range from 0 to 1020%. The motor current is output via QCUR.

Assignment of bytes 2 / 3 of the analog control interface and bytes 4 to 9 of the cyclic send data when using basic type 1 is described in the following chapter: Assignment of the cyclic process image (Page 56)

4.7.5 Operating modes

Changing the control station (REMOTE, LOCAL)

The control station is changed via the interconnectable function input REM_L if the input REM_SEL is set, or via the function input REM_ON_OP set by the OS.

The function input (REMOP_EN) influences the operator enable (QLOCOP) for operating via the OS.

The operating mode of the control station is output via QREMOTE (1 = REMOTE, 0 = LOCAL). QREMOTE corresponds here to the bit DP 0.5 of the SIMOCODE pro.

In LOCAL mode, the controller is completely switched off via the SMC_REV block. Control is then only possible via a control station connected direct to the SIMOCODE pro. It is still possible to acknowledge the fault.

Changing the operating modes (MANUAL, AUTO) when REMOTE is selected

If QREMOTE = TRUE, changeover between the two operating modes MANUAL and AUTOMATIC takes place either via OS operation using AUT_ON_OP (LIOP_SEL = 0) or via the interconnection of the input AUT_L (LIOP_SEL = 1).

The function inputs (MANOP_EN, AUTOP_EN) influence the operator enables (QMANOP, QAUTOP) for operating via the OS.

The operating mode is output at output QMAN_AUT (1 = AUTO, 0 = MANUAL).

Changing the control station for MANUAL

In REMOTE mode, the operating mode MANUAL can be controlled either via the OS or via the interconnectable function inputs. The changeover for this takes place via the interconnectable function input LINK_MAN.

4.7.6 Control stations for MANUAL and AUTOMATIC mode

General information

The PLC/DP control station of the SIMOCODE pro (that is, DP0.1 and DP0.2) is level-active. The On command is stored in the SIMOCODE pro. The Off command (DP0.1) takes priority over the On command (DP0.2).

Control of the SIMOCODE pro via AS/OS is only possible in REMOTE mode.

AUTOMATIC

In automatic mode, the SIMOCODE pro control functions are controlled via the interconnectable function inputs AUTO_ON (TRUE = On, FALSE = Off) and AUTO_DIR (TRUE = counter-clockwise, FALSE = clockwise).

Control without non-maintained command mode (JOG_ON = FALSE)

At one edge of the command input, the associated control bit is set in the interface until the SIMOCODE pro sends the relevant feedback message, or a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again if a command is active at the automatic interface.

Control with non-maintained command mode (JOG_ON = TRUE)

The corresponding control bit in the interface is set as long as the command input = TRUE or if a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again if a command is active at the automatic interface. The Stop command is not necessary for switching the device off but is nevertheless set by the block if no On command is active.

MANUAL

In manual mode, the SIMOCODE pro is controlled either via the function inputs FORW_ON, REV_ON and MOT_OFF set by the OS or via the interconnectable function inputs L_FORW, L_REV and L_OFF.

The inputs for the operator enables FW_OP_EN / RV_OP_EN / OFFOP_EN set the outputs QFORW_OP / QREV_OP / QOFF_OP for operation using the OS.

At one edge of the command input, the associated control bit is set in the interface until the SIMOCODE pro sends the relevant feedback message, or a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again if a command is active at the interconnectable manual interface.

The Off command takes priority over the On command (no edge evaluation!).

The following priorities apply for the On commands:

Right takes priority over left.

After changing to manual mode, the commands are not forwarded to the inputs until there is a positive edge change when L_FORW / L_REV / L_OFF is active.

Control without non-maintained command mode (JOG_ON = FALSE)

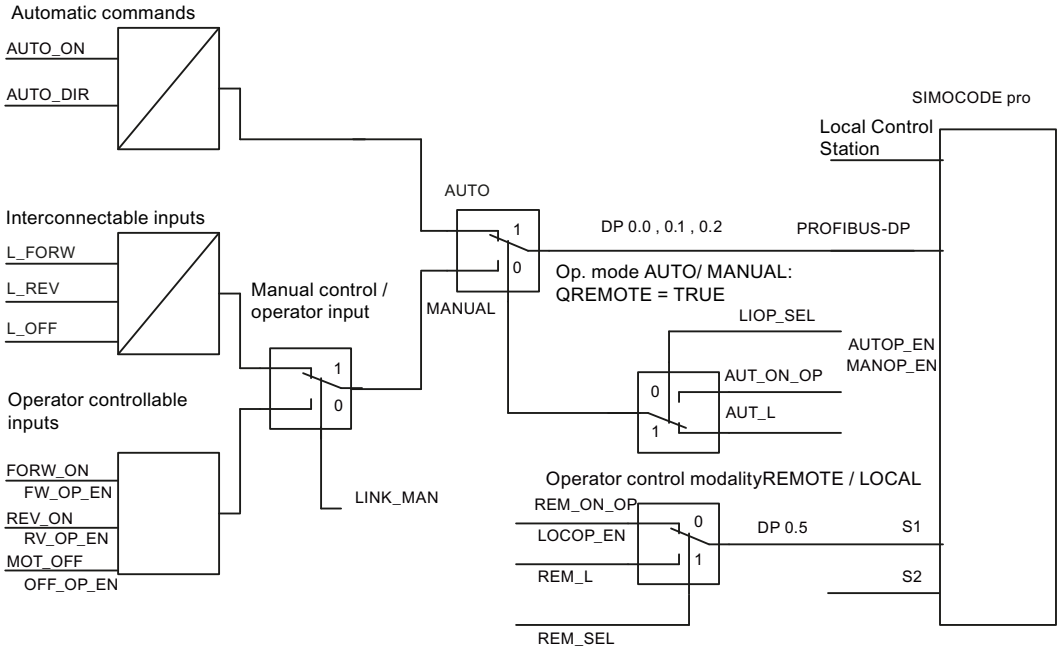
At one edge of the command input, the associated control bit is set in the interface until the SIMOCODE pro sends the relevant feedback message, or a fault occurs (QGR_ERR = TRUE).

If the fault is acknowledged, the control bit is set again if a command is active at the interconnectable inputs. The operator controllable inputs FORW_ON, REV_ON and MOT_OFF are adjusted when tripped.

Control with non-maintained command mode (JOG_ON = TRUE)

The corresponding control bit in the interface is set as long as the command input = TRUE or if a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again if a command is active at the automatic interface. The Stop command is not necessary for switching the device off but is nevertheless set by the block if no On command is active.

4.7.7 Overview of control stations, operating modes, and operator control modalities



4.7.8 Start-up characteristics

During OB100 (warm restart) or the first start of the block, the block is switched to manual mode and the Off command is output. For this purpose, the block must be called from the startup OB. After OB 100 (Warm Restart) startup, the messages are suppressed for the number of cycles parameterized in the RUNUPCYC value.

Following Output parameters from the block are re-initialized to "0" (RESET, SMCRESET and QLOC_INT). Motor Outputs like QCST, QRUN, QDIR and QSTOP are reinitialized from its process data value IN_01.

OB1 first run identification information is received from SMC_DIAG block through IN-OUT parameter RECVDATA at bit 24. Further, this information is used as an entry condition for RDREC/WRREC processing.

4.7.9 Status displays for icons

Status	Parameter	View
Off	QSTOP = 1	
Right On	QRUN = 1 QDIR = 0	
Left On	QRUN = 1 QDIR = 1	
Not available	QBAD = 1	

4.7.10 Description of faceplates

The available faceplates are described in this chapter.

The following views are available:

Overview	OVERVIEW
Standard	STANDARD
Limits	LIMITS
Maintenance	MAINTENANCE
Faults	MESSAGE1
Warnings	MESSAGE2
Messages	—
Trend	—
Batch	—

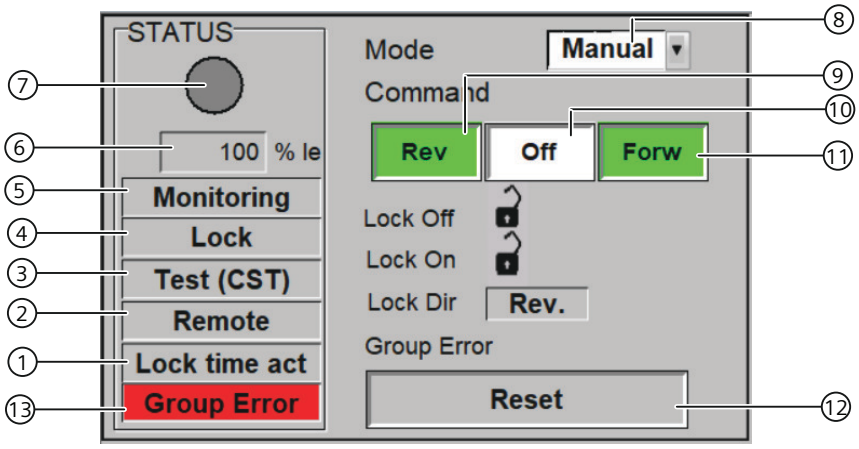
The file name is composed as follows: @PG_SMC_REV_<View>.PDL

The PCS 7 standard displays are used for the message, trend and batch views.

The structure of the individual views of faceplates is described below.

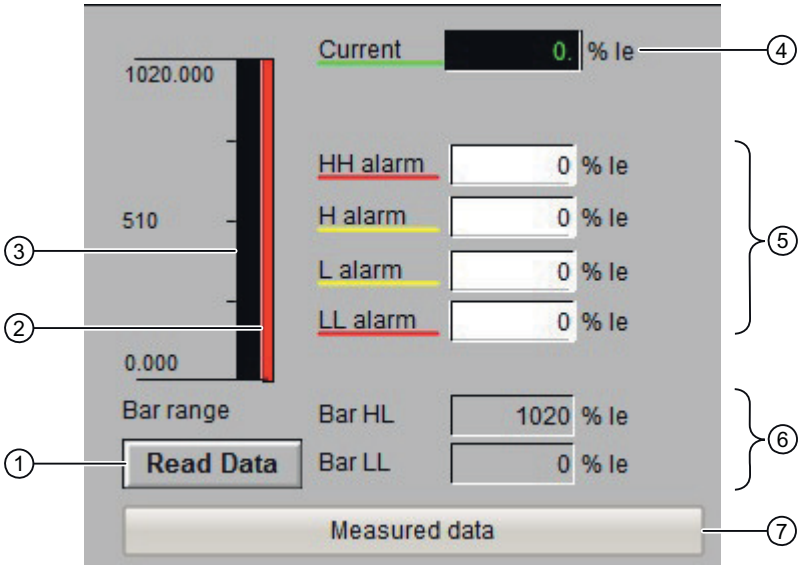
Standard (STANDARD)

The status display is a user object comprising several status displays. The status display corresponds to the representation from the process image icon.



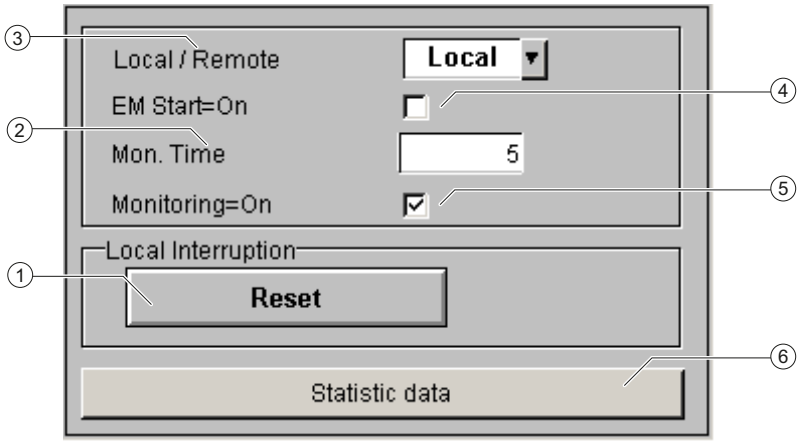
① Interlocking time (QLTA)
② Operator control modality (QREMOTE)
③ Test (QCST)
④ Interlocking (LOCK / LOCK_ON)
⑤ Local Interruption (QLOC_INT)
⑥ Current (QCUR) / unit (QCUR#unit)
⑦ Status display (VSTATUS)
⑧ Operating mode (QMAN_AUT, AUT_ON_OP)
⑨ Command Left On (REV_ON)
⑩ Command Off (MOT_OFF)
⑪ Command Right On (FORW_ON)
⑫ Acknowledgement (RESET)
⑬ Status (QGR_ERR)

Limits (LIMITS)



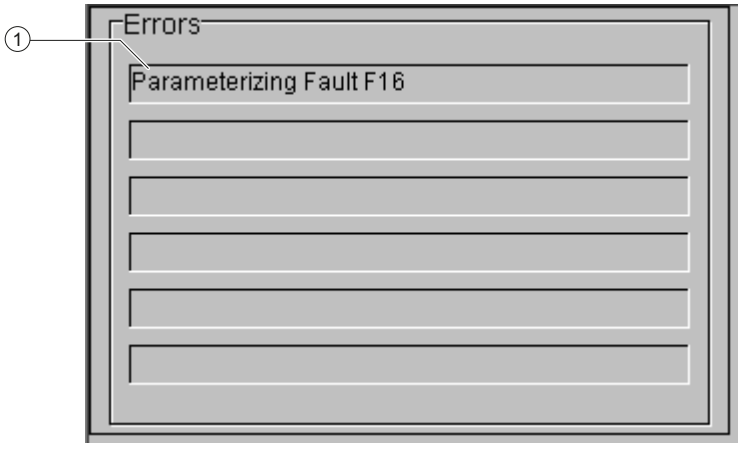
① Read Data (RD_DATA)
② Limit value display (CUR_AH, CUR_WH, CUR_WL, CUR_AL)
③ Actual value bar (QCUR, MO_PVHR, MO_PVLR)
④ Current value (QCUR, QCUR#unit)
⑤ Limits (CUR_AH, CUR_WH, CUR_WL, CUR_AL)
⑥ Bar range (MO_PVHR, MO_PVLR)
⑦ Call faceplate SMC_MEAS, visible if EN_MEAS = TRUE

Maintenance (MAINTENANCE)



① Acknowledge Local Interruption (RESET)
② Monitoring time for Local Interruption (TIME_MON)
③ Operator control modality Local / Remote (REM_ON_OP)
Operator needs to have Authorization level 6 to access this command area.
④ Activation Emergency Start (EM_START)
⑤ Activation Monitoring (MONITOR)
⑥ Call faceplate SMC_STAT, visible if EN_STAT = TRUE

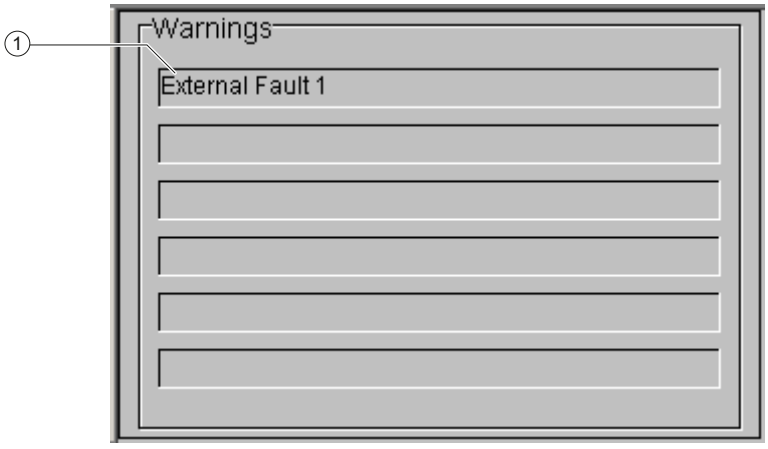
Faults (MESSAGE1)



① Text list with error description (ERR_NOx)

For error number 0, the text field is switched to invisible.

Warnings (MESSAGE2)



① Text list with error description (WRN_NOx)

For error number 0, the text field is switched to invisible.

4.8 SMC_STAR: Signal processing block for the star-delta starter control function

4.8.1 Description of SMC_STAR

Block Number

FB2006

Calling OBs

The watchdog interrupt OB in which you install the block (e.g. OB32). Also in OB100 (see start-up characteristics).

Called blocks

The block calls the following blocks:

SFB35	ALARM_8P
SFB52	RDREC
SFB53	WRREC
SFC6	RD_SINFO
SFC20	BLKMOV

4.8.2 Parameter assignment in SIMOCODE ES

For the signal blocks to function correctly, a range of SIMOCODE pro parameters must have quite specific settings. Those parameters that define the assignment of the cyclic I/O interface are especially affected.

These parameters are represented in **bold**.

In addition, the overview below represents the parameters that are already preset for the control function in the templates for application selection in the SIMOCODE ES software. The settings are suggestions and depend heavily on the actual wiring of the SIMOCODE pro inputs and outputs.

These parameters are represented in *italics*.

Other parameters must also be set, e.g. for motor protection. These are not described here. Parameter assignment for the extended I/O interface of basic type 1 is represented in the following chapter: Parameter assignment in SIMOCODE ES (Page 55)

Star Delta control function

Motor control → Control stations		
Operation mode selector S1	**Cyclic receive bit 0.5**	—
Operation mode selector S2	*Fixed level 1*	—

Local control [LC]		
OFF	*BU - Input 2*	—
ON	*BU - Input 1*	—
Operator enable local 2 OFF	*Active*	—
Operator enable local 2 ON	*Active*	—
Operator enable remote OFF	**Not active**	—
Operator enable remote ON	**Not active**	—

PLC/PCS [DP]		
OFF	**Cyclic receive – bit 0.1**	—
ON	**Cyclic receive – bit 0.2**	—
Operator enable local 2 OFF	**Not active**	—
Operator enable local 2 ON	**Not active**	—
Operator enable remote OFF	**Active**	—
Operator enable remote ON	**Active**	—

Operator Panel [OP]		
OFF	*OP button 4*	—
ON	*OP button 3*	—
Operator enable local 2 OFF	*Active*	—
Operator enable local 2 ON	*Active*	—

Operator Panel [OP]		
Operator enable remote OFF	**Not active**	—
Operator enable remote ON	**Not active**	—

Motor control → Control function → Control commands		
OFF	**Enabled control command - OFF**	—
ON>	**Enabled control command – ON>**	—

Motor control → Control function → Operating mode		
Non-maintained command mode	*Not active*	*The setting of the parameter influences the parameter JOG_ON in the SIMOCODE signal block:* *Non-maintained command mode not active: JOG_ON = FALSE* *Non-maintained command mode active: JOG_ON = TRUE*

Timings	
Feedback time	0.5s
Execution time	1.0s

Motor control → Control function → Auxiliary control inputs		
Feedback ON	**Status - Motor current flowing**	—

Outputs → Basic unit		
BU – Output 1	*Contactor control QE1*	—
BU – Output 2	*Contactor control QE2*	—
BU – Output 3	*Contactor control QE3*	—

Outputs → Operator panel LEDs		
LED green 3	*Display QLE> (ON>)*	—
LED green 4	*Display QLA (OFF)*	—

Outputs → Cyclic send data		
Byte 0, bit 0	Not connected	Freely assignable
Byte 0, bit 1	**Status - OFF**	—
Byte 0, bit 2	**Status – ON>**	—
Byte 0, bit 3	**Event - overload operation (I>115%Is)**	—
Byte 0, bit 4	**Status - Change-over pause active**	—
Byte 0, bit 5	**Status – Remote mode**	—

Outputs → Cyclic send data		
Byte 0, bit 6	**Status – Group fault**	—
Byte 0, bit 7	**Status - Group warning**	—
Byte 1, bit 0	Not connected	Freely assignable
Byte 1, bit 1	Status - Test position (TPF)	—
Byte 1, bit 2	Not connected	Freely assignable
Byte 1, bit 3	Not connected	Freely assignable
Byte 1, bit 4	Not connected	Freely assignable
Byte 1, bit 5	Not connected	Freely assignable
Byte 1, bit 6	Not connected	Freely assignable
Byte 1, bit 7	Not connected	Freely assignable
Bytes 2 to 3	**Max. current Imax**	—

Standard functions→ Test/reset		
Test 1	Cyclic receive – bit 0.3	—
Reset 1	Cyclic receive – bit 0.6	—

Standard functions→ Emergency Start		
Emergency start – Input	Cyclic receive – bit 0.4	—

4.8.3 Function

The block is installed by the user in a cyclic watchdog interrupt OB (e.g. OB32). Parameter inputs `IN_01` and `IN_23` as well as parameter output `O_01` are also interconnected by the user with the associated icons for inputs or outputs of the associated SIMOCODE pro device.

SMC_STAR accesses the data provided by SIMOCODE pro via inputs `IN_01` (2 bytes of binary data) and `IN_23` (2 bytes of motor current).

Data is transferred to SIMOCODE pro via the output `O_01` (2 bytes of binary data).

The configuration of the inputs and outputs are determined here by SIMOCODE pro basic type 2.

Access to the inputs and outputs takes place exclusively via the process image.

The block uses the input parameter `MODE` to determine whether the inputs `IN_01` and `IN_23` are valid. In the case of a higher-level fault, all inputs are read by SIMOCODE pro with "0" and output to the relevant outputs of the block.

4.8.4 Assignment of the cyclic process image

Table 4-16 Assignment of O_01: Output commands to SIMOCODE pro

Bit	Control interface
0.0	—
0.1	Off
0.2	On> → On
0.3	Test 1
0.4	Emergency start
0.5	Local/remote control station
0.6	Reset
0.7	—
1.0 ... 1.7	User-specific outputs

Table 4-17 Assignment of IN_01: Feedback messages from SIMOCODE pro

Bit	Cyclic send data	Block parameter
0.0	—	—
0.1	Status – Off	QSTOP
0.2	Status – On>	QRUN
0.3	Message – Pre-warning overload	—
0.4	Status - Change-over pause active	QCOA
0.5	Status – Remote mode	QREMOTE
0.6	Status - Group fault	QGR_ERR
0.7	Status - Group warning	QGR_WRN
1.0	—	—
1.1	Status - Test position (TPF)	QCST
1.2 ... 1.7	—	—

The input parameter `IN_01` is additionally copied to the output `Q_IN_01`.

The motor current is transferred as an unsigned 2-byte value via the input parameter `IN_23`. SIMOCODE pro always transfers the current here as a percentage of the set current in a range from 0 to 1020%. The motor current is output via `QCUR`.

Assignment of bytes 2 / 3 of the analog control interface and bytes 4 to 9 of the cyclic send data when using basic type 1 is described in the following chapter: Assignment of the cyclic process image (Page 56)

4.8.5 Operating modes

Changing the control station (REMOTE, LOCAL)

The control station is changed via the interconnectable function input REM_L if the input REM_SEL is set, or via the function input REM_ON_OP set by the OS.

The function input (REMOP_EN) influences the operator enable (QLOCOP) for operating via the OS.

The operating mode of the control station is output via QREMOTE (1 = REMOTE, 0 = LOCAL). QREMOTE corresponds here to the bit DP 0.5 of the SIMOCODE pro.

In LOCAL mode, the controller is completely switched off via the SMC_STAR block. Control is then only possible via a control station connected direct to the SIMOCODE pro. It is still possible to acknowledge the fault.

Changing the operating modes (MANUAL, AUTO) when REMOTE is selected

If QREMOTE = TRUE, changeover between the two operating modes MANUAL and AUTOMATIC takes place either via OS operation using AUT_ON_OP (LIOP_SEL = 0) or via the interconnection of the input AUT_L (LIOP_SEL = 1).

The function inputs (MANOP_EN, AUTOP_EN) influence the operator enables (QMANOP, QAUTOP) for operating via the OS.

The operating mode is output at output QMAN_AUT(1 = AUTO, 0 = MANUAL).

Changing the control station for MANUAL

In REMOTE mode, the operating mode MANUAL can be controlled either via the OS or via the interconnectable function inputs. The changeover for this takes place via the interconnectable function input LINK_MAN.

4.8.6 Control stations for MANUAL and AUTOMATIC mode

General information

The PLC/DP control station of the SIMOCODE pro (that is, DP0.1 and DP0.2) is level-active. The On command is stored in the SIMOCODE pro. The Off command (DP0.1) takes priority over the On command (DP0.2).

Control of the SIMOCODE pro via AS / OS is only possible in REMOTE mode.

AUTOMATIC

In automatic mode, the SIMOCODE pro control functions are controlled via the interconnectable function input AUTO_ON (TRUE =On, FALSE =Off).

Control without non-maintained command mode (JOG_ON = FALSE)

At one edge of the command input, the associated control bit is set in the interface until the SIMOCODE pro sends the relevant feedback message, or a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again if a command is active at the automatic interface.

Control with non-maintained command mode (JOG_ON = TRUE)

The corresponding control bit in the interface is set as long as the command input = TRUE or if a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again if a command is active at the automatic interface. The Stop command is not necessary for switching the device off but is nevertheless set by the block if no On command is active.

MANUAL

In manual mode, the SIMOCODE pro is controlled either via the function input MAN_ON (TRUE = On, FALSE = Off set by the OS or via the interconnectable function inputs L_ON and L_OFF).

The inputs for the operator enables ON_OP_EN / OFFOP_EN set the outputs QON_OP / QOFF_OP for operation using the OS.

At one edge of the command input, the associated control bit is set in the interface until the SIMOCODE pro sends the relevant feedback message, or a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again if a command is active at the interconnectable manual interface.

The Off command takes priority over the On command (no edge evaluation!).

After changing to manual mode, the commands are not forwarded to the inputs until there is a positive edge change when L_ON / L_OFF is active.

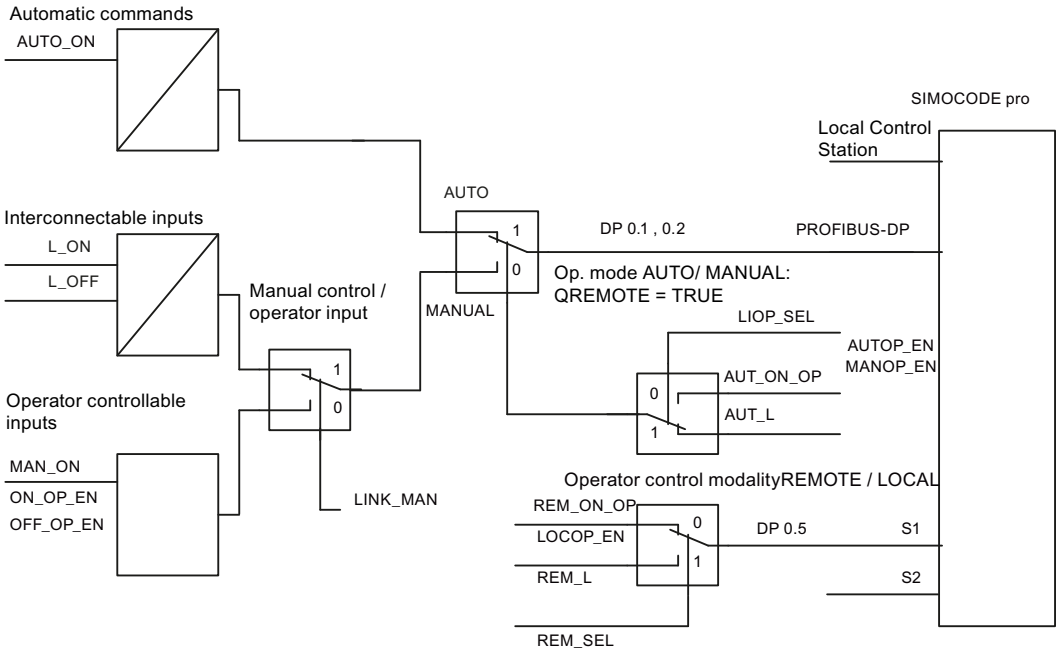
Control without non-maintained command mode (JOG_ON = FALSE)

At one edge of the command input, the associated control bit is set in the interface until the SIMOCODE pro sends the relevant feedback message, or a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again if a command is active at the interconnectable inputs. The operator controllable input MAN_ON is adjusted when tripped.

Control with non-maintained command mode (JOG_ON = TRUE)

The corresponding control bit in the interface is set as long as the command input = TRUE or if a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again if a command is active at the automatic interface. The Stop command is not necessary for switching the device off but is nevertheless set by the block if no On command is active.

4.8.7 Overview of control stations, operating modes, and operator control modalities



4.8.8 Start-up characteristics

During OB100 (warm restart) or the first start of the block, the block is switched to manual mode and the Off command is output. For this purpose, the block must be called from the startup OB. After OB 100 (Warm Restart) startup, the messages are suppressed for the number of cycles parameterized in the `RUNUPCYC` value.

Following Output parameters from the block are re-initialized to "0" (`RESET`, `SMCRESET` and `QLOC_INT`). Motor Outputs like `QCST`, `QRUN`, `QCOA` and `QSTOP` are reinitialized from its process data value `IN_01`.

OB1 first run identification information is received from SMC_DIAG block through IN-OUT parameter `RECVDATA` at bit 24. Further, this information is used as an entry condition for RDREC/WRREC processing.

4.8.9 Status displays for icons

Status	Parameter	View
Off	QSTOP = 1	
A star	QSTOP = 0 QRUN = 0	
A triangle	QSTOP = 0 QRUN = 1	
Not available	QBAD = 1	

4.8.10 Description of faceplates

The available faceplates are described in this chapter.

The following views are available:

Overview	OVERVIEW
Standard	STANDARD
Limits	LIMITS
Maintenance	MAINTENANCE
Faults	MESSAGE1
Warnings	MESSAGE2
Messages	—
Trend	—
Batch	—

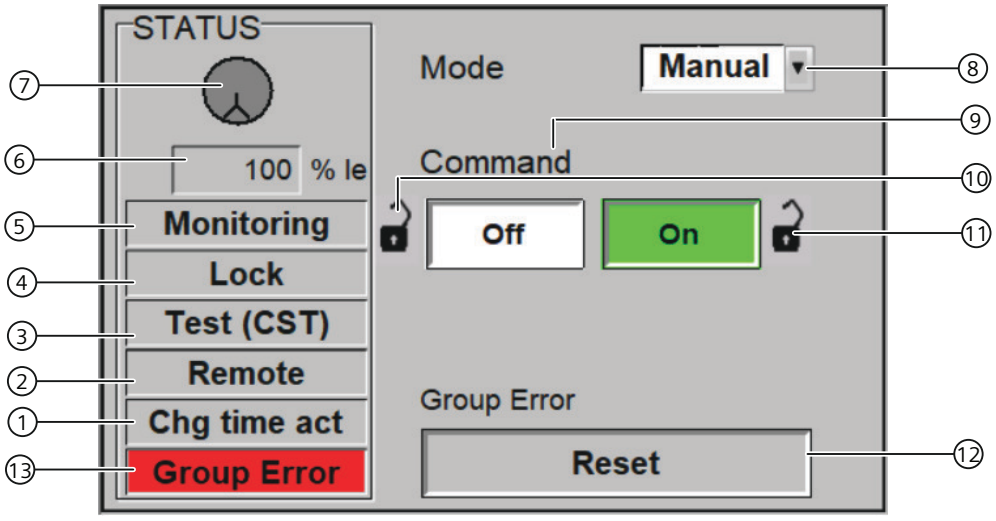
The file name is composed as follows: @PG_SMC_STAR_<View>.PDL

The PCS 7 standard displays are used for the message, trend and batch views.

The structure of the individual views of faceplates is described below.

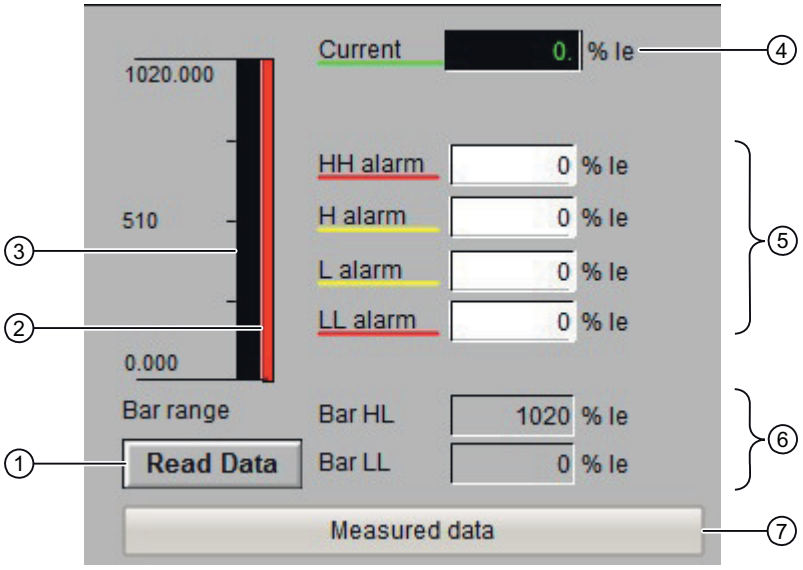
Standard (STANDARD)

The status display is a user object comprising several status displays. The status display corresponds to the representation from the process image icon.



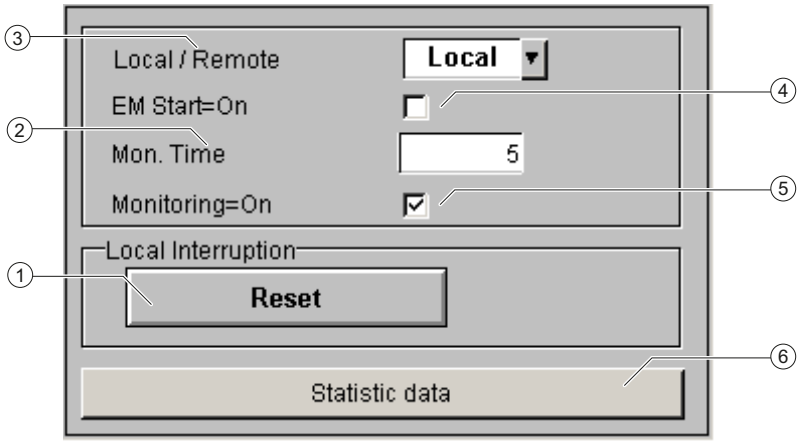
① Change-over pause (QCOA)
② Operator control modality (QREMOTE)
③ Test (QCST)
④ Interlocking (LOCK / LOCK_ON)
⑤ Local Interruption (QLOC_INT)
⑥ Current (QCUR)/ unit (QCUR#unit)
⑦ Status display (VSTATUS)
⑧ Operating mode (QMAN_AUT, AUT_ON_OP)
⑨ Command (MAN_ON)
⑩ Lock to Off (LOCK)
⑪ Lock to On (LOCK_ON)
⑫ Acknowledgement (RESET)
⑬ Status (QGR_ERR)

Limits (LIMITS)



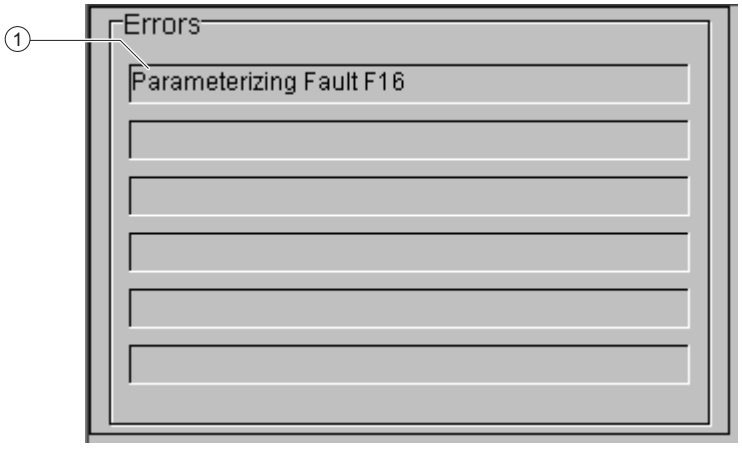
① Read Data (RD_DATA)
② Limit value display (CUR_AH, CUR_WH, CUR_WL, CUR_AL)
③ Actual value bar (QCUR, MO_PVHR, MO_PVLR)
④ Current value (QCUR, QCUR#unit)
⑤ Limits (CUR_AH, CUR_WH, CUR_WL, CUR_AL)
⑥ Bar range (MO_PVHR, MO_PVLR)
⑦ Call faceplate SMC_MEAS, visible if EN_MEAS = TRUE

Maintenance (MAINTENANCE)



① Acknowledge Local Interruption (RESET)
② Monitoring time for Local Interruption (TIME_MON)
③ Operator control modality Local / Remote (REM_ON_OP)
Operator needs to have Authorization level 6 to access this command area.
④ Activation Emergency Start (EM_START)
⑤ Activation Monitoring (MONITOR)
⑥ Call faceplate s, visible if EN_STAT = TRUE

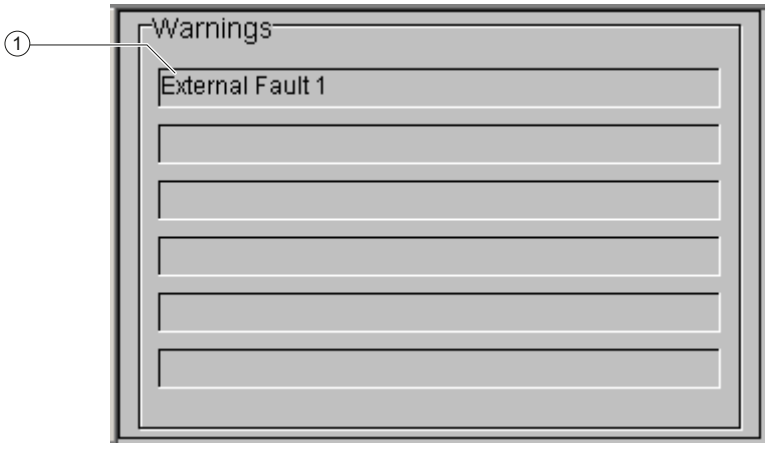
Faults (MESSAGE1)



① Text list with error description (ERR_NOx)

For error number 0, the text field is switched to invisible.

Warnings (MESSAGE2)



① Text list with error description (WRN_NOx)

For error number 0, the text field is switched to invisible.

4.9 SMC_REVS: Signal processing block for the star-delta reversing starter control function

4.9.1 Description of SMC_REVS

Block Number

FB2007

Calling OBs

The watchdog interrupt OB in which you install the block (e.g. OB32). Also in OB100 (see start-up characteristics).

Called blocks

The block calls the following blocks:

SFB35	ALARM_8P
SFB52	RDREC
SFB53	WRREC
SFC6	RD_SINFO
SFC20	BLKMOV

4.9.2 Parameter assignment in SIMOCODE ES

For the signal blocks to function correctly, a range of SIMOCODE pro parameters must have quite specific settings. Those parameters that define the assignment of the cyclic I/O interface are especially affected.

These parameters are represented in **bold**.

In addition, the overview below represents the parameters that are already preset for the control function in the templates for application selection in the SIMOCODE ES software. The settings are suggestions and depend heavily on the actual wiring of the SIMOCODE pro inputs and outputs.

These parameters are represented in *italics*.

Other parameters must also be set, e.g. for motor protection. These are not described here. Parameter assignment for the extended I/O interface of basic type 1 is represented in the following chapter: Parameter assignment in SIMOCODE ES (Page 55)

Motor control → Control stations		
Operation mode selector S1	**Cyclic receive bit 0.5**	—
Operation mode selector S2	*Fixed level 1*	—

Local control [LC]		
ON<	*BU - Input 3*	—
OFF	*BU - Input 2*	—
ON>	*BU - Input 1*	—
Operator enable local 2 OFF	*Active*	—
Operator enable local 2 ON	*Active*	—
Operator enable remote OFF	**Not active**	—
Operator enable remote ON	**Not active**	—

PLC/PCS [DP]		
ON<	**Cyclic receive – bit 0.0**	—
OFF	**Cyclic receive – bit 0.1**	—
ON>	**Cyclic receive – bit 0.2**	—
Operator enable local 2 OFF	**Not active**	—
Operator enable local 2 ON	**Not active**	—
Operator enable remote OFF	**Active**	—
Operator enable remote ON	**Active**	—

Operator Panel [OP]		
ON<	*OP button 2*	—
OFF	*OP button 4*	—
ON>	*OP button 3*	—
Operator enable local 2 OFF	*Active*	—
Operator enable local 2 ON	*Active*	—

Operator Panel [OP]		
Operator enable remote OFF	**Not active**	—
Operator enable remote ON	**Not active**	—

Motor control → Control function → Control commands		
ON<	**Enabled control command – ON<**	—
OFF	**Enabled control command - OFF**	—
ON>	**Enabled control command – ON>**	—

Motor control → Control function → Operating mode		
Non-maintained command mode	*Not active*	*The setting of the parameter influences the parameter JOG_ON in the SIMOCODE signal block:* *Non-maintained command mode not active: JOG_ON=FALSE* *Non-maintained command mode active: JOG_ON=TRUE*
Saving change-over command	**Not Active**	—

Timings	
Feedback time	0.5s
Execution time	1.0s

Motor control → Control function → Auxiliary control inputs		
Feedback ON	**Status - Motor current flowing**	—

Outputs → Basic unit		
BU – Output 1	*Contactor control QE1*	—
BU – Output 2	*Contactor control QE2*	—

Outputs → Operator panel LEDs		
LED green 2	*Display QLE< (ON<)*	—
LED green 3	*Display QLE> (ON>)*	—
LED green 4	*Display QLA (OFF)*	—

Outputs → Digital module 1		
DM – Output 1	*Contactor control QE3*	—
DM – Output 2	*Contactor control QE4*	—

Outputs → Cyclic send data		
Byte 0, bit 0	**Status – ON<**	—
Byte 0, bit 1	**Status - OFF**	—
Byte 0, bit 2	**Status – ON>**	—
Byte 0, bit 3	**Event - overload operation (I>115%Is)**	—
Byte 0, bit 4	**Status - Change-over pause active**	—
Byte 0, bit 5	**Status – Remote mode**	—
Byte 0, bit 6	**Status – Group fault**	—
Byte 0, bit 7	**Status - Group warning**	—
Byte 1, bit 0	Not connected	Freely assignable
Byte 1, bit 1	Status - Test position (TPF)	—
Byte 1, bit 2	Not connected	Freely assignable
Byte 1, bit 3	**Status – Interlocking time active**	—
Byte 1, bit 4	Not connected	Freely assignable
Byte 1, bit 5	Not connected	Freely assignable
Byte 1, bit 6	Not connected	Freely assignable
Byte 1, bit 7	Not connected	Freely assignable
Bytes 2 to 3	**Max. current Imax**	—

Standard functions → Test/reset		
Test 1	Cyclic receive – bit 0.3	—
Reset 1	Cyclic receive – bit 0.6	—

Standard functions → Emergency start		
Emergency start – Input	Cyclic receive – bit 0.4	—

4.9.3 Function

The block is installed by the user in a cyclic watchdog interrupt OB (e.g. OB32). Parameter inputs `IN_01` and `IN_23` as well as parameter output `O_01` are also interconnected by the user with the associated icons for inputs or outputs of the associated SIMOCODE pro device.

SMC_REVS accesses the data provided by SIMOCODE pro via inputs `IN_01` (2 bytes of binary data) and `IN_23` (2 bytes of motor current).

Data is transferred to SIMOCODE pro via the output `O_01` (2 bytes of binary data).

The configuration of the inputs and outputs are determined here by SIMOCODE pro basic type 2.

Access to the inputs and outputs takes place exclusively via the process image.

The block uses the input parameter MODE to determine whether the inputs `IN_01` and `IN_23` are valid. In the case of a higher-level fault, all inputs are read by SIMOCODE pro with "0" and output to the relevant outputs of the block.

4.9.4 Assignment of the cyclic process image

Table 4-18 Assignment of O_01: Output commands to SIMOCODE pro

Bit	Control interface
0.0	On< → Left On
0.1	Off
0.2	On> → Right On
0.3	Test 1
0.4	Emergency start
0.5	Local/remote control station
0.6	Reset
0.7	—
1.0 ... 1.7	User-specific outputs

Table 4-19 Assignment of IN_01: Feedback messages from SIMOCODE pro

Bit	Cyclic send data	Block parameter
0.0	Status – On<	QRUN / QDIR = TRUE
0.1	Status – Off	QSTOP
0.2	Status – On>	QRUN / QDIR = FALSE
0.3	Message – Pre-warning overload	—
0.4	Status - Change-over pause active	QCOA
0.5	Status – Remote mode	QREMOTE
0.6	Status - Group fault	QGR_ERR
0.7	Status - Group warning	QGR_WRN
1.0	—	—
1.1	Status - Test position (TPF)	QCST
1.2	—	—
1.3	Status - Interlocking time active	QLTA
1.4 ... 1.7	—	—

The input parameter `IN_01` is additionally copied to the output `Q_IN_01`.

The motor current is transferred via the input parameter `IN_23` as an unsigned 2-byte value. SIMOCODE pro always transfers the current here as a percentage of the set current in a range from 0 to 1020%. The motor current is output via `QCUR`.

Assignment of bytes 2 / 3 of the analog control interface and bytes 4 to 9 of the cyclic send data when using basic type 1 is described in the following chapter: Assignment of the cyclic process image (Page 56)

4.9.5 Operating modes

Changing the control station (REMOTE, LOCAL)

The control station is changed via the interconnectable function input REM_L if the input REM_SEL is set, or via the function input REM_ON_OP set by the OS.

The function input (REMOP_EN) influences the operator enable (QLOCOP) for operating via the OS.

The operating mode of the control station is output via QREMOTE (1 = REMOTE, 0 = LOCAL). QREMOTE corresponds here to the bit DP0.5 of the SIMOCODE pro.

In LOCAL mode, the controller is completely switched off via the SMC_REVS block. Control is then only possible via a control station connected direct to the SIMOCODE pro. It is still possible to acknowledge the fault.

Changing the operating modes (MANUAL, AUTO) when REMOTE is selected

If QREMOTE = TRUE, changeover between the two operating modes MANUAL and AUTOMATIC takes place either via OS operation using AUT_ON_OP (LIOP_SEL = 0) or via the interconnection of the input AUT_L (LIOP_SEL = 1).

The function inputs (MANOP_EN, AUTOP_EN) influence the operator enables (QMANOP, QAUTOP) for operating via the OS.

The operating mode is output at output QMAN_AUT (1 = AUTO, 0 = MANUAL).

Changing the control station for MANUAL

In REMOTE mode, the operating mode MANUAL can be controlled either via the OS or via the interconnectable function inputs. The changeover for this takes place via the interconnectable function input LINK_MAN.

4.9.6 Control stations for MANUAL and AUTOMATIC mode

General information

The PLC/DP control station of the SIMOCODE pro (that is, DP0.1 and DP0.2) is level-active. The On command is stored in the SIMOCODE pro. The Off command (DP0.1) takes priority over the On command (DP0.2).

Control of the SIMOCODE pro via AS / OS is only possible in REMOTE mode.

AUTOMATIC

In automatic mode, the SIMOCODE pro control functions are controlled via the interconnectable function inputs AUTO_ON (TRUE = On, FALSE = Off) and AUTO_DIR (TRUE = counter-clockwise, FALSE = clockwise).

Control without non-maintained command mode (JOG_ON = FALSE)

At one edge of the command input, the associated control bit is set in the interface until the SIMOCODE pro sends the relevant feedback message, or a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again if a command is active at the automatic interface.

Control with non-maintained command mode (JOG_ON = TRUE)

The corresponding control bit in the interface is set as long as the command input = TRUE or if a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again if a command is active at the automatic interface. The Stop command is not necessary for switching the device off but is nevertheless set by the block if no On command is active.

MANUAL

In manual mode, the SIMOCODE pro is controlled either via the function inputs FORW_ON, REV_ON and MOT_OFF set by the OS or via the interconnectable function inputs L_FORW, L_REV and L_OFF.

The inputs for the operator enables FW_OP_EN / RV_OP_EN / OFFOP_EN set the outputs QFORW_OP / QREV_OP / QOFF_OP for operation using the OS.

At one edge of the command input, the associated control bit is set in the interface until the SIMOCODE pro sends the relevant feedback message, or a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again if a command is active at the interconnectable manual interface.

The Off command takes priority over the On command (no edge evaluation!).

The following priorities apply for the On commands:

Right takes priority over left.

After changing to manual mode, the commands are not forwarded to the inputs until there is a positive edge change when L_FORW / L_REV / L_OFF is active.

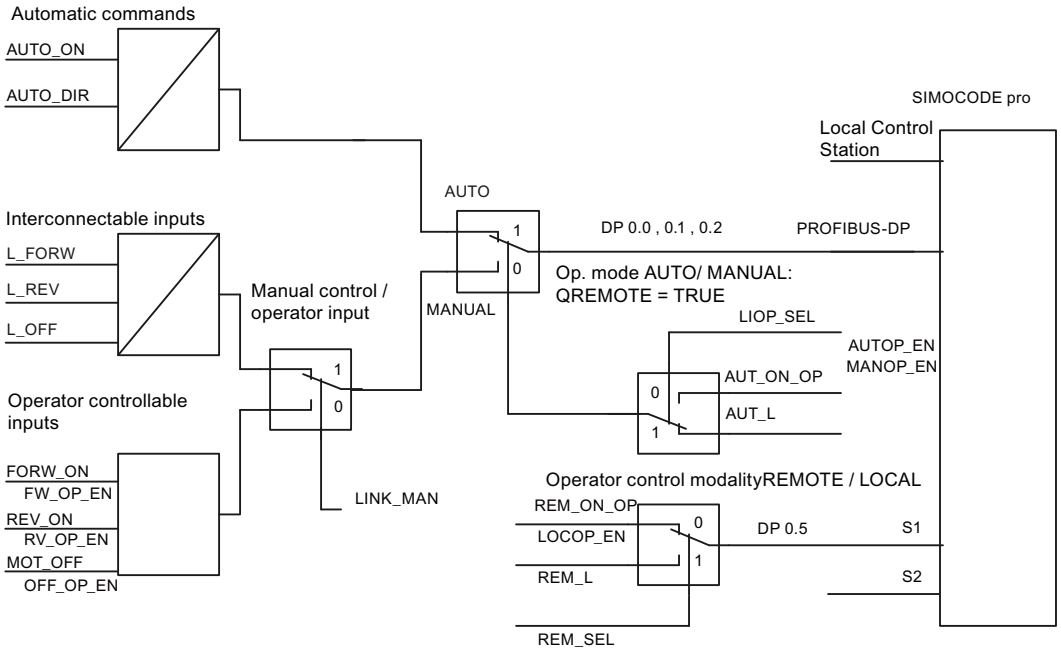
Control without non-maintained command mode (JOG_ON = FALSE)

At one edge of the command input, the associated control bit is set in the interface until the SIMOCODE pro sends the relevant feedback message, or a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again if a command is active at the interconnectable inputs. The operator controllable inputs FORW_ON, REV_ON and MOT_OFF are adjusted when tripped.

Control with non-maintained command mode (JOG_ON = TRUE)

The corresponding control bit in the interface is set as long as the command input = TRUE or if a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again if a command is active at the automatic interface. The Stop command is not necessary for switching the device off but is nevertheless set by the block if no On command is active.

4.9.7 Overview of control stations, operating modes, and operator control modalities



4.9.8 Start-up characteristics

During OB100 (warm restart) or the first start of the block, the block is switched to manual mode and the Off command is output. For this purpose, the block must be called from the startup OB. After OB 100 (Warm Restart) startup, the messages are suppressed for the number of cycles parameterized in the `RUNUPCYC` value.

Following Output parameters from the block are re-initialized to "0" (`RESET`, `SMCRESET` and `QLOC_INT`). Motor Outputs like `QCST`, `QRUN`, `QCOA`, `QDIR`, `QLTA` and `QSTOP` are reinitialized from its process data value `IN_01`.

OB1 first run identification information is received from SMC_DIAG block through IN-OUT parameter `RECVDATA` at bit 24. Further, this information is used as an entry condition for RDREC/WRREC processing.

4.9.9 Status displays for icons

Status	Parameter	View
Off	QSTOP = 1	
Right On Star	QSTOP = 0 QRUN = 0 QDIR = 0	
Right On Triangle	QSTOP = 0 QRUN = 1 QDIR = 0	
Left On Star	QSTOP = 0 QRUN = 0 QDIR = 1	
Left On Triangle	QSTOP = 0 QRUN = 1 QDIR = 1	
Not available	QBAD = 1	

4.9.10 Description of faceplates

The available faceplates are described in this chapter.

The following views are available:

Overview	OVERVIEW
Standard	STANDARD
Limits	LIMITS
Maintenance	MAINTENANCE
Faults	MESSAGE1
Warnings	MESSAGE2
Messages	—
Trend	—
Batch	—

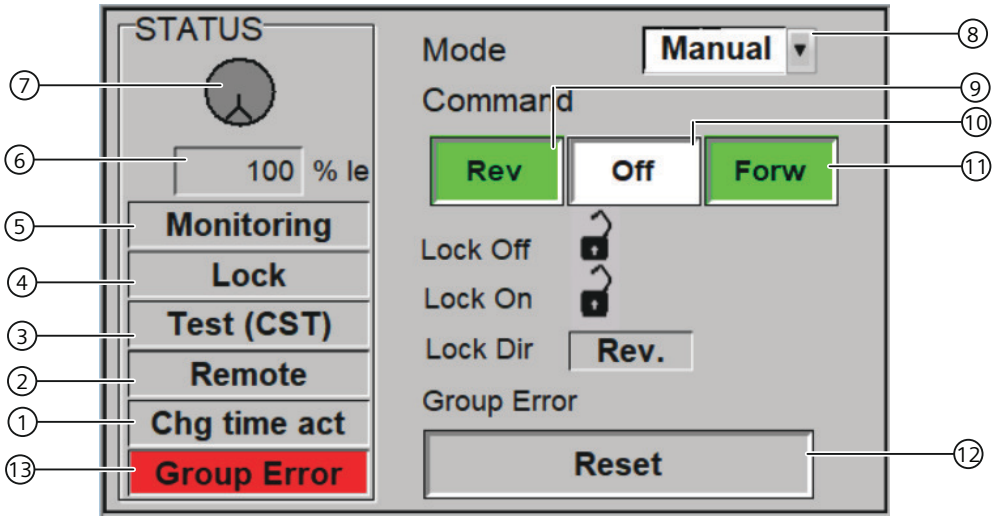
The file name is composed as follows: @PG_SMC_REVS_<View>.PDL

The PCS 7 standard displays are used for the message, trend and batch views.

The structure of the individual views of faceplates is described below.

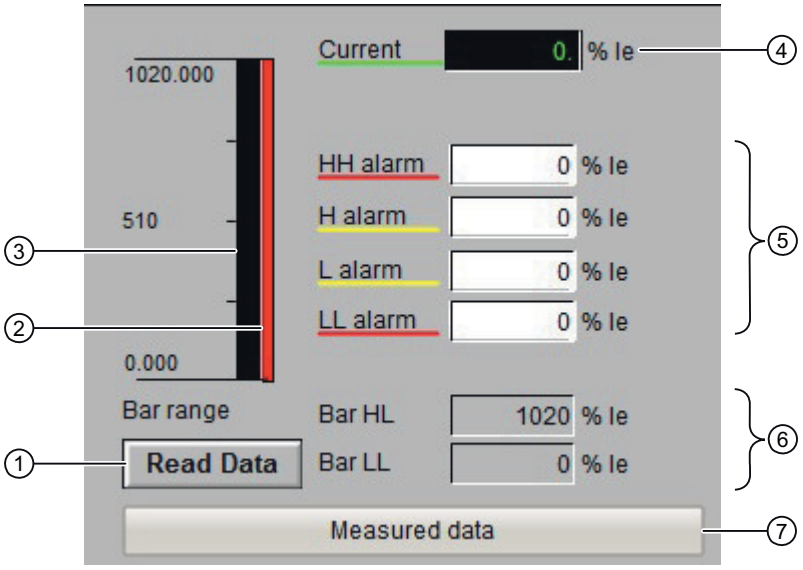
Standard (STANDARD)

The status display is a user object comprising several status displays. The status display corresponds to the representation from the process image icon.



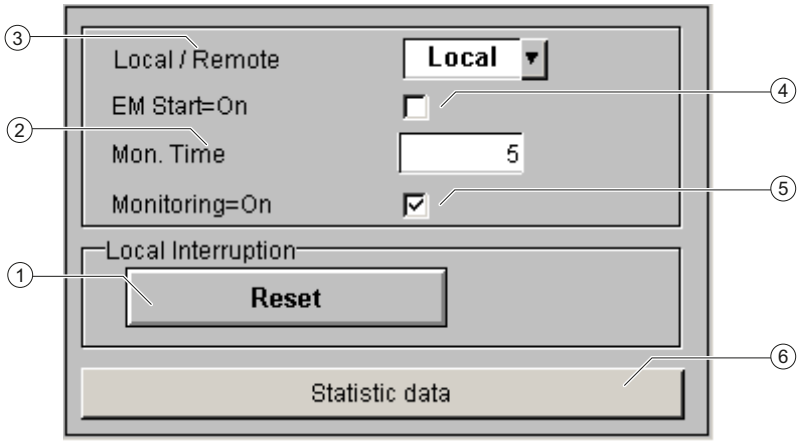
① Interlocking time (QLTA) / change-over pause (QCOA)
② Operator control modality (QREMOTE)
③ Test (QCST)
④ Interlocking (LOCK / LOCK_ON)
⑤ Local Interruption (QLOC_INT)
⑥ Current (QCUR)/ unit (QCUR#unit)
⑦ Status display (VSTATUS)
⑧ Operating mode (QMAN_AUT, AUT_ON_OP)
⑨ Command Left On (REV_ON)
⑩ Command Off (MOT_OFF)
⑪ Command Right On (FORW_ON)
⑫ Acknowledgement (RESET)
⑬ Status (QGR_ERR)

Limits (LIMITS)



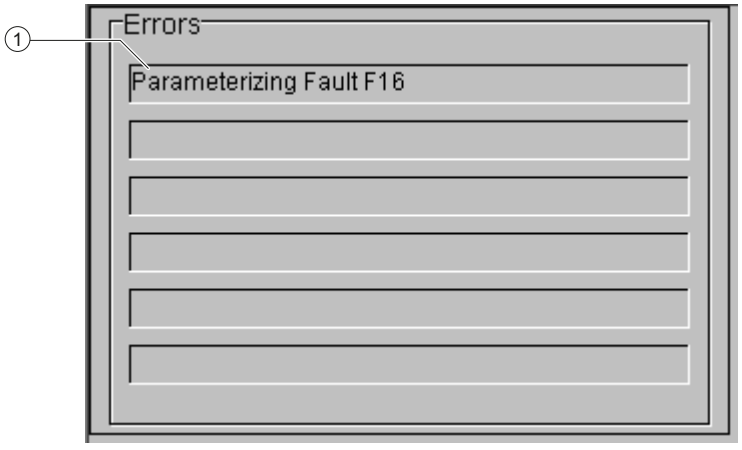
① Read Data (RD_DATA)
② Limit value display (CUR_AH, CUR_WH, CUR_WL, CUR_AL)
③ Actual value bar (QCUR, MO_PVHR, MO_PVLR)
④ Current value (QCUR, QCUR#unit)
⑤ Limits (CUR_AH, CUR_WH, CUR_WL, CUR_AL)
⑥ Bar range (MO_PVHR, MO_PVLR)
⑦ Call faceplate SMC_MEAS, visible if EN_MEAS = TRUE

Maintenance (MAINTENANCE)



① Acknowledge Local Interruption (RESET)
② Monitoring time for Local Interruption (TIME_MON)
③ Operator control modality Local / Remote (REM_ON_OP)
Operator needs to have Authorization level 6 to access this command area.
④ Activation Emergency Start (EM_START)
⑤ Activation Monitoring (MONITOR)
⑥ Call faceplate SMC_STAT, visible if EN_STAT = TRUE

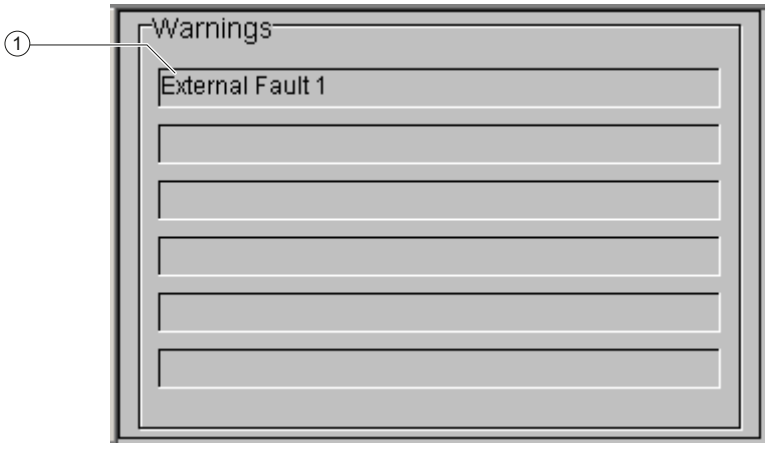
Faults (MESSAGE1)



① Text list with error description (ERR_NOx)

For error number 0, the text field is switched to invisible.

Warnings (MESSAGE2)



① Text list with error description (WRN_NOx)

For error number 0, the text field is switched to invisible.

4.10 SMC_DAHL: Signal processing block for the dahlander/pole-changing starter control function

4.10.1 Description of SMC_DAHL

Block Number

FB2008

Calling OBs

The watchdog interrupt OB in which you install the block (e.g. OB32). Also in OB100 (see start-up characteristics).

Called blocks

The block calls the following blocks:

SFB35	ALARM_8P
SFB52	RDREC
SFB53	WRREC
SFC6	RD_SINFO
SFC20	BLKMOV

4.10.2 Parameter assignment in SIMOCODE ES

For the signal blocks to function correctly, a range of SIMOCODE pro parameters must have quite specific settings. Those parameters that define the assignment of the cyclic I/O interface are especially affected.

These parameters are represented in **bold**.

In addition, the overview below represents the parameters that are already preset for the control function in the templates for application selection in the SIMOCODE ES software. The settings are suggestions and depend heavily on the actual wiring of the SIMOCODE pro inputs and outputs.

These parameters are represented in *italics*.

Other parameters must also be set, e.g. for motor protection. These are not described here. Parameter assignment for the extended I/O interface of basic type 1 is represented in the following chapter: Parameter assignment in SIMOCODE ES (Page 55)

Dahlander control function

Motor control → Control stations		
Operation mode selector S1	**Cyclic receive bit 0.5**	—
Operation mode selector S2	*Fixed level 1*	—

Local control [LC]		
OFF	*BU - Input 2*	—
ON>	*BU - Input 1*	—
ON>>	*BU - Input 3*	—
Operator enable local 2 OFF	*Active*	—
Operator enable local 2 ON	*Active*	—
Operator enable remote OFF	**Not active**	—
Operator enable remote ON	**Not active**	—

PLC/PCS [DP]		
OFF	**Cyclic receive – bit 0.1**	—
ON>	**Cyclic receive – bit 0.2**	—
ON>>	**Cyclic receive – bit 0.0**	—
Operator enable local 2 OFF	**Not active**	—
Operator enable local 2 ON	**Not active**	—
Operator enable remote OFF	**Active**	—

Operator Panel [OP]		
OFF	*OP button 4*	—
ON>	*OP button 3*	—
ON>>	*OP button 2*	—

Operator Panel [OP]		
Operator enable local 2 OFF	*Active*	—
Operator enable local 2 ON	*Active*	—
Operator enable remote OFF	**Not active**	—
Operator enable remote ON	**Not active**	—

Motor control → Control function → Control commands		
OFF	**Enabled control command - OFF**	—
ON>	**Enabled control command – ON>**	—
ON>>	**Enabled control command – ON>>**	—

Motor control → Control function → Operating mode		
Non-maintained command mode	*Not active*	*The setting of the parameter influences the parameter JOG_ON in the SIMOCODE signal block:* *Non-maintained command mode not active: JOG_ON = FALSE* *Non-maintained command mode active: JOG_ON = TRUE*
Saving change-over command	**Not Active**	—

Timings	
Feedback time	0.5s
Execution time	1.0s

Motor control → Control function → Auxiliary control inputs		
Feedback ON	**Status - Motor current flowing**	—

Outputs → Basic unit		
BU – Output 1	*Contactor control QE1*	—
BU – Output 2	*Contactor control QE2*	—
BU – Output 3	*Contactor control QE3*	—

Outputs → Operator panel LEDs		
LED green 2	*Display QLE>> (ON>>)*	—
LED green 3	*Display QLE> (ON>)*	—
LED green 4	*Display QLA (OFF)*	—

Outputs → Cyclic send data		
Byte 0, bit 0	**Status – ON>>**	—
Byte 0, bit 1	**Status - OFF**	—
Byte 0, bit 2	**Status – ON>**	—
Byte 0, bit 3	**Event - overload operation (I>115%Is)**	—
Byte 0, bit 4	**Status - Change-over pause active**	—
Byte 0, bit 5	**Status – Remote mode**	—
Byte 0, bit 6	**Status – Group fault**	—
Byte 0, bit 7	**Status - Group warning**	—
Byte 1, bit 0	Not connected	Freely assignable
Byte 1, bit 1	Status - Test position (TPF)	—
Byte 1, bit 2	Not connected	Freely assignable
Byte 1, bit 3	Not connected	Freely assignable
Byte 1, bit 4	Not connected	Freely assignable
Byte 1, bit 5	Not connected	Freely assignable
Byte 1, bit 6	Not connected	Freely assignable
Byte 1, bit 7	Not connected	Freely assignable
Byte 2-3	**Max. current Imax**	—

Standard functions→ Test/reset		
Test 1	Cyclic receive – bit 0.3	—
Reset 1	Cyclic receive – bit 0.6	—

Standard functions→ Emergency Start		
Emergency start – Input	Cyclic receive – bit 0.4	—

Pole-changing starter control function

Motor control → Control stations		
Operation mode selector S1	**Cyclic receive bit 0.5**	—
Operation mode selector S2	*Fixed level 1*	—

Local control [LC]		
OFF	*BU - Input 2*	—
ON>	*BU - Input 1*	—
ON>>	*BU - Input 3*	—
Operator enable local 2 OFF	*Active*	—
Operator enable local 2 ON	*Active*	—
Operator enable remote OFF	**Not active**	—
Operator enable remote ON	**Not active**	—

PLC/PCS [DP]		
OFF	*Cyclic receive – bit 0.1*	—
ON>	*Cyclic receive – bit 0.2*	—
ON>>	*Cyclic receive – bit 0.0*	—
Operator enable local 2 OFF	*Not active*	—
Operator enable local 2 ON	*Not active*	—
Operator enable remote OFF	**Active**	—
Operator enable remote ON	**Active**	—

Operator Panel [OP]		
OFF	*OP button 4*	—
ON>	*OP button 3*	—
ON>>	*OP button 2*	—
Operator enable local 2 OFF	*Active*	—
Operator enable local 2 ON	*Active*	—
Operator enable remote OFF	**Not active**	—
Operator enable remote ON	**Not active**	—

Motor control → Control function → Control commands		
OFF	**Enabled control command - OFF**	**—**
ON>	**Enabled control command – ON>**	**—**
ON>>	**Enabled control command – ON>>**	—

Motor control → Control function → Operating mode		
Non-maintained command mode	*Not active*	*The setting of the parameter influences the parameter JOG_ON in the SIMOCODE signal block:* *Non-maintained command mode not active: JOG_ON = FALSE* *Non-maintained command mode active: JOG_ON = TRUE*
Saving change-over command	**Not Active**	—

Motor control → Control function → Auxiliary control inputs		
Feedback ON	**Status - Motor current flowing**	—

Timings	
Feedback time	0.5s
Execution time	1.0s

Outputs → Basic unit		
BU – Output 1	*Contactor control QE1*	—
BU – Output 2	*Contactor control QE2*	—

Outputs → Operator panel LEDs		
LED green 2	*Display QLE>> (ON>>)*	—
LED green 3	*Display QLE> (ON>)*	—
LED green 4	*Display QLA (OFF)*	—

Outputs → Cyclic send data		
Byte 0, bit 0	**Status – ON>>**	—
Byte 0, bit 1	**Status - OFF**	—
Byte 0, bit 2	**Status – ON>**	—
Byte 0, bit 3	**Event - overload operation (I>115%Is)**	—
Byte 0, bit 4	**Status - Change-over pause active**	—
Byte 0, bit 5	**Status – Remote mode**	—
Byte 0, bit 6	**Status – Group fault**	—
Byte 0, bit 7	**Status - Group warning**	—
Byte 1, bit 0	Not connected	Freely assignable
Byte 1, bit 1	Status - Test position (TPF)	—
Byte 1, bit 2	Not connected	Freely assignable
Byte 1, bit 3	Not connected	Freely assignable
Byte 1, bit 4	Not connected	Freely assignable
Byte 1, bit 5	Not connected	Freely assignable
Byte 1, bit 6	Not connected	Freely assignable
Byte 1, bit 7	Not connected	Freely assignable
Byte 2-3	**Max. current Imax**	—

Standard functions→ Test/reset		
Test 1	Cyclic receive – bit 0.3	—
Reset 1	Cyclic receive – bit 0.6	—

Standard functions→ Emergency Start		
Emergency start – Input	Cyclic receive – bit 0.4	—

4.10.3 Function

The block is installed by the user in a cyclic watchdog interrupt OB (e.g. OB32). Parameter inputs `IN_01` and `IN_23` as well as parameter output `O_01` are also interconnected by the user with the relevant icons for inputs or outputs of the associated SIMOCODE pro device.

SMC_DAHL accesses the data provided by SIMOCODE pro via inputs IN_01 (2 bytes of binary data) and IN_23 (2 bytes of motor current).

Data is transferred to SIMOCODE pro via the output O_01 (2 bytes of binary data).

The configuration of the inputs and outputs are determined here by SIMOCODE pro basic type 2.

Access to the inputs and outputs takes place exclusively via the process image.

The block uses the input parameter MODE to determine whether the inputs IN_01 and IN_23 are valid. In the case of a higher-level fault, all inputs are read by SIMOCODE pro with "0" and output to the relevant outputs of the block.

4.10.4 Assignment of the cyclic process image

Table 4-20 Assignment of O_01: Output commands to SIMOCODE pro

Bit	Control interface
0.0	On>> → Motor FAST On
0.1	Off
0.2	On> → Motor SLOW On
0.3	Test 1
0.4	Emergency start
0.5	Local/remote control station
0.6	Reset
0.7	—
1.0 ... 1.7	User-specific outputs

Table 4-21 Assignment of IN_01: Feedback messages from SIMOCODE pro

Bit	Cyclic send data	Block parameter
0.0	Status – On>>	QRUN / QSPEED = TRUE
0.1	Status – Off	QSTOP
0.2	Status – On>	QRUN / QSPEED = FALSE
0.3	Message – Pre-warning overload	—
0.4	Status - Change-over pause active	QCOA
0.5	Status – Remote mode	QREMOTE
0.6	Status - Group fault	QGR_ERR
0.7	Status - Group warning	QGR_WRN
1.0	—	—
1.1	Status - Test position (TPF)	QCST
1.2 ... 1.7	—	—

The input parameter IN_01 is additionally copied to the output Q_IN_01.

The motor current is transferred via the input parameter IN_23 as an unsigned 2-byte value. SIMOCODE pro always transfers the current here as a percentage of the set current in a range from 0 to 1020%. The motor current is output via QCUR.

Assignment of bytes 2 / 3 of the analog control interface and bytes 4 to 9 of the cyclic send data when using basic type 1 is described in the following chapter: Assignment of the cyclic process image (Page 56)

4.10.5 Operating modes

Changing the control station (REMOTE, LOCAL)

The control station is changed via the interconnectable function input REM_L if the input REM_SEL is set, or via the function input REM_ON_OP set by the OS.

The function input (REMOP_EN) influences the operator enable (QLOCOP) for operating via the OS.

The operating mode of the control station is output via QREMOTE (1 = REMOTE, 0 = LOCAL). QREMOTE corresponds here to the bit DP 0.5 of the SIMOCODE pro.

In LOCAL mode, the controller is completely switched off via the SMC_DAHL block. Control is then only possible via a control station connected direct to the SIMOCODE pro. It is still possible to acknowledge the fault.

Changing the operating modes (MANUAL, AUTO) when REMOTE is selected

If QREMOTE = TRUE, changeover between the two operating modes MANUAL and AUTOMATIC takes place either via OS operation using AUT_ON_OP (LIOP_SEL = 0) or via the interconnection of the input AUT_L (LIOP_SEL = 1).

The function inputs (MANOP_EN, AUTOP_EN) influence the operator enables (QMANOP, QAUTOP) for operating via the OS.

The operating mode is output at output QMAN_AUT(1 = AUTO, 0 = MANUAL).

Changing the control station for MANUAL

In REMOTE mode, the operating mode MANUAL can be controlled either via the OS or via the interconnectable function inputs. The changeover for this takes place via the interconnectable function input LINK_MAN.

4.10.6 Control stations for MANUAL and AUTOMATIC mode

General information

The PLC/DP control station of the SIMOCODE pro (that is, DP0.1 and 0.2) is level-active. The On command is stored in the SIMOCODE pro. The Off command (DP0.1) takes priority over the On command (DP0.2).

Control of the SIMOCODE pro via AS / OS is only possible in REMOTE mode.

AUTOMATIC

In automatic mode, the SIMOCODE pro control functions are controlled via the interconnectable function inputs AUTO_ON (TRUE = On, FALSE = Off) and AUTO_SPD (TRUE = Motor FAST, FALSE = Motor SLOW).

Control without non-maintained command mode (JOG_ON = FALSE)

At one edge of the command input, the associated control bit is set in the interface until the SIMOCODE pro sends the relevant feedback message, or a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again if a command is active at the automatic interface.

Control with non-maintained command mode (JOG_ON = TRUE)

The corresponding control bit in the interface is set as long as the command input = TRUE or if a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again if a command is active at the automatic interface. The Stop command is not necessary for switching the device off but is nevertheless set by the block if no On command is active.

MANUAL

In manual mode, the SIMOCODE pro is controlled either via the function inputs SP1_ON, SP2_ON and MOT_OFF set by the OS or via the interconnectable function inputs L_SP1, L_SP2 and L_OFF.

The inputs for the operator enables S1_OP_EN / S2_OP_EN / OFFOP_EN set the outputs QS1_OP / QS2_OP / QOFF_OP for operation using the OS.

At one edge of the command input, the associated control bit is set in the interface until the SIMOCODE pro sends the relevant feedback message, or a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again if a command is active at the interconnectable manual interface.

The Off command takes priority over the On command (no edge evaluation!).

The following priorities apply for the On commands:

Slow takes priority over fast.

After changing to manual mode, the commands are not forwarded to the inputs until there is a positive edge change when L_SP1 / L_SP2 / L_OFF is active.

Control without non-maintained command mode (JOG_ON = FALSE)

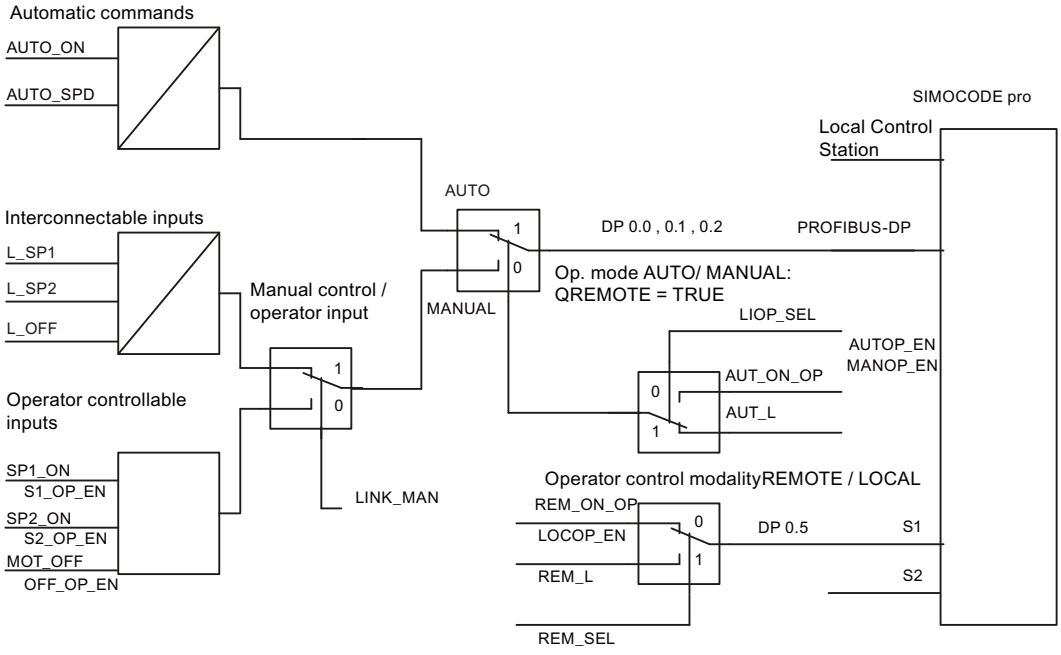
At one edge of the command input, the associated control bit is set in the interface until the SIMOCODE pro sends the relevant feedback message, or a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again if a command is active at the interconnectable inputs. The operator controllable inputs SP1_ON, SP2_ON and MOT_OFF are adjusted when tripped.

Control with non-maintained command mode (JOG_ON = TRUE)

The corresponding control bit in the interface is set as long as the command input = TRUE or if a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again

if a command is active at the automatic interface. The Stop command is not necessary for switching the device off but is nevertheless set by the block if no On command is active.

4.10.7 Overview of control stations, operating modes, and operator control modalities



4.10.8 Start-up characteristics

During OB100 (warm restart) or the first start of the block, the block is switched to manual mode and the Off command is output. For this purpose, the block must be called from the startup OB. After OB 100 (Warm Restart) startup, the messages are suppressed for the number of cycles parameterized in the `RUNUPCYC` value.

Following Output parameters from the block are re-initialized to "0" (`RESET`, `SMCRESET` and `QLOC_INT`). Motor Outputs like `QCST`, `QRUN`, `QSPEED`, `QCOA`, and `QSTOP` are reinitialized from its process data value `IN_01`.

OB1 first run identification information is received from SMC_DIAG block through IN-OUT parameter `RECVDATA` at bit 24. Further, this information is used as an entry condition for RDREC/WRREC processing.

4.10.9 Status displays for icons

Status	Parameter	View
Off	QSTOP = 1	
Start speed 1	QRUN = 1 QSPEED = 0	
Start speed 2	QRUN = 1 QSPEED = 1	
Not available	QBAD = 1	

4.10.10 Description of the faceplate

The available faceplates are described in this chapter.

The following views are available:

Overview	OVERVIEW
Standard	STANDARD
Limits	LIMITS
Maintenance	MAINTENANCE
Faults	MESSAGE1
Warnings	MESSAGE2
Messages	—
Trend	—
Batch	—

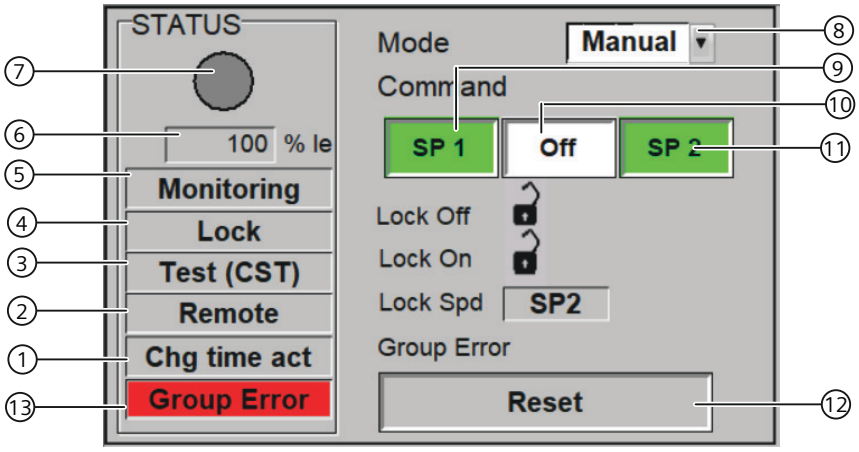
The file name is composed as follows: @PG_SMC_DAHL_<View>.PDL

The PCS 7 standard displays are used for the message, trend and batch views.

The structure of the individual views of faceplates is described below.

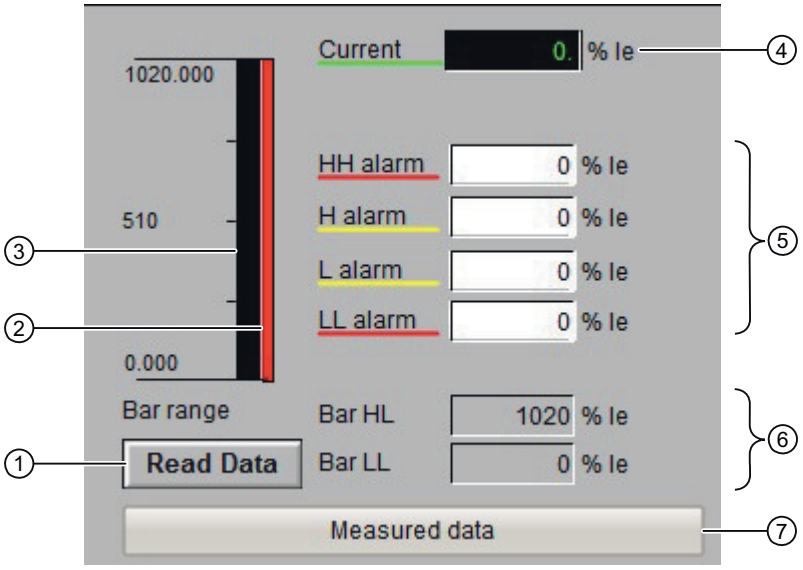
Standard (STANDARD)

The status display is a user object comprising several status displays. The status display corresponds to the representation from the Process Image Icon.



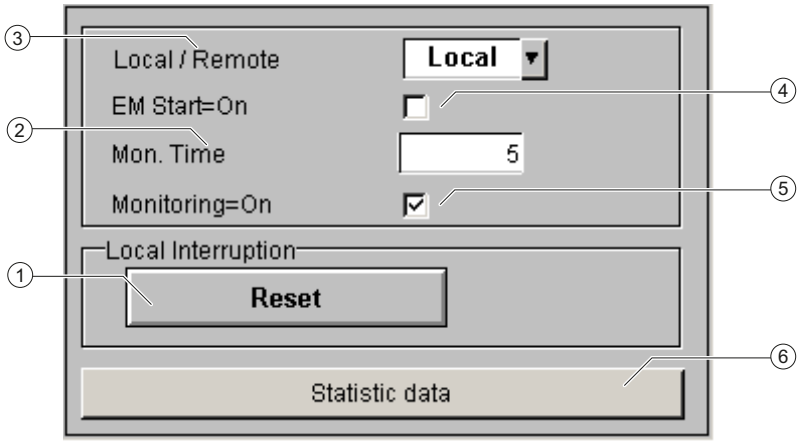
① Change-over pause (QCOA)
② Operator control modality (QREMOTE)
③ Test (QCST)
④ Interlocking (LOCK / LOCK_ON)
⑤ Local Interruption (QLOC_INT)
⑥ Current (QCUR)/ unit (QCUR#unit)
⑦ Status display (VSTATUS)
⑧ Operating mode (QMAN_AUT, AUT_ON_OP)
⑨ Command Slow On (SP1_ON)
⑩ Command Off (MOT_OFF)
⑪ Command Fast On (SP2_ON)
⑫ Acknowledgement (RESET)
⑬ Status (QGR_ERR)

Limits (LIMITS)



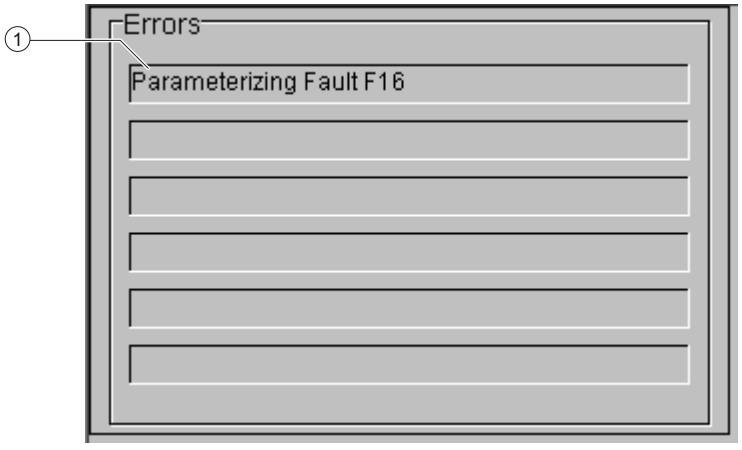
① Read Data (RD_DATA)
② Limit value display (CUR_AH, CUR_WH, CUR_WL, CUR_AL)
③ Actual value bar (QCUR, MO_PVHR, MO_PVLR)
④ Current value (QCUR, QCUR#unit)
⑤ Limits (CUR_AH, CUR_WH, CUR_WL, CUR_AL)
⑥ Bar range (MO_PVHR, MO_PVLR)
⑦ Call faceplate SMC_MEAS, visible if EN_MEAS = TRUE

Maintenance (MAINTENANCE)



① Acknowledge Local Interruption (RESET)
② Monitoring time for Local Interruption (TIME_MON)
③ Operator control modality Local / Remote (REM_ON_OP)
Operator needs to have Authorization level 6 to access this command area.
④ Activation Emergency Start (EM_START)
⑤ Activation Monitoring (MONITOR)
⑥ Call faceplate SMC_STAT, visible if EN_STAT = TRUE

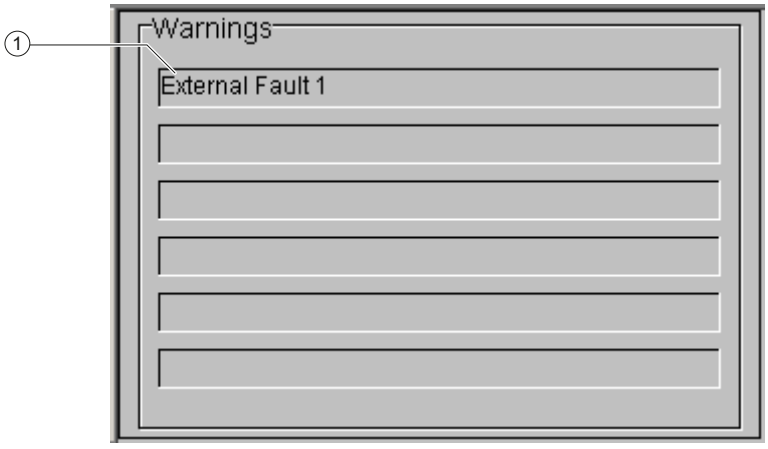
Faults (MESSAGE1)



① Text list with error description (ERR_NOx)

For error number 0, the text field is switched to invisible.

Warnings (MESSAGE2)



① Text list with error description (WRN_NOx)

For error number 0, the text field is switched to invisible.

4.11 SMC_REVD: Signal processing block for the dahlander reversing starter/pole-changing reversing starter control function

4.11.1 Description of SMC_REVD

Block Number

FB2009

Calling OBs

The watchdog interrupt OB in which you install the block (e.g. OB32). Also in OB100 (see start-up characteristics).

Called blocks

The block calls the following blocks:

SFB35	ALARM_8P
SFB52	RDREC
SFB53	WRREC
SFC6	RD_SINFO
SFC20	BLKMOV

4.11.2 Parameter assignment in SIMOCODE ES

For the signal blocks to function correctly, a range of SIMOCODE pro parameters must have quite specific settings. Those parameters that define the assignment of the cyclic I/O interface are especially affected.

These parameters are represented in **bold**.

In addition, the overview below represents the parameters that are already preset for the control function in the templates for application selection in the SIMOCODE ES software. The settings are suggestions and depend heavily on the actual wiring of the SIMOCODE pro inputs and outputs.

These parameters are represented in *italics*.

Other parameters must also be set, e.g. for motor protection. These are not described here. Parameter assignment for the extended I/O interface of basic type 1 is represented in the following chapter: Parameter assignment in SIMOCODE ES (Page 55)

Dahlander reversing starter control function

Motor control → Control stations		
Operation mode selector S1	*Cyclic receive bit 0.5*	—
Operation mode selector S2	**Fixed level 1**	—

Local control [LC]		
ON<<	*DM 1 – Input 2*	—
ON<	*DM 1 – Input 1*	—
OFF	*BU - Input 2*	—
ON>	*BU - Input 1*	—
ON>>	*BU - Input 3*	—
Operator enable local 2 OFF	*Active*	—
Operator enable local 2 ON	*Active*	—
Operator enable remote OFF	**Not active**	—
Operator enable remote ON	**Not active**	—

PLC/PCS [DP]		
ON<<	**Cyclic receive – bit 1.0**	—
ON<	**Cyclic receive – bit 1.2**	—
OFF	**Cyclic receive – bit 0.1**	—
ON>	**Cyclic receive – bit 0.2**	—
ON>>	**Cyclic receive – bit 0.0**	—
Operator enable local 2 OFF	**Not active**	—
Operator enable local 2 ON	**Not active**	—
Operator enable remote OFF	**Active**	—
Operator enable remote ON	**Active**	—

Operator Panel [OP]		
OFF	*OP button 4*	—
ON>	*OP button 3*	—
ON<	*OP button 2*	—
ON<<	*OP button 1*	—
ON>>	Not connected	—
Operator enable local 2 OFF	*Active*	—
Operator enable local 2 ON	*Active*	—
Operator enable remote OFF	**Not active**	—
Operator enable remote ON	**Not active**	—

Motor control → Control function → Control commands		
ON<<	**Enabled control command – ON<<**	—
ON<	**Enabled control command – ON<**	—
OFF	**Enabled control command - OFF**	—
ON>	**Enabled control command – ON>**	—
ON>>	**Enabled control command – ON>>**	—

Motor control → Control function → Operating mode		
Non-maintained command mode	*Not active*	*The setting of the parameter influences the parameter JOG_ON in the SIMOCODE signal block:* *Non-maintained command mode not active: JOG_ON = FALSE* *Non-maintained command mode active: JOG_ON = TRUE*
Saving change-over command	**Not active**	—

Motor control → Control function → Auxiliary control inputs		
Feedback ON	**Status - Motor current flowing**	—

Motor control → Control function → Timings		
Feedback time	0.5 s	—
Execution time	1.0 s	—

Outputs → Basic unit		
BU – Output 1	*Contactor control QE1*	—
BU – Output 2	*Contactor control QE2*	—
BU – Output 3	*Contactor control QE3*	—

Outputs → Operator panel LEDs		
LED green 1	*Truth table 6 3I/1Q - output*	—
LED green 2	*Truth table 7 2I/1Q - output*	—
LED green 3	*Truth table 8 2I/1Q - output*	—
LED green 4	*Display QLA (Off)*	—

Outputs → Digital module 1		
DM – Output 1	*Contactor control QE4*	—
DM – Output 2	*Contactor control QE5*	—

Outputs → Cyclic send data		
Byte 0, bit 0	**Status – ON>>**	—
Byte 0, bit 1	**Status - OFF**	—
Byte 0, bit 2	**Status – ON>**	—
Byte 0, bit 3	**Event - prewarning overload (I>115 %Is)**	—
Byte 0, bit 4	**Status - Change-over pause active**	—
Byte 0, bit 5	**Status – Remote mode**	—
Byte 0, bit 6	**Status – Group fault**	—
Byte 0, bit 7	**Status - Group warning**	—
Byte 1, bit 0	**Status – ON<<**	—
Byte 1, bit 1	Status - Test position (TPF)	—
Byte 1, bit 2	**Status – ON<**	—
Byte 1, bit 3	**Status – Interlocking time active**	—
Byte 1, bit 4	Not connected	Freely assignable
Byte 1, bit 5	Not connected	Freely assignable
Byte 1, bit 6	Not connected	Freely assignable
Byte 1, bit 7	Not connected	Freely assignable
Byte 2-3	**Max. current I_max (% of Is)**	—

Logic blocks → Truth table 3I / 1O → Truth table 6		
Input 1	*Not connected*	—
Input 2	*Status On<<*	—
Input 3	*Status On>>*	—
Logic	*01110000*	—

Standard functions→ Test/reset		
Test 1	Cyclic receive – bit 0.3	—
Reset 1	Cyclic receive – bit 0.6	—

Standard functions→ Emergency Start		
Emergency start – Input	Cyclic receive – bit 0.4	—

Logic blocks → Truth table 2I / 1O → Truth table 7		
Input 1	*Display QLE< (ON<)*	—
Input 2	*Display QLE<< (ON<<)*	—
Logic	*0111*	—

Logic blocks → Truth table 2I / 1O → Truth table 8		
Input 1	*Display* QLE> (ON>)	—
Input 2	*Display* QLE>> (ON>>)	—
Logic	*0111*	—

Pole-changing reversing starter control function

Motor control → Control stations		
Operation mode selector S1	**Cyclic receive bit 0.5**	—
Operation mode selector S2	*Fixed level 1*	—

Local control [LC]		
ON<<	*DM 1 – Input 2*	—
ON<	*DM 1 – Input 1*	—
OFF	*BU - Input 2*	—
ON>	*BU - Input 1*	—
ON>>	*BU - Input 3*	—
Operator enable local 2 OFF	*Active*	—
Operator enable local 2 ON	*Active*	—
Operator enable remote OFF	**Not active**	—
Operator enable remote ON	**Not active**	—

PLC/PCS [DP]		
ON<<	**Cyclic receive – bit 1.0**	—
ON<	**Cyclic receive – bit 1.2**	—
OFF	**Cyclic receive – bit 0.1**	—
ON>	**Cyclic receive – bit 0.2**	—
ON>>	**Cyclic receive – bit 0.0**	—
Operator enable local 2 OFF	**Not active**	—
Operator enable local 2 ON	**Not active**	—
Operator enable remote OFF	**Active**	—
Operator enable remote ON	**Active**	—

Operator Panel [OP]		
OFF	*OP button 4*	—
ON>	*OP button 3*	—
ON<	*OP button 2*	—
ON<<	*OP button 1*	—
ON>>	Not connected	—
Operator enable local 2 OFF	*Active*	—
Operator enable local 2 ON	*Active*	—
Operator enable remote OFF	**Not active**	—
Operator enable remote ON	**Not active**	—

Motor control → Control function → Control commands		
ON<<	**Enabled control command – ON<<**	—
ON<	**Enabled control command – ON<**	—
OFF	**Enabled control command - OFF**	—
ON>	**Enabled control command – ON>**	—
ON>>	**Enabled control command – ON>>**	—

Motor control → Control function → Operating mode		
Non-maintained command mode	*Not active*	*Setting of the parameter influences the parameter JOG_ON in the SIMOCODE signal block:* *Non-maintained command mode not active: JOG_ON = FALSE* *Non-maintained command mode active: JOG_ON = TRUE*
Saving change-over command	**Not active**	—

Motor control → Control function → Auxiliary control inputs		
Feedback ON	**Status - Motor current flowing**	—

Motor control → Control function → Timings		
Feedback time	0.5 s	—
Execution time	1.0 s	—

Outputs → Basic unit		
BU – Output 1	*Contactor control QE1*	—
BU – Output 2	*Contactor control QE2*	—

Outputs → Operator panel LEDs		
LED green 1	*Truth table 6 3I/1Q - output*	—
LED green 2	*Truth table 7 2I/1Q - output*	—
LED green 3	*Truth table 8 2I/1Q - output*	—
LED green 4	*Display QLA (Off)*	—

Outputs → Digital module 1		
DM – Output 1	*Contactor control QE4*	—
DM – Output 2	*Contactor control QE5*	—

Outputs → Cyclic send data		
Byte 0, bit 1	**Status – ON>>**	—
Byte 0, bit 1	**Status - OFF**	—
Byte 0, bit 2	**Status – ON>**	—
Byte 0, bit 3	**Event - Pre-warning overload (I>115%Is)**	—
Byte 0, bit 4	**Status - Change-over pause active**	—
Byte 0, bit 5	**Status – Remote mode**	—
Byte 0, bit 6	**Status – Group fault**	—
Byte 0, bit 7	**Status - Group warning**	—
Byte 1, bit 0	**Status – ON<<**	—
Byte 1, bit 1	Status - Test position (TPF)	—
Byte 1, bit 2	**Status – ON<**	—
Byte 1, bit 3	**Status – Interlocking time active**	—
Byte 1, bit 4	Not connected	Freely assignable
Byte 1, bit 5	Not connected	Freely assignable
Byte 1, bit 6	Not connected	Freely assignable
Byte 1, bit 7	Not connected	Freely assignable
Byte 2-3	**Max. current Imax**	—

Standard functions→ Test/reset		
Test 1	Cyclic receive – bit 0.3	—
Reset 1	Cyclic receive – bit 0.6	—

Standard functions→ Emergency Start		
Emergency start – Input	Cyclic receive – bit 0.4	—

Logic blocks → Truth table 3I / 1O → Truth table 6		
Input 1	*Not connected*	—
Input 2	*Status ON<<*	—

Logic blocks → Truth table 3I / 1O → Truth table 6		
Input 3	*Status ON>>*	—
Logic	*01110000*	—

Logic blocks → Truth table 2I / 1O → Truth table 7		
Input 1	*Display QLE< (ON<)*	—
Input 2	*Display QLE<< (ON<<)*	—
Logic	*0111*	—

Logic blocks → Truth table 2I / 1O → Truth table 8		
Input 1	*Display* QLE> (ON>)	—
Input 2	*Display* QLE>> (ON>>)	—
Logic	*0111*	—

4.11.3 Function

The block is installed by the user in a cyclic watchdog interrupt OB (e.g. OB32). Parameter inputs `IN_01` and `IN_23` as well as parameter output `O_01` are also interconnected by the user with the relevant icons for inputs or outputs of the associated SIMOCODE pro device.

SMC_REVD accesses the data provided by SIMOCODE pro via inputs `IN_01` (2 bytes of binary data) and `IN_23` (2 bytes of motor current).

Data is transferred to SIMOCODE pro via the output `O_01` (2 bytes of binary data).

The configuration of the inputs and outputs are determined here by SIMOCODE pro basic type 2.

Access to the inputs and outputs takes place exclusively via the process image.

The block uses the input parameter `MODE` to determine whether the inputs `IN_01` and `IN_23` are valid. In the case of a higher-level fault, all inputs are read by SIMOCODE pro with "0" and output to the relevant outputs of the block.

4.11.4 Assignment of the cyclic process image

Table 4-22 Assignment of O_01: Output commands to SIMOCODE pro

Bit	Control interface
0.0	On>> → Motor FAST Right On
0.1	Off
0.2	On> → Motor SLOW Right On
0.3	Test 1
0.4	Emergency start
0.5	Local/remote control station

Bit	Control interface
0.6	Reset
0.7	—
1.0	On<< → Motor FAST Left On
1.1	—
1.2	On< → Motor SLOW Left On
1.3 – 1.7	User-specific outputs

Table 4-23 Assignment of IN_01: Feedback messages from SIMOCODE pro

Bit	Cyclic send data	Block parameter
0.0	Status – On>>	QRUN / QDIR = FALSE / QSPEED = TRUE
0.1	Status – Off	QSTOP
0.2	Status – On>	QRUN / QDIR = FALSE / QSPEED = FALSE
0.3	Event - Pre-warning overload (I>115 %)	—
0.4	Status - Change-over pause active	QCOA
0.5	Status – Remote mode	QREMOTE
0.6	Status - Group fault	QGR_ERR
0.7	Status - Group warning	QGR_WRN
1.0	Status – On<<	QRUN / QDIR = TRUE / QSPEED = TRUE
1.1	Status - Test position (TPF)	QCST
1.2	Status – On<	QRUN / QDIR = TRUE / QSPEED = FALSE
1.3	Status interlocking time active	QLTA
1.4-1.7	—	—

The input parameter `IN_01` is additionally copied to the output `Q_IN_01`.

The motor current is transferred via the input parameter `IN_23` as an unsigned 2-byte value. SIMOCODE pro always transfers the current here as a percentage of the set current in a range from 0 to 1020%. The motor current is output via `QCUR`.

Assignment of bytes 2 / 3 of the analog control interface and bytes 4 to 9 of the cyclic send data when using basic type 1 is described in the following chapter: Assignment of the cyclic process image (Page 56)

4.11.5 Operating modes

Changing the control station (REMOTE, LOCAL)

The control station is changed via the interconnectable function input `REM_L` if the input `REM_SEL` is set, or via the function input `REM_ON_OP` set by the OS.

The function input (REMOP_EN) influences the operator enable (QLOCOP) for operating via the OS.

The operating mode of the control station is output via QREMOTE (1 = REMOTE, 0 = LOCAL). QREMOTE corresponds here to the bit DP 0.5 of the SIMOCODE pro.

In LOCAL mode, the controller is completely switched off via the SMC_REVD block. Control is then only possible via a control station connected direct to the SIMOCODE pro. It is still possible to acknowledge the fault.

Changing the operating modes (MANUAL, AUTO) when REMOTE is selected

If QREMOTE = TRUE, changeover between the two operating modes MANUAL and AUTOMATIC takes place either via OS operation using AUT_ON_OP (LIOP_SEL = 0) or via the interconnection of the input AUT_L (LIOP_SEL = 1).

The function inputs (MANOP_EN, AUTOP_EN) influence the operator enables (QMANOP, QAUTOP) for operating via the OS.

The operating mode is output at output QMAN_AUT (1 = AUTO, 0 = MANUAL) .

Changing the control station for MANUAL

In REMOTE mode, the operating mode MANUAL can be controlled either via the OS or via the interconnectable function inputs. The changeover for this takes place via the interconnectable function input LINK_MAN.

4.11.6 Control stations for MANUAL and AUTOMATIC mode

General information

The PLC/DP control station of the SIMOCODE pro (that is, DP0.0, 0.1, 0.2, 1.0 and 1.2) is level-active. The On command is stored in the SIMOCODE pro. The Off command (DP0.1) takes priority over the On command (DP0.0, 0.1, 1.0 or 1.2).

Control of the SIMOCODE pro via AS / OS is only possible in REMOTE mode.

AUTOMATIC

In automatic mode, the SIMOCODE pro control functions are controlled via the interconnectable function inputs AUTO_ON (TRUE = On, FALSE = Off), AUTO_DIR (TRUE = counter-clockwise, FALSE = clockwise) and AUTO_SPD (TRUE = Motor FAST, FALSE = Motor SLOW).

Control without non-maintained command mode (JOG_ON = FALSE)

At one edge of the command input, the associated control bit is set in the interface until the SIMOCODE pro sends the relevant feedback message, or a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again if a command is active at the automatic interface.

Control with non-maintained command mode (JOG_ON = TRUE)

The corresponding control bit in the interface is set as long as the command input = TRUE or if a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again if a command is active at the automatic interface. The Stop command is not necessary for switching the device off but is nevertheless set by the block if no On command is active.

MANUAL

In manual mode, the SIMOCODE pro is controlled either via the function inputs FWSP1_ON, FWSP2_ON, RVSP1_ON, RVSP2_ON and MOT_OFF set by the OS or via the interconnectable function inputs L_FWSP1, L_FWSP2, L_RVSP1, L_RVSP2 and L_OFF.

The inputs for the operator enables FS1OP_EN / FS2OP_EN / RS1OP_EN / RS2OP_EN / OFFOP_EN set the outputs QFS1_OP / QFS2_OP / QRS1_OP / QRS2_OP / QOFF_OP for operation using the OS.

At one edge of the command input, the associated control bit is set in the interface until the SIMOCODE pro sends the relevant feedback message, or a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again if a command is active at the interconnectable manual interface.

The Off command takes priority over the On command (no edge evaluation!).

The following priorities apply for the On commands:

Right takes priority over left / slow takes priority over fast.

After changing to manual mode, the commands are not forwarded to the inputs until there is a positive edge change when L_FWSP1 / L_FWSP2 / L_RVSP1 / L_RVSP2 / L_OFF is active.

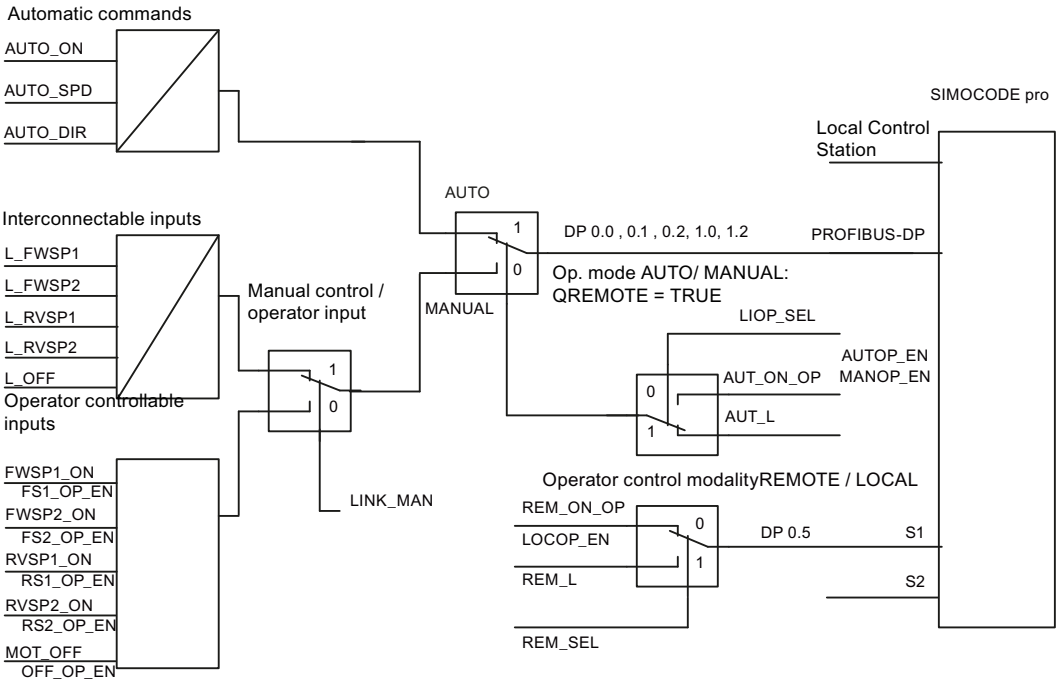
Control without non-maintained command mode (JOG_ON = FALSE)

At one edge of the command input, the associated control bit is set in the interface until the SIMOCODE pro sends the relevant feedback message, or a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again if a command is active at the interconnectable inputs. The operator controllable inputs FWSP1_ON, FWSP2_ON, RVSP1_ON, RVSP2_ON and MOT_OFF are adjusted when tripped.

Control with non-maintained command mode (JOG_ON = TRUE)

The corresponding control bit in the interface is set as long as the command input = TRUE or if a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again if a command is active at the automatic interface. The Stop command is not necessary for switching the device off but is nevertheless set by the block if no On command is active.

4.11.7 Overview of control stations, operating modes, and operator control modalities



4.11.8 Start-up characteristics

During OB100 (warm restart) or the first start of the block, the block is switched to manual mode and the Off command is output. For this purpose, the block must be called from the startup OB. After OB 100 (Warm Restart) startup, the messages are suppressed for the number of cycles parameterized in the `RUNUPCYC` value.

Following Output parameters from the block are re-initialized to "0" (`RESET`, `SMCRESET` and `QLOC_INT`). Motor Outputs like `QCST`, `QRUN`, `QDIR`, `QSPEED`, `QCOA`, `QLTA` and `QSTOP` are reinitialized from its process data value `IN_01`.

OB1 first run identification information is received from SMC_DIAG block through IN-OUT parameter `RECVDATA` at bit 24. Further, this information is used as an entry condition for RDREC/WRREC processing.

4.11.9 Time response

The block must be called via a watchdog interrupt OB. The sampling time of the block is entered in the parameter `SAMPLE_T`.

4.11.10 Status displays for icons

Status	Parameter	View
Off	QSTOP = 1	
Right Motor SLOW On	QRUN = 1 QDIR = 0 QSPEED = 0	
Right Motor FAST On	QRUN = 1 QDIR = 0 QSPEED = 1	
Left Motor SLOW On	QRUN = 1 QDIR = 1 QSPEED = 0	
Left Motor FAST On	QRUN = 1 QDIR = 1 QSPEED = 1	
Not available	QBAD = 1	

4.11.11 Description of the faceplate

The available faceplates are described in this chapter.

The following views are available:

Overview	OVERVIEW
Standard	STANDARD
Limits	LIMITS
Maintenance	MAINTENANCE
Faults	MESSAGE1
Warnings	MESSAGE2
Messages	—
Trend	—
Batch	—

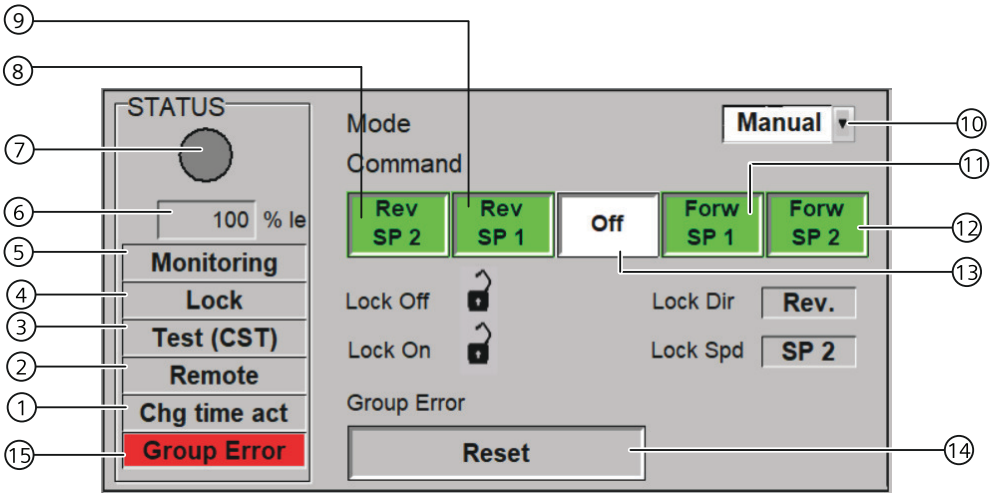
The file name is composed as follows: @PG_SMC_REVD_<View>.PDL

The PCS 7 standard displays are used for the message, trend and batch views.

The structure of the individual views of faceplates is described below.

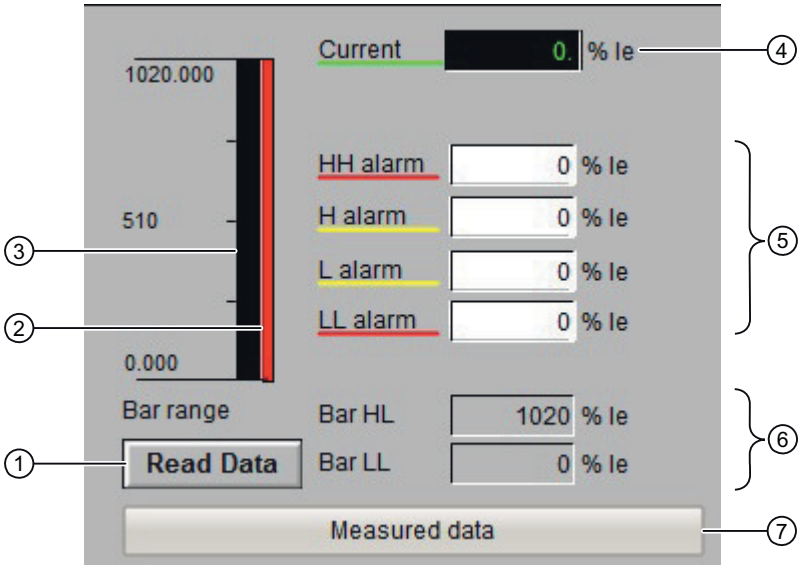
Standard (STANDARD)

The status display is a user object comprising several status displays. The status display corresponds to the representation from the process image icon.



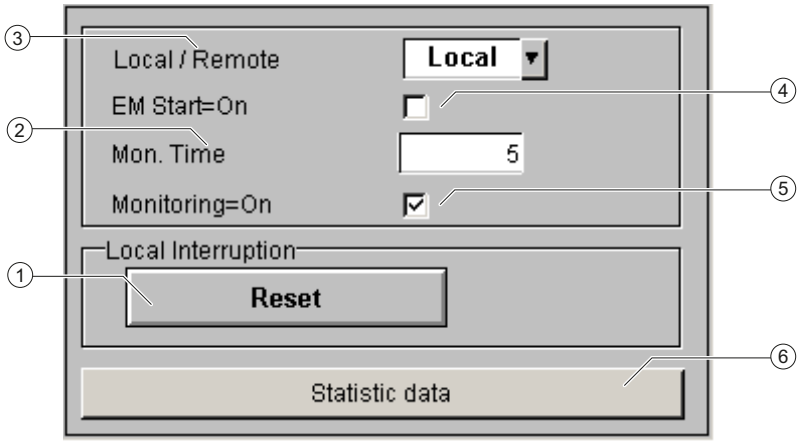
① Interlocking time (QLTA) / change-over pause (QCOA)
② Operator control modality (QREMOTE)
③ Test (QCST)
④ Interlocking (LOCK / LOCK_ON)
⑤ Local Interruption (QLOC_INT)
⑥ Current (QCUR) / unit (QCUR#unit)
⑦ Status display (VSTATUS)
⑧ Command Left Fast On (RVSP2_ON)
⑨ Command Left Slow On (RVSP1_ON)
⑩ Operating mode (QMAN_AUT, AUT_ON_OP)
⑪ Command Right Slow On (FWSP1_ON)
⑫ Command Right Fast On (FWSP2_ON)
⑬ Command Off (MOT_OFF)
⑭ Acknowledgement (RESET)
⑮ Status (QGR_ERR)

Limits (LIMITS)



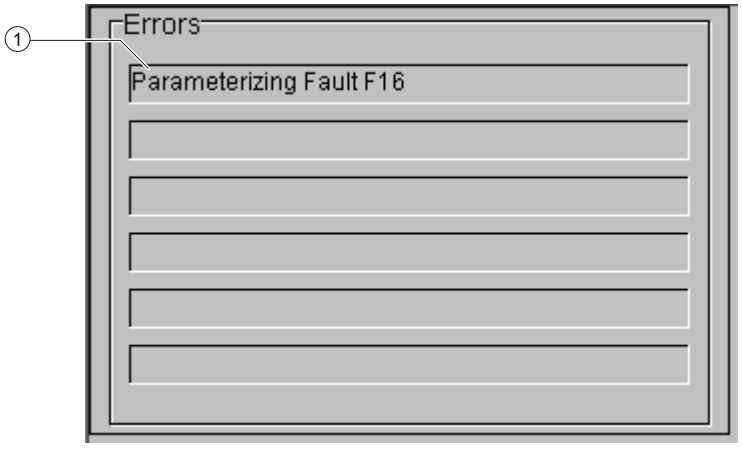
① Read Data (RD_DATA)
② Limit value display (CUR_AH, CUR_WH, CUR_WL, CUR_AL)
③ Actual value bar (QCUR, MO_PVHR, MO_PVLR)
④ Current value (QCUR, QCUR#unit)
⑤ Limits (CUR_AH, CUR_WH, CUR_WL, CUR_AL)
⑥ Bar range (MO_PVHR, MO_PVLR)
⑦ Call faceplate SMC_MEAS, visible if EN_MEAS = TRUE

Maintenance (MAINTENANCE)



① Acknowledge Local Interruption (RESET)
② Monitoring time for Local Interruption (TIME_MON)
③ Operator control modality Local / Remote (REM_ON_OP)
Operator needs to have Authorization level 6 to access this command area.
④ Activation Emergency Start (EM_START)
⑤ Activation Monitoring (MONITOR)
⑥ Call faceplate SMC_STAT, visible if EN_STAT = TRUE

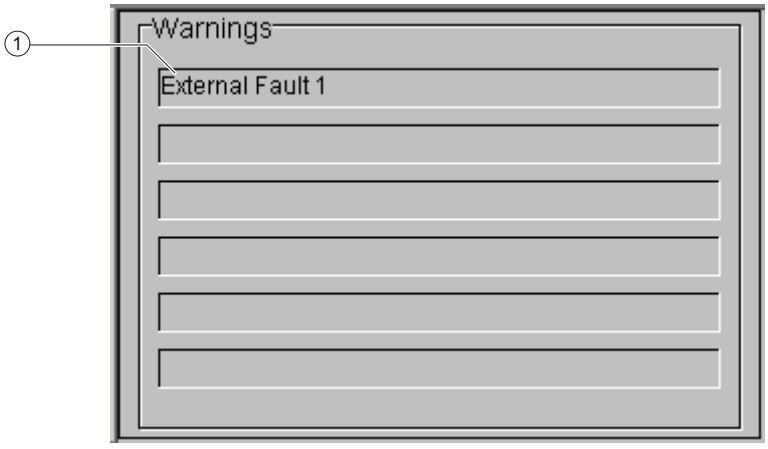
Faults (MESSAGE1)



① Text list with error description (ERR_NOx)

For error number 0, the text field is switched to invisible.

Warnings (MESSAGE2)



① Text list with error description (WRN_NOx)

For error number 0, the text field is switched to invisible.

4.12 SMC_VAL: Signal processing block for valve control function

4.12.1 Description of SMC_VAL

Block Number

FB2010

Calling OBs

The watchdog interrupt OB in which you install the block (e.g. OB32). Also in OB100 (see start-up characteristics).

Called blocks

The block calls the following blocks:

SFB35	ALARM_8P
SFC6	RD_SINFO
SFC20	BLKMOV

4.12.2 Parameter assignment in SIMOCODE ES

For the signal blocks to function correctly, a range of SIMOCODE pro parameters must have quite specific settings. Those parameters that define the assignment of the cyclic I/O interface are especially affected.

These parameters are represented in **bold**.

In addition, the overview below represents the parameters that are already preset for the control function in the templates for application selection in the SIMOCODE ES software. The settings are suggestions and depend heavily on the actual wiring of the SIMOCODE pro inputs and outputs.

These parameters are represented in *italics*.

Other parameters must also be set, e.g. for motor protection. These are not described here. Parameter assignment for the extended I/O interface of basic type 1 is represented in the following chapter: Parameter assignment in SIMOCODE ES (Page 55)

Solenoid Valve Control function

Motor control → Control stations		
Operation mode selector S1	**Cyclic receive bit 0.5**	—
Operation mode selector S2	*Fixed level 1*	—

Local control [LC]		
Close	*BU - Input 2*	—
Open	*BU - Input 1*	—
Operator enable local 2 OFF	*Active*	—
Operator enable local 2 ON	*Active*	—
Operator enable remote OFF	**Not active**	—
Operator enable remote ON	**Not active**	—

PLC/PCS [DP]		
Close	**Cyclic receive – bit 0.1**	—
Open	**Cyclic receive – bit 0.2**	—
Operator enable local 2 OFF	**Not active**	—
Operator enable local 2 ON	**Not active**	—
Operator enable remote OFF	**Active**	—
Operator enable remote ON	**Active**	—

Operator Panel [OP]		
Close	*OP button 4*	—
Open	*OP button 3*	—
Operator enable local 2 OFF	*Active*	—
Operator enable local 2 ON	*Active*	—

Operator Panel [OP]		
Operator enable remote OFF	**Not active**	—
Operator enable remote ON	**Not active**	—

Motor control → Control function → Control commands		
Close	**Enabled control command - Close**	—
Open	**Enabled control command – Open**	—

Motor control → Control function → Operating mode		
Non-maintained command mode	*Not active*	*The setting of the parameter influences the parameter JOG_ON in the SIMOCODE signal block:* *Non-maintained command mode not active: JOG_ON = FALSE* *Non-maintained command mode active: JOG_ON = TRUE*

Motor control → Control function → Auxiliary control inputs		
Feedback closed	*BU - Input 3*	—
Feedback open	*BU - Input 4*	—

Motor control → Control function → Timings		
Execution time	1.0 s	—

Outputs → Basic unit		
BU – Output 1	*Contactor control QE1*	—

Outputs → Operator panel LEDs		
LED green 3	*Display QLE> (ON>)*	—
LED green 4	*Display QLA (OFF)*	—

Outputs → Cyclic send data		
Byte 0, bit 0	Not connected	—
Byte 0, bit 1	**Status - OFF**	—
Byte 0, bit 2	**Status – ON>**	—
Byte 0, bit 3	Not connected	—
Byte 0, bit 4	Not connected	—
Byte 0, bit 5	**Status – Remote mode**	—
Byte 0, bit 6	**Status – Group fault**	—

Outputs → Cyclic send data		
Byte 0, bit 7	**Status - Group warning**	—
Byte 1, bit 0	Not connected	Freely assignable
Byte 1, bit 1	Not connected	Freely assignable
Byte 1, bit 2	Not connected	Freely assignable
Byte 1, bit 3	Not connected	Freely assignable
Byte 1, bit 4	Not connected	Freely assignable
Byte 1, bit 5	Not connected	Freely assignable
Byte 1, bit 6	Not connected	Freely assignable
Byte 1, bit 7	Not connected	Freely assignable
Byte 2-3	Not connected	—

Standard functions→ Test/reset		
Test 1	Cyclic receive – bit 0.3	—
Reset 1	Cyclic receive – bit 0.6	—

4.12.3 Function

The block is installed by the user in a cyclic watchdog interrupt OB (e.g. OB32). Parameter inputs `IN_01` and `IN_23` as well as parameter output `O_01` are also interconnected by the user with the relevant icons for inputs or outputs of the associated SIMOCODE pro device.

SMC_VAL accesses the data provided by SIMOCODE pro via inputs `IN_01` (2 bytes of binary data) and `IN_23` (2 bytes of motor current).

Data is transferred to SIMOCODE pro via the output `O_01` (2 bytes of binary data).

The configuration of the inputs and outputs are determined here by SIMOCODE pro basic type 2.

Access to the inputs and outputs takes place exclusively via the process image.

The block uses the input parameter `MODE` to determine whether the inputs `IN_01` and `IN_23` are valid. In the case of a higher-level fault, all inputs are read by SIMOCODE pro with "0" and output to the relevant outputs of the block.

4.12.4 Assignment of the cyclic process image

Table 4-24 Assignment of O_01: Output commands to SIMOCODE pro

Bit	Control interface
0.0	—
0.1	Close
0.2	Open
0.3	Test1
0.4	Emergency start

Bit	Control interface
0.5	Local/remote control station
0.6	Reset
0.7	—
1.0 ... 1.7	User-specific outputs

Table 4-25 Assignment of IN_01: Feedback messages from SIMOCODE pro

Bit	Cyclic send data	Block parameter
0.0	—	—
0.1	Status – Closed	QCLOSED
0.2	Status – Open	QOPENED
0.3	—	—
0.4	—	—
0.5	Status – Remote mode	QREMOTE
0.6	Status - Group fault	QGR_ERR
0.7	Status - Group warning	QGR_WRN
1.0	—	—
1.1	Status - Test position (TPF)	QCST
1.2 ... 1.7	—	—

The input parameter `IN_01` is additionally copied to the output `Q_IN_01`.

The motor current is transferred via the input parameter `IN_23` as an unsigned 2-byte value. SIMOCODE pro always transfers the current here as a percentage of the set current in a range from 0 to 1020%. The motor current is output via `QCUR`.

4.12.5 Operating modes

Changing the control station (REMOTE, LOCAL)

The control station is changed via the interconnectable function input `REM_L` if the input `REM_SEL` is set, or via the function input `REM_ON_OP` set by the OS.

The function input (`REMOP_EN`) influences the operator enable (`QLOCOP`) for operating via the OS.

The operating mode of the control station is output via `QREMOTE` (1 = REMOTE, 0 = LOCAL). `QREMOTE` corresponds here to the bit DP 0.5 of the SIMOCODE pro.

In LOCAL mode, the controller is completely switched off via the SMC_VAL block. Control is then only possible via a control station connected direct to the SIMOCODE pro. It is still possible to acknowledge the fault.

Changing the operating modes (MANUAL, AUTO) when REMOTE is selected

If QREMOTE = TRUE, changeover between the two operating modes MANUAL and AUTOMATIC takes place either via OS operation using AUT_ON_OP (LIOP_SEL = 0) or via the interconnection of the input AUT_L (LIOP_SEL = 1).

The function inputs (MANOP_EN, AUTOP_EN) influence the operator enables (QMANOP, QAUTOP) for operating via the OS.

The operating mode is output at output QMAN_AUT (1 = AUTO, 0 = MANUAL).

Changing the control station for MANUAL

In REMOTE mode, the operating mode MANUAL can be controlled either via the OS or via the interconnectable function inputs. The changeover for this takes place via the interconnectable function input LINK_MAN.

4.12.6 Control stations for MANUAL and AUTOMATIC mode

General information

The PLC/DP control station of the SIMOCODE pro (that is, DP0.1 and 0.2) is level-active. The open command is stored in the SIMOCODE pro. The close command (DP0.1) takes priority over the open command (DP0.2).

Control of the SIMOCODE pro via AS / OS is only possible in REMOTE mode.

AUTOMATIC

In automatic mode, the SIMOCODE pro control functions are controlled via the interconnectable function input AUTO_OC (TRUE = Open, FALSE = Closed).

Control without non-maintained command mode (JOG_ON = FALSE)

At one edge of the command input, the associated control bit is set in the interface until the SIMOCODE pro sends the relevant feedback message, or a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again if a command is active at the automatic interface.

Control with non-maintained command mode (JOG_ON = TRUE)

The corresponding control bit in the interface is set as long as the command input = TRUE or if a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again if a command is active at the automatic interface. The Closed command is not necessary for closing the valve but is nevertheless set by the block if no Open command is active.

MANUAL

In manual mode, the SIMOCODE pro is controlled either via the function inputs OPEN_VAL and CLOS_VAL set by the OS or via the interconnectable function inputs L_OPEN and L_CLOSE.

The inputs for the operator enables OP_OP_EN / CL_OP_EN set the outputs QOP_OP / QCL_OP for operation using the OS.

At one edge of the command input, the associated control bit is set in the interface until the SIMOCODE pro sends the relevant feedback message, or a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again if a command is active at the interconnectable manual interface.

The Closed command takes priority over the Open command (no edge evaluation!).

After changing to manual mode, the commands are not forwarded to the inputs until there is a positive edge change when L_OPEN / L_CLOSE is active.

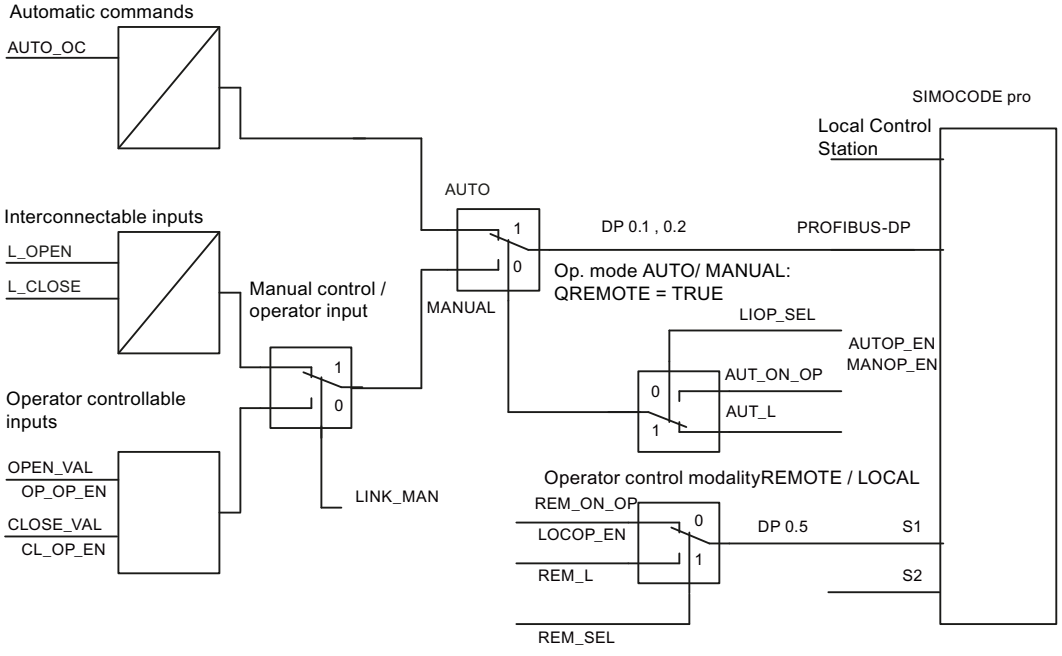
Control without non-maintained command mode (JOG_ON = FALSE)

At one edge of the command input, the associated control bit is set in the interface until the SIMOCODE pro sends the relevant feedback message, or a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again if a command is active at the interconnectable inputs. The operator controllable inputs OPEN_VAL and CLOS_VAL are adjusted when tripped.

Control with non-maintained command mode (JOG_ON = TRUE)

The corresponding control bit in the interface is set as long as the command input = TRUE or if a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again if a command is active at the automatic interface. The Closed command is not necessary for closing the valve but is nevertheless set by the block if no Open command is active.

4.12.7 Overview of control stations, operating modes, and operator control modalities



4.12.8 Start-up characteristics

At CPU startup (warm restart) or the first start of the block, the block is switched to manual mode and the valve is taken to the safe position (SS_POS). For this purpose, the block must be called from the startup OB.

After startup, the messages are suppressed for the number of cycles parameterized in the RUNUPCYC value. Following Output parameters from the block are re-initialized to "0" (RESET, SMCRESET and QLOC_INT). Motor Outputs like QCST, QRUN, QOPENED, QCLOSED are reinitialized from its process data value IN_01.

OB1 first run identification information is received from SMC_DIAG block through IN-OUT parameter RECVDATA at bit 24.

4.12.9 Status displays for icons

Status	Parameter	View
Closed	QCLOSED = 1	
Open	QOPENED = 1	
Not available	QBAD = 1	

4.12.10 Description of the faceplate

The available faceplates are described in this chapter.

The following views are available:

Overview	OVERVIEW
Standard	STANDARD
Limits	LIMITS
Maintenance	MAINTENANCE
Faults	MESSAGE1
Warnings	MESSAGE2
Messages	—
Trend	—
Batch	—

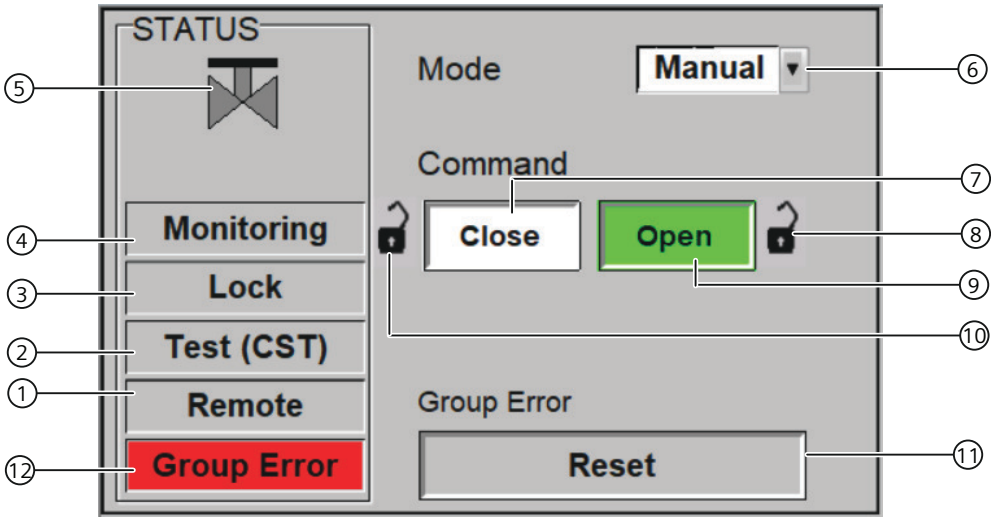
The file name is composed as follows: @PG_SMC_VAL_<View>.PDL

The PCS 7 standard displays are used for the message and batch views.

The structure of the individual views of faceplates is described below.

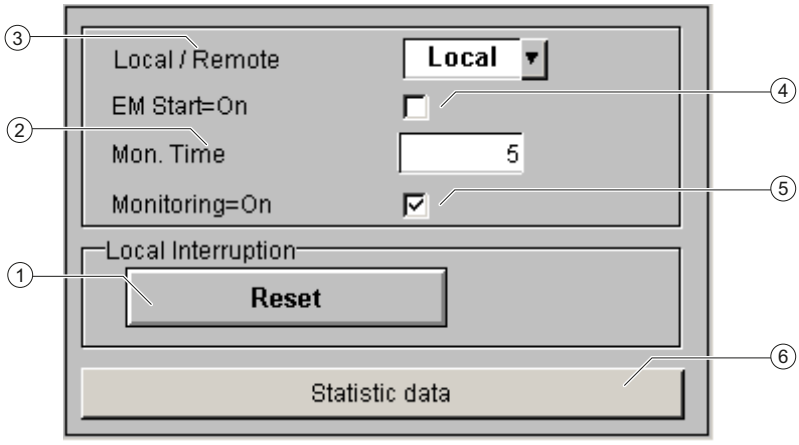
Standard (STANDARD)

The status display is a user object comprising several status displays. The status display corresponds to the representation from the process image icon.



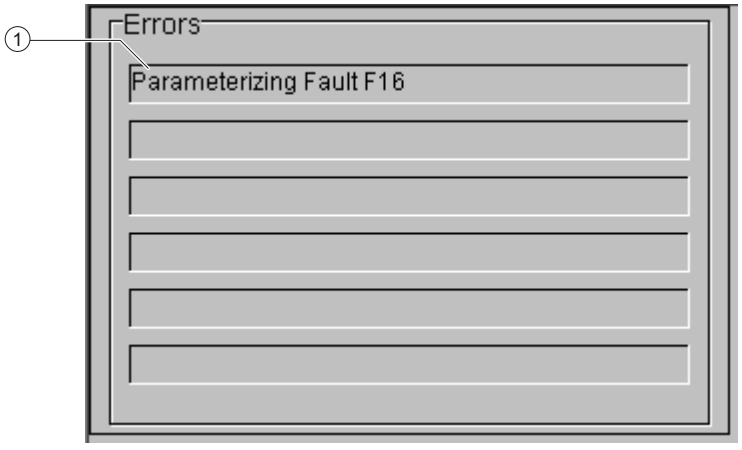
① Operator control modality (QREMOTE)
② Test (QCST)
③ Interlocking (V_LOCK , VL_OPEN; VL_CLOSE)
④ Local Interruption (QLOC_INT)
⑤ Status display (VSTATUS)
⑥ Operating mode (QMAN_AUT, AUT_ON_OP)
⑦ Close command (CLOSE_VAL)
⑧ Lock to open (VL_OPEN) or lock to safe position (V_LOCK) and safe position (SS_POS)
⑨ Open command (OPEN_VAL)
⑩ Lock to close (VL_CLOS) or lock to safe position (V_LOCK) and safe position (SS_POS)
⑪ Acknowledgement (RESET)
⑫ Status (QGR_ERR)

Maintenance (MAINTENANCE)



① Acknowledge Local Interruption (RESET)
② Monitoring time for Local Interruption (TIME_MON)
③ Operator control modality Local / Remote (REM_ON_OP)
Operator needs to have Authorization level 6 to access this command area.
④ Activation Emergency Start (EM_START)
⑤ Activation Monitoring (MONITOR)
⑥ Call faceplate SMC_STAT, visible if EN_STAT = TRUE

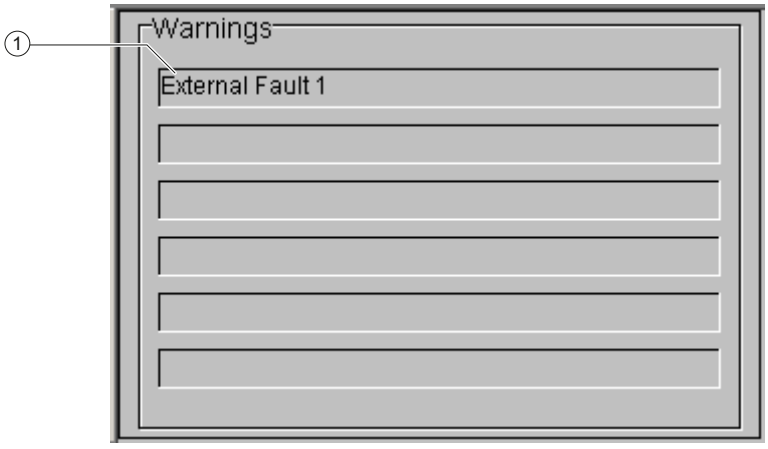
Faults (MESSAGE1)



① Text list with error description (ERR_NOx)

For error number 0, the text field is switched to invisible.

Warnings (MESSAGE2)



① Text list with error description (WRN_NOx)

For error number 0, the text field is switched to invisible.

4.13 SMC_POS: Signal processing block for positioner control function

4.13.1 Description of SMC_POS

Block Number

FB2011

Calling OBs

The watchdog interrupt OB in which you install the block (e.g. OB32). Also in OB100 (see start-up characteristics).

Called blocks

The block calls the following blocks:

SFB35	ALARM_8P
SFB52	RDREC
SFB53	WRREC
SFC6	RD_SINFO
SFC20	BLKMOV

4.13.2 Parameter assignment in SIMOCODE ES

For the signal blocks to function correctly, a range of SIMOCODE pro parameters must have quite specific settings. Those parameters that define the assignment of the cyclic I/O interface are especially affected.

These parameters are represented in **bold**.

In addition, the overview below represents the parameters that are already preset for the control function in the templates for application selection in the SIMOCODE ES software. The settings are suggestions and depend heavily on the actual wiring of the SIMOCODE pro inputs and outputs.

These parameters are represented in *italics*.

Other parameters must also be set, e.g. for motor protection. These are not described here. Parameter assignment for the extended I/O interface of basic type 1 is represented in the following chapter: Parameter assignment in SIMOCODE ES (Page 55)

Table 4-26 Positioner control function

Motor control → Control stations		
Operation mode selector S1	**Cyclic receive bit 0.5**	—
Operation mode selector S2	*Fixed level 1*	—

Local control [LC]		
Close	*DM – Input 1*	—
Stop	*DM – Input 2*	—
Open	*DM – Input 3*	—
Operator enable local 2 OFF	*Active*	—
Operator enable local 2 ON	*Active*	—
Operator enable remote OFF	**Not active**	—
Operator enable remote ON	**Not active**	—

PLC/PCS [DP]		
Close	*Cyclic receive – bit 0.0*	—
Stop	*Cyclic receive – bit 0.1*	—
Open	*Cyclic receive – bit 0.2*	—
Operator enable local 2 OFF	*Not active*	—
Operator enable local 2 ON	*Not active*	—
Operator enable remote OFF	**Active**	—
Operator enable remote ON	**Active**	—

Operator Panel [OP]		
Close	*OP button 2*	—
Stop	*OP button 4*	—
Open	*OP button 3*	—

Operator Panel [OP]		
Operator enable local 2 OFF	*Active*	—
Operator enable local 2 ON	*Active*	—
Operator enable remote OFF	**Not active**	—
Operator enable remote ON	**Not active**	—

Motor control → Control function → Control commands		
Close	**Enabled control command – Close**	—
Stop	**Enabled control command - Stop**	—
Open	**Enabled control command – Open**	—

Motor control → Control function → Operating mode		
Non-maintained command mode	*Not active*	*The setting of the parameter influences the parameter JOG_ON in the SIMOCODE signal block:* *Non-maintained command mode not active: JOG_ON = FALSE* *Non-maintained command mode active: JOG_ON = TRUE*
Saving change-over command	Not active	Only Positioner 2

Motor control → Control function → Auxiliary control inputs		
Feedback ON	**Status – Motor current flowing**	—
Feedback closed (FC)	*BU - Input 2*	—
Feedback open (FO)	*BU - Input 3*	—
Torque closed (TC)	*BU - Input 1*	*(only positioner control function 2.3)*
Torque open (TO)	*BU - Input 4*	*(only positioner control function 2,4)*

Motor control → Control function → Timings		
Feedback time	0.5 s	—
Execution time	10 s	—

Outputs → Basic unit		
BU – Output 1	*Contactor control QE1*	—
BU – Output 2	*Contactor control QE2*	—

Outputs → Operator panel LEDs		
LED green 2	*Display QLE< (ON<)*	—
LED green 3	*Display QLE> (ON>)*	—
LED green 4	*Display QLA (OFF)*	—

Outputs → Cyclic send data		
Byte 0, bit 0	**Status – ON<**	—
Byte 0, bit 1	**Status - OFF**	—
Byte 0, bit 2	**Status – ON>**	—
Byte 0, bit 3	**Event - Pre-warning overload (I>115%Is)**	—
Byte 0, bit 4	**Status – Interlocking time active**	—
Byte 0, bit 5	**Status – Remote mode**	—
Byte 0, bit 6	**Status – Group fault**	—
Byte 0, bit 7	**Status - Group warning**	—
Byte 1, bit 0	**Status – Positioner runs in OPEN direction**	—
Byte 1, bit 1	Status - Test position (TPF)	—
Byte 1, bit 2	**Status - Positioner runs in CLOSED direction**	—
Byte 1, bit 3	Not connected	Freely assignable
Byte 1, bit 4	Not connected	Freely assignable
Byte 1, bit 5	Not connected	Freely assignable
Byte 1, bit 6	Not connected	Freely assignable
Byte 1, bit 7	Not connected	Freely assignable
Byte 2-3	**Max. current I_max (% of Is)**	—

Standard functions→ Test/reset		
Test 1	Cyclic receive – bit 0.3	—
Reset 1	Cyclic receive – bit 0.6	—

Standard functions→ Emergency Start		
Emergency start – Input	Cyclic receive – bit 0.4	—

4.13.3 Function

The block is installed by the user in a cyclic watchdog interrupt OB (e.g. OB32). Parameter inputs `IN_01` and `IN_23` as well as parameter output `O_01` are also interconnected by the user with the relevant icons for inputs or outputs of the associated SIMOCODE pro device.

SMC_POS accesses the data provided by SIMOCODE pro via inputs `IN_01` (2 bytes of binary data) and `IN_23` (2 bytes of motor current).

Data is transferred to SIMOCODE pro via the output `O_01` (2 bytes of binary data).

The configuration of the inputs and outputs are determined here by SIMOCODE pro basic type 2.

Access to the inputs and outputs takes place exclusively via the process image.

The block uses the input parameter MODE to determine whether the inputs IN_01 and IN_23 are valid. In the case of a higher-level fault, all inputs are read by SIMOCODE pro with "0" and output to the relevant outputs of the block.

4.13.4 Assignment of the cyclic process image

Table 4-27 Assignment of O_01: Output commands to SIMOCODE pro

Bit	Control interface
0.0	Close
0.1	Stop
0.2	Open
0.3	Test1
0.4	Emergency start
0.5	Local/remote control station
0.6	Reset
0.7	—
1.0 ... 1.7	User-specific outputs

Table 4-28 Assignment of IN_01: Feedback messages from SIMOCODE pro

Bit	Cyclic send data	Block parameter
0.0	Status – Closed	QCLOSED
0.1	Status – Stop	QSTOP
0.2	Status – Open	QOPENED
0.3	Event - Pre-warning overload (I>115 %)	—
0.4	Status – Interlocking time active	QLTA
0.5	Status – Remote mode	QREMOTE
0.6	Status - Group fault	QGR_ERR
0.7	Status - Group warning	QGR_WRN
1.0	Status – Positioner runs in Open direction	QOPENING
1.1	Status - Test position (TPF)	QCST
1.2	Status – Positioner runs in Close direction	QCLOSING
1.3 ... 1.7	—	—

The input parameter IN_01 is additionally copied to the output Q_IN_01.

The motor current is transferred via the input parameter IN_23 as an unsigned 2-byte value. SIMOCODE pro always transfers the current here as a percentage of the set current in a range from 0 to 1020%. The motor current is output via QCUR.

Assignment of bytes 2 / 3 of the analog control interface and bytes 4 to 9 of the cyclic send data when using basic type 1 is described in the following chapter: Assignment of the cyclic process image (Page 56)

4.13.5 Operating modes

Changing the control station (REMOTE, LOCAL)

The control station is changed via the interconnectable function input REM_L if the input REM_SEL is set, or via the function input REM_ON_OP set by the OS.

The function input (REMOP_EN) influences the operator enable (QLOCOP) for operating via the OS.

The operating mode of the control station is output via QREMOTE (1 = REMOTE, 0 = LOCAL). QREMOTE corresponds here to the bit DP 0.5 of the SIMOCODE pro.

In LOCAL mode, the controller is completely switched off via the SMC_POS block. Control is then only possible via a control station connected direct to the SIMOCODE pro. It is still possible to acknowledge the fault.

Changing the operating modes (MANUAL, AUTO) when REMOTE is selected

If QREMOTE = TRUE, changeover between the two operating modes MANUAL and AUTOMATIC takes place either via OS operation using AUT_ON_OP (LIOP_SEL = 0) or via the interconnection of the input AUT_L (LIOP_SEL = 1).

The function inputs (MANOP_EN, AUTOP_EN) influence the operator enables (QMANOP, QAUTOP) for operating via the OS.

The operating mode is output at output QMAN_AUT (1 = AUTO, 0 = MANUAL).

Changing the control station for MANUAL

In REMOTE mode, the operating mode MANUAL can be controlled either via the OS or via the interconnectable function inputs. The changeover for this takes place via the interconnectable function input LINK_MAN.

4.13.6 Control stations for MANUAL and AUTOMATIC mode

General information

The PLC/DP control station of the SIMOCODE pro (that is, DP0.1 and 0.2) is level-active. The open command is stored in the SIMOCODE pro. The close command (DP0.1) takes priority over the open command (DP0.2).

Control of the SIMOCODE pro via AS / OS is only possible in REMOTE mode.

AUTOMATIC

In automatic mode, the SIMOCODE pro control functions are controlled via the interconnectable function inputs AUTO_ON (TRUE = On, FALSE = Stop) and AUTO_OC (TRUE = Open, FALSE = Closed).

Control without non-maintained command mode (JOG_ON = FALSE)

At one edge of the command input, the associated control bit is set in the interface until the SIMOCODE pro sends the relevant feedback message, or a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again if a command is active at the automatic interface.

Control with non-maintained command mode (JOG_ON = TRUE)

The corresponding control bit in the interface is set as long as the command input = TRUE or if a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again if a command is active at the automatic interface. The Stop command is not necessary for stopping the positioner but is nevertheless set by the block if no open/close command is active.

MANUAL

In manual mode, the SIMOCODE pro is controlled either via the function inputs OPEN_VAL, CLOS_VAL and STOP_VAL set by the OS or via the interconnectable function inputs L_OPEN, L_CLOSE and L_STOP.

The inputs for the operator enables OP_OP_EN / CL_OP_EN / ST_OP_EN set the outputs QOP_OP / QCL_OP / QST_OP for operation using the OS.

At one edge of the command input, the associated control bit is set in the interface until the SIMOCODE pro sends the relevant feedback message, or a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again if a command is active at the interconnectable manual interface.

The Stop command takes priority over the Open/Close command (no edge evaluation!).

After changing to manual mode, the commands are not forwarded to the inputs until there is a positive edge change when L_OPEN / L_CLOSE / L_STOP is active.

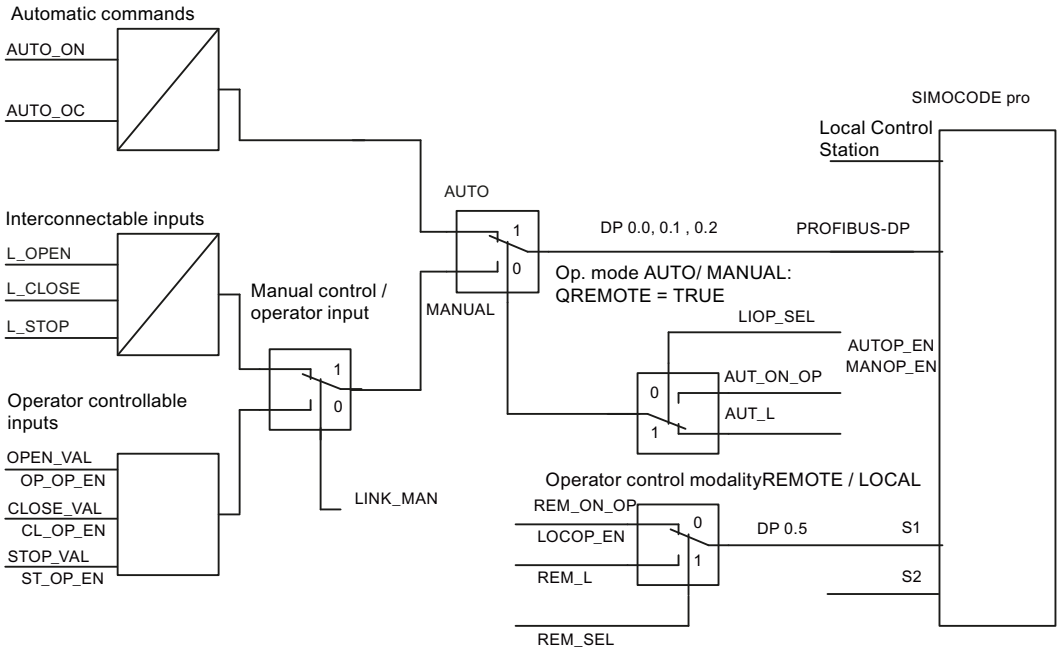
Control without non-maintained command mode (JOG_ON = FALSE)

At one edge of the command input, the associated control bit is set in the interface until the SIMOCODE pro sends the relevant feedback message, or a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again if a command is active at the interconnectable inputs. The operator controllable inputs OPEN_VAL, CLOS_VAL and STOP_VAL are adjusted when tripped.

Control with non-maintained command mode (JOG_ON = TRUE)

The corresponding control bit in the interface is set as long as the command input = TRUE or if a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again if a command is active at the automatic interface. The Stop command is not necessary for stopping the positioner but is nevertheless set by the block if no Open/Close command is active.

4.13.7 Overview of control stations, operating modes, and operator control modalities



4.13.8 Start-up characteristics

During OB100 (warm restart) or the first start of the block, the block is switched to manual mode and the Off command is output. For this purpose, the block must be called from the startup OB. After OB 100 (Warm Restart) startup, the messages are suppressed for the number of cycles parameterized in the `RUNUPCYC` value.

Following Output parameters from the block are re-initialized to "0" (`RESET`,`SMCRESET` and `QLOC_INT`). Motor Outputs like `QCST`, `QRUN`, `QOPENED`, `QCLOSED` and `QLTA` are reinitialized from its process data value `IN_01`.

OB1 first run identification information is received from SMC_DIAG block through IN-OUT parameter `RECVDATA` at bit 24. Further, this information is used as an entry condition for RDREC/WRREC processing.

4.13.9 Status displays for icons

Status	Parameter	View
Stop	QCLOSED = 0 QOPENED = 0 QCLOSING = 0 QOPENING = 0	
Closed	QCLOSED = 1	
Opened	QOPENED = 1	
Closing	QCLOSING = 1	  Flashes
Opening	QOPENING = 1	  Flashes
Not available	QBAD = 1	

4.13.10 Description of the faceplate

The available faceplates are described in this chapter.

The following views are available:

Overview	OVERVIEW
Standard	STANDARD
Limits	LIMITS
Maintenance	MAINTENANCE
Faults	MESSAGE1
Warnings	MESSAGE2
Messages	—
Trend	—
Batch	—

The file name is composed as follows: @PG_SMC_POS_<View>.PDL

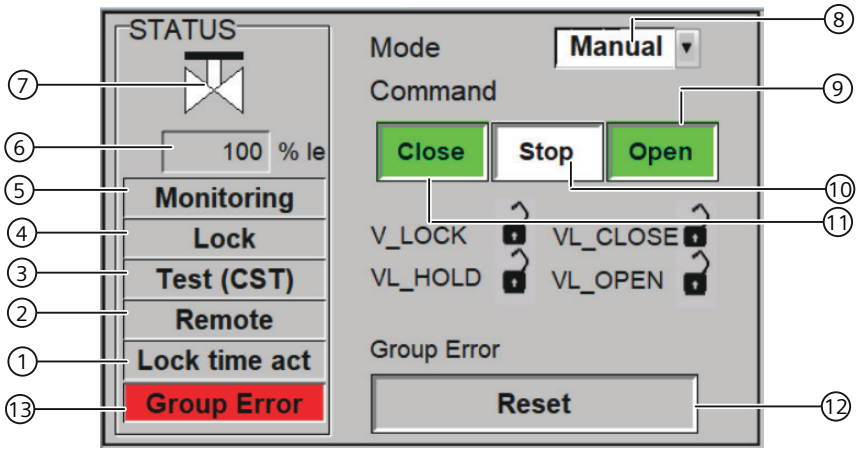
The PCS 7 standard displays are used for the message, trend and batch views.

The structure of the individual views of faceplates is described below.

Standard (STANDARD)

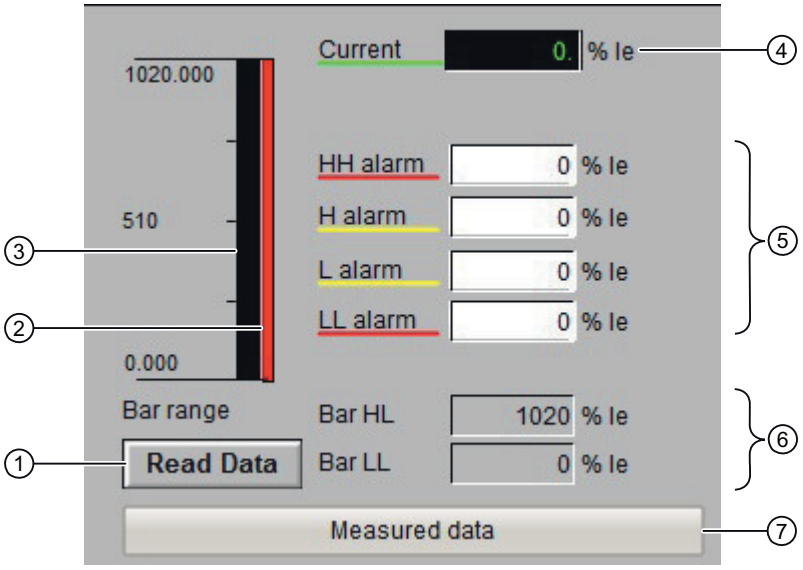
Status

The status display is a user object comprising several status displays. The status display corresponds to the representation from the process image icon.



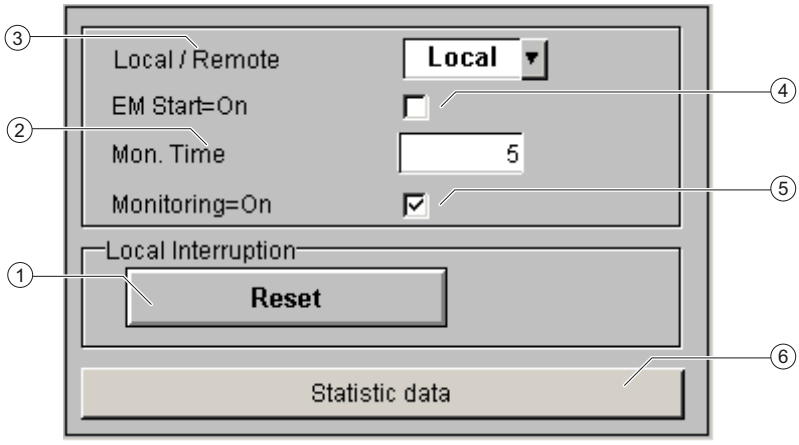
① Interlocking time (QLTA)
② Operator control modality (QREMOTE)
③ Test (QCST)
④ Interlocking (V_LOCK, VL_OPEN, VL_CLOSE, VL_HOLD)
⑤ Local Interruption (QLOC_INT)
⑥ Current (QCUR)/ unit (QCUR#unit)
⑦ Status display (VSTATUS)
⑧ Operating mode (QMAN_AUT, AUT_ON_OP)
⑨ Open command (OPEN_VAL)
⑩ Stop command (STOP_VAL)
⑪ Close command (CLOSE_VAL)
⑫ Acknowledgement (RESET)
⑬ Status (QGR_ERR)

Limits (LIMITS)



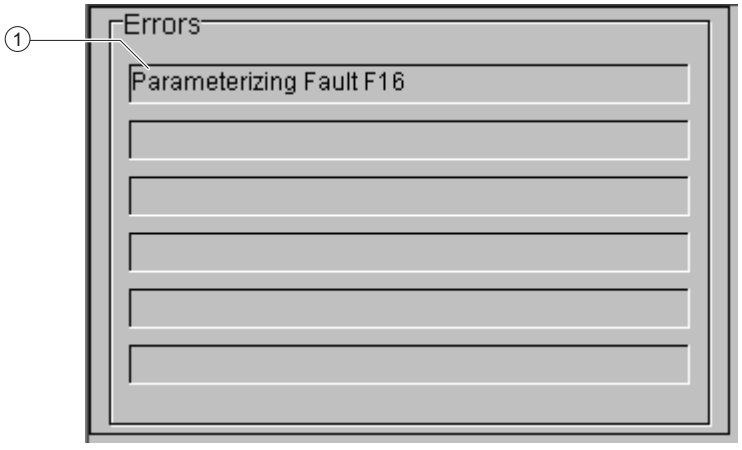
① Read Data (RD_DATA)
② Limit value display (CUR_AH, CUR_WH, CUR_WL, CUR_AL)
③ Actual value bar (QCUR, MO_PVHR, MO_PVLR)
④ Current value (QCUR, QCUR#unit)
⑤ Limits (CUR_AH, CUR_WH, CUR_WL, CUR_AL)
⑥ Bar range (MO_PVHR, MO_PVLR)
⑦ Call faceplate SMC_MEAS, visible if EN_MEAS = TRUE

Maintenance (MAINTENANCE)



① Acknowledge Local Interruption (RESET)
② Monitoring time for Local Interruption (TIME_MON)
③ Operator control modality Local / Remote (REM_ON_OP)
Operator needs to have Authorization level 6 to access this command area.
④ Activation Emergency Start (EM_START)
⑤ Activation Monitoring (MONITOR)
⑥ Call faceplate SMC_STAT, visible if EN_STAT = TRUE

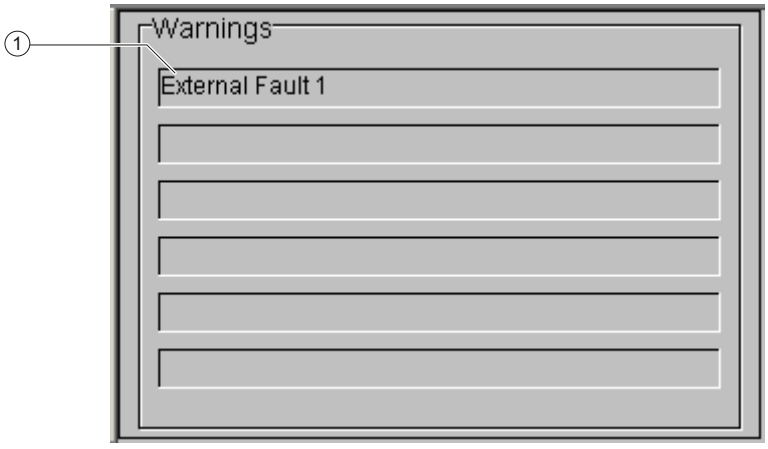
Faults (MESSAGE1)



① Text list with error description (ERR_NOx)

For error number 0, the text field is switched to invisible.

Warnings (MESSAGE2)



① Text list with error description (WRN_NOx)

For error number 0, the text field is switched to invisible.

4.14 SMC_OVL: Signal processing block for overload relay control function

4.14.1 Description of SMC_OVL

Block Number

FB2012

Calling OBs

The watchdog interrupt OB in which you install the block (e.g. OB32). Also in OB100 (see start-up characteristics).

Called blocks

The block calls the following blocks:

SFB35	ALARM_8P
SFB52	RDREC
SFB53	WRREC
SFC6	RD_SINFO
SFC20	BLKMOV

4.14.2 Parameter assignment in SIMOCODE ES

For the signal blocks to function correctly, a range of SIMOCODE pro parameters must have quite specific settings. Those parameters that define the assignment of the cyclic I/O interface are especially affected.

These parameters are represented in **bold**.

In addition, the overview below represents the parameters that are already preset for the control function in the templates for application selection in the SIMOCODE ES software. The settings are suggestions and depend heavily on the actual wiring of the SIMOCODE pro inputs and outputs.

These parameters are represented in *italics*.

Other parameters must also be set, e.g. for motor protection. These are not described here. Parameter assignment for the extended I/O interface of basic type 1 is represented in the following chapter: Parameter assignment in SIMOCODE ES (Page 55)

Table 4-29 Overload relay control function

Motor control → Control function → Auxiliary control inputs		
Feedback ON	**Status - Motor current flowing**	—

Outputs → Basic unit		
BU – Output 3	**Contactor control 3 QE3**	—

Outputs → Cyclic send data		
Byte 0, bit 0	**Not connected**	—
Byte 0, bit 1	**Not connected**	—
Byte 0, bit 2	**Not connected**	—
Byte 0, bit 3	**Event – Pre-warning overload (I>115%Is)**	—
Byte 0, bit 4	**Not connected**	—
Byte 0, bit 5	**Not connected**	—
Byte 0, bit 6	**Status – Group fault**	—
Byte 0, bit 7	**Status - Group warning**	—
Byte 1, Bit 0-7	Not connected	Freely assignable
Byte 2-3	**Max. current I_max (% of Is)**	—

Standard functions→ Test/reset		
Test 1	Cyclic receive – bit 0.3	—
Reset 1	Cyclic receive – bit 0.6	—

Standard functions→ Emergency Start		
Emergency start – Input	Cyclic receive – bit 0.4	—

4.14.3 Function

The block is installed by the user in a cyclic watchdog interrupt OB (e.g. OB32). Parameter inputs IN_01 and IN_23 as well as parameter output O_01 are also interconnected by the user with the relevant icons for inputs or outputs of the associated SIMOCODE pro device.

SMC_OVL accesses the data provided by SIMOCODE pro via inputs IN_01 (2 bytes of binary data) and IN_23 (2 bytes of motor current).

Data is transferred to SIMOCODE pro via the output O_01 (2 bytes of binary data).

The configuration of the inputs and outputs are determined here by SIMOCODE pro basic type 2.

Access to the inputs and outputs takes place exclusively via the process image.

The block uses the input parameter MODE to determine whether the inputs IN_01 and IN_23 are valid. In the case of a higher-level fault, all inputs are read by SIMOCODE pro with "0" and output to the relevant outputs of the block.

4.14.4 Assignment of the cyclic process image

Table 4-30 Assignment of O_01: Output commands to SIMOCODE pro

Bit	Control interface
0.0	—
0.1	—
0.2	—
0.3	Test 1
0.4	Emergency start
0.5	—
0.6	Reset
0.7	—
1.0 – 1.7	User-specific outputs

Table 4-31 Assignment of IN_01: Feedback messages from SIMOCODE pro

Bit	Cyclic send data	Block parameter
0.0	—	—
0.1	—	—
0.2	—	—
0.3	Event – Pre-warning overload (I>115 %)	QOVL
0.4	—	—
0.5	—	—
0.6	Status - Group fault	QGR_ERR
0.7	Status - Group warning	QGR_WRN
1.0	—	—

Bit	Cyclic send data	Block parameter
1.1	Status - Test position (TPF)	QCST
1.2 - 1.7	—	—

The input parameter `IN_01` is additionally copied to the output `Q_IN_01`.

The motor current is transferred via the input parameter `IN_23` as an unsigned 2-byte value. SIMOCODE pro always transfers the current here as a percentage of the set current in a range from 0 to 1020%. The motor current is output via `QCUR`.

Assignment of bytes 2 / 3 of the analog control interface and bytes 4 to 9 of the cyclic send data when using basic type 1 is described in the following chapter: Assignment of the cyclic process image (Page 56)

4.14.5 Start-up characteristics

During OB100 (warm restart) or the first start of the block, the block is switched to manual mode and the Off command is output. For this purpose, the block must be called from the startup OB. After OB 100 (Warm Restart) startup, the messages are suppressed for the number of cycles parameterized in the `RUNUPCYC` value.

Output parameter `SMC_RESET` from the block is re-initialized to "0".

OB1 first run identification information is received from SMC_DIAG block through IN-OUT parameter `RECVDATA` at bit 24. Further, this information is used as an entry condition for RDREC/WRREC processing.

4.14.6 Status displays for icons

Status	Parameter	View
Fault	QGR_ERR = 1	
OK	QGR_ERR = 0	
Not available	QBAD = 1	

4.14.7 Description of the faceplate

The available faceplates are described in this chapter.

The following views are available:

Overview	OVERVIEW
Standard	STANDARD
Limits	LIMITS
Faults	MESSAGE1
Warnings	MESSAGE2
Messages	—
Trend	—
Batch	—

The file name is composed as follows: @PG_SMC_OVL_<View>.PDL

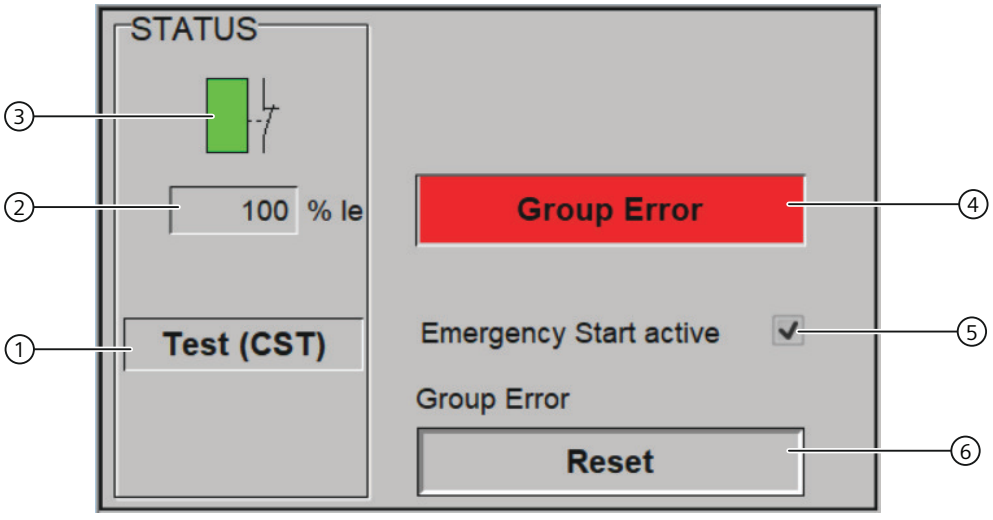
The PCS 7 standard displays are used for the message, trend and batch views.

The structure of the individual views of faceplates is described below.

Standard (STANDARD)

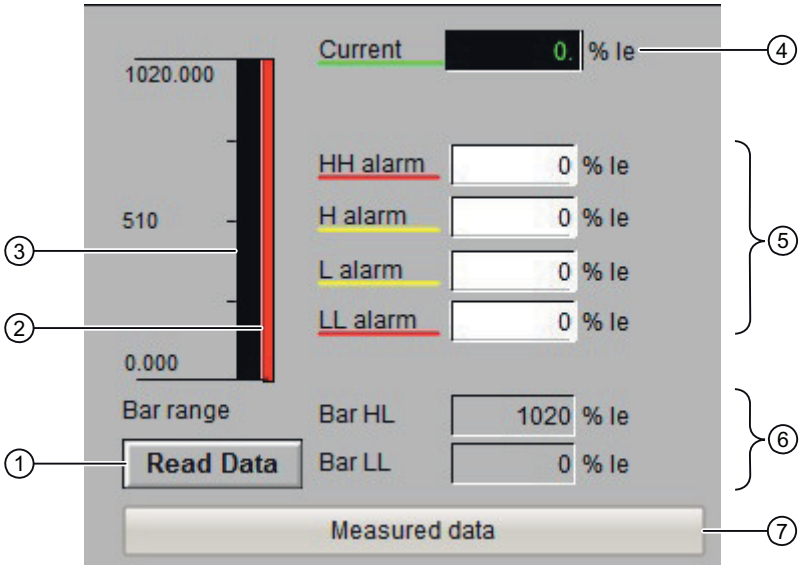
Status

The status display is a user object comprising several status displays. The status display corresponds to the representation from the process image icon.



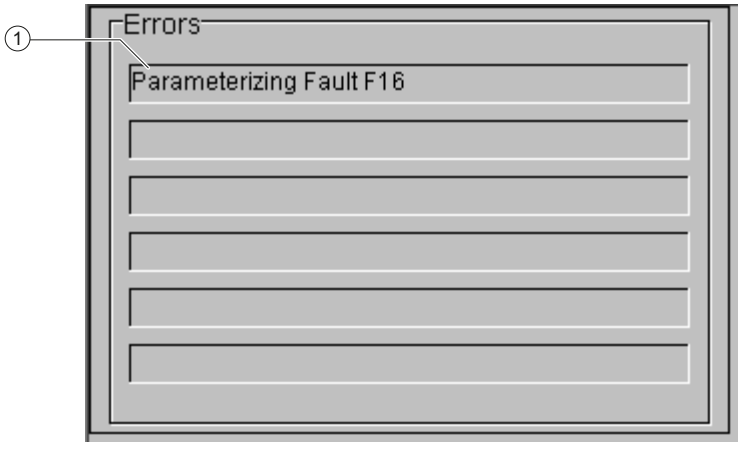
① Test (QCST)
② Current (QCUR)/ unit (QCUR#unit)
③ Status display (VSTATUS)
④ Status (QGR_ERR)
⑤ Activation Emergency Start (EM_START)
⑥ Acknowledgement (RESET)

Limits (LIMITS)



① Read Data (RD_DATA)
② Limit value display (CUR_AH, CUR_WH, CUR_WL, CUR_AL)
③ Actual value bar (QCUR, MO_PVHR, MO_PVLR)
④ Current value (QCUR, QCUR#unit)
⑤ Limits (CUR_AH, CUR_WH, CUR_WL, CUR_AL)
⑥ Bar range (MO_PVHR, MO_PVLR)
⑦ Call faceplate SMC_MEAS, visible if EN_MEAS = TRUE

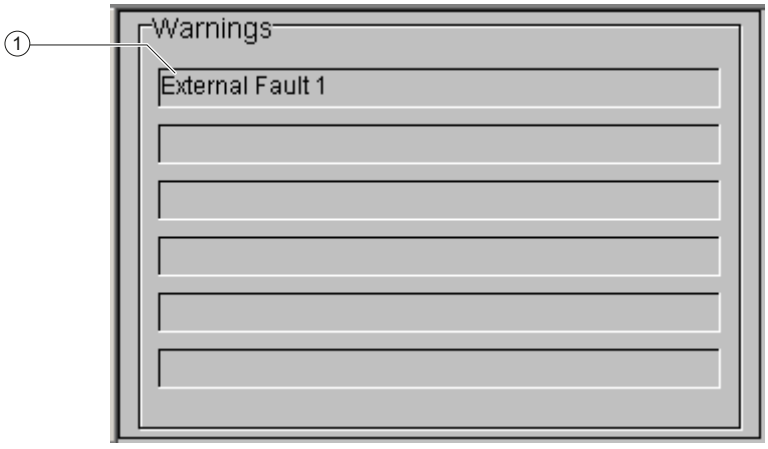
Faults (MESSAGE1)



① Text list with error description (ERR_NOx)

For error number 0, the text field is switched to invisible.

Warnings (MESSAGE2)



① Text list with error description (WRN_NOx)

For error number 0, the text field is switched to invisible.

4.15 SMC_CB: Signal processing block for circuit breaker control function

4.15.1 Description of SMC_CB

Block Number

FB2013

Calling OBs

The watchdog interrupt OB in which you install the block (e.g. OB32). Also in OB100 (see start-up characteristics).

Called blocks

The block calls the following blocks:

SFB35	ALARM_8P
SFB52	RDREC
SFB53	WRREC
SFC6	RD_SINFO
SFC20	BLKMOV

4.15.2 Parameter assignment in SIMOCODE ES

For the signal blocks to function correctly, a range of SIMOCODE pro parameters must have quite specific settings. Those parameters that define the assignment of the cyclic I/O interface are especially affected.

These parameters are represented in **bold**.

In addition, the overview below represents the parameters that are already preset for the control function in the templates for application selection in the SIMOCODE ES software. The settings are suggestions and depend heavily on the actual wiring of the SIMOCODE pro inputs and outputs.

These parameters are represented in *italics*.

Other parameters must also be set, e.g. for motor protection. These are not described here. Parameter assignment for the extended I/O interface of basic type 1 is represented in the following chapter: Parameter assignment in SIMOCODE ES (Page 55)

Table 4-32 Molded Case Circuit Breaker (MCCB)

Motor control → Control stations		
Operation mode selector S1	**Cyclic receive bit 0.5**	—
Operation mode selector S2	*Fixed level 1*	—

Local control [LC]		
OFF	*BU - Input 2*	—
ON	*BU - Input 1*	—
Operator enable local 2 OFF	*Active*	—
Operator enable local 2 ON	*Active*	—
Operator enable remote OFF	**Not active**	—
Operator enable remote ON	**Not active**	—

PLC/PCS [DP]		
OFF	**Cyclic receive – bit 0.1**	—
ON	**Cyclic receive – bit 0.2**	—
Operator enable local 2 OFF	**Not active**	—
Operator enable local 2 ON	**Not active**	—
Operator enable remote OFF	**Active**	—
Operator enable remote ON	**Active**	—

Operator Panel [OP]		
OFF	*OP button 4*	—
ON	*OP button 3*	—
Operator enable local 2 OFF	*Active*	—
Operator enable local 2 ON	*Active*	—

Operator Panel [OP]		
Operator enable remote OFF	**Not active**	—
Operator enable remote ON	**Not active**	—

Motor control → Control function → Control commands		
OFF	**Enabled control command - OFF**	—
ON>	**Enabled control command – ON>**	—

Motor control → Control function → Operating mode		
Non-maintained command mode	*Not active*	*The setting of the parameter influences the parameter JOG_ON in the SIMOCODE signal block:* *Non-maintained command mode not active: JOG_ON = FALSE* *Non-maintained command mode active: JOG_ON = TRUE*

Motor control → Control function → Auxiliary control inputs		
Feedback ON	*BU - Input 3*	*Auxiliary switch of the circuit breaker*

Motor control → Control function → Timings		
Execution time	**Greater than the motor runtime of the motorized operating mechanism of the circuit breaker, typ. 10 s**	**Auxiliary switch of the circuit breaker**

Outputs → Basic unit		
BU – Output 1	*Contactor control QE1*	—
BU – Output 2	*Contactor control QE3*	—

Outputs → Operator panel LEDs		
LED green 3	*Display QLE> (ON>)*	—
LED green 4	*Display QLA (OFF)*	—

Outputs → Cyclic send data		
Byte 0, bit 0	**Not connected**	—
Byte 0, bit 1	**Status - OFF**	—
Byte 0, bit 2	**Status – ON>**	—
Byte 0, bit 3	**Event – Pre-warning overload**	—
Byte 0, bit 4	**Event - overload**	—
Byte 0, bit 5	**Status – Remote mode**	—

Outputs → Cyclic send data		
Byte 0, bit 6	**Status – Group fault**	—
Byte 0, bit 7	**Status - General warning**	—
Byte 1, bit 0	Not connected	Freely assignable
Byte 1, bit 1	Not connected	—
Byte 1, bit 2	Not connected	Freely assignable
Byte 1, bit 3	Not connected	Freely assignable
Byte 1, bit 4	Not connected	Freely assignable
Byte 1, bit 5	Not connected	Freely assignable
Byte 1, bit 6	Not connected	Freely assignable
Byte 1, bit 7	Not connected	Freely assignable
Byte 2-3	**Max. current Imax (% of Is)**	—

Standard functions→ Test/reset		
Test 1	Cyclic receive – bit 0.3	—
Reset 1	Cyclic receive – bit 0.6	—

Standard functions → External faults 1		
External fault 1	*BU - Input 4*	*Alarm switch of the circuit breaker*
Response	Trip	—

Standard functions→ Emergency Start		
Emergency start – Input	Cyclic receive – bit 0.4	—

4.15.3 Function

The block is installed by the user in a cyclic watchdog interrupt OB (e.g. OB32). Parameter inputs `IN_01` and `IN_23` as well as parameter output `O_01` are also interconnected by the user with the relevant icons for inputs or outputs of the associated SIMOCODE pro device.

SMC_CB accesses the data provided by SIMOCODE pro via inputs `IN_01` (2 bytes of binary data) and `IN_23` (2 bytes of motor current).

Data is transferred to SIMOCODE pro via the output O_01 (2 bytes of binary data).

The configuration of the inputs and outputs are determined here by the SIMOCODE pro basic type.

Access to the inputs and outputs takes place exclusively via the process image.

The block uses the input parameter `MODE` to determine whether the inputs `IN_01` and `IN_23` are valid. In the case of a higher-level fault, all inputs are read by SIMOCODE pro with "0" and output to the relevant outputs of the block.

4.15.4 Assignment of the cyclic process image

Table 4-33 Assignment of O_01: Output commands to SIMOCODE pro

Bit	Control interface
0.0	—
0.1	Off
0.2	On> → On
0.3	Test 1
0.4	Emergency start
0.5	Local/remote control station
0.6	Reset
0.7	—
1.0 ... 1.7	User-specific outputs

Table 4-34 Assignment of IN_01: Feedback messages from SIMOCODE pro

Bit	Cyclic send data	Block parameter
0.0	—	—
0.1	Status – Off	QOFF
0.2	Status – On	QON
0.3	Event – Pre-warning overload	QOVL
0.4	—	—
0.5	Status – Remote mode	QREMOTE
0.6	Status - Group fault	QGR_ERR
0.7	Status - Group warning	QGR_WRN
1.0	—	—
1.1	Status - Test position feedback (TPF)	QCST
1.2 ... 1.7	—	—

The input parameter `IN_01` is additionally copied to the output `Q_IN_01`.

The motor current is transferred via the input parameter `IN_23` as an unsigned 2-byte value. SIMOCODE pro always transfers the current here as a percentage of the set current in a range from 0 to 1020%. The motor current is output via `QCUR`.

Assignment of bytes 2 / 3 of the analog control interface and bytes 4 to 9 of the cyclic send data when using basic type 1 is described in the following chapter: Assignment of the cyclic process image (Page 56)

4.15.5 Operating modes

Changing the control station (REMOTE, LOCAL)

The control station is changed via the interconnectable function input REM_L if the input REM_SEL is set, or via the function input REM_ON_OP set by the OS.

The function input (REMOP_EN) influences the operator enable (QLOCOP) for operating via the OS.

The operating mode of the control station is output via QREMOTE (1 = REMOTE, 0 = LOCAL). QREMOTE corresponds here to the bit DP 0.5 of the SIMOCODE pro.

In LOCAL mode, the controller is completely switched off via the SMC_CB block. Control is then only possible via a control station connected direct to the SIMOCODE pro. It is still possible to acknowledge the fault.

Changing the operating modes (MANUAL, AUTO) when REMOTE is selected

If QREMOTE = TRUE, changeover between the two operating modes MANUAL and AUTOMATIC takes place either via OS operation using AUT_ON_OP (LIOP_SEL = 0) or via the interconnection of the input AUT_L (LIOP_SEL = 1).

The function inputs (MANOP_EN, AUTOP_EN) influence the operator enables (QMANOP, QAUTOP) for operating via the OS.

The operating mode is output at output QMAN_AUT (1 = AUTO, 0 = MANUAL).

Changing the control station for MANUAL

In REMOTE mode, the operating mode MANUAL can be controlled either via the OS or via the interconnectable function inputs. The changeover for this takes place via the interconnectable function input LINK_MAN.

4.15.6 Control stations for MANUAL and AUTOMATIC mode

General information

The PLC/DP control station of the SIMOCODE pro (that is, DP0.1 and 0.2) is level-active. The On command is stored in the SIMOCODE pro. The Off command (DP0.1) takes priority over the On command (DP0.2).

Control of the SIMOCODE pro via AS / OS is only possible in REMOTE mode.

AUTOMATIC

In automatic mode, the SIMOCODE pro control functions are controlled via the interconnectable function input AUTO_ON (TRUE = On, FALSE = Off).

Control without non-maintained command mode (JOG_ON = FALSE)

At one edge of the command input, the associated control bit is set in the interface until the SIMOCODE pro sends the relevant feedback message, or a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again if a command is active at the automatic interface.

Control with non-maintained command mode (JOG_ON = TRUE)

The corresponding control bit in the interface is set as long as the command input = TRUE or if a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again if a command is active at the automatic interface. The Off command is not necessary for switching the device off but is nevertheless set by the block if no On command is active.

MANUAL

In manual mode, the SIMOCODE pro is controlled either via the function input MAN_ON (TRUE = On, FALSE = Off) set by the OS or via the interconnectable function inputs L_ON and L_OFF.

The inputs for the operator enables ON_OP_EN / OFFOP_EN set the outputs QON_OP / QOFF_OP for operation using the OS.

At one edge of the command input, the associated control bit is set in the interface until the SIMOCODE pro sends the relevant feedback message, or a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again if a command is active at the interconnectable manual interface.

The Off command takes priority over the On command (no edge evaluation!).

After changing to manual mode, the commands are not forwarded to the inputs until there is a positive edge change when L_ON / L_OFF is active.

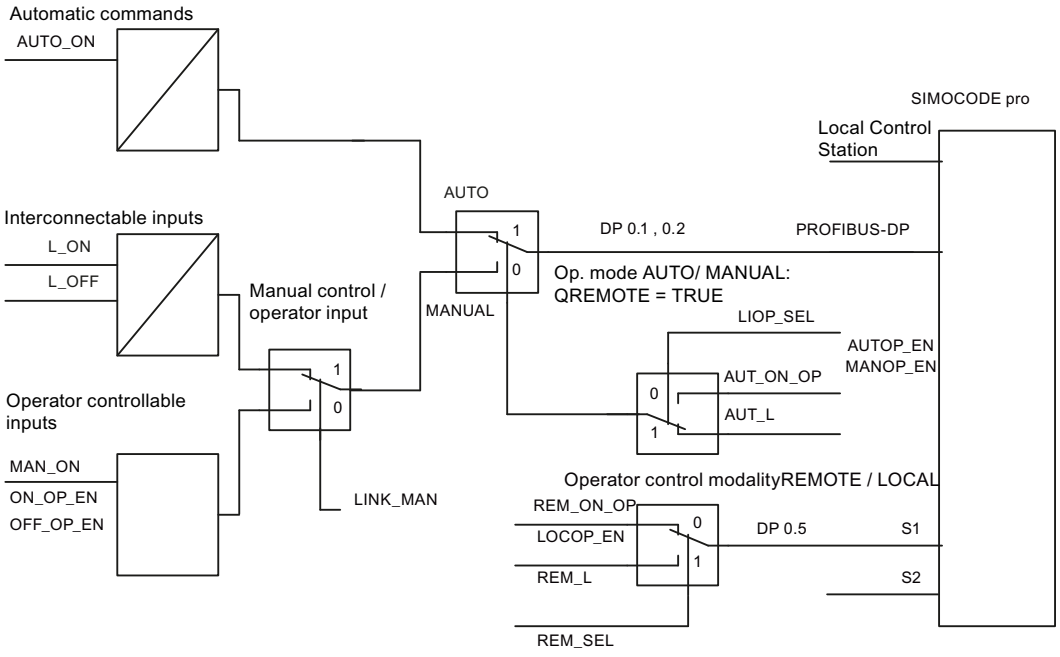
Control without non-maintained command mode (JOG_ON = FALSE)

At one edge of the command input, the associated control bit is set in the interface until the SIMOCODE pro sends the relevant feedback message, or a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again if a command is active at the interconnectable inputs. The operator controllable input MAN_ON is adjusted when tripped.

Control with non-maintained command mode (JOG_ON = TRUE)

The corresponding control bit in the interface is set as long as the command input = TRUE or if a fault occurs (QGR_ERR = TRUE). If the fault is acknowledged, the control bit is set again if a command is active at the automatic interface. The Off command is not necessary for switching the device off but is nevertheless set by the block if no On command is active.

4.15.7 Overview of control stations, operating modes, and operator control modalities



4.15.8 Start-up characteristics

During OB100 (warm restart) or the first start of the block, the block is switched to manual mode and the Off command is output. For this purpose, the block must be called from the startup OB. After OB 100 (Warm Restart) startup, the messages are suppressed for the number of cycles parameterized in the `RUNUPCYC` value.

Following Output parameters from the block are re-initialized to "0" (`RESET`, `SMCRESET` and `QLOC_INT`). Motor Outputs like `QCST`, `QON`, and `QOFF` are reinitialized from its process data value `IN_01`.

OB1 first run identification information is received from SMC_DIAG block through IN-OUT parameter `RECVDATA` at bit 24. Further, this information is used as an entry condition for RDREC/WRREC processing.

4.15.9 Status displays for icons

Status	Parameter	View
Off	QOFF = 1	
On	QON = 1	
Not available	QBAD = 1	

4.15.10 Description of the faceplate

The available faceplates are described in this chapter.

The following views are available:

Overview	OVERVIEW
Standard	STANDARD
Limits	LIMITS
Maintenance	MAINTENANCE
Faults	MESSAGE1
Warnings	MESSAGE2
Messages	—
Trend	—
Batch	—

The file name is composed as follows: @PG_SMC_CB_<View>.PDL

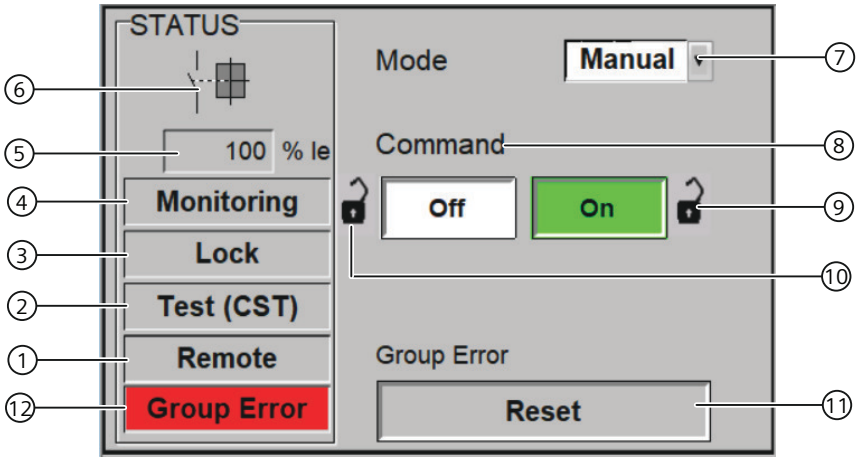
The PCS 7 standard displays are used for the message, trend and batch views.

The structure of the individual views of faceplates is described below.

Standard (STANDARD)

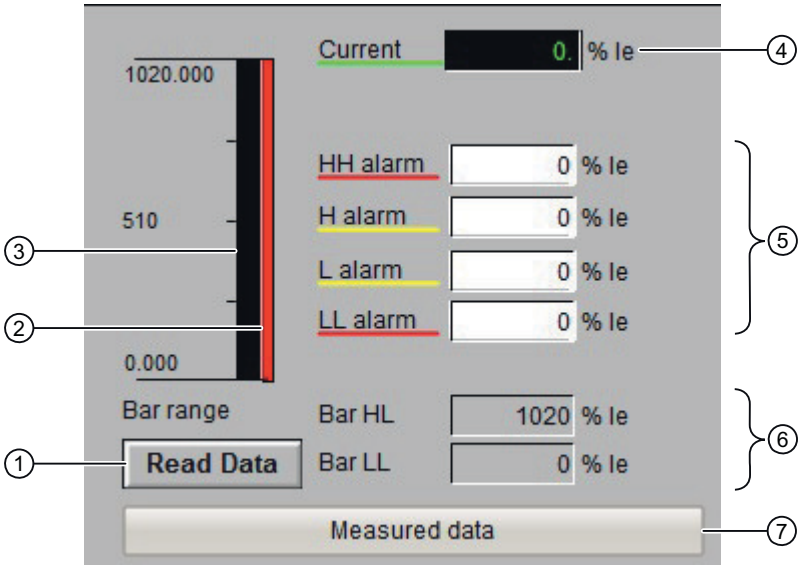
Status

The status display is a user object comprising several status displays. The status display corresponds to the representation from the process image icon.



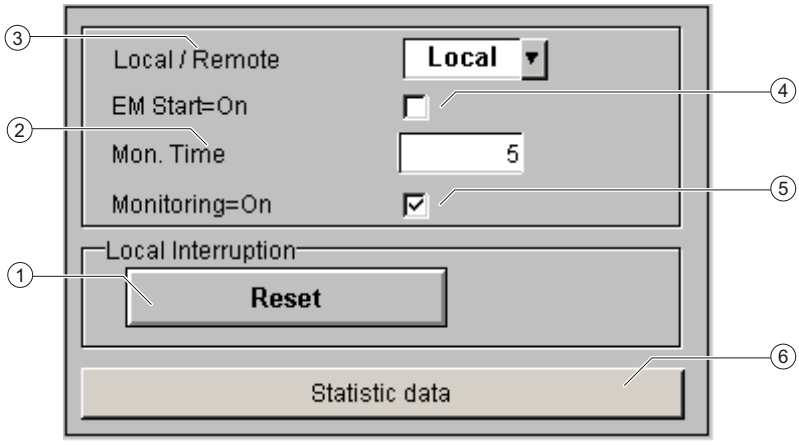
① Operator control modality (QREMOTE)
② Test (QCST)
③ Interlocking (LOCK / LOCK_ON)
④ Local Interruption (QLOC_INT)
⑤ Current (QCUR) / unit (QCUR#unit)
⑥ Status display (VSTATUS)
⑦ Operating mode (QMAN_AUT, AUT_ON_OP)
⑧ Command (MAN_ON)
⑨ Lock to On (LOCK_ON)
⑩ Lock to Off (LOCK)
⑪ Acknowledgement (RESET)
⑫ Status (QGR_ERR)

Limits (LIMITS)



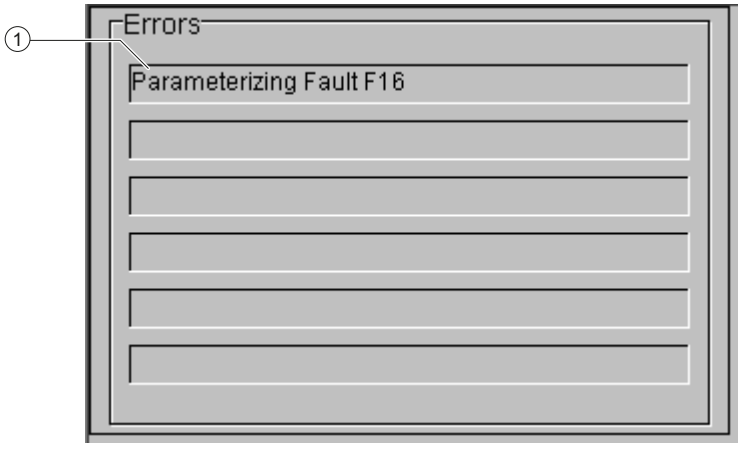
① Read Data (RD_DATA)
② Limit value display (CUR_AH, CUR_WH, CUR_WL, CUR_AL)
③ Actual value bar (QCUR, MO_PVHR, MO_PVLR)
④ Current value (QCUR, QCUR#unit)
⑤ Limits (CUR_AH, CUR_WH, CUR_WL, CUR_AL)
⑥ Bar range (MO_PVHR, MO_PVLR)
⑦ Call faceplate SMC_MEAS, visible if EN_MEAS = TRUE

Maintenance (MAINTENANCE)



① Acknowledge Local Interruption (RESET)
② Monitoring time for Local Interruption (TIME_MON)
③ Operator control modality Local / Remote (REM_ON_OP)
Operator needs to have Authorization level 6 to access this command area.
④ Activation Emergency Start (EM_START)
⑤ Activation Monitoring (MONITOR)
⑥ Call faceplate SMC_STAT, visible if EN_STAT = TRUE

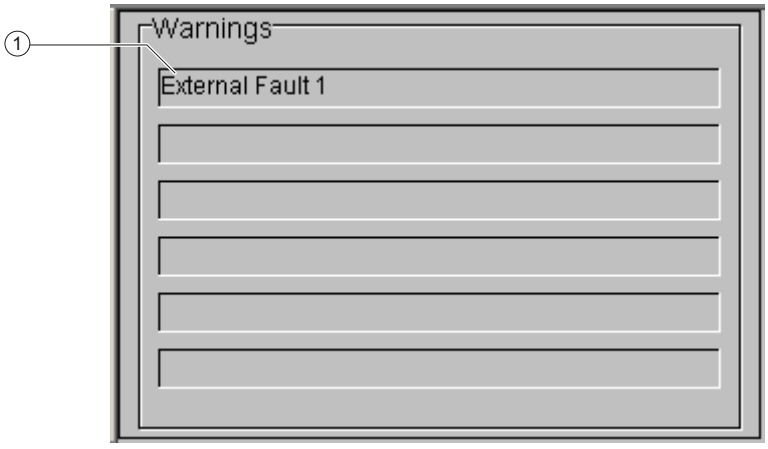
Faults (MESSAGE1)



① Text list with error description (ERR_NOx)

For error number 0, the text field is switched to invisible.

Warnings (MESSAGE2)



① Text list with error description (`WRN_NOx`)

For error number 0, the text field is switched to invisible.

Maintenance Station

5

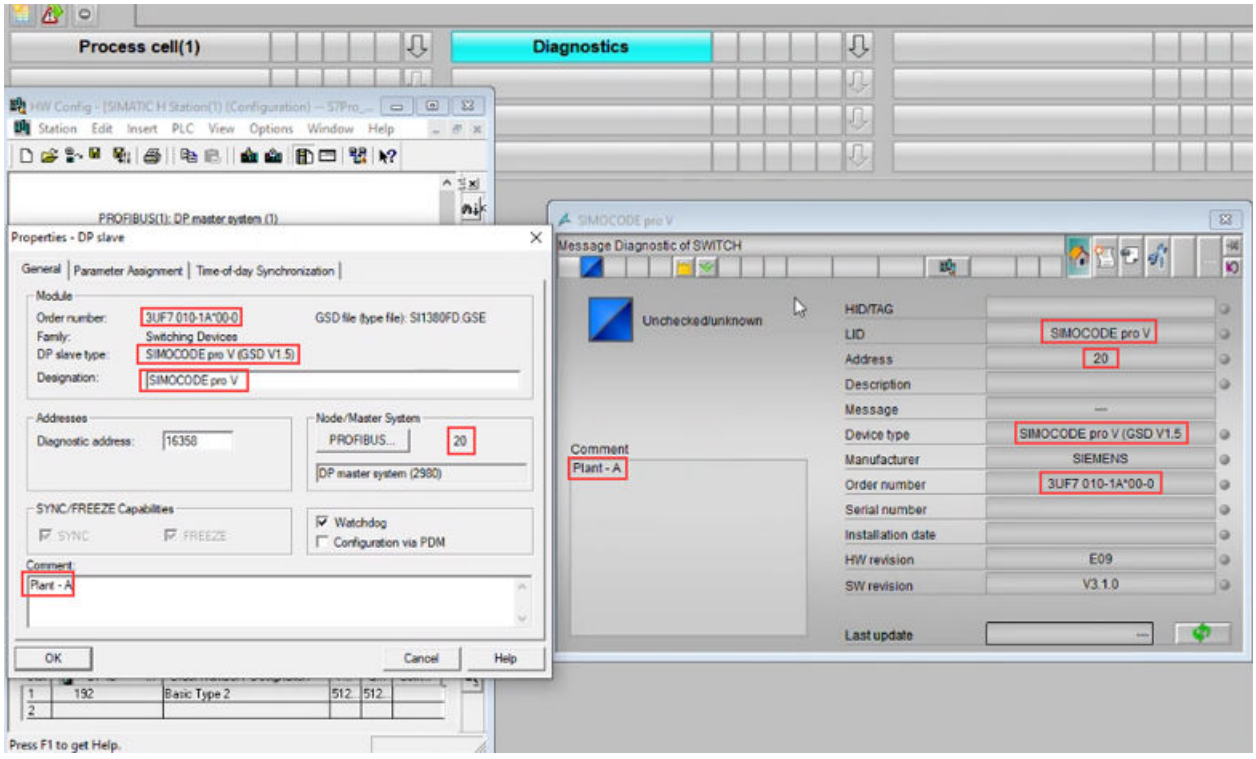
This version of PCS 7 Library SIMOCODE pro Migration Legacy V10.0 SP1 supports the function of the Maintenance Station, via GSD, via PDM object, and via OM for SIMOCODE pro.

5.1 Maintenance Station

Prerequisites

Requirements for MS single-station system and MS multiple-station system.

1. The multiproject/project has been created.
2. The hardware configuration is completed.
3. The network configuration is completed.
4. Make sure the basic parameters assignments are available offline in the HW config and ES:
   - Device Name
   - Description
   - Location designation
   - Installation date, etc.

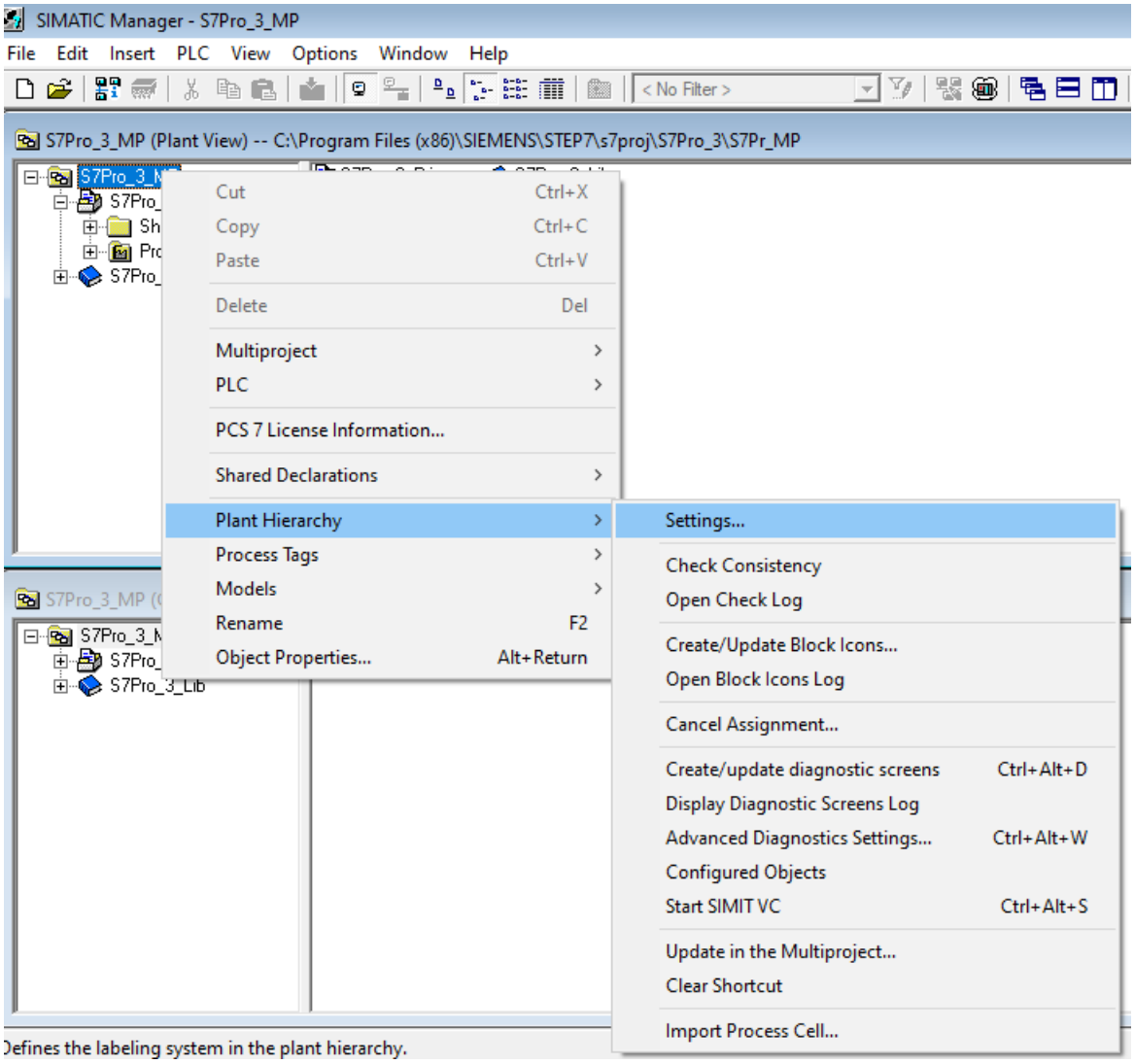


Note

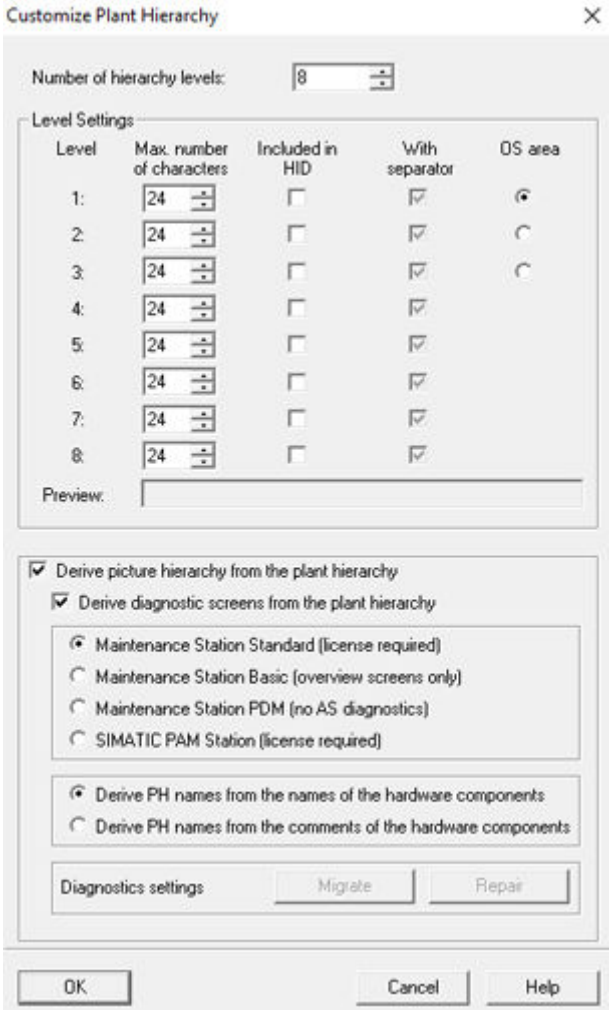
For more information on setting up a Maintenance Station refer to the Function manual of PCS 7 Maintenance Station.

Configuration

1. Open the plant view in the SIMATIC Manager.
2. Select the object in the tree view:
   - If you are using a multiproject, select the object "[name of the project] MP".
   - If you are using a single project, select the object "[name of the project]".
3. Select the menu command Options > Plant Hierarchy > Settings.

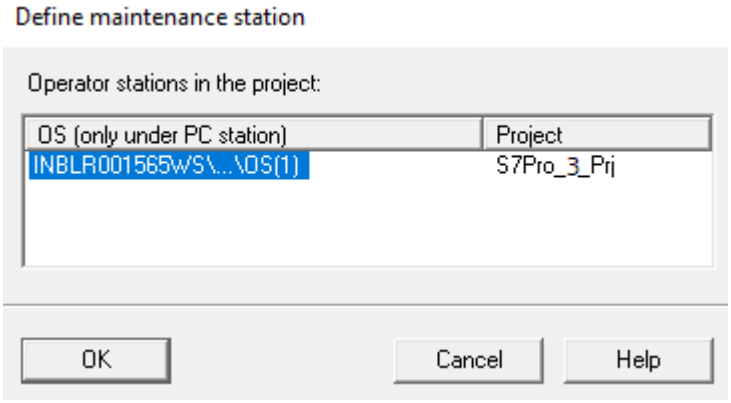


4. Define the settings for the relevant levels.
   - Activate the "Derive picture hierarchy from the plant hierarchy" check box.
   - Enable the "Derive diagnostic screens from the plant hierarchy" check box.
   - Specify the version, "Maintenance Station Standard (license required)" option button (full functionality)/"Maintenance Station Basic (overview screens only)" option button (no detailed information)."
   - When creating / updating the diagnostic screens, specify whether the names of the created hierarchy folders should be derived from the name or the commentary for the hardware components.



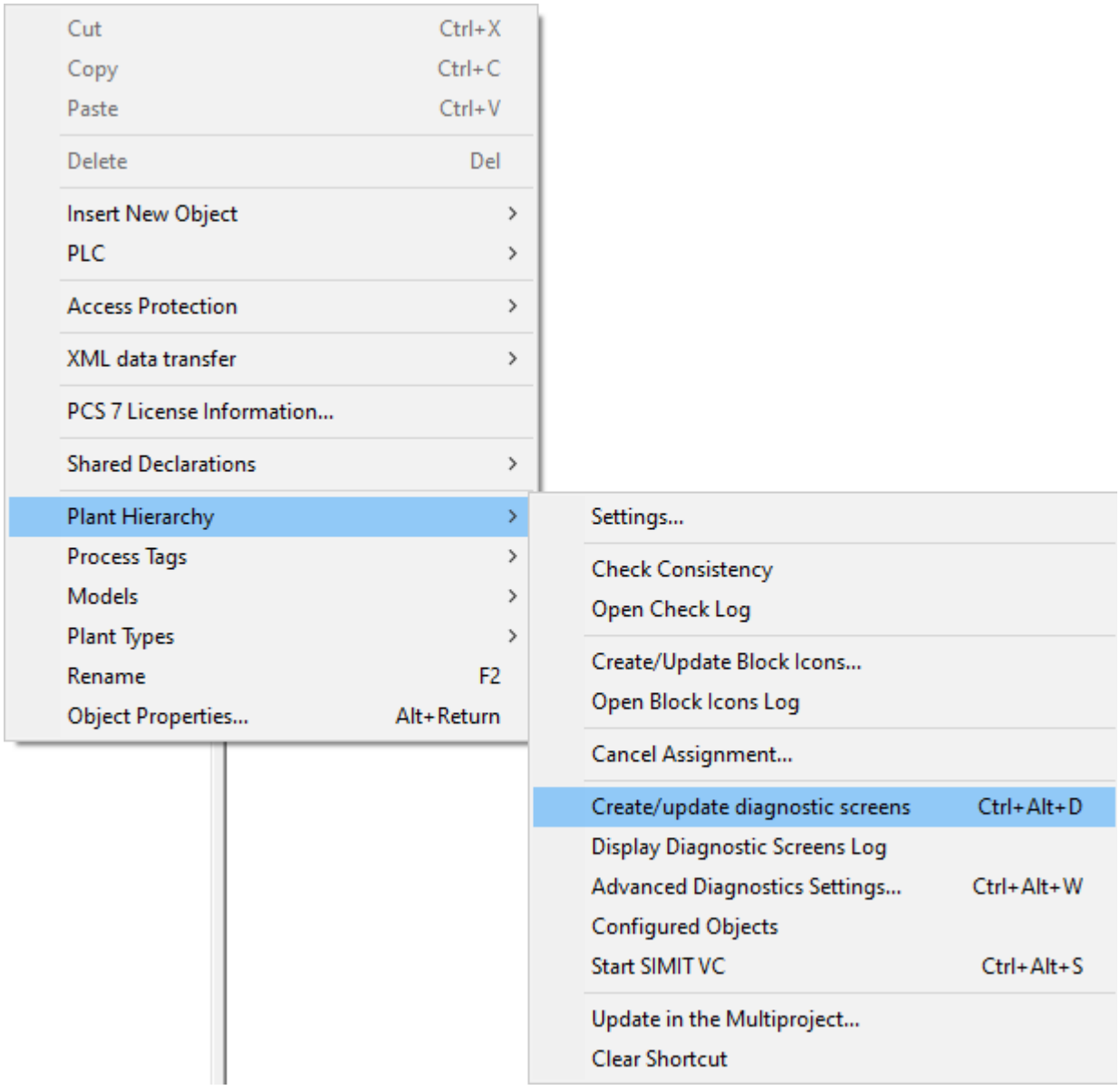
5. Click "OK". The "Define Maintenance Station" dialog box opens and all OS's available in the multiproject, project are shown.

6. Select the OS you want to define as Maintenance Station.



7. Compile the CFC charts with "Generate Module Driver" setting enabled before creating diagnostics screens. (If not it will show a popup for module error generation).

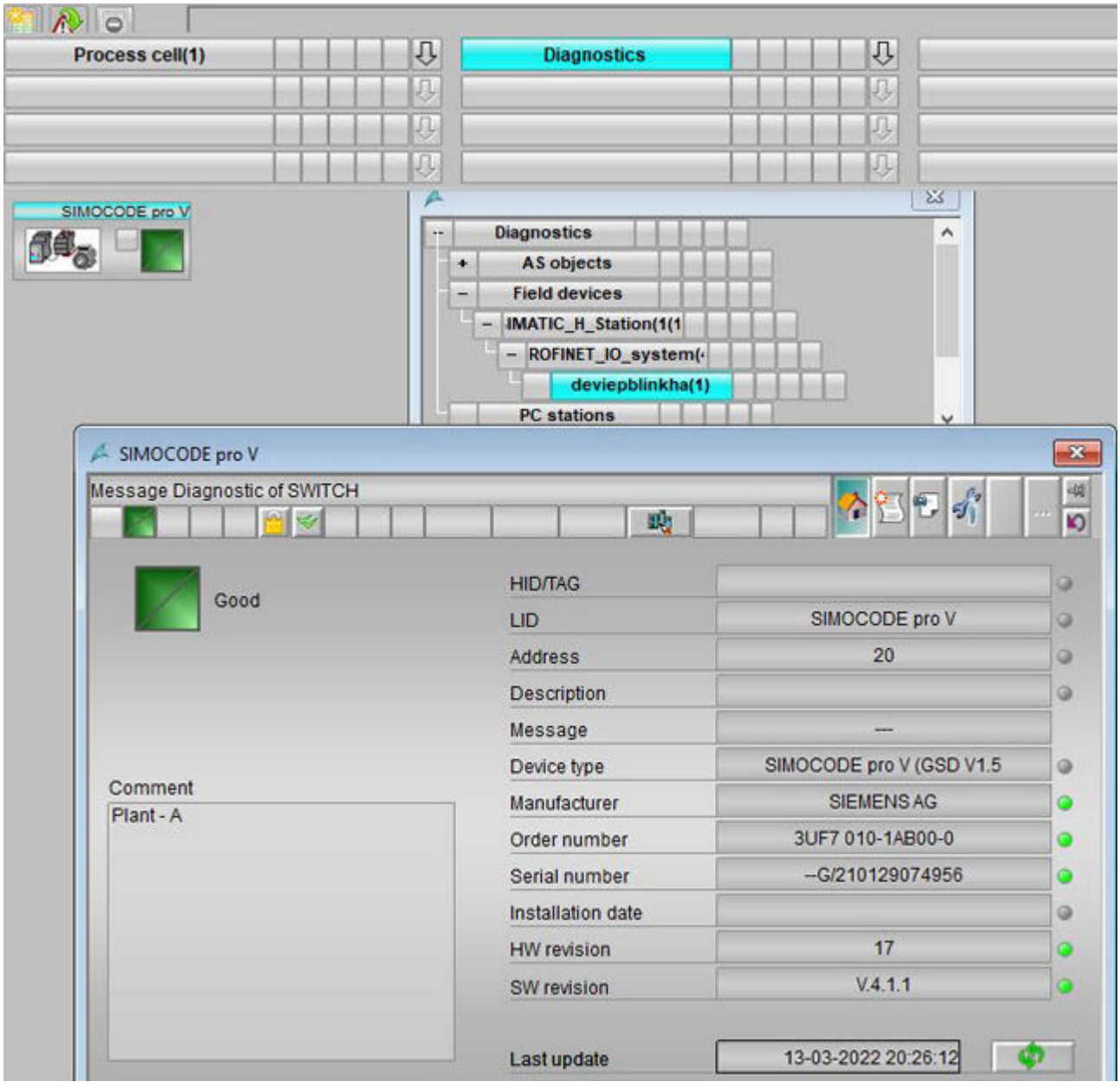
8. Once the CFC is compiled, generate diagnostic screen by selecting Options > Plant Hierarchy >Create/Update Diagnostic screens.



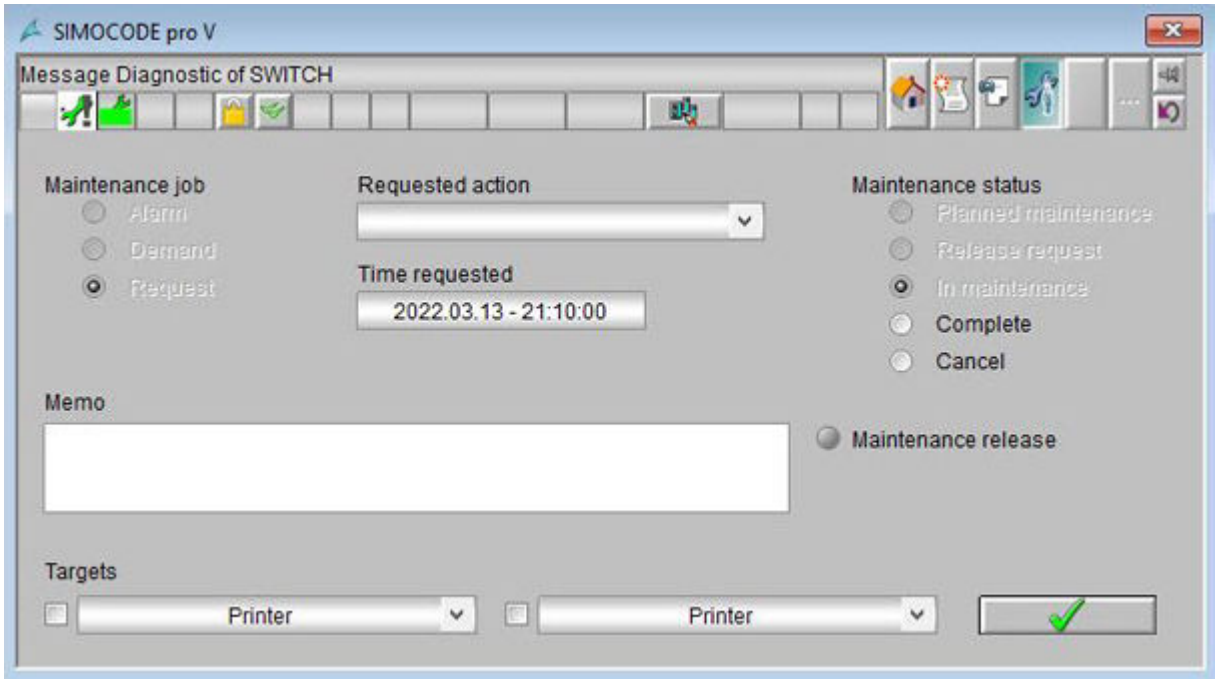
9. Compile the Entire OS and Activate OS Runtime.

Overview of "Diagnostics" view for SIMOCODE pro:

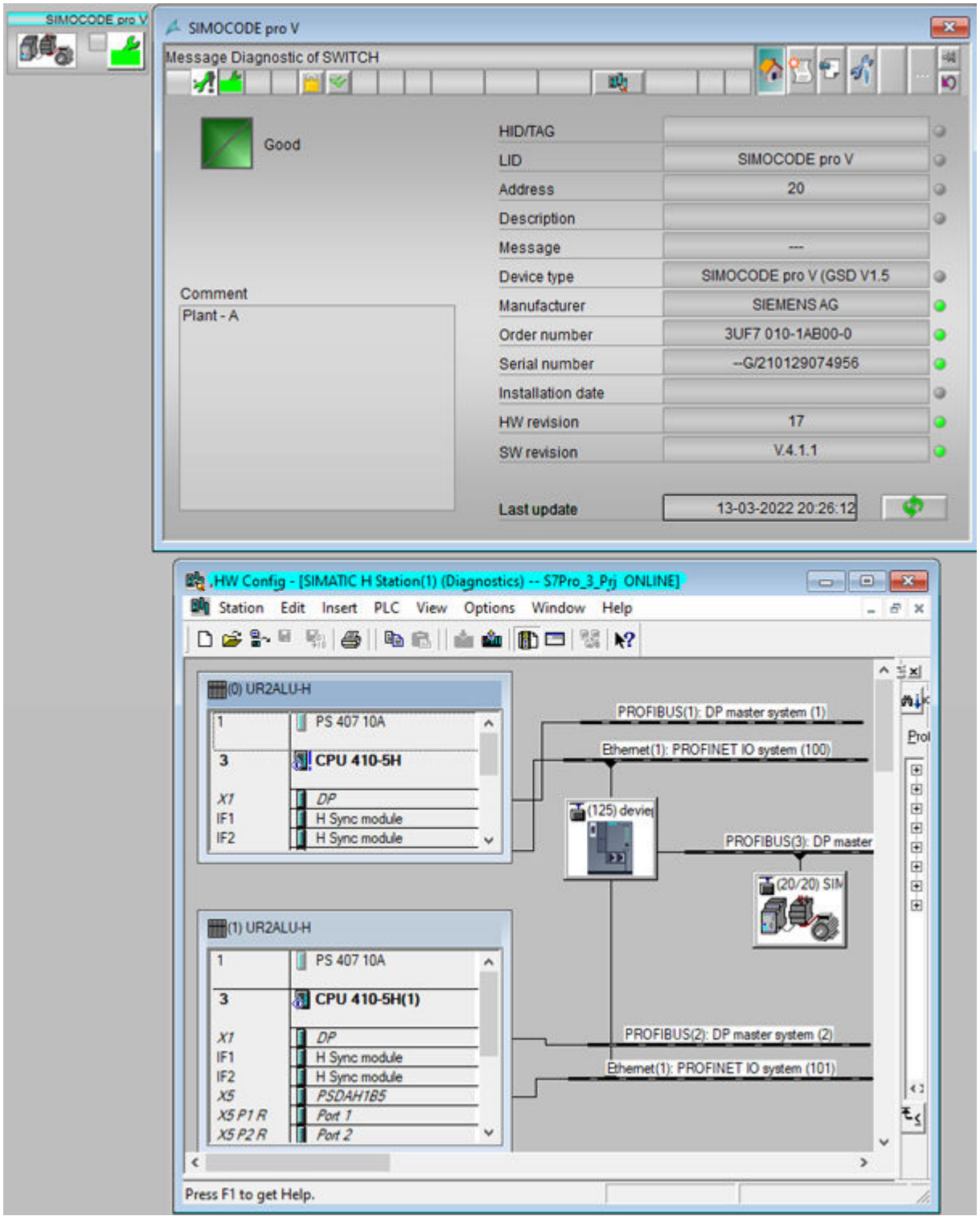
- Overview of the SIMOCODE pro Devices screen is given below : Diagnostics > Field Devices > PROFINET_IO_System which tells the entire device identification information.



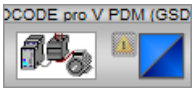
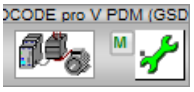
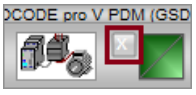
- Maintenance view allows the user to set the new maintenance job and to plan the existing jobs. The Maintenance release option in this window will get enabled when the operator puts the device into maintenance state, after which the maintenance operator can carry out maintenance of the device.


SIMOCODE pro V
Message Diagnostic of SWITCH
Maintenance job
Alarm
Demand
Request
Requested action
Time requested
2022.03.13 - 21:10:00
Maintenance status
Planned maintenance
Release request
In maintenance
Complete
Cancel
Memo
Maintenance release
Targets
Printer
Printer

- Diagnostics View shows the status of the error and warning.
- "Call Hardware config" in the overview bar calls the online Hardware config window from which the hardware information related to the devices can be verified.



Maintenance Station Block Icons

Display	Remark	Message	Caused by
	Unknown/untested	-	PLC in Standby
	Trip	Device [Subnet No.]/[Address]: Bad, maintenance alarm	Tripping *) • General Fault • Controller Fault • Protection has tripped • Level monitoring low/high • Miscellaneous
	Failure	Device [Subnet No.]/[Address]: Failure	Failure of PROFIBUS connection or Rack Fault or Module Fault
	Warning	Device [Subnet No.]/[Address]: Uncertain, maintenance demanded	Warnings *) • Protection has tripped • Level monitoring low/high • Miscellaneous
	Signaling	Device [Subnet No.]/[Address]: Good, maintenance required	Status signaling *) • Signaling by controller • Protection has tripped • Signaling caused by parameterization
	Good	-	-
	Message is locked	-	

*) You can find the detailed information on Signaling, Warning and Tripping described for Dataset DS 92 – Device diagnostic in system manual of SIMOCODE pro PROFIBUS.

For more information on "Maintenance status and maintenance group display" refer to PCS 7 Maintenance Station Function Manual.

5.2 PDM Maintenance Station

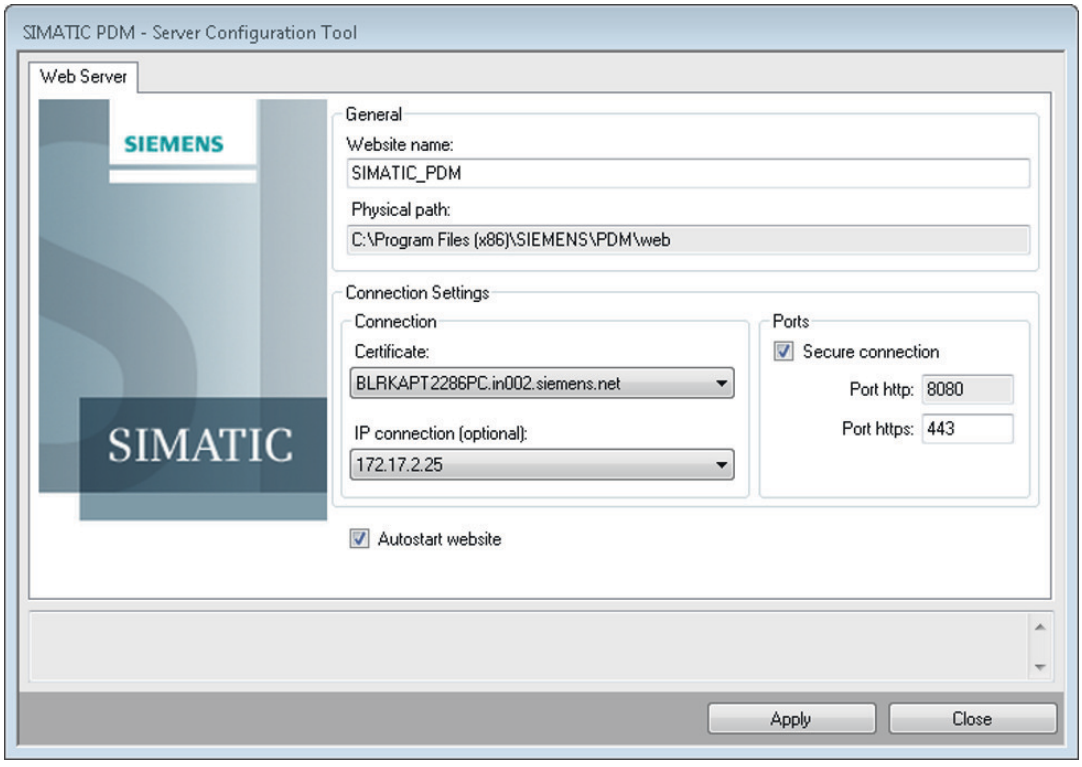
PDM Maintenance Station:

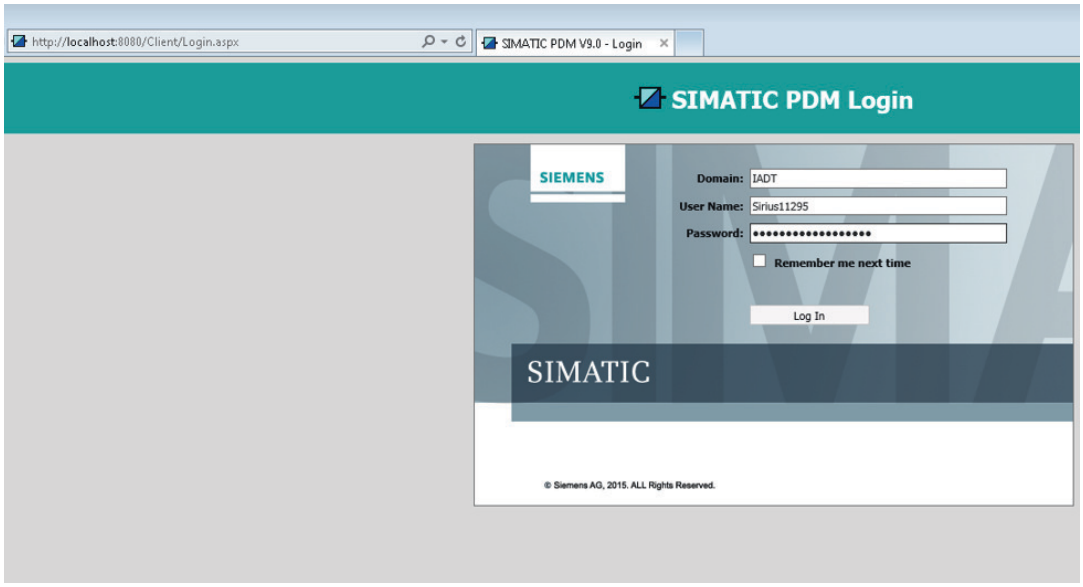
Prerequisites:

Requirements for PDM Maintenance single-station system

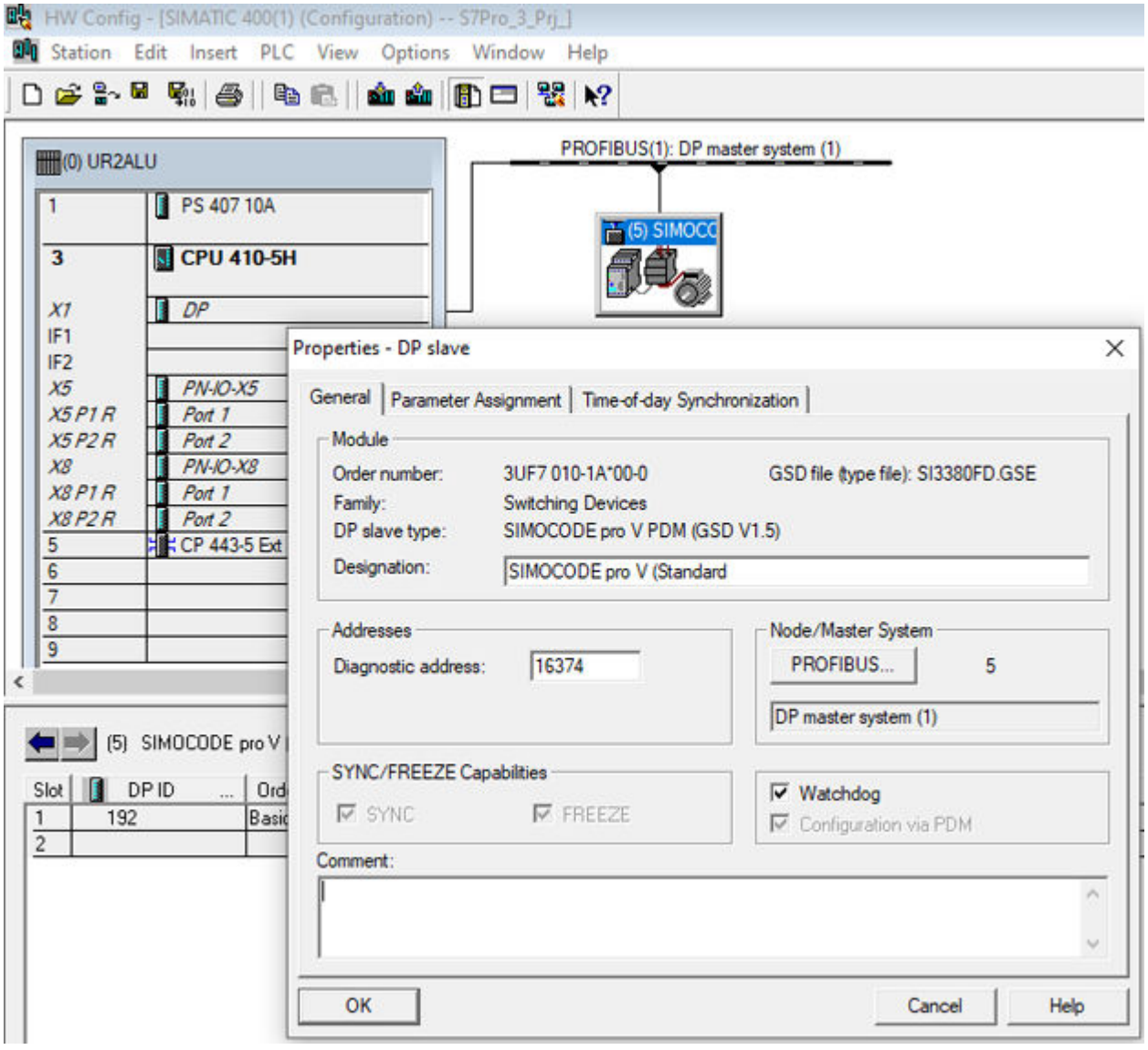
- SIMATIC PDM server is installed from the PCS7 setup components.
- Required license which are mentioned below needs to be transferred.
- PCS7 project needs be a single station project.
- The Microsoft Internet Information Server (IIS) with ASP.NET support is installed via Windows Control Panel > "Program and Features" > "Turn Windows features on and off".
- If the firewall is enabled a rule in the firewall is to be enabled.
- Internet Explorer 10 needs to be installed for the web server functionality.
- The SIMATIC PDM users are added to the "Logon Administrators" group.
- The SIMATIC PDM Web server is configured with the following settings.

- Ensure PDM Asset service is running before Setting up the Maintenance station at WinCC Runtime.



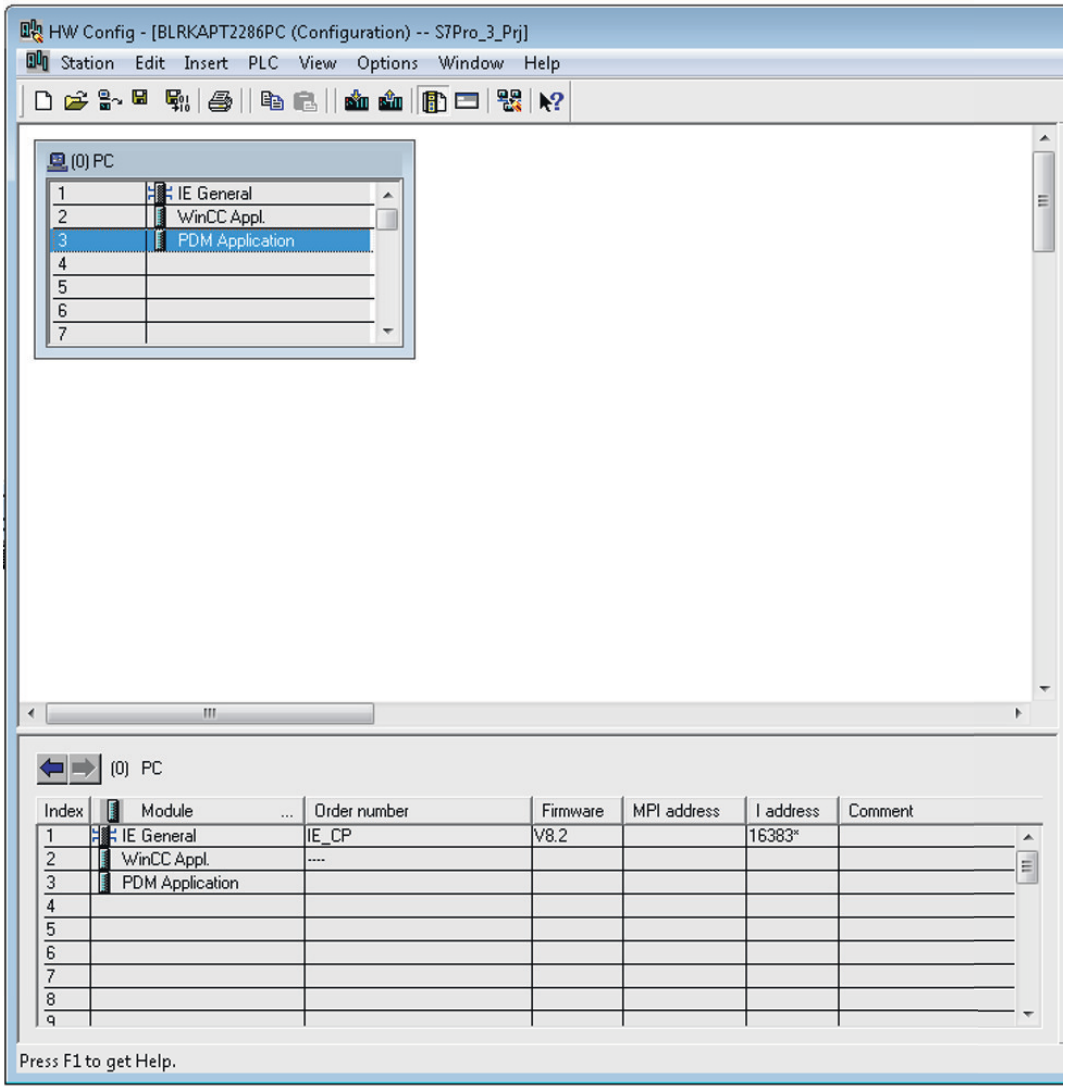


- The hardware configuration is completed with the PDM objects.

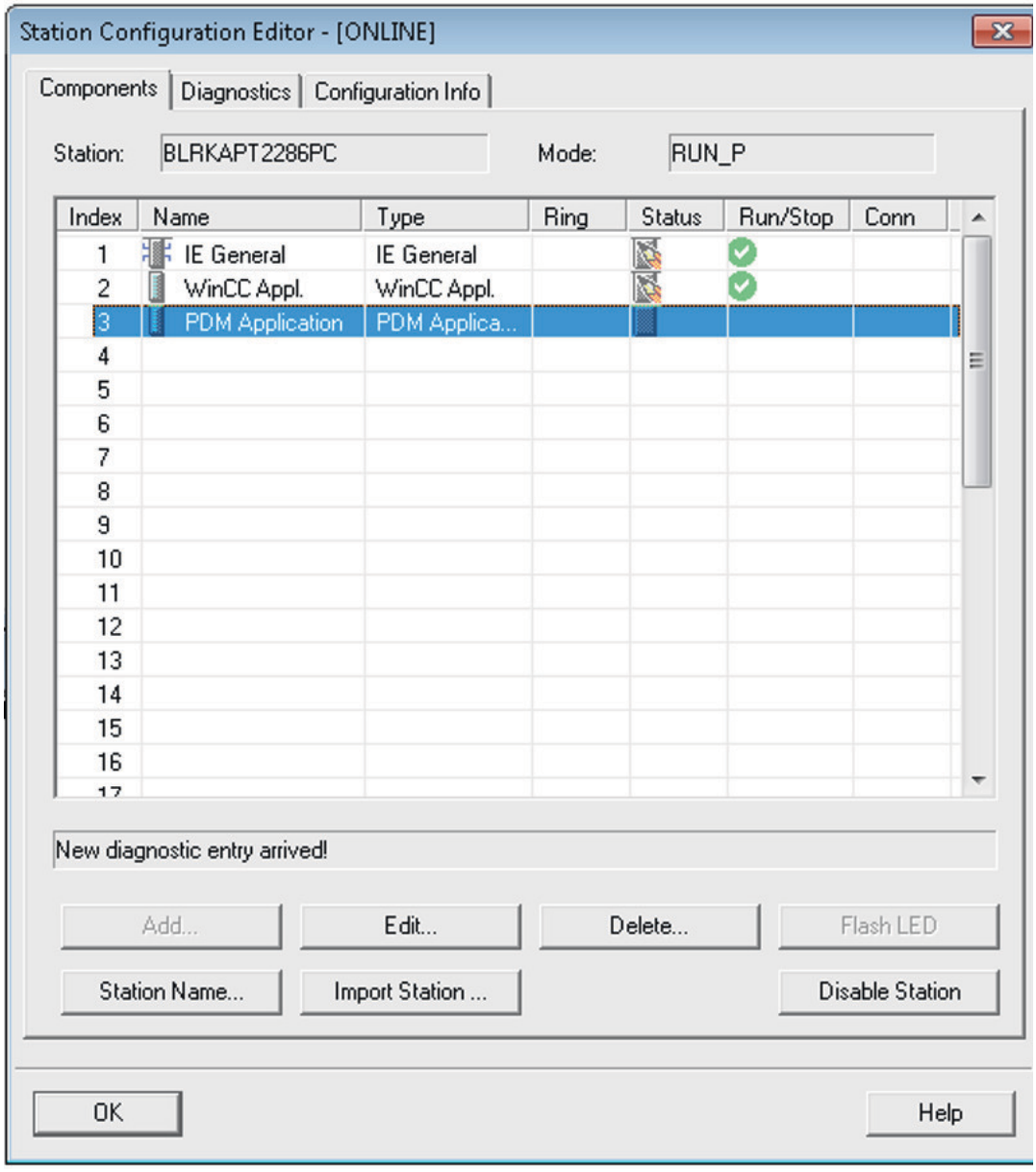


- The network configuration is completed.
- The basic parameters assignments is available offline in the HW config and ES:
  - Device Name
  - Description
  - Location designation
  - Plant designation
  - installation date etc

- PDM application is inserted in the PC station of the engineering station.



- Open the Station configurator and configure the station as given below.



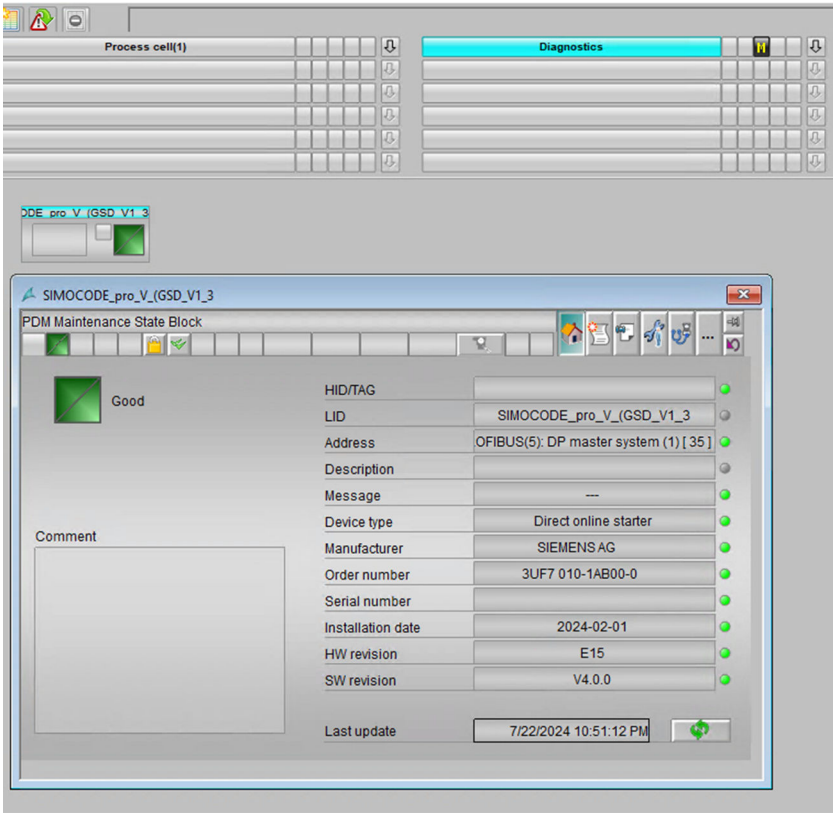
- Download the OS station to the Station configurator.

Note

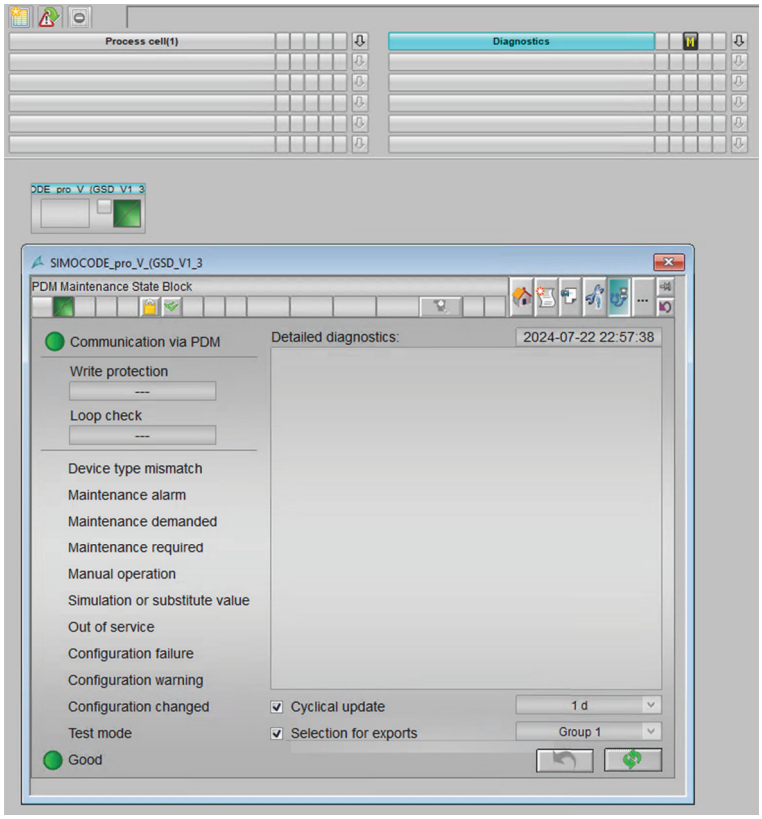
For more information on setting up a PDM Maintenance Station refer to the manual of PDM Maintenance Station on the internet.

Overview of "Diagnostics" view in MS PDM for SIMOCODE pro Devices:

- Overview of the SIMOCODE Devices screen is given below: Diagnostics -> Field Devices -> Ethernet_PROFINET/PROFIBUS_DP master system which tells the entire device identification information.



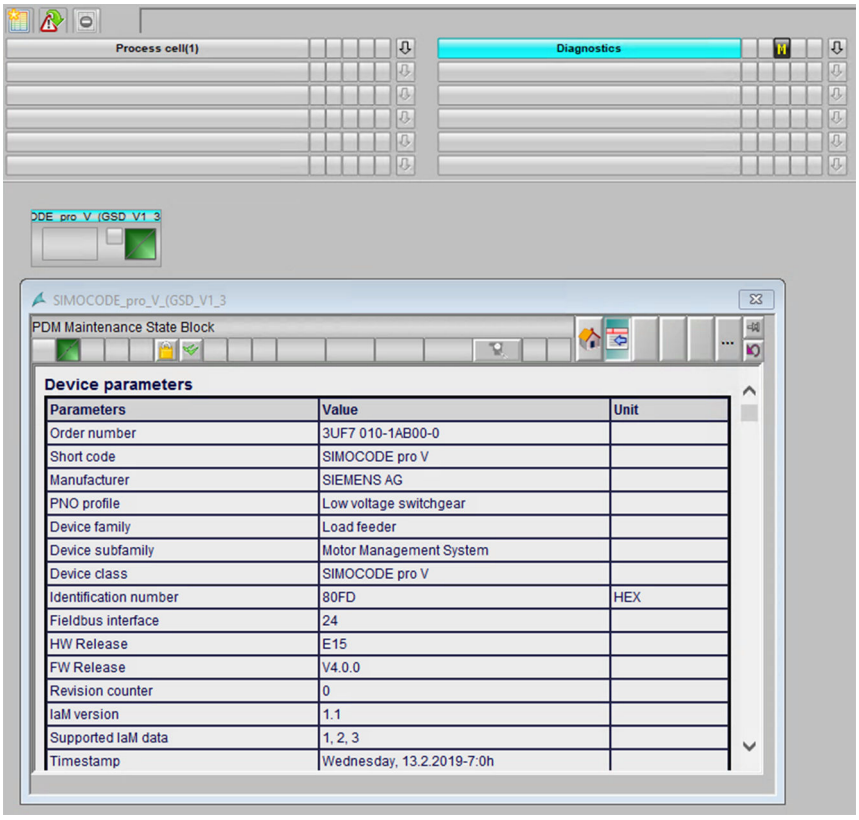
- Diagnostics Window gives the entire information of the device.


Process cell(1)
Diagnostics
SIMOCODE_pro_V_(GSD_V1_3
PDM Maintenance State Block
Communication via PDM
Write protection

Loop check

Device type mismatch
Maintenance alarm
Maintenance demanded
Maintenance required
Manual operation
Simulation or substitute value
Out of service
Configuration failure
Configuration warning
Configuration changed
Test mode
Good
Detailed diagnostics:
2024-07-22 22:57:38
Cyclical update
1 d
Selection for exports
Group 1

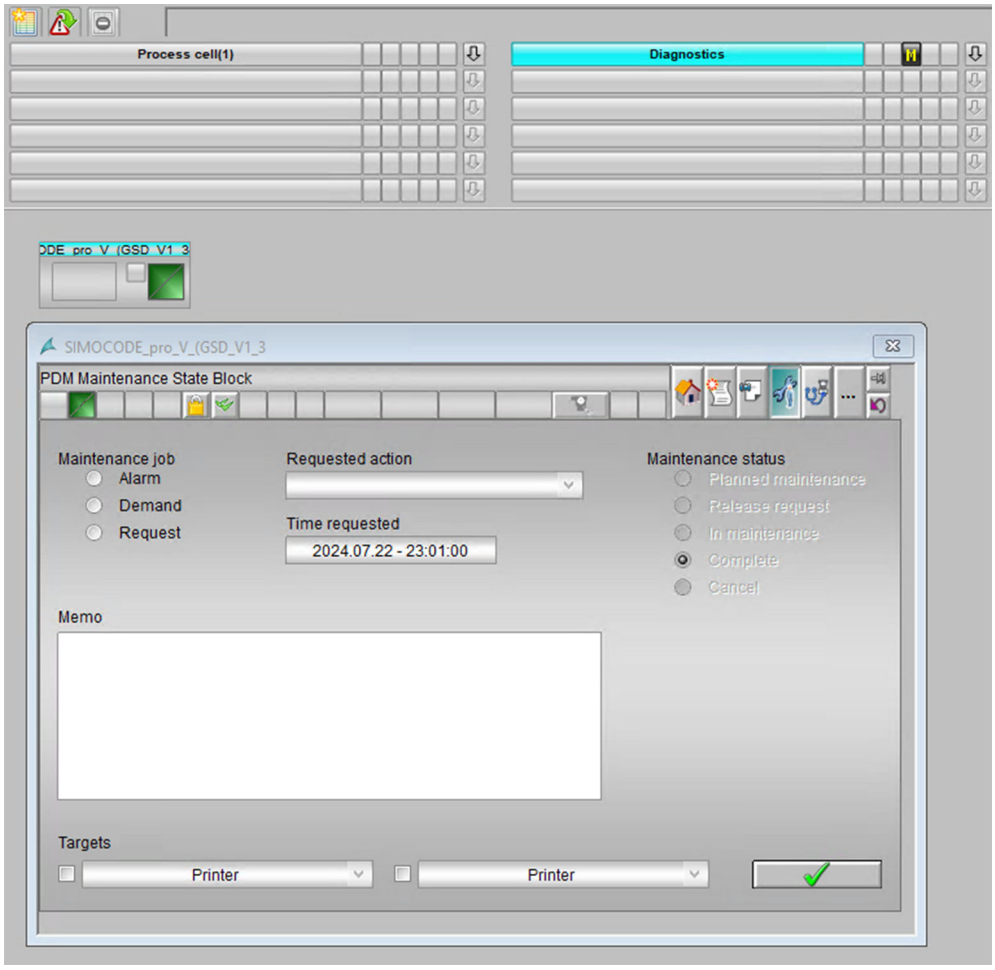
- Parameter Window show the current parameter settings configured in the device through PDM.



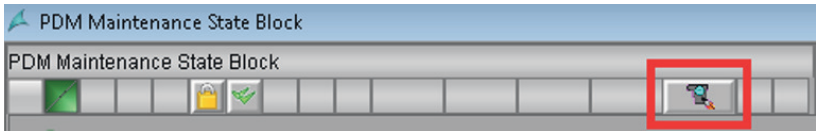
Device parameters

Parameters	Value	Unit
Order number	3UF7 010-1AB00-0	
Short code	SIMOCODE pro V	
Manufacturer	SIEMENS AG	
PNO profile	Low voltage switchgear	
Device family	Load feeder	
Device subfamily	Motor Management System	
Device class	SIMOCODE pro V	
Identification number	80FD	HEX
Fieldbus interface	24	
HW Release	E15	
FW Release	V4.0.0	
Revision counter	0	
IaM version	1.1	
Supported IaM data	1, 2, 3	
Timestamp	Wednesday, 13.2.2019-7:0h	

- Maintenance Window allows the operator to create Maintenance Request or Demand or Alarm based on the need.



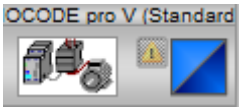
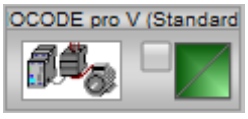
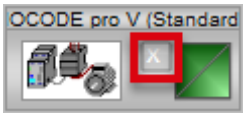
- Call SIMATIC PDM functionality calls the PDM web server as web page in the runtime window.



5.3 Maintenance Station Block Icons

This version of PCS 7 Library SIMOCODE pro Migration Legacy V10 SP1 supports the function of the Maintenance Station, via GSD, via PDM object, and via OM for SIMOCODE pro.

SIMOCODE pro PROFIBUS – Maintenance Station

Display	Remark	Message	Caused by
	Unknown/untested	-	PLC in Standby
	Trip	Device [Subnet No.]/[Address]: Bad, maintenance alarm	Tripping *) • General Fault • Controller Fault • Protection has tripped • Level monitoring low/high • Miscellaneous
	Failure	Device [Subnet No.]/[Address]: Failure	Failure of PROFIBUS connection or Rack Fault or Module Fault
	Warning	Device [Subnet No.]/[Address]: Uncertain, maintenance demanded	Warnings *) • Protection has tripped • Level monitoring low/high • Miscellaneous
	Signaling	Device [Subnet No.]/[Address]: Good, maintenance required	Status signaling *) • Signaling by controller • Protection has tripped • Signaling caused by parameterization
	Good	-	-
	Message is locked	-	Message lock is enabled in maintenance view faceplate

*) You can find the detailed information on Signaling, Warning and Tripping described for Dataset DS 92 – Device diagnostic in system manual of SIMOCODE pro PROFIBUS.

5.4 Maintenance State and Maintenance Job

Messages

Messages for an incoming Signaling, Warning and Tripping event can be found using:

Tool	Dialog/Alarm logging
For WinCC	Alarm logging or at the faceplates diagnosis view of the device
For PDM-Menu	Device > Faults/ Warnings/ Status Information - You will find following tabs according to the event: • Faults • Warnings • Status Information
For SIMOCODE ES-Menu	Target System > Faults/ Warnings/ Status Information - You will find following tabs according to the event: • Faults • Warnings • Status Information

Further status information according to control and protection can be found:

Tool	Dialog
For PDM-Menu	Device > Control/ Status Information - Following group boxes will display status information: • Control • Protection
For SIMOCODE ES-Menu	Target System > Control/ Status Information - Following group boxes will display status information: • Control • Protection

Correlation Maintenance Status and Maintenance Job

The following table provides an overview:

Meaning	Maintenance job	Status maintenance job
Maintenance required has been requested, maintenance engineer has not yet created a maintenance job		
Maintenance demanded has been requested, maintenance engineer has not yet created a maintenance job		
Maintenance alarm has been requested, maintenance engineer has not yet created a maintenance job		

Meaning	Maintenance job	Status maintenance job
Maintenance required has been requested, maintenance job was set to status "In progress"		
Maintenance demanded has been requested, maintenance job was set to status "In progress"		
Maintenance alarm has been requested Maintenance job was set to status "In progress"		
Maintenance job canceled Maintenance engineer has canceled the maintenance job	Maintenance status see table above	
Maintenance job completed	Maintenance status see table above	

Note

For more information on setting up a Maintenance Station refer to the Function manual of PCS 7 Maintenance Station.

For more information on setting up a PDM Maintenance Station refer to the manual of PDM Maintenance Station on the internet.

Parameter

A

A.1 Block parameters SMC_DIAG

Input parameters

Parameter	Data Type	Default setting	Meaning
CST	BOOL	FALSE	1 = Test (CST)
DADDR	INT	0	Diagnostic address of module
DPA_LINK	BOOL	FALSE	Device connection: 0= DP-MASTER 1=DP/PA-LINK
DEBUGINF	BYTE	16#0	0 = Disable, 1 = Enable, 2 = Reset: SFC/SFB Debug Information
EN_RDIAG	BOOL	FALSE	1 = Enable Read diagnostic data (DS92)
GR_ERR	BOOL	FALSE	1 = Group Error
LADDR	INT	0	Logical address of module
MODE	WORD	16#0000	Parameter OMODE of SMC_DIAG
IEPB_LNK	BYTE	16#00	1 = IE/PB_LINK Configured
RACKF	BOOL	FALSE	1 = Rack Failure
CALLRST*	WORD	16#00	Reset SFB/SFC call
RESFXTRCNT	INT	300	Configurable repeat count for RDSYSST/read call execution
RESFXFLCNT	INT	20	Configurable repeat count for RDSYSST/read call termination
RDSYSSUP	BOOL	FALSE	1 = RDSYSST call suppression
SLOT_NO	BYTE	16#00	Slot number
SUBN_TYP	BOOL	FALSE	1 = External DP interface
SUBN1_ID	BYTE	16#FF	ID of the primary subnet
SUBN2_ID	BYTE	16#FF	ID of the redundant subnet
SUBN1ACT	BOOL	FALSE	1=Slave 1 Active
SUBN1ERR	BOOL	FALSE	1=Slave 1 Failure
RESIN1	BOOL	FALSE	Reserved
RESIN2	WORD	16#0000	Reserved
RESIN3	INT	0	Reserved

Output parameters

Parameter	Data Type	Default setting	Meaning
OMODE	DWORD	16#00000000	Status MODE
PA_DIAG	DWORD	16#00000000	Diagnostic information for maintenance
QDIAG_INF	UDT_ DIAG		Diagnostic information
QERR	BOOL	FALSE	1 = Program Error
QERR_RD	BOOL	FALSE	1 = Error read record
QMEAS_INF	UDT_ MEAS		Measurement information
QMODF	BOOL	FALSE	1 = Module Failure
QRACKF	BOOL	FALSE	1 = Rack Failure
QRD_STAT	WORD	16#0000	Status of Read record error
QUALITY	BYTE	0	Quality code for process value
RACK1ERR	BOOL	FALSE	1 = DP slave system failure (primary)
RDSTATUS	WORD	16#0000	Status of RDSYSST return code
RESOUT1- RES-OUT3	BOOL	FALSE	Reserved
RESOUT4	WORD	16#0	Reserved
RESOUT5	INT	0	Reserved
SNDDATA	DWORD	16#00000000	Send data to technological and blocks

Input/Output parameters

Parameter	Data Type	Default setting	Meaning
ACC_ID*	BOOL	TRUE	1 = Accept new Mode settings

* These parameters are not linkable and cannot be connected by user via CFC connection.

A.1.1 Structure of UDTs for SMC_DIAG

Table A-1 Structure of OMODE

Byte	Value		Meaning
Byte 3	16#80:	Valid data	—
	16#40:	Invalid data	Higher-level fault
Byte 2	16#01:	Restart (OB100)	—
Byte 1; 0	16#0000	—	Irrelevant

Table A-2 Structure of UDT_DIAG

Element	Type	Meaning
GR_ERR	BOOL	Group fault
GR_WRN	BOOL	Group warning
FLT_F9	BOOL	Fault F9
PARFF16	BOOL	Parameter error F16
BUS_PLC	BOOL	Bus/PLC fault
BOOL_05	BOOL	Reserved
BOOL_06	BOOL	Reserved
BOOL_07	BOOL	Reserved
BYTE_10	BOOL	Reserved
DD_17	BYTE	Diagnostics data Byte 17 Warnings
DD_18	BYTE	Diagnostics data Byte 18 Warnings
DD_19	BYTE	Diagnostics data Byte 19 Warnings
DD_20	BYTE	Diagnostics data Byte 20 Warnings
DD_21	BYTE	Diagnostics data Byte 21 Warnings
DD_22	BYTE	Diagnostics data Byte 22 Warnings
DD_24	BYTE	Diagnostics data Byte 24 Faults
DD_25	BYTE	Diagnostics data Byte 25 Faults
DD_26	BYTE	Diagnostics data Byte 26 Faults
DD_27	BYTE	Diagnostics data Byte 27 Faults
DD_28	BYTE	Diagnostics data Byte 28 Faults
DD_29	BYTE	Diagnostics data Byte 29 Faults
DD_30	BYTE	Diagnostics data Byte 30 Faults
DD_31	BYTE	Diagnostics data Byte 31 Faults

Table A-3 Structure of UDT_MEAS

Element	Type	Meaning
QU_WL	BOOL	Lower warning limit voltage violated
QU_AL	BOOL	Lower alarm limit voltage violated
QCPHI_WL	BOOL	Lower warning limit power factor violated
QCPHI_AL	BOOL	Lower alarm limit power factor violated
QP_AH	BOOL	Upper alarm limit active power violated
QP_WH	BOOL	Upper warning limit active power violated
QP_WL	BOOL	Lower warning limit active power violated
QP_AL	BOOL	Lower alarm limit active power violated
QAI_AH	BOOL	Upper alarm limit analog input violated
QAI_WH	BOOL	Upper warning limit analog input violated
QAI_WL	BOOL	Lower warning limit analog input violated
QAI_AL	BOOL	Lower alarm limit analog input violated
QT_AH	BOOL	Upper alarm limit temperature violated
QT_WH	BOOL	Upper warning limit temperature violated

Element	Type	Meaning
QEF_WH	BOOL	Lower warning limit ground fault violated
QEF_AH	BOOL	Lower alarm limit ground fault violated

A.2 Block parameters SMC_MEAS

Input parameters

Parameter	Data Type	Default setting	Meaning	WinCC Tag
AO	REAL	0	Interconnectable input for analog output	N
AO_OP_EN	BOOL	TRUE	1 = Operator enable for input of the analog output	N
BA_ID	DWORD	16#00000000	BATCH: Consecutive batch number	Y
BA_NA	STRING [32]	"	BATCH name	Y
CALLRST*	WORD	16#00	Reset SFB call	N
DEBUGINF	BYTE	16#0	0 = Disable, 1 = Enable, 2 = Reset: SFB Debug Information	N
EN_RMEAS	BOOL	TRUE	1 = Enable reading of Measurement data (DS94/130/132)	N
IN_01	WORD	16#0000	Inputs DP0.0 to 1.7	N
IN_45	WORD	16#0000	Analog input DP4.0 basic type 1	N
IN_67	WORD	16#0000	Analog input DP6.0 basic type 1	N
IN_89	WORD	16#0000	Analog input DP8.0 basic type 1	N
L_RD_DATA	BOOL	FALSE	Interconnectable input 0 → 1: Reading of data sets	N
LADDR	INT	0	Logical address of module	N
LINK_ON	BOOL	FALSE	Interconnectable input for selecting the input for analog output: 1 = Interconnection is active, 0 = Operation is active	Y
M_SUP_AI	BOOL	FALSE	1 = Message suppression active for limit value violations of the analog input	Y
M_SUP_CP	BOOL	FALSE	1 = Message suppression active for power factor limit value violations	Y
M_SUP_P	BOOL	FALSE	1 = Message suppression active for power limit value violations	Y
M_SUP_S	BOOL	FALSE	1 = Suppress Apparent Power alarms	Y
M_SUP_T	BOOL	FALSE	1 = Message suppression active for temperature limit value violations	Y
M_SUP_U	BOOL	FALSE	1 = Message suppression active for voltage limit value violations	Y

Parameter	Data Type	Default setting	Meaning	WinCC Tag
M_SUP_RD	BOOL	FALSE	1 = Suppress Read alarms	N
M_SUP_EM	BOOL	FALSE	1 = Suppress earth fault alarm	Y
MEAS_INF	STRUCT		Measured value structure of SMC_DIAG	N
MO_AIHR	REAL	100.0	Bar upper limit analog input	Y
MO_AILR	REAL	0.0	Bar lower limit analog input	Y
MO_AOHR	REAL	100.0	Bar upper limit analog output	Y
MO_AOLR	REAL	0.0	Bar lower limit analog output	Y
MO_CPHR	REAL	100.0	Bar upper limit power factor	Y
MO_CPLR	REAL	0.0	Bar lower limit power factor	Y
MO_EHR	REAL	100.0	Bar upper limit earth fault	Y
MO_ELR	REAL	0.0	Bar lower limit earth fault	Y
MO_PHR	REAL	100.0	Bar upper limit active power	Y
MO_PLR	REAL	0.0	Bar lower limit active power	Y
MO_SHR	REAL	100.0	High limit bar range Apparent Power	Y
MO_SLR	REAL	0.0	Low limit bar range Apparent Power	Y
MO_THR	REAL	100.0	Bar upper limit max. temperature	Y
MO_TLR	REAL	0.0	Bar lower limit max. temperature	Y
MO_UHR	REAL	2040.0	Bar upper limit min. voltage	Y
MO_ULR	REAL	0.0	Bar lower limit min. voltage	Y
MODF	BOOL	False	1 = Module Failure information from SMC_DIAG	N
MODE	DWORD	16#8000FFFF	Parameter OMODE of SMC_DIAG	N
MODEIN45	BYTE	16#00	Mode for analog input IN_45	N
MODEIN67	BYTE	16#00	Mode for analog input IN_67	N
MODEIN89	BYTE	16#00	Mode for analog input IN_89	N
MSG_EVID1*	DWORD	16#0	Event ID of ALARM8_P block 1	N
MSG_EVID2*	DWORD	16#0	Event ID of ALARM8_P block 2	N
MSG_EVID3*	DWORD	16#0	Event ID of ALARM8_P block 3	N
NM_AI1HR	REAL	100.0	Upper standardization limit of analog input 1	N
NM_AI1LR	REAL	0.0	Lower standardization limit of analog input 1	N
NM_AI2HR	REAL	100.0	Upper standardization limit of analog input 2	N
NM_AI2LR	REAL	0.0	Lower standardization limit of analog input 2	N
NM_AOHR	REAL	100.0	Upper standardization limit of analog output	N
NM_AOLR	REAL	0.0	Lower standardization limit of analog output	N
RACKF	BOOL	FALSE	1 = Rack fault	N
RESFXTRCNT	INT	300	Configurable repeat count for read/write call execution	N

Parameter	Data Type	Default setting	Meaning	WinCC Tag
RESFXFLCNT	INT	20	Configurable repeat count for read/ write call termination	N
RESIN1	INT	0	Reserved	N
RESIN2	WORD	16#00	Reserved	N
RESIN3-RESIN4	BOOL	FALSE	Reserved	N
RUNUPCYC*	INT	10	Number of initial run cycles after CPU restart	N
SAMPLE_T*	REAL	0.1	Sampling time in [s]	N
STEP_NO	DWORD	16#00000000	Batch step number	Y

* These parameters are not linkable and cannot be connected by user via CFC connection.

Output parameters

Parameter	Data Type	Default setting	Meaning	WinCC Tag
AI1_AH	REAL	0.0	Upper alarm limit analog input 1	Y
AI1_AL	REAL	0.0	Lower alarm limit analog input 1	Y
AI1_WH	REAL	0.0	Upper warning limit analog input 1	Y
AI1_WL	REAL	0.0	Lower warning limit analog input 1	Y
COOL_T	REAL	0.0	Cooling down period	Y
CPHI_AL	REAL	0.0	Lower alarm limit power factor	Y
CPHI_WL	REAL	0.0	Lower warning limit power factor	Y
EF_WH	REAL	0.0	Earth-fault H alarm	N
EF_AH	REAL	0.0	Earth-fault HH alarm	N
ETRP_CUR	REAL	0.0	Earth-fault current in [A]	Y
ELTRP_CUR	REAL	0.0	Earth fault - last trip current [A]	Y
MSG_ACK1	WORD	16#0000	Messages acknowledged ALARM8_P block 1	N
MSG_ACK2	WORD	16#0000	Messages acknowledged ALARM8_P block 2	N
MSG_ACK3	WORD	16#0000	Messages acknowledged ALARM8_P block 3	N
MSG_STAT1	WORD	16#0000	MESSAGE1: STATUS output	N
MSG_STAT2	WORD	16#0000	MESSAGE2: STATUS output	N
MSG_STAT3	WORD	16#0000	MESSAGE3: STATUS output	N
O_23	WORD	16#0000	Analog output DP2.0 basic type 1	N
P_AH	REAL	0.0	Upper alarm limit active power	Y
P_AL	REAL	0.0	Lower alarm limit active power	Y
P_WH	REAL	0.0	Upper warning limit active power	Y
P_WL	REAL	0.0	Lower warning limit active power	Y
QAI1	REAL	0.0	Analog input 1	Y
QAI1_AH	BOOL	FALSE	Upper alarm limit analog input 1 violated	N
QAI1_AL	BOOL	FALSE	Lower alarm limit analog input 1 violated	N

Parameter	Data Type	Default setting	Meaning	WinCC Tag
QAI1_WH	BOOL	FALSE	Upper warning limit analog input 1 violated	N
QAI1_WL	BOOL	FALSE	Lower warning limit analog input 1 violated	N
QAI2	REAL	0.0	Analog input 2	Y
QAO	REAL	0.0	Analog output	Y
QAO_OP	BOOL	FALSE	1 = Operator enable for input of the analog output	Y
QCPHI	REAL	0.0	Power factor	Y
QCPHI_AL	BOOL	FALSE	Lower alarm limit power factor violated	N
QCPHI_WL	BOOL	FALSE	Lower warning limit power factor violated	N
QCUR	REAL	0.0	Max. motor current in %Ie	Y
QCUR_Lx	REAL	0.0	Current phase Lx (x = 1 to 3)	Y
QEF_WH	BOOL	FALSE	Upper warning limit earth fault tripping current violated	N
QEF_AH	BOOL	FALSE	Upper alarm limit earth fault tripping current violated	N
QER_RD	BOOL	FALSE	1=Error symbol indication at faceplate	Y
QERR	BOOL	FALSE	1 = Program error	N
QERR_RD	BOOL	FALSE	1 = Error while reading the data sets	Y
QMSG_ERR	BOOL	FALSE	1 = ALARM8_P error	N
QMSG_SUP	BOOL	FALSE	1 = Message suppression	Y
QP	REAL	0.0	Active power	Y
QP_AH	BOOL	FALSE	Upper alarm limit active power violated	N
QP_AL	BOOL	FALSE	Lower alarm limit active power violated	N
QP_WH	BOOL	FALSE	Upper warning limit active power violated	N
QP_WL	BOOL	FALSE	Lower warning limit active power violated	N
QPU	REAL	0.0	Phase unbalance	Y
QRD_OP	BOOL	TRUE	1 = Operator enable Read data set	Y
QRD_STAT	WORD	16#0000	Status of read record	N
QS	REAL	0.0	Apparent Power	Y
QT1	REAL	0.0	Temperature T1	Y
QT2	REAL	0.0	Temperature T2	Y
QT3	REAL	0.0	Temperature T3	Y
QTM	REAL	0.0	Max. temperature	Y
QTM_AH	BOOL	FALSE	Upper alarm limit max. temperature violated	N
QTM_WH	BOOL	FALSE	Upper warning limit max. temperature violated	N

Parameter	Data Type	Default setting	Meaning	WinCC Tag
QTR	REAL	0.0	Thermal motor model	Y
QU_AL	BOOL	FALSE	Lower alarm limit min. voltage violated	N
QU_WL	BOOL	FALSE	Lower warning limit min. voltage violated	N
QUL1	REAL	0.0	Voltage U_L1	Y
QUL2	REAL	0.0	Voltage U_L2	Y
QUL3	REAL	0.0	Voltage U_L3	Y
RESOUT1-RESOUT2	BOOL	FALSE	Reserved	N
RESOUT3	WORD	16#0	Reserved	N
RESOUT4	INT	0	Reserved	N
TM_AH	REAL	0.0	Upper alarm limit max. temperature	Y
TM_WH	REAL	0.0	Upper warning limit max. temperature	Y
TRIP_CUR	REAL	0.0	Tripping current	Y
TRIP_T	REAL	0.0	Time to trip	Y
U_AL	REAL	0.0	Lower alarm limit min. voltage	Y
U_WL	REAL	0.0	Lower warning limit min. voltage	Y

Input/Output parameters

Parameter	Data Type	Default setting	Meaning	WinCC Tag
AO_OP*	REAL	0.0	Operator controllable input for analog output	Y
AUX_PRxx	ANY		Auxiliary value x (x = 104 to 110, 204 to 210)	N
RD_DATA*	BOOL	FALSE	0 → 1: Reading of data sets	Y
RECVDATA	DWORD	16#00000000	Receive Data from Diag block	N

* These parameters are not linkable and cannot be connected by user via CFC connection.

A.3 Block parameters SMC_STAT

Input parameters

Parameter	Data Type	Default setting	Meaning	WinCC Tag
CALLRST*	WORD	16#00	Reset SFB call	N
DEBUGINF	BYTE	16#0	0 = Disable, 1 = Enable, 2 = Reset: SFB Debug Information	N
EN_RWSTAT	BOOL	TRUE	1 = Enable read / write Statistical DATA (DS130)	N

Parameter	Data Type	Default setting	Meaning	WinCC Tag
EN_WSTAT	BOOL	TRUE	1 = Enable Write Statistical DATA (DS130)	Y
IN_01	WORD	16#0000	Inputs DP0.0 to 1.7	N
L_RD_DATA	BOOL	TRUE	Interconnectable input 0 → 1: Reading of the data set	N
LADDR	INT	0	Logical address of module	N
MODE	DWORD	16#8000FFFF	Mode of OMODE of the SMC_DIAG	N
MODF	BOOL	FALSE	1= Module Failure information from SMC_DIAG block	N
RACKF	BOOL	FALSE	1 = Rack fault	N
RUNUPCYC*	INT	10	Reserved	N
RESIN1	INT	0	Reserved	N
RESIN2	WORD	16#00	Reserved	N
RESIN3-4	BOOL	FALSE	Reserved	N
RESFXTRCNT	INT	300	Configurable repeat count for Read/ Write call execution	N
RESFXFLCNT	INT	20	Configurable repeat count for Read/ Write call termination	N

Output parameters

Parameter	Data Type	Default setting	Meaning	WinCC Tag
CALCx	REAL	0.0	Calculation Module Output x (x= 1,2)	Y
COOL_T	REAL	0.0	Cooling down period	Y
COUNTx	DINT	0	Counter value counter x (x = 1 to 4)	Y
QDOPH	REAL	0.0	Device Operating Hours	Y
QEGY	REAL	0.0	Energy counter	N
QER_RD	BOOL	FALSE	1= Read Failure Status Display	Y
QER_WR	BOOL	FALSE	1= Write Failure Status Display	Y
QERR	BOOL	FALSE	1= Program error	N
QERR_RD	BOOL	FALSE	1= Error while reading the data set	Y
QERR_WR	BOOL	FALSE	1= Error while writing the data set	Y
QIOPH	REAL	0.0	Internal Motor Operating Hours	Y
QN_OVL	REAL	0.0	Number of overload trips	N
QN_PARAM	REAL	0.0	Number of parametrization	Y
QN_STRT	REAL	0.0	Number of starts	N
QOPH	REAL	0.0	Operating hours	N
QP_STRT	REAL	0.0	Permissible starts	N
QRD_STAT	WORD	16#0000	Status of read record	N
QRDWR_OP	BOOL	TRUE	1 = Operator enable Read/write data set	Y
QSTOP_T	REAL	0.0	Downtime	N
QTTST_REQ	REAL	0.0	Time until test required	Y
QWR_STAT	WORD	16#0000	Status of write record	N

Parameter	Data Type	Default setting	Meaning	WinCC Tag
RESOUT1-RES-OUT2	BOOL	FALSE	Reserved	N
RESOUT3	WORD	16#00	Reserved	N
RESOUT4	INT	0	Reserved	N
TIMERx	REAL	0.0	Timer value timer x (x = 1 to 4)	Y
TRIP_CUR	REAL	0.0	Tripping current	Y

Input/Output parameters

Parameter	Data Type	Default setting	Meaning	WinCC Tag
EGY	REAL	0.0	Energy counter	Y
N_OVL	REAL	0.0	Number of overload trips	Y
N_STRT	REAL	0.0	Number of starts	Y
OPH	REAL	0.0	Operating hours	Y
P_STRT	REAL	0.0	Permissible starts	Y
RD_DATA	BOOL	FALSE	0 → 1: Reading of the data set	Y
STOP_T	REAL	0.0	Downtime	Y
RECVDATA	DWORD	16#00	Receive Data from Diag block	N

A.4 Block parameters SMC_TIME

Input parameters

Parameter	Data Type	Default setting	Meaning	WinCC Tag
BA_ID	DWORD	16#00000000	BATCH: Consecutive batch number	Y
BA_NA	STRING [32]	-	BATCH name	Y
CALLRST*	WORD	16#00	Reset SFB call	N
DEBUGINF	BYTE	16#0	0 = Disable, 1 = Enable, 2 = Reset: SFB Debug Information	N
DADDR	INT	0	Diagnostic address	N
EN_RD	BOOL	FALSE	1 = Enable reading of data set	N
IN_01	WORD	16#0000	Inputs DP0.0 to 1.7	N
MODE	DWORD	16#8000FFFF	Mode of OMODE of the SMC_DIAG	N
MODF	BOOL	FALSE	1 = Module Failure information from SMC_DIAG block	N
MSG_EVID1*	DWORD	16#0	Event ID of ALARM_8P block 1	N
MSG_EVID2*	DWORD	16#0	Event ID of ALARM_8P block 2	N
MSG_EVID3*	DWORD	16#0	Event ID of ALARM_8P block 3	N
M_SUP_Sx	BOOL	FALSE	1 = Message suppression active for signal input x (x = 0 to 7)	Y

Parameter	Data Type	Default setting	Meaning	WinCC Tag
M_SUP_RD	BOOL	FALSE	1 = Suppress Read alarms	Y
RACKF	BOOL	FALSE	1 = Rack fault	N
RESFXTRCNT	INT	300	Configurable repeat count for Read/Write call execution	N
RESFXFLCNT	INT	20	Configurable repeat count for Read/Write call termination	N
RESIN1- RESIN7	BOOL	FALSE	Reserved	N
RESIN8	WORD	16#00	Reserved	N
RESIN9	INT	0	Reserved	N
RUNUPCYC*	INT	10	Number of initial run cycles after CPU restart	N
STEP_NO	DWORD	16#0	Batch step number	Y

* These parameters are not linkable and cannot be connected by user via CFC connection.

Output parameters

Parameter	Data Type	Default setting	Meaning	WinCC Tag
MSG_ACK1	WORD	16#0000	Messages acknowledged ALARM_8P block 1	N
MSG_ACK2	WORD	16#0000	Messages acknowledged ALARM_8P block 2	N
MSG_ACK3	WORD	16#0000	Message block 3: ACK_STATE Output	N
MSG_STAT1	WORD	16#0000	MESSAGE1: STATUS output	N
MSG_STAT2	WORD	16#0000	MESSAGE2: STATUS output	N
MSG_STAT3	WORD	16#0	Message block 3: STATUS output	N
QERR	BOOL	FALSE	1 = Program error	N
QER_RD	BOOL	FALSE	1 = Read Failure Status Display	Y
QERR_RD	BOOL	FALSE	1 = Error while reading the data set	Y
QOFLOW	BOOL	FALSE	1 = Buffer overflow	N
QMSG_ERR	BOOL	FALSE	1 = ALARM_8P error	N
QMSG_SUP	BOOL	FALSE	1 = Message suppression	Y
QMSG_x	BOOL	FALSE	Signal input x (x = 0 to 7)	N
QRD_STAT	WORD	16#0000	Status of read record	N
QTSTACT	BOOL	FALSE	1 = Timestamping active	Y
QSTATUS	BYTE	16#00	Status of the special messages	N
QSYNC_OK	BOOL	FALSE	1 = Synchronization available	N
RESOUT1 - RESOUT2	BOOL	FALSE	Reserved	N
RESOUT3	WORD	16#0000	Reserved	N
RESOUT4	INT	0	Reserved	N

Input/Output parameters

Parameter	Data Type	Default setting	Meaning	WinCC Tag
AUX_PRxx	ANY	-	Auxiliary value x (x = 105 to 110)	N
RECVDATA	DWORD	16#00000000	Receive Data from Diag block	N

A.4.1 Structure of QSTATUS

Bit	Meaning
0	Startup data
1	Time-of-day frame failure
2	Time-of-day difference between frame and int. clock > 1 second
3	STOP of the timestamping functionality
4	Buffer full
5	—
6	—
7	—
8	—

A.5 Block parameters SMC_DIR

Input parameters

Parameter	Data Type	Default setting	Meaning	WinCC Tag
AUT_L	BOOL	FALSE	Interconnectable input for MAN / AUTO (0 = Manual / 1 = Auto)	N
AUTO_ON	BOOL	FALSE	Automatic value: 1 = On, 0 = Off	N
AUTOP_EN	BOOL	TRUE	1 = Operator enable for Auto	N
BA_EN	BOOL	FALSE	BATCH enabled	Y
BA_ID	DWORD	16#00000000	BATCH ID: Consecutive batch number	Y
BA_NA	STRING [32]	''	BATCH name	Y
CALLRST*	WORD	16#00	Reset SFB call	N
CST	BOOL	FALSE	1 = Test mode	N
DIAG_INF	STRUCT		Diagnostics structure of SMC_DIAG	N

Parameter	Data Type	Default setting	Meaning	WinCC Tag
DEBUGINF	BYTE	16#0	0 = Disable, 1 = Enable, 2 = Reset: SFB Debug Information	N
EM_START	BOOL	FALSE	Emergency start	Y
EN_MEAS	BOOL	TRUE	1 = Measured value block available	Y
EN_RWLIM	BOOL	TRUE	1 = Enable Read / Write Limit values	N
EN_WLIM	BOOL	TRUE	1 = Enable Write Limit values	Y
EN_STAT	BOOL	TRUE	1 = Statistics block available	Y
I1_x	BOOL	FALSE	User-defined outputs DP1.x (x = 0 to 7)	N
IN_01	WORD	16#0000	Inputs DP0.0 to 1.7	N
IN_23	WORD	16#0000	Input motor current	N
JOG_ON	BOOL	FALSE	1 = Non-maintained command mode active	N
L_OFF	BOOL	FALSE	Manual control: 1 = Off	N
L_ON	BOOL	FALSE	Manual control: 1 = ON	N
L_RD_DATA	BOOL	FALSE	Interconnectable input 0 → 1: Reading of the data set	N
L_RESET	BOOL	FALSE	Configurable input for resetting QLOC_INT	N
L_SMCRESET	BOOL	FALSE	Interconnectable input for resetting	N
LADDR	INT	FALSE	Logical address of module	N
LINK_MAN	BOOL	FALSE	0 = Operator input active 1 = Manual control via interconnectable inputs	N
LIOP_SEL	BOOL	FALSE	Interconnectable input for manual/AUTO changeover (AUT_L): 1 = Interconnection is active 0 = Operation is active	N
LOCK	BOOL	FALSE	1 = Lock (OFF)	Y
LOCK_ON	BOOL	FALSE	1 = Lock (ON)	Y
LOCOP_EN	BOOL	TRUE	1 = Operator enable for LOCAL	N
M_SUP_C	BOOL	FALSE	1 = Message suppression active for current limit value violations	Y
M_SUP_RW	BOOL	FALSE	1 = Suppress Read/Write alarms	Y
MANOP_EN	BOOL	FALSE	1 = Operator enable for Manual	N
MO_PVHR	REAL	1020.0	Bar upper limit	Y

Parameter	Data Type	Default setting	Meaning	WinCC Tag
MO_PVLR	REAL	0.0	Bar lower limit	Y
MODE	DWORD	16#8000FFFF	Mode of OMODE of the SMC_DIAG	N
MODF	BOOL	FALSE	1 = Module Failure information from SMC_DIAG block	
MONITOR	BOOL	TRUE	Monitoring: 1 = ON	Y
MSG_EVID1*	DWORD	16#0	Event ID of ALARM_8P block 1	N
MSG_EVID2*	DWORD	16#0	Event ID of ALARM_8P block 2	N
MSG_EVID3*	DWORD	16#0	Event ID of ALARM_8P block 3	N
MSG_x	BOOL	FALSE	Free message input x (x = 8 to 16)	N
OCCUPIED	BOOL	FALSE	Occupied by batch	Y
OFFOP_EN	BOOL	FALSE	1 = Operator enable for OFF	N
ON_OP_EN	BOOL	FALSE	1 = Operator enable for ON	N
QC_MSG_x	BYTE	16#80	Not Used Quality Code Message Input x (x = 8 to 16)	N
RESET_MON	BOOL	FALSE	Reset the MONITOR input parameter in first download	Y
RACKF	BOOL	FALSE	1 = Rack fault	N
REM_L	BOOL	FALSE	Interconnectable input for LOCAL / REMOTE (0 = LOCAL / 1 = REMOTE)	N
REM_SEL	BOOL	FALSE	Interconnectable input for LOCAL / REMOTE changeover (REM_L): 1 = Interconnection is active 0 = Operation is active	N
RESFXTRCNT	INT	300	Configurable repeat count for read/write call execution	N
RESFXFLCNT	INT	20	Configurable repeat count for read/write call termination	N
RESIN1- RESIN2	BOOL	FALSE	Reserved	N
RESIN3	BOOL	FALSE	Reserved	N
RESIN4	WORD	16#00	Reserved	N
RESIN5	INT	0	Reserved	N
RUNUPCYC*	INT	10	Number of initial run cycles after CPU restart	N
SAMPLE_T*	REAL	0.1	Sampling time in [s]	N
SIM_I01	WORD	16#0000	Simulation value IN_01	N
SIM_I23	WORD	16#0000	Simulation value IN_23	N
SIM_ON	BOOL	FALSE	1 = Simulation	Y
STAT_RDER	BOOL	FALSE	statistical data Read failure alarm	N

Parameter	Data Type	Default setting	Meaning	WinCC Tag
STAT_WRER	BOOL	FALSE	statistical data Write failure alarm	N
STEP_NO	DWORD	16#00000000	Batch step number	Y
TIME_MON*	REAL	5.0	Monitoring time in [s]	Y
USTATUS	WORD	16#0000	Status word in VSTATUS, freely user-assignable	N

* These parameters are not linkable and cannot be connected by user via CFC connection.

Output parameters

Parameter	Data Type	Default setting	Meaning	WinCC Tag
DD_17_20	DWORD	16#00000000	DS92 Byte 17 to 20: General warning additional info 1	Y
DD_21_22	WORD	16#0000	DS92 Byte 21 to 22: General warning additional info 2	Y
DD_24_27	DWORD	16#00000000	DS92 Byte 24 to 27: General fault additional info 1	Y
DD_28_31	DWORD	16#00000000	DS92 Byte 28 to 31: General fault additional info 2	Y
ERR_NOx	INT	0	Fault number x (x = 1 to 6)	Y
MSG_ACK1	WORD	16#0000	Messages acknowledged ALARM_8P block 1	N
MSG_ACK2	WORD	16#0000	Messages acknowledged ALARM_8P block 2	N
MSG_ACK3	WORD	16#0000	Messages acknowledged ALARM_8P block 3	N
MSG_STAT1	WORD	16#0000	MESSAGE1: STATUS output	N
MSG_STAT2	WORD	16#0000	MESSAGE2: STATUS output	N
MSG_STAT3	WORD	16#0000	MESSAGE3: STATUS output	N
O_01	WORD	16#0000	Outputs DP0.0 to 1.7	N
Q_IN_01	WORD	16#0000	Inputs DP0.0 to 1.7	N
QAUTOP	BOOL	FALSE	1 = Operator enable for Auto	Y
QBAD	BOOL	FALSE	1 = Invalid process value	Y
QBUS_PLC	BOOL	FALSE	Bus/PLC fault	Y
QCST	BOOL	FALSE	1 = Test active (DP1.1)	Y
QCUR	REAL	0.0	Motor current % Ie	Y
QCUR_AH	BOOL	FALSE	Upper alarm limit current violated	N
QCUR_AL	BOOL	FALSE	Lower alarm limit current violated	N
QCUR_WH	BOOL	FALSE	Upper warning limit current violated	N
QCUR_WL	BOOL	FALSE	Lower warning limit current violated	N
QEM_STRT	BOOL	FALSE	1 = Emergency start active	N

Parameter	Data Type	Default setting	Meaning	WinCC Tag
QER_RD	BOOL	FALSE	1= Read Failure Status Display	Y
QER_WR	BOOL	FALSE	1= Write Failure Status Display	Y
QERR	BOOL	FALSE	1 = Program error	N
QERR_RD	BOOL	FALSE	1 = Error while reading the data set	N
QERR_WR	BOOL	FALSE	1 = Error while writing the data set	N
QFLT_F9	BOOL	FALSE	Fault F9	Y
QGR_ERR	BOOL	FALSE	General fault (DP0.6)	N
QGR_WRN	BOOL	FALSE	General warning (DP0.7)	N
QLOC_INT	BOOL	FALSE	1 = Local interruption	Y
QLOCOP	BOOL	FALSE	1 = Operator enable for LOCAL / REMOTE	Y
QMAN_AUT	BOOL	FALSE	0 = Manual, 1 = Automatic	Y
QMANOP	BOOL	FALSE	1 = Operator enable for Manual	Y
QMSG_ERR	BOOL	FALSE	1 = ALARM_8P error	N
QMSG_SUP	BOOL	FALSE	1 = Message suppression	Y
QOFF_OP	BOOL	FALSE	1 = Operator enable for OFF	Y
QON_OP	BOOL	FALSE	1 = Operator enable for ON	Y
QOP_ERR	BOOL	FALSE	1 = General operator error	N
QPARFF16	BOOL	FALSE	Parameter error F16	Y
QRD_STAT	WORD	16#0000	Status of read record	N
QRDWR_OP	BOOL	FALSE	1 = Operator enable Read/ write data set	Y
QREMOTE	BOOL	FALSE	1 = REMOTE mode (DP0.5)	Y
QRUN	BOOL	FALSE	Status: 1 = Motor ON (DP0.2)	Y
QSIM	BOOL	FALSE	1 = Simulation active	Y
QSTATUS	WORD	16#0000	Command status (outputs DP0.0 to 1.7)	N
QSTOP	BOOL	FALSE	Status: 1 = Motor OFF (DP0.1)	Y
QUALITY	BYTE	16#0000	Quality code	N
QWR_STAT	WORD	16#0	Status of write record	N
RESOUT1- RESOUT2	BOOL	FALSE	Reserved	N
RESOUT3	WORD	16#0000	Reserved	N
RESOUT4	INT	0	Reserved	N
VSTATUS	DWORD	16#0000	Status for status displays for block icon	Y
VSTATUS1	DWORD	16#0000	Reserved Status word	Y
WRN_NOx	INT	0	Warning number x (x = 1 to 6)	Y

Input/Output parameters

Parameter	Data Type	Default setting	Meaning	WinCC Tag
AUT_ON_OP*	BOOL	TRUE	Control input: 0 = Manual, 1 = Auto	Y
AUX_PRxx	ANY		Auxiliary value x (x-110-210)	N
CUR_AH*	REAL	0.0	Upper alarm limit current	Y
CUR_AL*	REAL	0.0	Lower alarm limit current	Y
CUR_WH*	REAL	0.0	Upper warning limit current	Y
CUR_WL*	REAL	0.0	Lower warning limit current	Y
MAN_ON*	BOOL	FALSE	Control input: 1 = ON, 0 = OFF	Y
RD_DATA*	BOOL	FALSE	0 → 1: Reading of the data set	Y
REM_ON_OP*	BOOL	TRUE	Control input: 0 = LOCAL 1 = REMOTE	Y
RESET*	BOOL	FALSE	Control input for resetting QLOC_INT	N
RECVDATA	DWORD	16#00000000	Receive Data from Diag block	N
SMCRESET*	BOOL	FALSE	Operator controllable reset input for faults	Y

* These parameters are not linkable and cannot be connected by user via CFC connection.

A.5.1 Structure of VSTATUS

Bit	Parameter
0	OCCUPIED
1	BA_EN
2	QSIM
3	QMAN_AUT
4	QCST
5	QGR_ERR
6	QGR_WRN
7	QLOC_INT
8	LOCK / LOCK_ON
9	QRUN
10	QSTOP
11	—
12	—
13	—
14	QERR_RD OR QERR_WR
15	—
16 ... 31	USTATUS

A.6 Block parameters SMC_REV

Input parameters

Parameter	Data Type	Default setting	Meaning	WinCC Tag
AUT_L	BOOL	FALSE	Interconnectable input for MAN / AUTO (0 = Manual / 1 = Auto)	N
AUTO_DIR	BOOL	FALSE	Automatic value: 1 = left, 0 = right	N
AUTO_ON	BOOL	FALSE	Automatic value: 1 = On, 0 = Off	N
AUTOP_EN	BOOL	FALSE	1 = Operator enable for Auto	N
BA_EN	BOOL	FALSE	BATCH enabled	Y
BA_ID	DWORD	16#00000000	BATCH ID: Consecutive batch number	Y
BA_NA	STRING [32]	"	BATCH name	Y
CALLRST*	WORD	16#00	Reset SFB call	N
CST	BOOL	FALSE	1 = Test mode	N
DIAG_INF	STRUCT		Diagnostics structure of SMC_DIAG	N
DEBUGINF	BYTE	16#0	0 = Disable, 1 = Enable, 2 = Reset: SFB Debug Information	N
EM_START	BOOL	FALSE	Emergency start	Y
EN_MEAS	BOOL	TRUE	1 = Measured value block available	Y
EN_RWLIM	BOOL	TRUE	1 = Enable Read / Write Limit values	N
EN_WLIM	BOOL	TRUE	1 = Enable Write Limit values	Y
EN_STAT	BOOL	TRUE	1 = Statistics block available	Y
FW_OP_EN	BOOL	FALSE	1 = Operator enable for RIGHT ON	N
I1_x	BOOL	FALSE	User-defined outputs DP1.x (x = 0 to 7)	N
IN_01	WORD	16#0000	Inputs DP0.0 to 1.7	N
IN_23	WORD	16#0000	Input motor current	N
JOG_ON	BOOL	FALSE	1 = Non-maintained command mode active	N
L_FORW	BOOL	FALSE	Manual control: 1 = right on	N
L_OFF	BOOL	FALSE	Manual control: 1 = Off	N
L_RD_DATA	BOOL	FALSE	Interconnectable input 0 to 1: Reading of the data set	N
L_RESET	BOOL	FALSE	Configurable input for resetting QLOC_INT	N
L_REV	BOOL	FALSE	Manual control: 1 = left on	N
L_SMCRESET	BOOL	FLASE	Interconnectable input for resetting	N
LADDR	INT	0	Logical address of module	N
LINK_MAN	BOOL	FALSE	0 = Operator input active 1 = Manual control via interconnectable inputs	N

Parameter	Data Type	Default setting	Meaning	WinCC Tag
LIOP_SEL	BOOL	FALSE	Interconnectable input for manual/ auto changeover (AUT_L): 1 = Interconnection is active 0 = Operation is active	N
LOCK	BOOL	FALSE	1 = Lock (OFF)	Y
LOCK_DIR	BOOL	FALSE	Direction of rotation with LOCK_ON: 1 = left, 0 = right	Y
LOCK_ON	BOOL	FALSE	1 = Lock (ON)	Y
LOCOP_EN	BOOL	FALSE	1 = Operator enable for LOCAL	N
M_SUP_C	BOOL	FALSE	1 = Message suppression active for current limit value violations	Y
M_SUP_RW	BOOL	FALSE	1=Suppress Read/Write alarms	Y
MANOP_EN	BOOL	FALSE	1 = Operator enable for Manual	N
MO_PVHR	REAL	1020.0	Bar upper limit	Y
MO_PVLR	REAL	0.0	Bar lower limit	Y
MODE	DWORD	16#8000FFFF	Mode of OMODE of the SMC_DIAG	N
MODF	BOOL	FALSE	1 = Module Failure	N
MONITOR	BOOL	TRUE	Monitoring: 1 = ON	Y
MSG_EVID1*	DWORD	16#0	Event ID of ALARM_8P block 1	N
MSG_EVID2*	DWORD	16#0	Event ID of ALARM_8P block 2	N
MSG_EVID3*	DWORD	16#0	Event ID of ALARM_8P block 3	N
MSG_x	BOOL	FALSE	Free message input x (x = 8 to 16)	N
OCCUPIED	BOOL	FALSE	Occupied by batch	Y
OFFOP_EN	BOOL	FALSE	1 = Operator enable for OFF	N
QC_MSG_x	BYTE	16#80	Not Used Quality Code Message Input x (x = 8 to 16)	N
RESET_MON	BOOL	FALSE	Reset the MONITOR input parameter in first download	Y
RACKF	BOOL	FALSE	1 = Rack fault	N
RESFXTRCNT	INT	300	Configurable repeat count for Read/ Write call execution	N
RESFXFLCNT	INT	20	Configurable repeat count for Read/ Write call termination	N
	BYTE	16#0	Enable SFB Debug Info. 16#00 - Disable 16#01 - Enable 16#02 - Reset	N
RESIN1- RESIN2	BOOL	FALSE	Reserved	N
RESIN3	BOOL	FALSE	Reserved	N
RESIN4	WORD	16#0	Reserved	N
RESIN5	INT	0	Reserved	N
REM_L	BOOL	FALSE	Interconnectable input for LOCAL / REMOTE(0 = LOCAL / 1 = REMOTE)	N

Parameter	Data Type	Default setting	Meaning	WinCC Tag
REM_SEL	BOOL	FALSE	Interconnectable input for LOCAL / REMOTE changeover (REM_L): 1 = Interconnection is active 0 = Operation is active	N
RUNUPCYC*	INT	10	Number of initial run cycles after CPU restart	N
RV_OP_EN	BOOL	FALSE	1 = Operator enable for LEFT ON	N
SAMPLE_T*	REAL	0.1	Sampling time in [s]	N
SIM_I01	WORD	16#0000	Simulation value IN_01	N
SIM_I23	WORD	16#0000	Simulation value IN_23	N
SIM_ON	BOOL	FALSE	1 = Simulation	Y
STEP_NO	DWORD	16#00000000	Batch step number	Y
STAT_RDER	BOOL	FALSE	Statistical data Read failure alarm	N
STAT_WRER	BOOL	FALSE	Statistical data Write failure alarm	N
TIME_MON*	REAL	5.0	Monitoring time in [s]	Y
USTATUS	WORD	16#0000	Status word in VSTATUS, freely user-assignable	N

* These parameters are not linkable and cannot be connected by user via CFC connection.

Output parameters

Parameter	Data Type	Default setting	Meaning	WinCC Tag
DD_17_20	DWORD	16#00000000	DS92 Byte 17 to 20: General warning additional info 1	Y
DD_21_22	WORD	16#0000	DS92 Byte 21 to 22: General warning additional info 2	Y
DD_24_27	DWORD	16#00000000	DS92 Byte 24 to 27: General fault additional info 1	Y
DD_28_31	DWORD	16#00000000	DS92 Byte 28 to 31: General fault additional info 2	Y
ERR_NOx	INT	0	Error Number x (x = 1 to 6)	Y
MSG_ACK1	WORD	16#0000	Messages acknowledged ALARM_8P block 1	N
MSG_ACK2	WORD	16#0000	Messages acknowledged ALARM_8P block 2	N
MSG_ACK3	WORD	16#0000	Messages acknowledged ALARM_8P block 3	N
MSG_STAT1	WORD	16#0000	MESSAGE1: STATUS output	N
MSG_STAT2	WORD	16#0000	MESSAGE2: STATUS output	N
MSG_STAT3	WORD	16#0000	MESSAGE3: STATUS output	N
O_01	WORD	16#0000	Outputs DP0.0 to 1.7	N
Q_IN_01	WORD	16#0000	Inputs DP0.0 to 1.7	N
QAUTOP	BOOL	FALSE	1 = Operator enable for Auto	Y

Parameter	Data Type	Default setting	Meaning	WinCC Tag
QBAD	BOOL	FALSE	1 = Invalid process value	Y
QBUS_PLC	BOOL	FALSE	Bus/PLC fault	Y
QCST	BOOL	FALSE	1 = Test active (DP1.1)	Y
QCUR	REAL	0.0	Motor current % Ie	Y
QCUR_AH	BOOL	FALSE	Upper alarm limit current violated	N
QCUR_AL	BOOL	FALSE	Lower alarm limit current violated	N
QCUR_WH	BOOL	FALSE	Upper warning limit current violated	N
QCUR_WL	BOOL	FALSE	Lower warning limit current violated	N
QDIR	BOOL	FALSE	Status direction of rotation: 1 = left, 0 = right	Y
QEM_STRT	BOOL	FALSE	1 = Emergency start active	N
QER_RD	BOOL	FALSE	1= Read Failure Status Display	Y
QER_WR	BOOL	FALSE	1= Write Failure Status Display	Y
QERR	BOOL	FALSE	1 = Program error	N
QERR_RD	BOOL	FALSE	1 = Error while reading the data set	N
QERR_WR	BOOL	FALSE	1 = Error while writing the data set	N
QFLT_F9	BOOL	FALSE	Fault F9	Y
QFORW_OP	BOOL	FALSE	1 = Operator enable for RIGHT ON	Y
QGR_ERR	BOOL	FALSE	General fault (DP0.6)	N
QGR_WRN	BOOL	FALSE	General warning (DP0.7)	N
QLOC_INT	BOOL	FALSE	1 = Local interruption	Y
QLOCOP	BOOL	FALSE	1 = Operator enable for LOCAL / REMOTE	Y
QLTA	BOOL	FALSE	1 = Interlocking time active (DP0.4)	Y
QMAN_AUT	BOOL	FALSE	0 = Manual, 1 = Automatic	Y
QMANOP	BOOL	FALSE	1 = Operator enable for Manual	Y
QMSG_ERR	BOOL	FALSE	1 = ALARM_8P error	N
QMSG_SUP	BOOL	FALSE	1 = Message suppression	Y
QOFF_OP	BOOL	FALSE	1 = Operator enable for OFF	Y
QOP_ERR	BOOL	FALSE	1 = General operator error	N
QPARFF16	BOOL	FALSE	Parameter error F16	Y
QRD_STAT	WORD	16#0000	Status of read record	N
QRDWR_OP	BOOL	TRUE	1 = Operator enable Read/write data set	Y
QREMOTE	BOOL	FALSE	1 = REMOTE mode (DP0.5)	Y
QREV_OP	BOOL	FALSE	1 = Operator enable for LEFT ON	Y
QRUN	BOOL	FALSE	Status: 1 = Motor ON (DP0.2)	Y
QSIM	BOOL	FALSE	1 = Simulation active	Y
QSTATUS	WORD	16#0000	Command status (outputs DP0.0 to 1.7)	N
QSTOP	BOOL	FALSE	Status: 1 = Motor OFF (DP0.1)	Y
QUALITY	BYTE	16#00	Quality code	N
QWR_STAT	WORD	16#0000	Status of write record	N
RESOUT1- RES-OUT2	BOOL	FALSE	Reserved	N

Parameter	Data Type	Default setting	Meaning	WinCC Tag
RESOUT3	WORD	16#0	Reserved	N
RESOUT4	INT	0	Reserved	N
VSTATUS	DWORD	16#00000000	Status for status displays for block icon	Y
VSTATUS1	DWORD	16#0000	Reserved Status word	Y
WRN_NOx	INT	0	Warning number x (x = 1 to 6)	Y

Input/Output parameters

Parameter	Data Type	Default setting	Meaning	WinCC Tag
AUT_ON_OP*	BOOL	TRUE	Control input: 0 = Manual, 1 = Auto	Y
AUX_PRxx	ANY		Auxiliary value x (x = 110 to 210)	N
CUR_AH*	REAL	0.0	Upper alarm limit current	Y
CUR_AL*	REAL	0.0	Lower alarm limit current	Y
CUR_WH*	REAL	0.0	Upper warning limit current	Y
CUR_WL*	REAL	0.0	Lower warning limit current	Y
FORW_ON*	BOOL	FALSE	Control input: 1 = RIGHT ON	Y
MOT_OFF*	BOOL	TRUE	Control input: 1 = OFF	Y
RD_DATA*	BOOL	FALSE	0 → 1 : Reading of the data set	Y
REM_ON_OP*	BOOL	TRUE	Control input: 0 = LOCAL, 1 = REMOTE	Y
RESET*	BOOL	FALSE	Control input for resetting QLOC_INT	N
REV_ON*	BOOL	FALSE	Control input: 1 = LEFT ON	Y
RECVDATA	DWORD	16#00000000	Receive Data from Diag block	N
SMCRESET*	BOOL	FALSE	Operator controllable reset input for faults	Y

* These parameters are not linkable and cannot be connected by user via CFC connection.

A.6.1 Structure of VSTATUS

Bit	Parameter
0	OCCUPIED
1	BA_EN
2	QSIM
3	QMAN_AUT
4	QCST
5	QGR_ERR
6	QGR_WRN
7	QLOC_INT

Bit	Parameter
8	LOCK / LOCK_ON
9	QRUN
10	QSTOP
11	QDIR
12	—
13	—
14	—
15	—
16 ... 31	USTATUS

A.7 Block parameters SMC_STAR

Input Parameter

Parameter	Data Type	Default setting	Meaning	WinCC Tag
AUT_L	BOOL	FALSE	Interconnectable input for MAN / AUTO (0 = Manual / 1 = Auto)	N
AUTO_ON	BOOL	FALSE	Automatic value: 1 = On, 0 = Off	N
AUTOP_EN	BOOL	TRUE	1 = Operator enable for Auto	N
BA_EN	BOOL	FALSE	BATCH enabled	Y
BA_ID	DWORD	16#00000000	BATCH ID: Consecutive batch number	Y
BA_NA	STRING [32]	"	BATCH name	Y
CALLRST*	WORD	16#00	Reset SFB call	N
CST	BOOL	FALSE	1 = Test mode	N
DIAG_INF	STRUCT		Diagnostics structure of SMC_DIAG	N
DEBUGINF	BYTE	16#0	0 = Disable, 1 = Enable, 2 = Reset: SFB Debug Information	N
EM_START	BOOL	FALSE	Emergency start	Y
EN_MEAS	BOOL	TRUE	1 = Measured value block available	Y
EN_RWLIM	BOOL	TRUE	1 = Enable Read / Write Limit values	N
EN_WLIM	BOOL	TRUE	1 = Enable Write Limit values	Y
EN_STAT	BOOL	TRUE	1 = Statistics block available	Y
I1_x	BOOL	FALSE	User-defined outputs DP1.x (x = 0 to 7)	N
IN_01	WORD	16#0000	Inputs DP0.0 to 1.7	N
IN_23	WORD	16#0000	Input motor current	N
JOG_ON	BOOL	FALSE	1 = Non-maintained command mode active	N
L_OFF	BOOL	FALSE	Manual control: 1 = Off	N

Parameter	Data Type	Default setting	Meaning	WinCC Tag
L_ON	BOOL	FALSE	Manual control: 1 = ON	N
L_RD_DATA	BOOL	FALSE	Interconnectable input 0 → 1: Reading of the data set	N
L_RESET	BOOL	FALSE	Configurable input for resetting QLOC_INT	N
L_SMCRESET	BOOL	FALSE	Interconnectable input for resetting	N
LADDR	INT	FALSE	Logical address of module	N
LINK_MAN	BOOL	FALSE	0 = Operator input active 1 = Manual control via interconnectable inputs	N
LIOP_SEL	BOOL	FALSE	Interconnectable input for manual/auto changeover (AUT_L): 1 = Interconnection is active 0 = Operation is active	N
LOCK	BOOL	FALSE	1 = Lock (OFF)	Y
LOCK_ON	BOOL	FALSE	1 = Lock (ON)	Y
LOCOP_EN	BOOL	TRUE	1 = Operator enable for LOCAL	N
M_SUP_C	BOOL	FALSE	1 = Message suppression active for current limit value violations	Y
M_SUP_RW	BOOL	FALSE	1=Suppress Read/Write alarms	N
MANOP_EN	BOOL	TRUE	1 = Operator enable for Manual	N
MO_PVHR	REAL	1020.0	Bar upper limit	Y
MO_PVLR	REAL	0.0	Bar lower limit	Y
MODE	DWORD	16#8000FFFF	Mode of OMODE of the SMC_DIAG	N
MODF	BOOL	FALSE	1 = Module Failure	N
MONITOR	BOOL	TRUE	Monitoring: 1 = ON	Y
MSG_EVID1*	DWORD	16#0	Event ID of ALARM_8P block 1	N
MSG_EVID2*	DWORD	16#0	Event ID of ALARM_8P block 2	N
MSG_EVID3*	DWORD	16#0	Event ID of ALARM_8P block 3	N
MSG_x	BOOL	FALSE	Free message input x (x = 8 to 16)	N
OCCUPIED	BOOL	FALSE	Occupied by batch	Y
OFFOP_EN	BOOL	TRUE	1 = Operator enable for OFF	N
ON_OP_EN	BOOL	TRUE	1 = Operator enable for ON	N
QC_MSG_x	BYTE	16#80	Not Used Quality Code Message Input x (x = 8 to 16)	N
RESET_MON	BOOL	FALSE	Reset the MONITOR input parameter in first download	Y
RACKF	BOOL	FALSE	1 = Rack fault	N
RESFXTRCNT	INT	300	Configurable repeat count for Read/Write call execution	N
RESFXFLCNT	INT	20	Configurable repeat count for Read/Write call termination	N
RESIN1-RESIN3	BOOL	FALSE	Reserved	N
RESIN4	WORD	16#0000	Reserved	N
RESIN5	INT	0	Reserved	N

Parameter	Data Type	Default setting	Meaning	WinCC Tag
REM_L	BOOL	FALSE	Interconnectable input for LOCAL / REMOTE (0 = LOCAL / 1 = REMOTE)	N
REM_SEL	BOOL	FALSE	Interconnectable input for LOCAL / REMOTE changeover (REM_L): 1 = Interconnection is active 0 = Operation is active	N
RUNUPCYC*	INT	10	Number of initial run cycles after CPU restart	N
SAMPLE_T*	REAL	0.1	Sampling time in [s]	N
SIM_I01	WORD	16#0000	Simulation value IN_01	N
SIM_I23	WORD	16#0000	Simulation value IN_23	N
SIM_ON	BOOL	FALSE	1 = Simulation	Y
STEP_NO	DWORD	16#00000000	Batch step number	Y
STAT_RDER	BOOL	FALSE	Statistical data Read failure alarm	N
STAT_WRER	BOOL	FALSE	Statistical data Write failure alarm	N
TIME_MON*	REAL	20.0	Monitoring time in [s]	Y
USTATUS	WORD	16#0000	Status word in VSTATUS, freely user-assignable	N

* These parameters are not linkable and cannot be connected by user via CFC connection.

Output Parameter

Parameter	Data Type	Default setting	Meaning	WinCC Tag
DD_17_20	DWORD	16#00000000	DS92 Byte 17 to 20: General warning additional info 1	Y
DD_21_22	WORD	16#0000	DS92 Byte 21 to 22: General warning additional info 2	Y
DD_24_27	DWORD	16#00000000	DS92 Byte 24 to 27: General fault additional info 1	Y
DD_28_31	DWORD	16#00000000	DS92 Byte 28 to 31: General fault additional info 2	Y
ERR_NOx	INT	0	Fault number x (x = 1 to 6)	Y
MSG_ACK1	WORD	16#0000	Messages acknowledged ALARM_8P block 1	N
MSG_ACK2	WORD	16#0000	Messages acknowledged ALARM_8P block 2	N
MSG_ACK3	WORD	16#0000	Messages acknowledged ALARM_8P block 3	N
MSG_STAT1	WORD	16#0000	MESSAGE1: STATUS output	N
MSG_STAT2	WORD	16#0000	MESSAGE2: STATUS output	N
MSG_STAT3	WORD	16#0000	MESSAGE3: STATUS output	N
O_01	WORD	16#0000	Outputs DP0.0 to 1.7	N
Q_IN_01	WORD	16#0000	Inputs DP0.0 to 1.7	N
QAUTOP	BOOL	FALSE	1 = Operator enable for Auto	Y

Parameter	Data Type	Default setting	Meaning	WinCC Tag
QBAD	BOOL	FALSE	1 = Invalid process value	Y
QBUS_PLC	BOOL	FALSE	Bus/PLC fault	Y
QCOA	BOOL	FALSE	1 = Change-over pause active (DP0.4)	Y
QCST	BOOL	FALSE	1 = Test active (DP1.1)	Y
QCUR	REAL	0.0	Motor current % Ie	Y
QCUR_AH	BOOL	FALSE	Upper alarm limit current violated	N
QCUR_AL	BOOL	FALSE	Lower alarm limit current violated	N
QCUR_WH	BOOL	FALSE	Upper warning limit current violated	N
QCUR_WL	BOOL	FALSE	Lower warning limit current violated	N
QEM_STRT	BOOL	FALSE	1 = Emergency start active	N
QER_RD	BOOL	FALSE	1= Read Failure Status Display	Y
QER_WR	BOOL	FALSE	1= Write Failure Status Display	Y
QERR	BOOL	FALSE	1 = Program error	N
QERR_RD	BOOL	FALSE	1 = Error while reading the data set	N
QERR_WR	BOOL	FALSE	1 = Error while writing the data set	N
QFLT_F9	BOOL	FALSE	Fault F9	Y
QGR_ERR	BOOL	FALSE	General fault (DP0.6)	N
QGR_WRN	BOOL	FALSE	General warning (DP0.7)	N
QLOC_INT	BOOL	FALSE	1 = Local interruption	Y
QLOCOP	BOOL	FALSE	1 = Operator enable for LOCAL / REMOTE	Y
QMAN_AUT	BOOL	FALSE	0 = Manual, 1 = Automatic	Y
QMANOP	BOOL	FALSE	1 = Operator enable for Manual	Y
QMSG_ERR	BOOL	FALSE	1 = ALARM_8P Error	N
QMSG_SUP	BOOL	FALSE	1 = Message suppression	Y
QOFF_OP	BOOL	FALSE	1 = Operator enable for OFF	Y
QON_OP	BOOL	FALSE	1 = Operator enable for ON	Y
QOP_ERR	BOOL	FALSE	1 = General operator error	N
QPARFF16	BOOL	FALSE	Parameter error F16	Y
QRD_STAT	WORD	16#0000	Status of read record	N
QRDWR_OP	BOOL	TRUE	1 = Operator enable Read/write data set	Y
QREMOTE	BOOL	FALSE	1 = REMOTE mode (DP0.5)	Y
QRUN	BOOL	FALSE	Status: 1 = Motor ON (DP0.2)	Y
QSIM	BOOL	FALSE	1 = Simulation active	Y
QSTATUS	WORD	16#0000	Command status (outputs DP0.0 to 1.7)	N
QSTOP	BOOL	FALSE	Status: 1 = Motor OFF (DP0.1)	Y
QUALITY	BYTE	16#00	Quality code	N
QWR_STAT	WORD	16#0000	Status of write record	N
RESOUT1-RESOUT2	BOOL	FALSE	Reserved	N
RESOUT3	WORD	16#0	Reserved	N
RESOUT4	INT	0	Reserved	N

Parameter	Data Type	Default setting	Meaning	WinCC Tag
VSTATUS	DWORD	16#00000000	Status for status displays for block icon	Y
VSTATUS1	DWORD	16#0000	Reserved Status word	Y
WRN_NOx	INT	0	Warning number x (x = 1 to 6)	Y

Input/Output Parameter

Parameter	Data Type	Default setting	Meaning	WinCC Tag
AUT_ON_OP*	BOOL	TRUE	Control input: 0 = Manual, 1 = Auto	Y
AUX_PRxx	ANY		Auxiliary value x (x-110-210)	N
CUR_AH*	REAL	0.0	Upper alarm limit current	Y
CUR_AL*	REAL	0.0	Lower alarm limit current	Y
CUR_WH*	REAL	0.0	Upper warning limit current	Y
CUR_WL*	REAL	0.0	Lower warning limit current	Y
MAN_ON*	BOOL	FALSE	Control input: 1 = ON, 0 = OFF	Y
RD_DATA*	BOOL	FALSE	0 → 1: Reading of the data set	Y
REM_ON_OP*	BOOL	TRUE	Control input: 0 = LOCAL, 1 = REMOTE	Y
RESET*	BOOL	FALSE	Control input for resetting QLOC_INT	N
RECVDATA	DWORD	16#00000000	Receive Data from Diag block	N
SMCRESET*	BOOL	FALSE	Operator controllable reset input for faults	Y

* These parameters are not linkable and cannot be connected by user via CFC connection.

A.7.1 Structure of VSTATUS

Bit	Parameter
0	OCCUPIED
1	BA_EN
2	QSIM
3	QMAN_AUT
4	QCST
5	QGR_ERR
6	QGR_WRN
7	QLOC_INT
8	LOCK / LOCK_ON
9	QRUN
10	QSTOP
11	—

Bit	Parameter
12	—
13	—
14	QERR_RD or QERR_WR
15	—
16 ... 31	USTATUS

A.8 Block parameters SMC_REVS

Input Parameter

Parameter	Data Type	Default setting	Meaning	WinCC Tag
AUT_L	BOOL	FALSE	Interconnectable input for MAN / AUTO (0 = Manual / 1 = Auto)	N
AUTO_DIR	BOOL	FALSE	Automatic value: 1 = left, 0 = right	N
AUTO_ON	BOOL	FALSE	Automatic value: 1 = On, 0 = Off	N
AUTOP_EN	BOOL	TRUE	1 = Operator enable for Auto	N
BA_EN	BOOL	FALSE	BATCH enabled	Y
BA_ID	DWORD	16#0000 0000	BATCH ID: Consecutive batch number	Y
BA_NA	STRING [32]	"	BATCH name	Y
CALLRST*	WORD	16#00	Reset SFB call	N
CST	BOOL	FALSE	1 = Test mode	N
DEBUGINF	BYTE	16#0	0 = Disable, 1 = Enable, 2 = Reset: SFB Debug Information	N
DIAG_INF	STRUCT		Diagnostics structure of SMC_DIAG	N
EM_START	BOOL	FALSE	Emergency start	Y
EN_MEAS	BOOL	TRUE	1 = Measured value block available	Y
EN_RWLIM	BOOL	TRUE	1 = Enable Read / Write Limit values	N
EN_WLIM	BOOL	TRUE	1 = Enable Write Limit values	Y
EN_STAT	BOOL	TRUE	1 = Statistics block available	Y
FW_OP_EN	BOOL	TRUE	1 = Operator enable for RIGHT ON	N
I1_x	BOOL	FALSE	User-defined outputs DP1.x (x = 0 to 7)	N
IN_01	WORD	16#0000	Inputs DP0.0 to 1.7	N
IN_23	WORD	16#0000	Input motor current	N
JOG_ON	BOOL	FALSE	1 = Non-maintained command mode active	N
L_FORW	BOOL	FALSE	Manual control: 1 = right on	N
L_OFF	BOOL	FALSE	Manual control: 1 = Off	N
L_RD_DATA	BOOL	FALSE	Interconnectable input 0 → 1: Reading of the data set	N

Parameter	Data Type	Default setting	Meaning	WinCC Tag
L_RESET	BOOL	FALSE	Configurable input for resetting QLOC_INT	N
L_REV	BOOL	FALSE	Manual control: 1 = left on	N
L_SMCRESET	BOOL	FALSE	Interconnectable input for resetting	N
LADDR	INT	0	Logical address of module	N
LINK_MAN	BOOL	FALSE	0 = Operator input active 1 = Manual control via interconnectable inputs	N
LIOP_SEL	BOOL	FALSE	Interconnectable input for manual/auto changeover (AUT_L): 1 = Interconnection is active 0 = Operation is active	N
LOCK	BOOL	FALSE	1 = Lock (OFF)	Y
LOCK_DIR	BOOL	FALSE	Direction of rotation with LOCK_ON: 1 = left, 0 = right	Y
LOCK_ON	BOOL	FALSE	1 = Lock (ON)	Y
LOCOP_EN	BOOL	TRUE	1 = Operator enable for LOCAL	N
M_SUP_C	BOOL	FALSE	1 = Message suppression active for current limit value violations	Y
M_SUP_RW	BOOL	FALSE	1=Suppress Read/Write alarms	Y
MANOP_EN	BOOL	TRUE	1 = Operator enable for Manual	N
MO_PVHR	REAL	1020.0	Bar upper limit	Y
MO_PVLR	REAL	0.0	Bar lower limit	Y
MODE	DWORD	16#8000 FFFF	Mode of OMODE of the SMC_DIAG	N
MODF	BOOL	FALSE	1 = Module Failure	N
MONITOR	BOOL	TRUE	Monitoring: 1 = ON	Y
MSG_EVID1*	DWORD	16#0	Event ID of ALARM_8P block 1	N
MSG_EVID2*	DWORD	16#0	Event ID of ALARM_8P block 2	N
MSG_EVID3*	DWORD	16#0	Event ID of ALARM_8P block 3	N
MSG_x	BOOL	FALSE	Free message input x (x = 8 to 16)	N
OCCUPIED	BOOL	FALSE	Occupied by batch	Y
OFFOP_EN	BOOL	TRUE	1 = Operator enable for OFF	N
QC_MSG_x	BYTE	16#80	Not Used Quality Code Message Input x (x = 8 to 16)	N
RESET_MON	BOOL	FALSE	Reset the MONITOR input parameter in first download	Y
RACKF	BOOL	FALSE	1 = Rack fault	N
RESFXTRCNT	INT	300	Configurable repeat count for Read/Write call execution	N
RESFXFLCNT	INT	20	Configurable repeat count for Read/Write call termination	N
RESIN1-RESIN2	BOOL	FALSE	Reserved	N
RESIN3	BOOL	FALSE	Reserved	N
RESIN4	WORD	16#0	Reserved	N
RESIN5	INT	0	Reserved	N

Parameter	Data Type	Default setting	Meaning	WinCC Tag
REM_L	BOOL	FALSE	Interconnectable input for LOCAL / REMOTE(0 = LOCAL / 1 = REMOTE)	N
REM_SEL	BOOL	FALSE	Interconnectable input for LOCAL / REMOTE changeover (REM_L): 1 = Interconnection is active 0 = Operation is active	N
RUNUPCYC*	INT	10	Number of initial run cycles after CPU restart	N
RV_OP_EN	BOOL	TRUE	1 = Operator enable for left on	N
SAMPLE_T*	REAL	0.1	Sampling time in [s]	N
SIM_I01	WORD	16#0000	Simulation value IN_01	N
SIM_I23	WORD	16#0000	Simulation value IN_23	N
SIM_ON	BOOL	FALSE	1 = Simulation	Y
STEP_NO	DWORD	16#0000 0000	Batch step number	Y
STAT_RDER	BOOL	FALSE	Statistical data Read failure alarm	N
STAT_WRER	BOOL	FALSE	Statistical data Write failure alarm	N
TIME_MON*	REAL	20.0	Monitoring time in [s]	Y
USTATUS	WORD	16#0000	Status word in VSTATUS, freely user-assignable	N

* These parameters are not linkable and cannot be connected by user via CFC connection.

Output Parameter

Parameter	Data Type	Default setting	Meaning	WinCC Tag
DD_17_20	DWORD	16#0000 0000	DS92 Byte 17 to 20: General warning additional info 1	Y
DD_21_22	WORD	16#0000	DS92 Byte 21 to 22: General warning additional info 2	Y
DD_24_27	DWORD	16#0000 0000	DS92 Byte 24 to 27: General fault additional info 1	Y
DD_28_31	DWORD	16#0000 0000	DS92 Byte 28 to 31: General fault additional info 2	Y
ERR_NOx	INT	0	Fault number x (x = 1 to 6)	Y
MSG_ACK1	WORD	16#0000	Messages acknowledged ALARM_8P block 1	N
MSG_ACK2	WORD	16#0000	Messages acknowledged ALARM_8P block 2	N
MSG_ACK3	WORD	16#0000	Messages acknowledged ALARM_8P block 3	N
MSG_STAT1	WORD	16#0000	MESSAGE1: STATUS output	N
MSG_STAT2	WORD	16#0000	MESSAGE2: STATUS output	N
MSG_STAT3	WORD	16#0000	MESSAGE3: STATUS output	N
O_01	WORD	16#0000	Outputs DP0.0 to 1.7	N
Q_IN_01	WORD	16#0000	Inputs DP0.0 to 1.7	N
QAUTOP	BOOL	FALSE	1 = Operator enable for Auto	Y
QBAD	BOOL	FALSE	1 = Invalid process value	Y

Parameter	Data Type	Default setting	Meaning	WinCC Tag
QBUS_PLC	BOOL	FALSE	Bus/PLC fault	Y
QCOA	BOOL	FALSE	1 = Change-over pause active (DP0.4)	Y
QCST	BOOL	FALSE	1 = Test active (DP1.1)	Y
QCUR	REAL	0.0	Motor current % Ie	Y
QCUR_AH	BOOL	FALSE	Upper alarm limit current violated	N
QCUR_AL	BOOL	FALSE	Lower alarm limit current violated	N
QCUR_WH	BOOL	FALSE	Upper warning limit current violated	N
QCUR_WL	BOOL	FALSE	Lower warning limit current violated	N
QDIR	BOOL	FALSE	Status direction of rotation: 1 = left 0 = right	Y
QEM_STRT	BOOL	FALSE	1 = Emergency start active	N
QER_RD	BOOL	FALSE	1= Read Failure Status Display	Y
QER_WR	BOOL	FALSE	1= Write Failure Status Display	Y
QERR	BOOL	FALSE	1 = Program error	N
QERR_RD	BOOL	FALSE	1 = Error while reading the data set	N
QERR_WR	BOOL	FALSE	1 = Error while writing the data set	N
QERR_RD	BOOL	FALSE	1 = Error while reading the data set	N
QERR_WR	BOOL	FALSE	1 = Error while writing the data set	N
QFLT_F9	BOOL	FALSE	Fault F9	Y
QFORW_OP	BOOL	FALSE	1 = Operator enable for RIGHT ON	Y
QGR_ERR	BOOL	FALSE	General fault (DP0.6)	N
QGR_WRN	BOOL	FALSE	General warning (DP0.7)	N
QLOC_INT	BOOL	FALSE	1 = Local interruption	Y
QLOCOP	BOOL	FALSE	1 = Operator enable for LOCAL / REMOTE	Y
QLTA	BOOL	FALSE	1 = Interlocking time active (DP0.4)	Y
QMAN_AUT	BOOL	FALSE	0 = Manual 1 = Automatic	Y
QMANOP	BOOL	FALSE	1 = Operator enable for Manual	Y
QMSG_ERR	BOOL	FALSE	1 = ALARM_8P Error	N
QMSG_SUP	BOOL	FALSE	1 = Message suppression	Y
QOFF_OP	BOOL	FALSE	1 = Operator enable for OFF	Y
QOP_ERR	BOOL	FALSE	1 = General operator error	N
QPARFF16	BOOL	FALSE	Parameter error F16	Y
QRD_STAT	WORD	16#0000	Status of read record	N
QRDWR_OP	BOOL	TRUE	1 = Operator enable Read/write data set	Y
QREMOTE	BOOL	FALSE	1 = REMOTE mode (DP0.5)	Y
QREV_OP	BOOL	FALSE	1 = Operator enable for left on	Y
QRUN	BOOL	FALSE	Status: 1 = Motor ON (DP0.2)	Y
QSIM	BOOL	FALSE	1 = Simulation active	Y
QSTATUS	WORD	16#0	Command status (outputs DP0.0 to 1.7)	N
QSTOP	BOOL	FALSE	Status: 1 = Motor OFF (DP0.1)	Y
QUALITY	BYTE	16#00	Quality code	N

Parameter	Data Type	Default setting	Meaning	WinCC Tag
QWR_STAT	WORD	16#0000	Status of write record	N
RESOUT1-RES-OUT2	BOOL	FALSE	Reserved	N
RESOUT3	WORD	16#0	Reserved	N
RESOUT3	INT	0	Reserved	N
VSTATUS	DWORD	16#0000 0000	Status for status displays for block icon	Y
VSTATUS1	DWORD	16#0000	Reserved Status word	Y
WRN_NOx	INT	0	Warning number x (x = 1 to 6)	Y

Input/Output Parameter

Parameter	Data Type	Default setting	Meaning	WinCC Tag
AUT_ON_OP*	BOOL	TRUE	Control input: 0 = Manual, 1 = Auto	Y
AUX_PRxx	ANY		Auxiliary value x (x = 110 to 210)	N
CUR_AH*	REAL	0.0	Upper alarm limit current	Y
CUR_AL*	REAL	0.0	Lower alarm limit current	Y
CUR_WH*	REAL	0.0	Upper warning limit current	Y
CUR_WL*	REAL	0.0	Lower warning limit current	Y
FORW_ON*	BOOL	FALSE	Control input: 1 = RIGHT ON	Y
FW_OP_EN	BOOL	FALSE	1 = Operator enable for RIGHT ON	N
MOT_OFF*	BOOL	TRUE	Control input: 1 = OFF	Y
RD_DATA*	BOOL	FALSE	0 → 1: Reading of the data set	Y
REM_ON_OP*	BOOL	TRUE	Control input: 0 = LOCAL, 1 = REMOTE	Y
RESET	BOOL	FALSE	Control input for resetting QLOC_INT	N
REV_ON*	BOOL	FALSE	Control input: 1 = left on	Y
RECVDATA	DWORD	16#0000 0000	Receive Data from Diag block	N
SMCRESET*	BOOL	FALSE	Operator controllable reset input for faults	Y

* These parameters are not linkable and cannot be connected by user via CFC connection.

A.8.1 Structure of VSTATUS

Bit	Parameter
0	OCCUPIED
1	BA_EN
2	QSIM
3	QMAN_AUT
4	QCST

Bit	Parameter
5	QGR_ERR
6	QGR_WRN
7	QLOC_INT
8	LOCK / LOCK_ON
9	QRUN
10	QSTOP
11	QDIR
12	—
13	—
14	QERR_RD or QERR_WR
15	—
16 ... 31	USTATUS

A.9 Block parameters SMC_DAHL

Input Parameter

Parameter	Data Type	Default setting	Meaning	WinCC Tag
AUT_L	BOOL	FALSE	Interconnectable input for MAN / AUTO (0 = Manual / 1 = Auto)	N
AUTO_ON	BOOL	FALSE	Automatic value: 1 = On, 0 = Off	N
AUTO_SPD	BOOL	FALSE	Automatic value: 1 = fast, 0 = slow	N
AUTOP_EN	BOOL	TRUE	1 = Operator enable for Auto	N
BA_EN	BOOL	FALSE	BATCH enabled	Y
BA_ID	DWORD	16#00000000	BATCH ID: Consecutive batch number	Y
BA_NA	STRING [32]	"	BATCH name	Y
CALLRST*	WORD	16#00	Reset SFB call	N
CST	BOOL	FALSE	1 = Test mode	N
DEBUGINF	BYTE	16#0	0 = Disable, 1 = Enable, 2 = Reset: SFB Debug Information	N
DIAG_INF	STRUCT		Diagnostics structure of SMC_DIAG	N
EM_START	BOOL	FALSE	Emergency start	Y
EN_MEAS	BOOL	TRUE	1 = Measured value block available	Y
EN_RWLIM	BOOL	TRUE	1 = Enable Read / Write Limit values	N
EN_WLIM	BOOL	TRUE	1 = Enable Write Limit values	Y
EN_STAT	BOOL	TRUE	1 = Statistics block available	Y
I1_x	BOOL	FALSE	User-defined outputs DP1.x (x = 0 to 7)	N

Parameter	Data Type	Default setting	Meaning	WinCC Tag
IN_01	WORD	16#0000	Inputs DP0.0 to 1.7	N
IN_23	WORD	16#0000	Input motor current	N
JOG_ON	BOOL	FALSE	1 = Non-maintained command mode active	N
L_OFF	BOOL	FALSE	Manual control: 1 = Off	N
L_RD_DATA	BOOL	FALSE	Interconnectable input 0 → 1: Reading of the data set	N
L_RESET	BOOL	FALSE	Configurable input for resetting QLOC_INT	N
L_SMCRESET	BOOL	FALSE	Interconnectable input for resetting	N
L_SP1	BOOL	FALSE	Manual control: 1 = Slow On	N
L_SP2	BOOL	FALSE	Manual control: 1 = Fast On	N
LADDR	INT	0	Logical address of module	N
LINK_MAN	BOOL	FALSE	0 = Operator input active, 1 = Manual control via interconnectable inputs	N
LIOP_SEL	BOOL	FALSE	Interconnectable input for manual/Auto changeover AUT_L: 1 = Interconnection is active, 0 = Operation is active	N
LOCK	BOOL	FALSE	1 = Lock (OFF)	Y
LOCK_ON	BOOL	FALSE	1 = Lock (ON)	Y
LOCK_SPD	BOOL	FALSE	Speed with LOCK_ON: 1 = fast, 0 = slow	Y
LOCOP_EN	BOOL	TRUE	1 = Operator enable for LOCAL	N
M_SUP_C	BOOL	FALSE	1 = Message suppression active for current limit value violations	Y
M_SUP_RW	BOOL	FALSE	1=Suppress Read/Write alarms	Y
MANOP_EN	BOOL	TRUE	1 = Operator enable for Manual	N
MO_PVHR	REAL	1020.0	Bar upper limit	Y
MO_PVLR	REAL	0.0	Bar lower limit	Y
MODE	DWORD	16#8000FFFF	Mode of OMODE of the SMC_DIAG	N
MODF	BOOL	FALSE	1 = Module Failure	N
MONITOR	BOOL	TRUE	Monitoring: 1 = ON	Y
MSG_EVID1*	DWORD	16#0	Event ID of the ALARM_8P block 1	N
MSG_EVID2*	DWORD	16#0	Event ID of the ALARM_8P block 2	N
MSG_EVID3*	DWORD	16#0	Event ID of the ALARM_8P block 3	N
MSG_x	BOOL	FALSE	Free message input x (x = 8 to 16)	N
OCCUPIED	BOOL	FALSE	Occupied by batch	Y
OFFOP_EN	BOOL	TRUE	1 = Operator enable for OFF	N
QC_MSG_x	BYTE	16#80	Not Used Quality Code Message Input x (x = 8 to 16)	N
RESET_MON	BOOL	FALSE	Reset the MONITOR input parameter in first download	Y
RACKF	BOOL	FALSE	1 = Rack fault	N
RESFXTRCNT	INT	300	Configurable repeat count for Read/Write call execution	N

Parameter	Data Type	Default setting	Meaning	WinCC Tag
RESFXFLCNT	INT	20	Configurable repeat count for Read/Write call termination	N
RESIN1-RESIN2	BOOL	FALSE	Reserved	N
RESIN3	BOOL	FALSE	Reserved	N
RESIN4	WORD	16#0	Reserved	N
RESIN5	INT	0	Reserved	N
REM_L	BOOL	FALSE	Interconnectable input for LOCAL / REMOTE (0 = LOCAL / 1 = REMOTE)	N
REM_SEL	BOOL	FALSE	Interconnectable input for LOCAL / REMOTE changeover (REM_L): 1 = Interconnection is active, 0 = Operation is active	N
RUNUPCYC*	INT	10	Number of initial run cycles after CPU restart	N
S1_OP_EN*	BOOL	FALSE	1 = Operator enable for SLOW ON	N
S2_OP_EN*	BOOL	FALSE	1 = Operator enable for FAST ON	N
SAMPLE_T*	REAL	0.1	Sampling time in [s]	N
SIM_I01	WORD	16#0000	Simulation value IN_01	N
SIM_I23	WORD	16#0000	Simulation value IN_23	N
SIM_ON	BOOL	FALSE	1 = Simulation	Y
STEP_NO	DWORD	16#00000000	Batch step number	Y
STAT_RDER	BOOL	FALSE	Statistical data Read failure alarm	N
STAT_WRER	BOOL	FALSE	Statistical data Write failure alarm	N
TIME_MON*	REAL	5.0	Monitoring time in [s]	Y
USTATUS	WORD	16#0000	Status word in VSTATUS, freely user-assignable	N

* These parameters are not linkable and cannot be connected by user via CFC connection.

Output Parameter

Parameter	Data Type	Default setting	Meaning	WinCC Tag
DD_17_20	DWORD	16#00000000	DS 92 Byte 17 to 20: General warning additional info 1	Y
DD_21_22	WORD	16#0000	DS 92 Byte 21 to 22: General warning additional info 2	Y
DD_24_27	DWORD	16#00000000	DS 92 Byte 24 to 27: General fault additional info 1	Y
DD_28_31	DWORD	16#00000000	DS 92 Byte 28 to 31: General fault additional info 2	Y
ERR_NOx	INT	0	Fault number x (x = 1 to 6)	Y
MSG_ACK1	WORD	16#0000	Messages acknowledged ALARM_8P block 1	N
MSG_ACK2	WORD	16#0000	Messages acknowledged ALARM_8P block 2	N

Parameter	Data Type	Default setting	Meaning	WinCC Tag
MSG_ACK3	WORD	16#0000	Messages acknowledged ALARM_8P block 3	N
MSG_STAT1	WORD	16#0000	MESSAGE 1: STATUS output	N
MSG_STAT2	WORD	16#0000	MESSAGE 2: STATUS output	N
MSG_STAT3	WORD	16#0000	MESSAGE 3: STATUS output	N
O_01	WORD	16#0000	Outputs DP0.0 to 1.7	N
Q_IN_01	WORD	16#0000	Inputs DP0.0 to 1.7	N
QAUTOP	BOOL	FALSE	1 = Operator enable for Auto	Y
QBAD	BOOL	FALSE	1 = Invalid process value	Y
QBUS_PLC	BOOL	FALSE	Bus/PLC fault	Y
QCOA	BOOL	FALSE	1 = Change-over pause active (DP0.4)	Y
QCST	BOOL	FALSE	1 = Test active (DP1.1)	Y
QCUR	REAL	0.0	Motor current % Ie	Y
QCUR_AH	BOOL	FALSE	Upper alarm limit current violated	N
QCUR_AL	BOOL	FALSE	Lower alarm limit current violated	N
QCUR_WH	BOOL	FALSE	Upper warning limit current violated	N
QCUR_WL	BOOL	FALSE	Lower warning limit current violated	N
QEM_STRT	BOOL	FALSE	1 = Emergency start active	N
QER_RD	BOOL	FALSE	1= Read Failure Status Display	Y
QER_WR	BOOL	FALSE	1= Write Failure Status Display	Y
QERR	BOOL	FALSE	1 = Program error	N
QERR_RD	BOOL	FALSE	1 = Error while reading the data set	N
QERR_WR	BOOL	FALSE	1 = Error while writing the data set	N
QFLT_F9	BOOL	FALSE	Fault F9	Y
QGR_ERR	BOOL	FALSE	General fault (DP0.6)	N
QGR_WRN	BOOL	FALSE	General warning (DP0.7)	N
QLOC_INT	BOOL	FALSE	1 = Local interruption	Y
QLOCOP	BOOL	FALSE	1 = Operator enable for LOCAL / REMOTE	Y
QMAN_AUT	BOOL	FALSE	0 = Manual, 1 = Automatic	Y
QMANOP	BOOL	FALSE	1 = Operator enable for Manual	Y
QMSG_ERR	BOOL	FALSE	1 = ALARM_8P Error	N
QMSG_SUP	BOOL	FALSE	1 = Message suppression	Y
QOFF_OP	BOOL	FALSE	1 = Operator enable for OFF	Y
QOP_ERR	BOOL	FALSE	1 = General operator error	N
QPARFF16	BOOL	FALSE	Parameter error F16	Y
QRD_STAT	WORD	16#0000	Status of read record	N
QRDWR_OP	BOOL	TRUE	1 = Operator enable Read/write data set	Y
QREMOTE	BOOL	FALSE	1 = REMOTE mode (DP0.5)	Y
QRUN	BOOL	FALSE	Status: 1 = Motor ON (DP0.2)	Y
QS1_OP	BOOL	FALSE	1 = Operator enable for SLOW ON	Y
QS2_OP	BOOL	FALSE	1 = Operator enable for FAST ON	Y
QSIM	BOOL	FALSE	1 = Simulation active	Y

Parameter	Data Type	Default setting	Meaning	WinCC Tag
QSPEED	BOOL	FALSE	Status speed: 1 = fast, 0 = slow	Y
QSTATUS	WORD	16#0000	Command status (outputs DP0.0 to 1.7)	N
QSTOP	BOOL	FALSE	Status: 1 = Motor OFF (DP0.1)	Y
QUALITY	BYTE	16#00	Quality code	N
QWR_STAT	WORD	16#0000	Status of write record	N
RESOUT1-RES-OUT2	BOOL	FALSE	Reserved	N
RESOUT3	WORD	16#0	Reserved	N
RESOUT4	INT	0	Reserved	N
VSTATUS	DWORD	16#00000000	Status for status displays for block icon	Y
VSTATUS1	DWORD	16#0000	Reserved Status word	Y
WRN_NOx	INT	0	Warning number x (x = 1 to 6)	Y

Input/Output Parameter

Parameter	Data Type	Default setting	Meaning	WinCC Tag
AUT_ON_OP*	BOOL	TRUE	Control input: 0 = Manual, 1 = Auto	Y
AUX_PRxx	ANY		Auxiliary value x (x = 110 to 210)	N
CUR_AH*	REAL	0.0	Upper alarm limit current	Y
CUR_AL*	REAL	0.0	Lower alarm limit current	Y
CUR_WH*	REAL	0.0	Upper warning limit current	Y
CUR_WL*	REAL	0.0	Lower warning limit current	Y
MOT_OFF*	BOOL	TRUE	Control input: 1 = OFF	Y
RD_DATA*	BOOL	FALSE	0 → 1: Reading of the data set	Y
REM_ON_OP*	BOOL	TRUE	Control input: 0 = LOCAL, 1 = REMOTE	Y
RESET*	BOOL	FALSE	Control input for resetting QLOC_INT	N
RECVDATA	DWORD	16#00000000	Receive Data from Diag block	N
SMCRESET*	BOOL	FALSE	Operator controllable reset input for faults	Y
SP1_ON	BOOL	TRUE	Control input: 1 = SLOW ON	Y
SP2_ON	BOOL	TRUE	Control input: 1 = FAST ON	Y

* These parameters are not linkable and cannot be connected by user via CFC connection.

A.9.1 Structure of VSTATUS

Bit	Parameter
0	OCCUPIED
1	BA_EN

Bit	Parameter
2	QSIM
3	QMAN_AUT
4	QCST
5	QGR_ERR
6	QGR_WRN
7	QLOC_INT
8	LOCK / LOCK_ON
9	QRUN
10	QSTOP
11	—
12	QSPEED
13	—
14	QERR_RD OR QERR_WR
15	—
16 - 31	USTATUS

A.10 Block parameters SMC_REVD

Input Parameter

Parameter	Data Type	Default setting	Meaning	WinCC Tag
AUT_L	BOOL	FALSE	Interconnectable input for MAN / AUTO (0 = Manual / 1 = Auto)	N
AUTO_DIR	BOOL	FALSE	Automatic value: 1 = left, 0 = right	N
AUTO_ON	BOOL	FALSE	Automatic value: 1 = On, 0 = Off	N
AUTO_SPD	BOOL	FALSE	Automatic value: 1 = fast, 0 = slow	N
AUTOP_EN	BOOL	TRUE	1 = Operator enable for Auto	N
BA_EN	BOOL	FALSE	BATCH enabled	Y
BA_ID	DWORD	16#00000000	BATCH ID: Consecutive batch number	Y
BA_NA	STRING [32]	"	BATCH name	N
CALLRST*	WORD	16#00	Reset SFB call	N
CST	BOOL	FALSE	1 = Test mode	Y
DEBUGINF	BYTE	16#0	0 = Disable, 1 = Enable, 2 = Reset: SFB Debug Information	N
DIAG_INF	STRUCT		Diagnostics structure of SMC_DIAG	Y
EM_START	BOOL	FLASE	Emergency start	Y
EN_MEAS	BOOL	TRUE	1 = Measured value block available	N

Parameter	Data Type	Default setting	Meaning	WinCC Tag
EN_RWLIM	BOOL	TRUE	1 = Enable Read / Write Limit values	N
EN_WLIM	BOOL	TRUE	1 = Enable Write Limit values	Y
EN_STAT	BOOL	TRUE	1 = Statistics block available	Y
FS1OP_EN	BOOL	FALSE	1 = Operator enable for RIGHT SLOW ON	N
FS2OP_EN	BOOL	FALSE	1 = Operator enable for RIGHT FAST ON	N
I1_x	BOOL	FALSE	User-defined outputs DP1.x (x = 0 to 7)	N
IN_01	WORD	16#0000	Inputs DP0.0 to 1.7	N
IN_23	WORD	16#0000	Input motor current	N
JOG_ON	BOOL	FALSE	1 = Non-maintained command mode active	N
L_FWSP1	BOOL	FALSE	Manual control: 1 = Right Slow On	N
L_FWSP2	BOOL	FALSE	Manual control: 1 = Right Fast On	N
L_OFF	BOOL	FALSE	Manual control: 1 = Off	N
L_RD_DATA	BOOL	FALSE	Interconnectable input 0 → 1: Reading of the data set	N
L_RESET	BOOL	FALSE	Configurable input for resetting QLOC_INT	Y
L_RVSP1	BOOL	FALSE	Manual control: 1 = Left Slow On	Y
L_RVSP2	BOOL	FALSE	Manual control: 1 = Left Fast On	Y
L_SMCRESET	BOOL	FALSE	Interconnectable input for resetting	N
LADDR	INT	0	Logical address of module	Y
LINK_MAN	BOOL	FALSE	0 = Operator input active, 1 = Manual control via interconnectable inputs	N
LIOP_SEL	BOOL	FALSE	Interconnectable input for manual/auto changeover (AUT_L): 1 = Interconnection is active, 0 = Operation is active	Y
LOCK	BOOL	FALSE	1 = Lock (OFF)	Y
LOCK_DIR	BOOL	FALSE	Direction of rotation with LOCK_ON: 1 = left, 0 = right	N
LOCK_ON	BOOL	FALSE	1= Lock (ON)	Y
LOCK_SPD	BOOL	FALSE	Speed with LOCK_ON: 1 = fast, 0 = slow	Y
LOCOP_EN	BOOL	TRUE	1 = Operator enable for LOCAL	N
M_SUP_C	BOOL	FALSE	1 = Message suppression active for current limit value violations	N
M_SUP_RW	BOOL	FALSE	1=Suppress Read/Write alarms	Y
MANOP_EN	BOOL	TRUE	1 = Operator enable for Manual	N
MO_PVHR	REAL	1020.0	Bar upper limit	N
MO_PVLR	REAL	0.0	Bar lower limit	N
MODE	DWORD	16#8000FFFF	Mode of OMODE of the SMC_DIAG	N
MODF	BOOL	FALSE	1 = Module Failure	N
MONITOR	BOOL	TRUE	Monitoring: 1 = ON	N
MSG_EVID1*	DWORD	16#0	Event ID of the ALARM_8P block 1	N
MSG_EVID2*	DWORD	16#0	Event ID of the ALARM_8P block 2	N

Parameter	Data Type	Default setting	Meaning	WinCC Tag
MSG_EVID3*	DWORD	16#0	Event ID of the ALARM_8P block 3	N
MSG_x	BOOL	FALSE	Free message input x (x = 8 to 16)	Y
OCCUPIED	BOOL	FALSE	Occupied by batch	Y
OFFOP_EN	BOOL	TRUE	1 = Operator enable for OFF	Y
QC_MSG_x	BYTE	16#80	Not Used Quality Code Message Input x (x = 8 to 16)	N
RESET_MON	BOOL	FALSE	Reset the `MONITOR` input parameter in first download	Y
RACKF	BOOL	FALSE	1 = Rack fault	Y
RESFXTRCNT	INT	300	Configurable repeat count for Read/Write call execution	N
RESFXFLCNT	INT	20	Configurable repeat count for Read/Write call termination	N
RESIN1-RESIN2	BOOL	FALSE	Reserved	N
RESIN3	BOOL	FALSE	Reserved	N
RESIN4	WORD	16#0	Reserved	N
RESIN5	INT	0	Reserved	N
REM_L	BOOL	FALSE	Interconnectable input for LOCAL / REMOTE (0 = LOCAL / 1 = REMOTE)	Y
REM_SEL	BOOL	FALSE	Interconnectable input for LOCAL / REMOTEchangeover (REM_L): 1 = Interconnection is active, 0 = Operation is active	Y
RS1OP_EN	BOOL	TRUE	1 = Operator enable for LEFT SLOW ON	N
RS2OP_EN	BOOL	TRUE	1 = Operator enable for LEFT FAST ON	Y
RUNUPCYC*	INT		Number of initial run cycles after CPU restart	Y
SAMPLE_T*	REAL	0.1	Sampling time in [s]	N
SIM_I01	WORD	16#0000	Simulation value IN_01	N
SIM_I23	WORD	16#0000	Simulation value IN_23	N
SIM_ON	BOOL	FALSE	1 = Simulation	Y
STEP_NO	DWORD	16#00000000	Batch step number	Y
STAT_RDER	BOOL	FALSE	Statistical data Read failure alarm	N
STAT_WRER	BOOL	FALSE	Statistical data Write failure alarm	
TIME_MON*	REAL	5.0	Monitoring time in [s]	Y
USTATUS	WORD	16#0000	Status word in VSTATUS, freely user-assignable	N

* These parameters are not linkable and cannot be connected by user via CFC connection.

Output Parameter

Parameter	Data Type	Default setting	Meaning	WinCC Tag
DD_17_20	DWORD	16#00000000	DS 92 Byte 17 to 20: General warning additional info 1	Y
DD_21_22	WORD	16#0000	DS 92 Byte 21 to 22: General warning additional info 2	Y
DD_24_27	DWORD	16#00000000	DS 92 Byte 24 to 27: General fault additional info 1	Y
DD_28_31	DWORD	16#00000000	DS 92 Byte 28 to 31: General fault additional info 2	N
ERR_NOx	INT	0	Fault number x (x = 1 to 6)	N
MSG_ACK1	WORD	16#0000	Messages acknowledged ALARM_8P block 1	Y
MSG_ACK2	WORD	16#0000	Messages acknowledged ALARM_8P block 2	N
MSG_ACK3	WORD	16#0000	Messages acknowledged ALARM_8P block 3	N
MSG_STAT1	WORD	16#0000	MESSAGE 1: STATUS output	Y
MSG_STAT2	WORD	16#0000	MESSAGE 2: STATUS output	Y
MSG_STAT3	WORD	16#0000	MESSAGE 3: STATUS output	Y
O_01	WORD	16#0000	Outputs DP0.0 to 1.7	Y
Q_IN_01	WORD	16#0000	Inputs DP0.0 to 1.7	N
QAUTOP	BOOL	FALSE	1 = Operator enable for Auto	N
QBAD	BOOL	FALSE	1 = Invalid process value	N
QBUS_PLC	BOOL	FALSE	Bus/PLC fault	N
QCOA	BOOL	FALSE	1 = Change-over pause active (DP0.4)	N
QCST	BOOL	FALSE	1 = Test active (DP1.1)	N
QCUR	REAL	0.0	Motor current % Ie	N
QCUR_AH	BOOL	FALSE	Upper alarm limit current violated	Y
QCUR_AL	BOOL	FALSE	Lower alarm limit current violated	N
QCUR_WH	BOOL	FALSE	Upper warning limit current violated	N
QCUR_WL	BOOL	FALSE	Lower warning limit current violated	Y
QDIR	BOOL	FALSE	Status direction of rotation: 1 = left, 0 = right	Y
QEM_STRT	BOOL	FALSE	1 = Emergency start active	N
QER_RD	BOOL	FALSE	1= Read Failure Status Display	Y
QER_WR	BOOL	FALSE	1= Write Failure Status Display	Y
QERR	BOOL	FALSE	1 = Program error	Y
QERR_RD	BOOL	FALSE	1 = Error while reading the data set	N
QERR_WR	BOOL	FALSE	1 = Error while writing the data set	N
QFLT_F9	BOOL	FALSE	Fault F9	Y
QFS1_OP	BOOL	FALSE	1 = Operator enable for RIGHT SLOW ON	N
QFS2_OP	BOOL	FALSE	1 = Operator enable for RIGHT FAST ON	Y
QGR_ERR	BOOL	FALSE	General fault (DP0.6)	N

Parameter	Data Type	Default setting	Meaning	WinCC Tag
QGR_WRN	BOOL	FALSE	General warning (DP0.7)	Y
QLOC_INT	BOOL	FALSE	1 = Local interruption	Y
QLOCOP	BOOL	FALSE	1 = Operator enable for LOCAL / REMOTE	Y
QLTA	BOOL	FALSE	1 = Interlocking time active (DP1.3)	Y
QMAN_AUT	BOOL	FALSE	0 = Manual, 1 = Automatic	Y
QMANOP	BOOL	FALSE	1 = Operator enable for Manual	Y
QMSG_ERR	BOOL	FALSE	1 = ALARM_8P Error	Y
QMSG_SUP	BOOL	FALSE	1 = Message suppression	N
QOFF_OP	BOOL	FALSE	1 = Operator enable for OFF	Y
QOP_ERR	BOOL	FALSE	1 = General operator error	N
QPARFF16	BOOL	FALSE	Parameter error F16	N
QRD_STAT	WORD	16#0000	Status of read record	N
QRDWR_OP	BOOL	TRUE	1 = Operator enable Read/write data set	Y
QREMOTE	BOOL	FALSE	1 = REMOTE mode (DP0.5)	N
QRS1_OP	BOOL	FALSE	1 = Operator enable for LEFT SLOW ON	Y
QRS2_OP	BOOL	FALSE	1 = Operator enable for LEFT FAST ON	N
QRUN	BOOL	FALSE	Status: 1 = Motor ON (DP0.2)	N
QSIM	BOOL	FALSE	1 = Simulation active	N
QSPEED	BOOL	FALSE	Status speed: 1 = fast, 0 = slow	N
QSTATUS	WORD	16#0000	Command status (outputs DP0.0 to 1.7)	N
QSTOP	BOOL	FALSE	Status: 1 = Motor OFF (DP0.1)	N
QUALITY	BYTE	16#00	Quality code	N
QWR_STAT	WORD	16#0000	Status of write record	N
RESOUT1-RESOUT2	BOOL	FALSE	Reserved	N
RESOUT3	WORD	16#0	Reserved	N
RESOUT4	INT	0	Reserved	N
VSTATUS	DWORD	16#00000000	Status for status displays for block icon	Y
VSTATUS1	DWORD	16#0000	Reserved Status word	Y
WRN_NOx	INT	0	Warning number x (x = 1 to 6)	Y

Input/Output Parameter

Parameter	Data Type	Default setting	Meaning	WinCC Tag
AUT_ON_OP*	BOOL	TRUE	Control input: 0 = Manual, 1 = Auto	Y
AUX_PRxx	ANY		Auxiliary value x (x = 110 to 210)	Y
CUR_AH*	REAL	0.0	Upper alarm limit current	Y
CUR_AL*	REAL	0.0	Lower alarm limit current	Y
CUR_WH*	REAL	0.0	Upper warning limit current	Y

Parameter	Data Type	Default setting	Meaning	WinCC Tag
CUR_WL*	REAL	0.0	Lower warning limit current	Y
FWSP1_ON*	BOOL	FALSE	Control input: 1 = RIGHT SLOW ON	N
FWSP2_ON*	BOOL	FALSE	Control input: 1 = RIGHT FAST ON	N
MOT_OFF*	BOOL	TRUE	Control input: 1 = OFF	N
RD_DATA*	BOOL	FALSE	0→1: Reading of the data set	Y
REM_ON_OP*	BOOL	TRUE	Control input: 0 = LOCAL, 1 = REMOTE	Y
RESET*	BOOL	FALSE	Control input for resetting QLOC_INT	Y
RVSP1_ON*	BOOL	FALSE	Control input: 1 = LEFT SLOW ON	Y
RVSP2_ON*	BOOL	FALSE	Control input: 1 = LEFT FAST ON	Y
RECVDATA	DWORD	16#00000000	Receive Data from Diag block	N
SMCRESET*	BOOL	FALSE	Operator controllable reset input for faults	Y

* These parameters are not linkable and cannot be connected by user via CFC connection.

A.10.1 Structure of VSTATUS

Bit	Parameter
0	OCCUPIED
1	BA_EN
2	QSIM
3	QMAN_AUT
4	QCST
5	QGR_ERR
6	QGR_WRN
7	QLOC_INT
8	LOCK / LOCK_ON
9	QRUN
10	QSTOP
11	QDIR
12	QSPEED
13	—
14	QERR_RD OR QERR_WR
15	—
16 - 31	USTATUS

A.11 Block parameters SMC_VAL

Input Parameter

Parameter	Data Type	Default setting	Meaning	WinCC Tag
AUT_L	BOOL	FALSE	Interconnectable input for MAN / AUTO (0 = Manual / 1 = Auto)	N
AUTO_OC	BOOL	FALSE	Automatic value: 1 = open, 0 = closed	N
AUTOP_EN	BOOL	FALSE	1 = Operator enable for Auto	N
BA_EN	BOOL	FALSE	BATCH enabled	Y
BA_ID	DWORD	16#00000000	BATCH ID: Consecutive batch number	Y
BA_NA	STRING [32]	-	BATCH name	Y
CL_OP_EN	BOOL	TRUE	1 = Operator enable for CLOSED	N
CST	BOOL	FALSE	1 = Test mode	N
DIAG_INF	UDT_ DIAG	0	Diagnostics structure of SMC_DIAG	N
EM_START	BOOL	FALSE	Emergency start	Y
EN_MEAS	BOOL	FALSE	1 = Measured value block available	Y
EN_STAT	BOOL	FALSE	1 = Statistics block available	Y
I1_x	BOOL	FALSE	User-defined outputs DP1.x (x = 0 to 7)	N
IN_01	WORD	16#0000	Inputs DP0.0 to 1.7	N
IN_23	WORD	16#0000	Inputs DP2.0 to 3.7	N
JOG_ON	BOOL	FALSE	1 = Non-maintained command mode active	N
L_CLOSE	BOOL	FALSE	Manual control: 1 = Closed	N
L_OPEN	BOOL	FALSE	Manual control: 1 = Open	N
L_RESET	BOOL	FALSE	Configurable input for resetting QLOC_INT	N
L_SMCRESET	BOOL	FALSE	Interconnectable input for resetting	N
LINK_MAN	BOOL	FALSE	0 = Operator input active, 1 = Manual control via interconnectable inputs	N
LIOP_SEL	BOOL	FALSE	Interconnectable input for manual/auto changeover (AUT_L): 1 = Interconnection is active, 0 = Operation is active	N
LOCOP_EN	BOOL	FALSE	1 = Operator enable for LOCAL	N
MANOP_EN	BOOL	FALSE	1 = Operator enable for Manual	N
MODE	DWORD	16#8000FFFF	Mode of OMODE of the SMC_DIAG	N
MODF	BOOL	FALSE	1=Module Failure	N
MONITOR	BOOL	TRUE	Monitoring: 1 = ON	Y

Parameter	Data Type	Default setting	Meaning	WinCC Tag
MSG_EVID1	DWORD	16#0	Event ID of the ALARM_8P block 1	N
MSG_EVID2	DWORD	16#0	Event ID of the ALARM_8P block 2	N
MSG_x	BOOL	FALSE	Free message input x (x = 4 to 16)	N
OCCUPIED	BOOL	FALSE	Occupied by batch	Y
OOS	BOOL	FALSE	Reserved	Y
OP_OP_EN	BOOL	TRUE	1 = Operator enable for OPEN	N
QC_MSG_x	BYTE	16#80	Not Used Quality Code Message Input x (x = 8 to 16)	N
RACKF	BOOL	FALSE	1 = Rack fault	N
REM_L	BOOL	FALSE	Interconnectable input for LOCAL / REMOTE (0 = LOCAL / 1 = REMOTE)	N
REM_SEL	BOOL	FALSE	Interconnectable input for LOCAL / REMOTE changeover (REM_L): 1 = Interconnection is active, 0 = Operation is active	N
RESIN1	BOOL	FALSE	Reserved	N
RESIN2	WORD	16#0000	Reserved	N
RESIN3	INT	FALSE	Reserved	N
RUNUPCYC	INT	10	Number of initial run cycles after CPU restart	N
SAMPLE_T	REAL	0.1	Sampling time in [s]	N
SIM_I01	WORD	16#0000	Simulation value IN_01	N
SIM_I23	WORD	16#0000	Simulation value IN_23	N
SIM_ON	BOOL	FALSE	1 = Simulation	Y
SS_POS	BOOL	FALSE	Idle position: 0 = Closed (Type C) 1 = Open (Type O)	Y
STEP_NO	DWORD	16#00000000	Batch step number	Y
TIME_MON	REAL	5.0	Monitoring time in [s]	Y
USTATUS	WORD	16#0000	Status word in VSTATUS, freely user-assignable	N
V_LOCK	BOOL	FALSE	1 = Lock (SS_POS)	Y
VL_CLOS	BOOL	FALSE	1 = Lock (OFF)	Y
VL_OPEN	BOOL	FALSE	1 = Lock (OPEN)	Y

Output Parameter

Parameter	Data Type	Default setting	Meaning	WinCC Tag
DD_17_20	DWORD	16#00000000	DS 92 Byte 17 to 20: General warning additional info 1	Y
DD_21_22	WORD	16#0000	DS 92 Byte 21 to 22: General warning additional info 2	Y
DD_24_27	DWORD	16#00000000	DS 92 Byte 24 to 27: General fault additional info 1	Y

Parameter	Data Type	Default setting	Meaning	WinCC Tag
DD_28_31	DWORD	16#00000000	DS 92 Byte 28 to 31: General fault additional info 2	Y
ERR_NOx	INT	0	Fault number x (x = 1 to 6)	Y
MSG_ACK1	WORD	16#0000	Messages acknowledged ALARM_8P block 1	N
MSG_ACK2	WORD	16#0000	Messages acknowledged ALARM_8P block 2	N
MSG_STAT1	WORD	16#0000	MESSAGE 1: STATUS output	N
MSG_STAT2	WORD	16#0000	MESSAGE 2: STATUS output	N
O_01	WORD	16#0000	Outputs DP0.0 to 1.7	N
Q_IN_01	WORD	16#0000	Inputs DP0.0 to 1.7	N
Q_IN_23	WORD	16#0000	Inputs DP2.0 to 3.7	N
QAUTOP	BOOL	FALSE	1 = Operator enable for Auto	Y
QBAD	BOOL	FALSE	1 = Invalid process value	Y
QBUS_PLC	BOOL	FALSE	Bus/PLC fault	Y
QCL_OP	BOOL	FALSE	1 = Operator enable for CLOSED	Y
QCLOSED	BOOL	FALSE	Status: 1 = Valve CLOSED (DP0.1)	Y
QCST	BOOL	FALSE	1 = Test active (DP1.1)	Y
QEM_STRT	BOOL	FALSE	1 = Emergency start active	N
QERR	BOOL	FALSE	1 = Program error	N
QFLT_F9	BOOL	FALSE	Fault F9	Y
QGR_ERR	BOOL	FALSE	General fault (DP0.6)	N
QGR_WRN	BOOL	FALSE	General warning (DP0.7)	N
QLOC_INT	BOOL	FALSE	1 = Local interruption	Y
QLOCOP	BOOL	FALSE	1 = Operator enable for LOCAL / REMOTE	Y
QMAN_AUT	BOOL	FALSE	0 = Manual, 1 = Automatic	Y
QMANOP	BOOL	FALSE	1 = Operator enable for Manual	Y
QMSG_ERR	BOOL	FALSE	1 = ALARM_8P Error	N
QMSG_SUP	BOOL	FALSE	1 = Message suppression	Y
QOP_ERR	BOOL	FALSE	1 = General operator error	N
QOP_OP	BOOL	FALSE	1 = Operator enable for OPEN	Y
QOPENED	BOOL	FALSE	Status: 1 = Valve OPEN (DP0.2)	Y
QPARFF16	BOOL	FALSE	Parameter error F16	Y
QREMOTE	BOOL	FALSE	1 = REMOTE mode (DP0.5)	Y
QSIM	BOOL	FALSE	1=Simulation active	Y
QSTATUS	WORD	16#0000	Command status (outputs DP0.0 to 1.7)	N
QUALITY	BYTE	16#00	Quality code	N
RESOUT1	BOOL	FALSE	Reserved	N
RESOUT2	WORD	16#000	Reserved	N
RESOUT3	INT	0	Reserved	N
VSTATUS	DWORD	16#00000000	Status for status displays for block icon	Y

Parameter	Data Type	Default setting	Meaning	WinCC Tag
VSTATUS1	DWORD	16#0000	Reserved Status word	Y
WRN_NOx	INT	0	Warning number x (x = 1 to 6)	Y

Input/Output Parameter

Parameter	Data Type	Default setting	Meaning	WinCC Tag
AUT_ON_OP	BOOL	TRUE	Control input: 0 = Manual, 1 = Auto	Y
AUX_PRxx	ANY	-	Auxiliary value x (x = 110 to 210)	N
CLOS_VAL	BOOL	FALSE	Control input: 1 = Positioner CLOSED	Y
OPEN_VAL	BOOL	FALSE	Control input: 1 = Positioner OPEN	Y
REM_ON_OP	BOOL	FALSE	Control input: 0 = LOCAL, 1 = REMOTE	Y
RESET	BOOL	FALSE	Control input for resetting QLOC_INT	N
RECVDATA	DWORD	16#00000000	Receive Data from Diag block	N
SMCRESET	BOOL	FALSE	Operator controllable reset input for faults	Y

A.11.1 Structure of VSTATUS

Table A-4 Structure of VSTATUS

Bit	Parameter
0	OCCUPIED
1	BA_EN
2	QSIM
3	QMAN_AUT
4	QCST
5	QGR_ERR
6	QGR_WRN
7	QLOC_INT
8	V_LOCK / VL_CLOS / VL_OPEN
9	QOPENED
10	QCLOSED
11	—
12	—
13	—
14	QERR_RD OR QERR_WR
15	—
16 - 31	USTATUS

A.12 Block parameters SMC_POS

Input Parameter

Parameter	Data Type	Default setting	Meaning	WinCC Tag
AUT_L	BOOL	FALSE	Interconnectable input for MAN / AUTO (0 = Manual / 1 = Auto)	N
AUTO_OC	BOOL	FALSE	Automatic value: 1 = Open, 0 = Closed	N
AUTO_ON	BOOL	FALSE	Automatic value: 1 = On, 0 = Off	N
AUTOP_EN	BOOL	TRUE	1 = Operator enable for Auto	N
BA_EN	BOOL	FALSE	BATCH enabled	Y
BA_ID	DWORD	16#00000000	BATCH ID: Consecutive batch number	Y
BA_NA	STRING [32]	''	BATCH name	Y
CALLRST*	WORD	16#00	Reset SFB call	N
CL_OP_EN	BOOL	TRUE	1 = Operator enable for CLOSED	N
CST	BOOL	FALSE	1 = Test mode	N
DEBUGINF	BYTE	16#0	0 = Disable, 1 = Enable, 2 = Reset: SFB Debug Information	N
DIAG_INF	STRUCT		Diagnostics structure of SMC_DIAG	N
EM_START	BOOL	FALSE	1 = Emergency start	Y
EN_MEAS	BOOL	TRUE	1 = Measured value block available	Y
EN_RWLIM	BOOL	TRUE	1 = Enable Read / Write Limit values	N
EN_WLIM	BOOL	TRUE	1 = Enable Write Limit values	Y
EN_STAT	BOOL	TRUE	1 = Statistics block available	Y
I1_x	BOOL	FALSE	User-defined outputs DP1.x (x = 0 to 7)	N
IN_01	WORD	16#0000	Inputs DP0.0 to 1.7	N
IN_23	WORD	16#0000	Input motor current	N
JOG_ON	BOOL	FALSE	1 = Non-maintained command mode active	N
L_CLOSE	BOOL	FALSE	Manual control: 1 = Closed	N
L_OPEN	BOOL		Manual control: 1 = Open	N
L_RD_DATA	BOOL	FALSE	Interconnectable input 0 → 1: Reading of the data set	N
L_RESET	BOOL	FALSE	Configurable input for resetting QLOC_INT	N
L_SMCRESET	BOOL	FALSE	Interconnectable input for resetting	N
L_STOP	BOOL	FALSE	Manual control: 1 = Stop	N
LADDR	INT	FALSE	Logical address of module	N
LINK_MAN	BOOL	FALSE	0 = Operator input active, 1 = Manual control via interconnectable inputs	N
LIOP_SEL	BOOL	TRUE	Interconnectable input for manual/auto changeover (AUT_L): 1 = Interconnection is active, 0 = Operation is active	N

Parameter	Data Type	Default setting	Meaning	WinCC Tag
LOCOP_EN	BOOL	TRUE	1 = Operator enable for LOCAL	N
M_SUP_C	BOOL	FALSE	1 = Message suppression active for current limit value violations	Y
M_SUP_RW	BOOL	FALSE	1=Suppress Read/Write alarms	Y
MANOP_EN	BOOL	TRUE	1 = Operator enable for Manual	N
MO_PVHR	REAL	1020.0	Bar upper limit	Y
MO_PVLR	REAL	0.0	Bar lower limit	Y
MODE	DWORD	16#8000FFFF	Mode of OMODE of the SMC_DIAG	N
MODF	BOOL	FALSE	1 = Module Failure	N
MONITOR	BOOL	TRUE	Monitoring: 1 = ON	Y
MSG_EVID1*	DWORD	16#0	Event ID of the ALARM_8P block 1	N
MSG_EVID2*	DWORD	16#0	Event ID of the ALARM_8P block 2	N
MSG_EVID3*	DWORD	16#0	Event ID of the ALARM_8P block 3	N
MSG_x	BOOL	FALSE	Free message input x (x = 8 to 16)	N
OCCUPIED	BOOL	FALSE	Occupied by batch	Y
RESET_MON	BOOL	FALSE	Reset the MONITOR input parameter in first download	Y
OP_OP_EN	BOOL	TRUE	1 = Operator enable for OPEN	N
QC_MSG_x	BYTE	16#80	Not Used Quality Code Message Input x (x = 8 to 16)	N
RACKF	BOOL	FALSE	1 = Rack fault	N
RESFXTRCNT	INT	300	Configurable repeat count for Read/Write call execution	N
RESFXFLCNT	INT	20	Configurable repeat count for Read/Write call termination	N
RESIN1-RESIN3	BOOL	FALSE	Reserved	N
RESIN4	WORD	16#0	Reserved	N
RESIN5	INT	0	Reserved	N
REM_L	BOOL	FALSE	Interconnectable input for LOCAL / REMOTE (0 = LOCAL / 1 = REMOTE)	N
REM_SEL	BOOL	FALSE	Interconnectable input for LOCAL / REMOTE changeover (REM_L): 1 = Interconnection is active, 0 = Operation is active	N
RUNUPCYC*	INT	10	Number of initial run cycles after CPU restart	N
SAMPLE_T*	REAL	0.1	Sampling time in [s]	N
SIM_I01	WORD	16#0000	Simulation value IN_01	N
SIM_I23	WORD	16#0000	Simulation value IN_23	N
SIM_ON	BOOL	FALSE	1 = Simulation	Y
SS_POS	BOOL	FALSE	Idle position: 0 = Closed (Type C) 1 = Open (Type O)	Y
ST_OP_EN	BOOL	TRUE	1 = Operator enable for STOP	N
STEP_NO	DWORD	16#00000000	Batch step number	Y

Parameter	Data Type	Default setting	Meaning	WinCC Tag
STAT_RDER	BOOL	FALSE	Statistical data Read failure alarm	N
STAT_WRER	BOOL	FALSE	Statistical data Write failure alarm	N
TIME_MON*	REAL	5.0	Monitoring time in [s]	Y
USTATUS	WORD	16#0000	Status word in VSTATUS, freely user-assignable	N
V_LOCK	BOOL	FALSE	1 = Lock (SS_POS)	Y
VL_CLOS	BOOL	FALSE	1 = Lock (OFF)	Y
VL_HOLD	BOOL	FALSE	1 = Lock (HOLD)	Y
VL_OPEN	BOOL	FALSE	1 = Lock (OPEN)	Y

* These parameters are not linkable and cannot be connected by user via CFC connection.

Output Parameter

Parameter	Data Type	Default setting	Meaning	WinCC Tag
DD_17_20	DWORD	16#00000000	DS 92 Byte 17 to 20: General warning additional info 1	Y
DD_21_22	WORD	16#0000	DS 92 Byte 21 to 22: General warning additional info 2	Y
DD_24_27	DWORD	16#00000000	DS 92 Byte 24 to 27: General fault additional info 1	Y
DD_28_31	DWORD	16#00000000	DS 92 Byte 28 to 31: General fault additional info 2	Y
ERR_NOx	INT	0	Fault number x (x = 1 to 6)	Y
MSG_ACK1	WORD	16#0000	Messages acknowledged ALARM_8P block 1	N
MSG_ACK2	WORD	16#0000	Messages acknowledged ALARM_8P block 2	N
MSG_ACK3	WORD	16#0000	Messages acknowledged ALARM_8P block 3	N
MSG_STAT1	WORD	16#0000	MESSAGE 1: STATUS output	N
MSG_STAT2	WORD	16#0000	MESSAGE 2: STATUS output	N
MSG_STAT3	WORD	16#0000	MESSAGE 3: STATUS output	N
O_01	WORD	16#0000	Outputs DP0.0 to 1.7	N
Q_IN_01	WORD	16#0000	Inputs DP0.0 to 1.7	N
QAUTOP	BOOL	FALSE	1 = Operator enable for Auto	Y
QBAD	BOOL	FALSE	1 = Invalid process value	Y
QBUS_PLC	BOOL	FALSE	Bus/PLC fault	Y
QCL_OP	BOOL	FALSE	1 = Operator enable for CLOSED	Y
QCLOSED	BOOL	FALSE	Status: 1 = Positioner CLOSED (DP0.1)	Y
QCLOSING	BOOL	FALSE	1 = Positioner closing (DP1.2)	Y
QCST	BOOL	FALSE	1 = Test active (DP1.1)	Y
QCUR	REAL	0.0	Motor current % le	Y

Parameter	Data Type	Default setting	Meaning	WinCC Tag
QCUR_AH	BOOL	FALSE	Upper alarm limit current violated	N
QCUR_AL	BOOL	FALSE	Lower alarm limit current violated	N
QCUR_WH	BOOL	FALSE	Upper warning limit current violated	N
QCUR_WL	BOOL	FALSE	Lower warning limit current violated	N
QEM_STRT	BOOL	FALSE	1 = Emergency start active	N
QER_RD	BOOL	FALSE	1= Read Failure Status Display	Y
QER_WR	BOOL	FALSE	1= Write Failure Status Display	Y
QERR	BOOL	FALSE	1 = Program error	N
QERR_RD	BOOL	FALSE	1 = Error while reading the data set	N
QERR_WR	BOOL	FALSE	1 = Error while writing the data set	N
QFLT_F9	BOOL	FALSE	Fault F9	Y
QGR_ERR	BOOL	FALSE	General fault (DP0.6)	N
QGR_WRN	BOOL	FALSE	General warning (DP0.7)	N
QLOC_INT	BOOL	FALSE	1 = Local interruption	Y
QLOCOP	BOOL	FALSE	1 = Operator enable for LOCAL / REMOTE	Y
QLTA	BOOL	FALSE	1 = Interlocking time active (DP0.4)	Y
QMAN_AUT	BOOL	FALSE	0 = Manual, 1 = Automatic	Y
QMANOP	BOOL	FALSE	1 = Operator enable for Manual	Y
QMSG_ERR	BOOL	FALSE	1 = ALARM_8P Error	N
QMSG_SUP	BOOL	FALSE	1 = Message suppression	Y
QOP_ERR	BOOL	FALSE	1 = General operator error	N
QOP_OP	BOOL	FALSE	1 = Operator enable for OPEN	Y
QOPENED	BOOL	FALSE	Status: 1 = Positioner OPEN (DP0.2)	Y
QOPENING	BOOL	FALSE	1 = Positioner opening (DP1.0)	Y
QPARFF16	BOOL	FALSE	Parameter error F16	Y
QRD_STAT	WORD	16#0000	Status of read record	N
QRDWR_OP	BOOL	FALSE	1 = Operator enable Read/write data set	Y
QREMOTE	BOOL	FALSE	1 = REMOTE mode (DP0.5)	Y
QSIM	BOOL	FALSE	1 = Simulation active	Y
QST_OP	BOOL	FALSE	1 = Operator enable for STOP	Y
QSTATUS	WORD	16#0000	Command status (outputs DP0.0 to 1.7)	N
QUALITY	BYTE	16#00	Quality code	N
QWR_STAT	WORD	16#0000	Status of write record	N
RESOUT1-RES-OUT2	BOOL	FALSE	Reserved	N
RESOUT3	WORD	16#0	Reserved	N
RESOUT4	INT	0	Reserved	N
VSTATUS	DWORD	16#00000000	Status for status displays for block icon	Y
VSTATUS1	DWORD	16#0000	Reserved Status word	Y
WRN_NOx	INT	0	Warning number x (x = 1 to 6)	Y

Input/Output Parameter

Parameter	Data Type	Default setting	Meaning	WinCC Tag
AUT_ON_OP*	BOOL	TRUE	Control input: 0 = Manual, 1 = Auto	Y
AUX_PRxx	ANY		Auxiliary value x (x = 110 to 210)	N
CLOS_VAL*	BOOL	FALSE	Control input: 1 = Positioner CLOSED	Y
CUR_AH*	REAL	0.0	Upper alarm limit current	Y
CUR_AL*	REAL	0.0	Lower alarm limit current	Y
CUR_WH*	REAL	0.0	Upper warning limit current	Y
CUR_WL*	REAL	0.0	Lower warning limit current	Y
OPEN_VAL*	BOOL	FALSE	Control input: 1 = Positioner OPEN	Y
RD_DATA*	BOOL	FALSE	0 → 1: Reading of the data set	Y
REM_ON_OP*	BOOL	TRUE	Control input: 0 = LOCAL, 1 = REMOTE	Y
RESET*	BOOL	FALSE	Control input for resetting QLOC_INT	N
RECVDATA	DWORD	16#00000000	Receive Data from Diag block	N
SMCRESET*	BOOL	FALSE	Operator controllable reset input for faults	Y
STOP_VAL*	BOOL	FALSE	Control input: 1 = Positioner STOP	Y

* These parameters are not linkable and cannot be connected by user via CFC connection.

A.12.1 Structure of VSTATUS

Bit	Parameter
0	OCCUPIED
1	BA_EN
2	QSIM
3	QMAN_AUT
4	QCST
5	QGR_ERR
6	QGR_WRN
7	QLOC_INT
8	V_LOCK / VL_CLOS / VL_OPEN / VL_HOLD
9	QOPENED
10	QSTOP
11	QCLOSED
12	QERR_RD OR QERR_WR
13	QOPENING
14	QCLOSING
15	—
16 ... 31	USTATUS

A.13 Block parameters SMC_OVL

Input Parameter

Parameter	Data Type	Default setting	Meaning	WinCC Tag
BA_EN	BOOL	FALSE	BATCH enabled	Y
BA_ID	DWORD	16#00000000	BATCH ID: Consecutive batch number	Y
BA_NA	STRING [32]	"	BATCH name	Y
CALLRST*	WORD	16#00	Reset SFB call	N
CST	BOOL	FALSE	1 = Test mode	N
DEBUGINF	BYTE	16#0	0 = Disable, 1 = Enable, 2 = Reset: SFB Debug Information	N
DIAG_INF	STRUCT		Diagnostics structure of SMC_DIAG	N
EM_START	BOOL	FALSE	1=Emergency Start	N
EN_MEAS	BOOL	TRUE	1 = Measured value block available	Y
EN_RWLIM	BOOL	TRUE	1 = Enable Read / Write Limit values	N
EN_WLIM	BOOL	TRUE	1 = Enable Write Limit values	Y
EN_STAT	BOOL	TRUE	1 = Statistics block available	Y
I1_x	BOOL	FALSE	User-defined outputs DP1.x (x = 0 to 7)	N
IN_01	WORD	16#0000	Inputs DP0.0 to 1.7	N
IN_23	WORD	16#0000	Input motor current	N
L_RD_DATA	BOOL	FALSE	Interconnectable input 0 → 1: Reading of the data set	N
L_SMCRESET	BOOL	FALSE	Interconnectable input for resetting	N
LADDR	INT	0	Logical address of module	N
M_SUP_C	BOOL	FALSE	1 = Message suppression active for current limit value violations	Y
M_SUP_RW	BOOL	FALSE	1=Suppress Read/Write alarms	Y
MO_PVHR	REAL	1020.0	Bar upper limit	Y
MO_PVLR	REAL	0.0	Bar lower limit	Y
MODE	DWORD	16#8000FFFF	Mode of OMODE of the SMC_DIAG	N
MODF	BOOL	FALSE	1 = Module Failure	N
MSG_EVID1*	DWORD	16#0	Event ID of the ALARM_8P block 1	N
MSG_EVID2*	DWORD	16#0	Event ID of the ALARM_8P block 2	N
MSG_EVID3*	DWORD	16#0	Event ID of the ALARM_8P block 3	N
MSG_x	BOOL	FALSE	Free message input x (x = 8 to 16)	N
OCCUPIED	BOOL	FALSE	Occupied by batch	Y
QC_MSG_x	BYTE	16#80	Not Used Quality Code Message Input x (x = 8 to 16)	N
RESET_MON	BOOL	FALSE	Reset the MONITOR input parameter in first download	N

Parameter	Data Type	Default setting	Meaning	WinCC Tag
RACKF	BOOL	FALSE	1 = Rack fault	N
RESFXTRCNT	INT	300	Configurable repeat count for Read/Write call execution	N
RESFXFLCNT	INT	20	Configurable repeat count for Read/Write call termination	N
RESIN1-RESIN2	BOOL	FALSE	Reserved	N
RESIN3	BOOL	FALSE	Reserved	N
RESIN4	WORD	16#0	Reserved	N
RESIN5	INT	0	Reserved	N
RUNUPCYC*	INT	10	Number of initial run cycles after CPU re-start	N
SAMPLE_T*	REAL	0.1	Sampling time in [s]	N
SIM_I01	WORD	16#0000	Simulation value IN_01	N
SIM_I23	WORD	16#0000	Simulation value IN_23	N
SIM_ON	BOOL	FALSE	1 = Simulation	Y
STEP_NO	DWORD	16#00000000	Batch step number	Y
STAT_RDER	BOOL	FALSE	Statistical data Read failure alarm	N
STAT_WRER	BOOL	FALSE	Statistical data Write failure alarm	N
TIME_MON*	REAL	5.0	Monitoring time in [s]	Y
USTATUS	WORD	16#0000	Status word in VSTATUS, freely user-assignable	N

* These parameters are not linkable and cannot be connected by user via CFC connection.

Output Parameter

Parameter	Data Type	Default setting	Meaning	WinCC Tag
DD_17_20	DWORD	16#00000000	DS 92 Byte 17 to 20: General warning additional info 1	Y
DD_21_22	WORD	16#0000	DS 92 Byte 21 to 22: General warning additional info 2	Y
DD_24_27	DWORD	16#00000000	DS 92 Byte 24 to 27: General fault additional info 1	Y
DD_28_31	DWORD	16#00000000	DS 92 Byte 28 to 31: General fault additional info 2	Y
ERR_NOx	INT	0	Fault number x (x = 1 to 6)	Y
MSG_ACK1	WORD	16#0000	Messages acknowledged ALARM_8P block 1	N
MSG_ACK2	WORD	16#0000	Messages acknowledged ALARM_8P block 2	N
MSG_ACK3	WORD	16#0000	Messages acknowledged ALARM_8P block 3	N
MSG_STAT1	WORD	16#0000	MESSAGE 1: STATUS output	N

Parameter	Data Type	Default setting	Meaning	WinCC Tag
MSG_STAT2	WORD	16#0000	MESSAGE 2: STATUS output	N
MSG_STAT3	WORD	16#0000	MESSAGE 3: STATUS output	N
O_01	WORD	16#0000	Outputs DP0.0 to 1.7	N
Q_IN_01	WORD	16#0000	Inputs DP0.0 to 1.7	N
QBAD	BOOL	FALSE	1 = Invalid process value	Y
QBUS_PLC	BOOL	FALSE	Bus/PLC fault	Y
QCST	BOOL	FALSE	1 = Test active (DP1.1)	Y
QCUR	REAL	0.0	Motor current in % e	Y
QCUR_AH	BOOL	FALSE	Upper alarm limit current violated	N
QCUR_AL	BOOL	FALSE	Lower alarm limit current violated	N
QCUR_WH	BOOL	FALSE	Upper warning limit current violated	N
QCUR_WL	BOOL	FALSE	Lower warning limit current violated	N
QEM_STRT	BOOL	FALSE	1=Emergency Start active	N
QER_RD	BOOL	FALSE	1= Read Failure Status Display	Y
QER_WR	BOOL	FALSE	1= Write Failure Status Display	Y
QERR	BOOL	FALSE	1 = Program error	N
QERR_RD	BOOL	FALSE	1 = Error while reading the data set	N
QERR_WR	BOOL	FALSE	1 = Error while writing the data set	N
QFLT_F9	BOOL	FALSE	Fault F9	Y
QGR_ERR	BOOL	FALSE	General fault (DP0.6)	Y
QGR_WRN	BOOL	FALSE	General warning (DP0.7)	N
QMSG_ERR	BOOL	FALSE	1 = ALARM_8P Error	N
QMSG_SUP	BOOL	FALSE	1 = Message suppression	Y
QPARFF16	BOOL	FALSE	Parameter error F16	Y
QRD_STAT	WORD	16#0000	Status of read record	N
QRDWR_OP	BOOL	FALSE	1 = Operator enable Read/write data set	Y
QSIM	BOOL	FALSE	1 = Simulation active	Y
QSTATUS	WORD	16#0000	Command status (outputs DP0.0 to 1.7)	N
QUALITY	BYTE	16#00	Quality code	N
QWR_STAT	WORD	16#0000	Status of write record	N
RESOUT1-RES-OUT2	BOOL	FALSE	Reserved	N
RESOUT3	WORD	16#0	Reserved	N
RESOUT4	INT	0	Reserved	N
VSTATUS	DWORD	16#00000000	Status for status displays for block icon	Y
VSTATUS1	DWORD	16#0000	Reserved Status word	Y
WRN_NOx	INT	0	Warning number x (x = 1 to 6)	Y

Input/Output Parameter

Parameter	Data Type	Default setting	Meaning	WinCC Tag
AUX_PRxx	ANY		Auxiliary value x (x-110-210)	N
CUR_AH*	REAL	0.0	Upper alarm limit current	Y
CUR_AL*	REAL	0.0	Lower alarm limit current	Y
CUR_WH*	REAL	0.0	Upper warning limit current	Y
CUR_WL*	REAL	0.0	Lower warning limit current	Y
RD_DATA*	BOOL	FALSE	0 → 1: Reading of the data set	Y
RECVDATA	DWORD	16#00000000	Receive Data from Diag block	N
SMCRESET*	BOOL	FALSE	Operator controllable reset input for faults	Y

* These parameters are not linkable and cannot be connected by user via CFC connection.

A.13.1 Structure of VSTATUS

Bit	Parameter
0	OCCUPIED
1	BA_EN
2	QSIM
3	—
4	QCST
5	QGR_ERR
6	QGR_WRN
7	—
8	—
9	—
10	—
11	—
12	—
13	—
14	QERR_RD OR QERR_WR
15	—
16 ... 31	USTATUS

A.14 Block parameters SMC_CB

Input Parameter

Parameter	Data Type	Default setting	Meaning	WinCC Tag
AUT_L	BOOL	FALSE	Interconnectable input for MAN / AUTO (0 = Manual / 1 = Auto)	N
AUTO_ON	BOOL	FALSE	Automatic value: 1 = On, 0 = Off	N
AUTOP_EN	BOOL	TRUE	1 = Operator enable for Auto	N
BA_EN	BOOL	FALSE	BATCH enabled	Y
BA_ID	DWORD	16#00000000	BATCH ID: Consecutive batch number	Y
BA_NA	STRING [32]	"	BATCH name	Y
CALLRST*	WORD	16#00	Reset SFB call	N
CST	BOOL	FALSE	1 = Test mode	N
DEBUGINF	BYTE	16#0	0 = Disable, 1 = Enable, 2 = Reset: SFB Debug Information	N
DIAG_INF	STRUCT		Diagnostics structure of SMC_DIAG	N
EM_START	BOOL	FALSE	Emergency start	Y
EN_MEAS	BOOL	FALSE	1 = Measured value block available	Y
EN_RWLIM	BOOL	TRUE	1 = Enable Read / Write Limit values	N
EN_WLIM	BOOL	TRUE	1 = Enable Write Limit values	Y
EN_STAT	BOOL	TRUE	1 = Statistics block available	Y
I1_x	BOOL	FALSE	User-defined outputs DP1.x (x = 0 to 7)	N
IN_01	WORD	16#0000	Inputs DP0.0 to 1.7	N
IN_23	WORD	16#0000	Input motor current	N
JOG_ON	BOOL	FALSE	1 = Non-maintained command mode active	N
L_OFF	BOOL	FALSE	Manual control: 1 = Off	N
L_ON	BOOL	FALSE	Manual control: 1 = ON	N
L_RD_DATA	BOOL	FALSE	Interconnectable input 0 → 1: Reading of the data set	N
L_RESET	BOOL	FALSE	Configurable input for resetting QLOC_INT	N
L_SMCRESET	BOOL	FALSE	Interconnectable input for resetting	N
LADDR	INT	0	Logical address of module	N
LINK_MAN	BOOL	FALSE	0 = Operator input active, 1 = Manual control via interconnectable inputs	N
LIOP_SEL	BOOL	FALSE	Interconnectable input for manual/auto changeover (AUT_L): 1 = Interconnection is active, 0 = Operation is active	N
LOCK	BOOL	FALSE	1 = Lock (OFF)	Y

Parameter	Data Type	Default setting	Meaning	WinCC Tag
LOCK_ON	BOOL	FALSE	1 = Lock (ON)	Y
LOCOP_EN	BOOL	TRUE	1 = Operator enable for LOCAL	N
M_SUP_C	BOOL	FALSE	1 = Message suppression active for current limit value violations	Y
M_SUP_RW	BOOL	FALSE	1=Suppress Read/Write alarms	Y
MANOP_EN	BOOL	TRUE	1 = Operator enable for Manual	N
MO_PVHR	REAL	1020.0	Bar upper limit	Y
MO_PVLR	REAL	0.0	Bar lower limit	Y
MODE	DWORD	16#8000FFFF	Mode of OMODE of the SMC_DIAG	N
MODF	BOOL	FALSE	1 = Module Failure	N
MONITOR	BOOL	TRUE	Monitoring: 1 = ON	Y
MSG_EVID1*	DWORD	16#0	Event ID of the ALARM_8P block 1	N
MSG_EVID2*	DWORD	16#0	Event ID of the ALARM_8P block 2	N
MSG_EVID3*	DWORD	16#0	Event ID of the ALARM_8P block 3	N
MSG_x	BOOL	FALSE	Free message input x (x = 8 to 16)	N
OCCUPIED	BOOL	FALSE	Occupied by batch	Y
OFFOP_EN	BOOL	TRUE	1 = Operator enable for OFF	N
ON_OP_EN	BOOL	TRUE	1 = Operator enable for ON	N
QC_MSG_x	BYTE	16#80	Not Used Quality Code Message Input x (x = 8 to 16)	N
RESET_MON	BOOL	FALSE	Reset the MONITOR input parameter in first download	Y
RACKF	BOOL	FALSE	1 = Rack fault	N
RESFXTRCNT	INT	300	Configurable repeat count for Read/Write call execution	N
RESFXFLCNT	INT	20	Configurable repeat count for Read/Write call termination	N
RESIN1-RESIN3	BOOL	FALSE	Reserved	N
RESIN4	WORD	16#0	Reserved	N
RESIN5	INT	0	Reserved	N
REM_L	BOOL	FALSE	Interconnectable input for LOCAL / REMOTE (0 = LOCAL / 1 = REMOTE)	N
REM_SEL	BOOL	FALSE	Interconnectable input for LOCAL / REMOTE changeover (REM_L): 1 = Interconnection is active, 0 = Operation is active	N
RUNUPCYC*	INT	10	Number of initial run cycles after CPU restart	N
SAMPLE_T*	REAL	0.1	Sampling time in [s]	N
SIM_I01	WORD	16#0000	Simulation value IN_01	N
SIM_I23	WORD	16#0000	Simulation value IN_23	N
SIM_ON	BOOL	FALSE	1 = Simulation	Y
STEP_NO	DWORD	16#00000000	Batch step number	Y

Parameter	Data Type	Default setting	Meaning	WinCC Tag
STAT_RDER	BOOL	FALSE	Statistical data Read failure alarm	N
STAT_WRER	BOOL	FALSE	Statistical data Write failure alarm	N
TIME_MON*	REAL	5.0	Monitoring time in [s]	Y
USTATUS	WORD	16#0000	Status word in VSTATUS, freely user-assignable	N

* These parameters are not linkable and cannot be connected by user via CFC connection.

Output Parameter

Parameter	Data Type	Default setting	Meaning	WinCC Tag
DD_17_20	DWORD	16#0	DS 92 Byte 17 to 20: General warning additional info 1	Y
DD_21_22	WORD	16#0	DS 92 Byte 21 to 22: General warning additional info 2	Y
DD_24_27	DWORD	16#0	DS 92 Byte 24 to 27: General fault additional info 1	Y
DD_28_31	DWORD	16#0	DS 92 Byte 28 to 31: General fault additional info 2	Y
ERR_NOx	INT	0	Fault number x (x = 1 to 6)	Y
MSG_ACK1	WORD	16#0000	Messages acknowledged ALARM_8P block 1	N
MSG_ACK2	WORD	16#0000	Messages acknowledged ALARM_8P block 2	N
MSG_ACK3	WORD	16#0000	Messages acknowledged ALARM_8P block 3	N
MSG_STAT1	WORD	16#0000	MESSAGE 1: STATUS output	N
MSG_STAT2	WORD	16#0000	MESSAGE 2: STATUS output	N
MSG_STAT3	WORD	16#000	MESSAGE 3: STATUS output	N
O_01	WORD	16#0	Outputs DP 0.0 to 1.7	N
Q_IN_01	WORD	16#0	Receive process value DP 0.0-1.7	N
QAUTOP	BOOL	FALSE	1 = Operator enable for Auto Mode	Y
QBAD	BOOL	FALSE	1 = Invalid process value	Y
QBUS_PLC	BOOL	FALSE	Bus/PLC fault	Y
QCST	BOOL	FALSE	1 = Test active (DP 1.1)	Y
QCUR	REAL	0.0	Motor current in [% Ie]	Y
QCUR_AH	BOOL	FALSE	Upper alarm limit current violated	N
QCUR_AL	BOOL	FALSE	Lower alarm limit current violated	N
QCUR_WH	BOOL	FALSE	Upper warning limit current violated	N
QCUR_WL	BOOL	FALSE	Lower warning limit current violated	N
QEM_STRT	BOOL	FALSE	1 = Emergency start active	N
QER_RD	BOOL	FALSE	1= Read Failure Status Display	Y
QER_WR	BOOL	FALSE	1= Write Failure Status Display	Y

Parameter	Data Type	Default setting	Meaning	WinCC Tag
QERR	BOOL	FALSE	1 = Program error	N
QERR_RD	BOOL	FALSE	1 = Error while reading the data set	N
QERR_WR	BOOL	FALSE	1 = Error while writing the data set	N
QFLT_F9	BOOL	FALSE	Fault F9	Y
QGR_ERR	BOOL	FALSE	General fault (DP 0.6)	N
QGR_WRN	BOOL	FALSE	General warning (DP 0.7)	N
QLOC_INT	BOOL	FALSE	1 = Local interruption	Y
QLOCOP	BOOL	FALSE	1 = Operator enable for LOCAL / REMOTE	Y
QMAN_AUT	BOOL	FALSE	0 = Manual, 1 = Automatic	Y
QMANOP	BOOL	FALSE	1 = Operator enable for Manual	Y
QMSG_ERR	BOOL	FALSE	1 = ALARM_8P Error	N
QMSG_SUP	BOOL	FALSE	1 = Message suppression	Y
QOFF	BOOL	FALSE	Status: 1 = Circuit breaker OFF (DP 0.1)	Y
QOFF_OP	BOOL	FALSE	1 = Operator enable for OFF	Y
QON	BOOL	FALSE	Status: 1 = Circuit breaker ON (DP 0.2)	Y
QON_OP	BOOL	FALSE	1 = Operator enable for ON	Y
QOP_ERR	BOOL	FALSE	1 = General operator error	N
QPARFF16	BOOL	FALSE	Parameter error F16	Y
QRD_STAT	WORD	16#0000	Status of read record	N
QRDWR_OP	BOOL	TRUE	1 = Operator enable Read/write data set	Y
QREMOTE	BOOL	FALSE	1 = REMOTE mode (DP 0.5)	Y
QSIM	BOOL	FALSE	1 = Simulation active	Y
QSTATUS	WORD	16#0	Command status (outputs DP 0.0 to 1.7)	N
QUALITY	BYTE	0	Quality code	N
QWR_STAT	WORD	16#0	Status of write record	N
RESOUT1- RES-OUT2	BOOL	FALSE	Reserved	N
RESOUT3	WORD	16#0	Reserved	N
RESOUT4	INT	0	Reserved	N
VSTATUS	DWORD	16#0	Status for status displays for block icon	Y
VSTATUS1	DWORD	16#0000	Reserved Status word	Y
WRN_NOx	INT		Warning number x (x = 1 to 6)	Y

Input/Output Parameter

Parameter	Data Type	Default setting	Meaning	WinCC Tag
AUT_ON_OP*	BOOL	TRUE	Control input: 0 = Manual, 1 = Auto	Y
AUX_PRxx	ANY		Auxiliary value x (x=110-210)	N
CUR_AH*	REAL	0.0	Upper alarm limit current	Y
CUR_AL*	REAL	0.0	Lower alarm limit current	Y
CUR_WH*	REAL	0.0	Upper warning limit current	Y

Parameter	Data Type	Default setting	Meaning	WinCC Tag
CUR_WL*	REAL	0.0	Lower warning limit current	Y
MAN_ON*	BOOL	FALSE	Control input: 1 = ON, 0 = OFF	Y
RD_DATA*	BOOL	FALSE	0 → 1: Reading of the data set	Y
REM_ON_OP*	BOOL	TRUE	Control input: 0 = LOCAL, 1 = REMOTE	Y
RECVDATA	DWORD	16#00000000	Receive Data from Diag block	N
RESET*	BOOL	FALSE	Control input for resetting QLOC_INT	N
SMCRESET*	BOOL	FALSE	Operator controllable reset input for faults	Y

* These parameters are not linkable and cannot be connected by user via CFC connection.

A.14.1 Structure of VSTATUS

Bit	Parameter
0	OCCUPIED
1	BA_EN
2	QSIM
3	QMAN_AUT
4	QCST
5	QGR_ERR
6	QGR_WRN
7	QLOC_INT
8	LOCK / LOCK_ON
9	QON
10	QOFF
11	—
12	—
13	—
14	QERR_RD OR QERR_WR
15	—
16 - 31	USTATUS

Technical data

B

B.1 Technical data

Block[1]	Length of block in the load memory, in bytes [3]	Length of block in the work memory, in bytes [3]	Length of instance data in the load memory, in bytes [4]	Length of instance data in the work memory, in bytes[4]	Temporary memory, in bytes [5]	Blocks called [6)]
SMC_DIAG	6688	5948	930	454	186	SFB52 SFB54 SFC6 SFC50 SFC51
SMC_MEAS	14340	12606	2102	1092	352	SFB35 SFB52 SFC6 SFC20
SMC_STAT	7642	6924	932	498	52	SFB52 SFC6 SFB53
SMC_DIR	11664	10224	2076	1006	142	SFB35 SFB52 SFB53 SFC6 SFC20
SMC_REV	12870	11350	2110	1006	142	SFB35 SFB52 SFB53 SFC6 SFC20
SMC_STAR	11768	10320	2080	1006	142	SFB35 SFB52 SFB53 SFC6 SFC20
SMC_REVS	12966	11440	2114	1006	142	SFB35 SFB52 SFB53 SFC6 SFC20
SMC_DAHL	12896	11378	2110	1006	142	SFB35 SFB52 SFB53 SFC6 SFC20

Block[1]	**Length of block in the load memory, in bytes** [3]	**Length of block in the work memory, in bytes** [3]	**Length of instance data in the load memory, in bytes** [4]	**Length of instance data in the work memory, in bytes**[4]	**Temporary memory, in bytes** [5]	**Blocks called** [6)]
SMC_REVD	14912	13278	2154	1008	142	SFB35 SFB52 SFB53 SFC6 SFC20
SMC_VAL	6552	5522	1444	656	134	SFB35 SFC6 SFC20
SMC_POS	13392	11846	2118	1006	142	SFB35 SFB52 SFB53 SFC6 SFC20
SMC_OVL	9602	8392	1972	1000	142	SFB35 SFB52 SFB53 SFC6 SFC20
SMC_CB	11660	10226	2076	1006	142	SFB35 SFB52 SFB53 SFC6 SFC20
SMC_TIME	7734	6836	1874	1170	178	SFB35 SFB52 SFB54 SFC6 SFC20

1) The symbolic identifier in the library's symbol table for the relevant FB. It must be unique in the project.

2) Consists of the type of block (FB) and the number.

3) Memory requirement of program code, once per block type

4) Memory requirement of an instance DB.

5) The local data memory needed when calling the block in an execution level. This is limited according to the specific CPU. If exceeded, you must check this in the CPU configuration and, if necessary, redistribute to OBs of the size actually needed.

6) The blocks stated here are used by the driver block in question and must be located in the user program. They are stored in the same library.

B.2 Header information

Header information of the blocks

This library block contain the following header information:

Table B-1 Header information

Function Block	FB no.	Name	Family	Author	Version	Title
SMC_DIAG	FB2000	SMC_DIAG	SMC	Siemens	5.1	Diagnostic block for SIMOCODE pro
SMC_MEAS	FB2002	SMC_MEAS	SMC	Siemens	5.1	Block for measured values
SMC_STAT	FB2003	SMC_STAT	SMC	Siemens	5.1	Block for statistic data
SMC_TIME	FB2014	SMC_TIME	SMC	Siemens	4.1	Alarms with time stamp
SMC_DIR	FB2004	SMC_DIR	SMC	Siemens	5.1	Direct starter / Soft Starter
SMC_REV	FB2005	SMC_REV	SMC	Siemens	5.1	Reversing starter / Reversing Soft Starter
SMC_STAR	FB2006	SMC_STAR	SMC	Siemens	5.1	Star-delta starter
SMC_REVS	FB2007	SMC_REVS	SMC	Siemens	5.1	Star-delta reversing starter
SMC_DAHL	FB2008	SMC_DAHL	SMC	Siemens	5.1	Dahlander starter
SMC_REVD	FB2009	SMC_REVD	SMC	Siemens	5.1	Dahlander reversing starter
SMC_VAL	FB2010	SMC_VAL	SMC	Siemens	3.1	Solenoid valve
SMC_POS	FB2011	SMC_POS	SMC	Siemens	5.1	Positioner
SMC_OVL	FB2012	SMC_OVL	SMC	Siemens	5.1	Overload
SMC_CB	FB2013	SMC_CB	SMC	Siemens	5.1	Circuit breaker

B.3 Attributes of the blocks

Attributes of the blocks

This library block contain the following attributes:

Table B-2 Attributes of the blocks

Block	S7_tasklist	S7_alarm_ui	S7_m_c	S7_driver	S7_hardware	PO_Count*
SMC_DIAG	OB1, OB40, OB82,OB83, OB85, OB86,OB100	-	-	-	im	NA
SMC_MEAS	OB100	1	TRUE	chn	-	-1
SMC_STAT	OB100	1	TRUE	chn	-	-1
SMC_TIME	OB100, OB40	1	TRUE	chn	-	-1
SMC_DIR	OB100	1	TRUE	chn	-	-1
SMC_REV	OB100	1	TRUE	chn	-	-1
SMC_STAR	OB100	1	TRUE	chn	-	-1
SMC_REVS	OB100	1	TRUE	chn	-	-1
SMC_DAHL	OB100	1	TRUE	chn	-	-1

Block	S7_tasklist	S7_alarm_ui	S7_m_c	S7_driver	S7_hardware	PO_Count*
SMC_REVD	OB100	1	TRUE	chn	-	-1
SMC_VAL	OB100	1	TRUE	chn	-	-1
SMC_POS	OB100	1	TRUE	chn	-	-1
SMC_OVL	OB100	1	TRUE	chn	-	-1
SMC_CB	OB100	1	TRUE	chn	-	-1

* Since PO Count is defined as "-1", AS RT PO licenses is not consumed for any SIMOCODE pro PCS7 Library blocks. After CFC compilation, during download, the total number of PO's are booked depending on the utilization of the CPU memory.

Note

Refer FAQ for more information on "How are the licenses for the AS and OS counted in PCS 7 V7.0 onwards?" on the internet (https://support.industry.siemens.com/cs/document/38855207).

Troubleshooting

C

C.1 Debug Information

The Debug information (DEBUGINF) input parameter is used for monitoring the status of the last executed call. Each SFB/SFC call will have its own structure to hold status information. The debug information will be stored in the respective block instance DB.
The user will have the option to Enable ,Disable or Reset debug information for the respective block. The DEBUGINF values can be used as follows:

- DEBUGINF = 16#00: SFB/SFC call monitoring disabled
- DEBUGINF = 16#01: SFB/SFC call monitoring enabled
- DEBUGINF = 16#02: SFB/SFC debug information resets to default values

Note

After successful reset the input parameter DEBUGINF value is enabled.

After successful debugging of the SFB/SFC calls DEBUGINF parameter should be disabled to reduce the consumption of work memory.

Parameter function

Parameter	Description
REQ	1= SFB/SFC call is executed. 0 = SFB/SFC call is terminated.
BUSY	1= SFB/SFC call is in busy state (i.e.. return code is equal to 16#7001 or 16#7002)
ERROR	1= SFB/SFC call is in error state (i.e return code = 16#80xx)
DYN_RST	Sets if the SFB/SFC call terminates with the dynamic reset. Resets during SFB/SFC call request (Req := True) 1= Dynamic reset executed for SFB/SFC call
MAN_RST	Sets if the SFB/SFC call terminates with Manual Reset. 1= Manual reset is executed
BRKN_CALL	Sets if the SFB/SFC call terminates during broken call. Resets during SFB/SFC call request (Req := True) 1= Broken call detected
EXC_RST	Sets if the SFB/SFC call terminates with Reset option. Resets during SFB/SFC call request (Req := True) 1= exclusive reset is executed
RECNUM	Indicate the data set number for read/write operations.
STATUS	The actual return status output of the SFB/SFC call

Parameter	Description
TRUECnt	The counter value will increase by 1 during SFB/SFC call request (Req :=True).
FALSECnt	The counter value will increment by 1 during SFB/SFC call termination request (Req := False).

Note

For more information on SFB/SFC call handling, refer (Page 39)

Table C-1 Debug parameters for SMC_DIAG (RDSYSST):

Parameter	Type	Default
REQ	BOOL	RDSYSST Request
BUSY	BOOL	Request Busy
ERROR	BOOL	Request Error
DYN_RST	BOOL	Dynamic Reset
MAN_RST	BOOL	Manual Reset
BRKN_CAL	BOOL	Broken call
EXC_RST	BOOL	Exclusive Reset
RES1	BOOL	Reserved
STATUS	WORD	Error Status
TRUECnt	INT	Request True counts
FALSECnt	INT	Request False counts

Table C-2 Static parameters of Debug Information

Parameter	Type	Comment
REQ	BOOL	Read/Write record Request
BUSY	BOOL	Request Busy
ERROR	BOOL	Request Error
DYN_RST	BOOL	Dynamic Reset
MAN_RST	BOOL	Manual Reset
BRKN_CAL	BOOL	Broken Call
EXC_RST	BOOL	Exclusive Reset
RES1	BOOL	Reserved
RECNUM	BYTE	Data set number(16#5C i.e.,92)
STATUS	WORD	Error Status
TRUECnt	INT	Request True counts
FALSECnt	INT	Request False counts

Abbreviations

D

D.1 Abbreviations

Table D-1 Meaning of abbreviations

Abbreviation	Meaning
AM	Analog module
AS	Automation station
CFC	Continuous Function Chart
DP	Distributed Peripherals
DM	Digital module
DM-F	Fail-safe digital module
EDD	Electronic device description language
EM	Ground fault detection module
ES	Engineering Station
FB	Function block
GSD	Generic Station Description
HW Config	"Hardware configuration" module in SIMATIC Manager
ID	Identification number
MA	Maintenance
MCCB	Molded-case circuit breaker
MM	Multifunction module
MS	Maintenance Station
OB	Organization block
OM	Object Manager
OOS	Out of service
OS	Operator Station
PCS 7	Process Control System 7
PIO	Process Image Output
PII	Process Image Input
PDM	Process Device Manager
SFB	System function block
SFC	System function call
TM	Temperature module