SIEMENS

Industrial Controls

SIMOCODE DP
SIMOCODE DP PCS 7 LIBRARY
V7-V9 MIGRATION V8.0 SP3 HF1

Programming and Operating Manual

09/2019
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Legal information

Warning notice system

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

⚠ DANGER

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

⚠ WARNING

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

⚠ CAUTION

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

NOTICE

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

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

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

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Introduction

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1.1 Security information

Siemens provides products and solutions with industrial security 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 security concept. Siemens' products and solutions constitute one element of such a concept.

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To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed under
https://www.siemens.com/industrialsecurity.

1.2 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/60119725).

SIMODIAG Function 2

2.1 Description

2.1.1 Object Name (Type+Number)

FB658

SIMODIAG Function Block Inputs/Outputs

2.1.2 Calling OBs

The block must be installed in run sequence in the following OBs (this is done automatically in the CFC).

- OB1 - Cyclic Program
- OB100 - Restart (Warm Start)

2.1.3 Scope of application

SIMODIAG monitors the SIMOCODE-DP at the master system, or behind a Y-Link DPV1. The block evaluates the related acyclic system events (startup, module error, etc.). It generates messages and provides status information for the SIMO_CHN on the OMODE output.

SIMODIAG is not used in systems with Y-Link DPV0. In this case, the SIMO_CHN block is linked to driver block PADP_L00.

2.1.4 Use in CFC

When using the CFC "Generate Module Driver" function, the following are performed automatically:

- SIMODIAG is installed behind the OB_DIAG1
- Inputs LADDR, DADDR, SUBN_TYP, SUBN1_ID, SUBN2_ID, MODE, RACK_NO, SLOT_NO, and V1_LINK are configured
- Inputs EN, RACKF, SUBN1ERR, SUBN2ERR, and EN_DIAG are linked

2.1.5 Startup response

The "Startup" identifier (OMODE=16#xx00xxxx) is written to output OMODE in the OB100.

2.1.6 DP master and DP Slave Failure

A failure in the DP Master or DP Slave is already detected and indicated by the OB_DIAG1 block connected in series. Inputs RACKF, SUBN1ERR and SUBN2ERR are evaluated in the SIMODIAG. In the event of a fault, the "higher-level error" (OMODE=16#40xxxxxx) or "redundancy error" (OMODE=16#20xxxxxx) identifier is written to output OMODE.

2.1.7 Module Error

After a restart or failure in the DP Master or DP Slave, and if ACC_ID=TRUE, the module addressed by LADDR is checked. This is done by reading the System Status List. If the module addressed by LADDR is not configured properly, output QMODF is set and the "higher-level error" identifier (OMODE=16#40xxxxxx) is written to output OMODE. The "SIMOCODE-DP Module Failure" message is also generated.

2.1.8 I / O access error

From the viewpoint of the I / O configuration, SIMOCODE-DP is a "compact" DP Slave, i.e. it always has a fixed I / O configuration. If there is an I / O access error, therefore, a general DP Slave failure is assumed, and indicated. In this case, no further I / O access errors are evaluated.

2.1.9 Diagnostic data reading

No slave diagnostic data are read.

2.1.10 Error handling

The block evaluates the error information from ALARM_8P and writes this information to output parameter MSG_STAT.

2.1.11 Messages

If there is a module error, the SIMODIAG block uses the Alarm_8P block to generate a message. RACKF device failures are indicated by OB_DIAG1. The output of messages is enabled on input EN_MSG.

2.1.12 Operator control and monitoring

There is no operator interface for the block.

2.2 Inputs / Outputs

I / O Parameter	Meaning	Data type	Default setting	Mode
ACC_ID	1=Accept MODE settings	BOOL	FALSE	IO
DADDR	Diagnostic address of the DP Slave	INT	0	I
DELAY	Alarm delay (sec)	INT	15	I
EN_DIAG	true -> Read diagnosis	BOOL	TRUE	I
EN_MSG	1= enable message	BOOL	TRUE	I
EV_ID	Message ID	DWORD	16#0	I
LADDR	Logical address of module	INT	0	I
MODE	Measuring range coding	WORD	16#0	I
MSG_ACK	Message acknowledged	WORD	16#0	O
MSG_STAT	Message failure	WORD	16#0	O
OMODE	Status + MODE	DWORD	16#0	O
QERR	1=Program error	BOOL	FALSE	O
QMODF	1=Module I/O Access Failure	BOOL	FALSE	O
QPERAF	Access error	BOOL	FALSE	O
QRACKF	1=Rack Error	BOOL	FALSE	O
RACK_NO	Rack number	BYTE	16#0	I
RACK1ERR	1=DP Slave system failure	BOOL	FALSE	O
RACK2ERR	1=Redundant DP Slave system failure	BOOL	FALSE	O
RACKF	1=Rack Error	BOOL	FALSE	I
SLOT_NO	Slot number	BYTE	16#0	I
SUBN_TYP	1=External DP interface	BOOL	FALSE	I
SUBN1_ID	ID of Primary DP Master system	BYTE	16#FF	I
SUBN2_ID	ID of Redundant DP Master system	BYTE	16#FF	I
SUBN1ERR	1=DP Master system failure	BOOL	FALSE	I
SUBN2ERR	1=Redundant DP Master system failure	BOOL	FALSE	I
V1_LINK	1=Operation behind a Y-Link DPV1	BOOL	FALSE	I

Refer SIMODIAG Message Texts and Auxiliary Process Values (Page 10)

2.3 Message Texts and Auxiliary Process Values

Assignment of message texts and message class to block parameters

Message number	Block parameter	Text	Message class	Can be inhibited by
1	QMODF	$$BlockComment$$ SIMOCODE DP- Module Failure @1%d@/@2%d@/@3%d@	S	EN_MSG

The auxiliary process values are assigned as follows:

Auxiliary process value	Block parameter	Meaning
1	SUBN_ID	DP master system ID
2	RACK_NO	Rack / Station number
3	SLOT_NO	Slot number

Refer Inputs / Outputs (Page 9)

2.4 Description of Parameters

2.4.1 OMODE structure

Byte 3			Byte 2		Byte 1 and 0
16#80	Valid data		16#01	Restart (OB100) completed	MODE input
16#40	Invalid data	Module error			
16#20	Invalid data	Redundancy error			
16#00	Invalid data	Higher level error			

The input value of MODE is passed unchanged into the Low Word of OMODE.

Refer SIMODIAG Function block Inputs / Outputs (Page 9).

SIMO_CHN Function 3

3.1 Description

3.1.1 Object Name (Type+Number)

FB659

SIMO_CHN Function Block Inputs / Outputs

3.1.2 Calling OBs

The watchdog interrupt OB in which the block is installed (e.g. OB32). Also, in OB 100 (see Startup Response).

3.1.3 Function

The function block is used for operating and monitoring the SIMOCODE-DP 3UF5 motor protection and control device.

The following 9 control functions are supported:

Sl no.	Control functions
1	Overload (OVL)
2	Direct starter (DIR)
3	Reversing starter (REV)
4	Star-delta starter (STAR)
5	Dahlander starter (DAHL)
6	Pole changing starter (POL)
7	Valve (VALVE)
8	Positioner 1-5 (POS)
9	Soft starter (SOFT)

Different operating modes

- **Local / Remote :** In Local mode, the block control is switched off. SIMOCODE-DP is controlled through the local control station or the operator panel.
  In Remote mode, SIMOCODE-DP is controlled through the PLC / CPU control station of the block.
- **Automatic :** In Automatic mode, SIMOCODE-DP 3UF5 is controlled by a program through linked block signals.
- **Manual :** In Manual mode, SIMOCODE_DP 3UF5 is controlled by an operator through the OS, or linked block inputs.

The SIMOCODE-DP is controlled and monitored using data from the process image. Moreover, data records containing statistical and diagnostic information can be read or written by means of acyclic DPV1 services (if integrated through GSD sie?8069.gs?).

3.1.4 Project configuration

The following steps describe how to enable the communication functionality of the SIMOCODE-DP device on the PROFIBUS network.

Condition

- The PROFIBUS DP master is a CP 443-5 Extended (MLFB: 6GK7 443-5DX03-0XE0)
- The Operating Mode of the DP network is DPV1
- SIMATIC PDM is installed.

SIMOCODE-DP Basic parameterization

There are SIMOCODE-DP device parameters that must be set initially (e.g. using the software WinSIMOCODE-DP) to enable the communication functionality on the PROFIBUS as follows:

- PROFIBUS network speed: The default network speed of a SIMOCODE-DP device is 500 Kbaud.
  This must be set accordingly to the settings in the Hardware Configuration.
- PROFIBUS-DP address: The default network address of a SIMOCODE-DP device is 126. This must be changed accordingly to the settings in the Hardware Configuration.
- Block DP Parameter: During PROFIBUS-DP start-up, the DP master downloads the device parameters to the SIMOCODE-DP.
  For SIMOCODE-DP, this operation is not desired since parameterization will be carried out via the software WinSIMOCODE-DP or SIMATIC PDM and not STEP 7. This blocking option disables the parameters being downloaded from the DP master and has to set.

SIMOCODE-DP at the DP Master System

- Open STEP 7 HW Config. From the Hardware Catalog, Profile standard, navigate to PROFIBUS Devices –Switching Devices –SIMOCODE-DPV1 (PDM). Place this device on the PROFIBUS network.

  Note

  Here DPV1 corresponds to the SIMOCODE-DP device parameter Operating Mode DPV1.

- Assign the PROFIBUS-DP address. Select device slot 1, and configure it as DPV1: Basic Type 2 Compact.

  Note

  Here DPV1 refers to the mode of the DP master. If the mode of the DP master is S7 Compatible, the slot selection would also be S7 Compatible.

SIMOCODE-DP behind the Y-Link (DPV1)

- Open STEP 7 HW Config. From the Hardware Catalog, Profile standard, navigate to PROFIBUS Devices –Switching Devices –SIMOCODE-DP (PDM). Place this device on the PROFIBUS network.

  Note

  Here DP corresponds to the SIMOCODE-DP device parameter Operating Mode DP-norm.

- In this configuration, DPV1 data record functions are not available. Assign the PROFIBUS-DP address. Select device slot 1, and configure it as Basic Type 2 Compact.
- For the Y-Link (DPV1) with the interface module IM 157 (MLFB: 6ES7 157-0AA82-0XA0), when SIMOCODE-DP is parameterized as Basic Type 2 compact, the number of SIMOCODE-DP devices is limited to 47 (max). This limitation is due to a maximum number of the slots within one Y-Link (47 x 5 slots = 235 slots, max. 236 slots). Also please refer to the information given in the Y-Link manual.

SIMOCODE-DP devices up to and including product level E09 (until May 1998)

- Open STEP 7 HW Config. From the Hardware Catalog, Profile standard, navigate to PROFIBUS Devices – additional field devices – compatible PROFIBUS DP slaves - Switching Devices –SIMOCODE-DP. Place this device on the PROFIBUS network and configure it as Basic Type 2.

  Note

  The I / O addresses for this SIMOCODE-DP must be configured in ascending order, without gaps. These devices do not support DPV1 data record functions.

- The symbols cannot be defined in the hardware configuration, due to the bit-oriented structure of the inputs and outputs. Therefore, you must enter these symbols directly in the table as input or output words, so that they can then be linked with the signal block.
- The inputs and outputs are accessed through the process image. To do this, parameter inputs "INBT2_01" (2 binary data bytes) and "INBT2_23" (2 current bytes), and parameter inputs "OBT2_01" (2 binary data bytes) and "OBT2_23" (2 binary data bytes) are linked to the associated inputs or outputs of the SIMOCODE-DP device.

3.1.5 Principle of Operation

In program file Blocks+Templates, the SIMOCODE-DP PCS 7 SIMO Library V60 provides templates for each control function.

The control function dependent parameters, and the messages to appear on the faceplates, are preset with suitable values in the templates. These templates can be used as models for making customized automation solutions. To do this, copy the SIMO_CHN block for the desired control function from the corresponding CFC plan, and insert it in your own CFC plan.

The control function (OVL, DIR, REV, STAR, DAHL, POL, VALVE, POS, SOFT) is configured at the block through input "SIMO_FCT". Depending on the setting selected, the corresponding functions are enabled in the block and the various displays in the OS components.

3.1.6 Module Failure

If an invalid process value is indicated by MODE, outputs QCSF and CUR_QC are set.

3.1.7 Simulation

Simulation mode is switched on through the SIM_ON input, and has higher priority than all other modes. If SIM_ON=TRUE, the block processes the simulation values (SIM_I01: binary data; SIM_I23: motor current) instead of the SIMOCODE-DP process values (INBT2_01, INBT2_23) . QSIM and CUR_QC are output accordingly. The process outputs to SIMOCODE-DP (OBT2_01, OBT2_23) are output as "0" when simulation is switched on.

Output QBAD is set depending on QCSF and QSIM (QBAD:= QCSF AND NOT QSIM). In normal operation (SIM_ON=FALSE), the value corresponds to output QCSF and indicates an invalid process value. A simulation value can thus be treated as a valid process value for testing purposes, in the event of an error.

3.1.8 Local / Remote switch-over of the Control Station

The control station can be switched over either by operating the OS (REMON_OP), or by linkable input REM_L. If REM_SEL=TRUE, input REM_L is active, otherwise control input REMON_OP is active. The required operator enabling signal QLOCOP is set by REM_SEL and enable signal LOCOP_EN.

The active control station is output through QREMOTE (1=REMOTE, 0=LOCAL).

3.1.9 Interlocking

Control Function DIR, SOFT, STAR, REV, POL, DAHL

- When LOCK is set, the motor is switched off directly, or cannot be switched on.
- LOCK_ON switches the motor on, or prevents it from being switched off.
- LOCK_OPT is used to define the option selected for LOCK_ON = 1 (forward/reverse; fast/slow).

Note

LOCK_OPT is not active for control functions DIR, SOFT, and STAR.

LOCK has higher priority than settings made with LOCK_ON.

Control Function VALVE, POS

- With LOCK set, the solenoid valve or positioner runs in the position defined by safety position SS_POS.
- VL_OPEN causes selection of OPEN position, and VL_CLOSE causes selection of CLOSED position.
- VL_HOLD is only active in the POS control function, and causes the positioner to stop at its current position.

Block I/O	DIR/SOFT/STAR	REV/POL/DAHL	VALVE	POS
LOCK	Motor switches OFF	Motor switches OFF	Solenoid valve runs in position defined by SS_POS (OPEN or CLOSED)	Positioner runs in position defined by SS_POS (OPEN or CLOSED)
LOCK_ON	Motor switches ON	Motor performs the option defined by LOCK_OPT	not active	not active
LOCK_OPT	not active	0=FORW./ FAST 1=REV./ SLOW	not active	not active
VL_OPEN	not active	not active	Solenoid valve OPEN	Positioner runs in OPEN
VL_CLOSE	not active	not active	Solenoid valve CLOSED	Positioner runs in CLOSED
VL_HOLD	not active	not active	not active	1=STOP
SS_POS	not active	not active	0=CLOSED (default) 1=OPEN	0=CLOSED (default) 1=OPEN

3.1.10 MANUAL / AUTOMATIC Operation

Manual / Automatic

The operating mode can be switched either by operating AUTON_OP at the OS, or by linkable input AUT_L. If LIOP_SEL=TRUE, input AUT_L is active, otherwise control input AUTON_OP is active. The required operator enabling signal QMANOP and QAUTOP are set depending on LIOP_SEL and enable signals MANOP_EN and AUTOP_EN. The active operating mode is output on QMAN_AUT (1=AUTO, 0=MANUAL).

Automatic

In automatic mode, the control commands are set by a program through linked inputs. If AUTO_M=TRUE, the commands are set through inputs AUTO_ON1, AUTO_OFF, and AUTO_ON2. Otherwise, inputs AUTO_ON and AUTO_OPT are active.

Manual

In manual mode, the control commands are set by the operator either at the OS or through linked inputs. The linked inputs are L_ON1, L_OFF and L_ON2. Control from the OS is performed through inputs ON1_OP, OFF_OP, ON2_OP. For control through the OS, operator enabling signals QON1OP, QOFFOP, and QON2OP are required. These signals are set depending on control function SIMO_FCT, the active operating mode, and enable signals ON1OP_EN, OFFOP_EN, ON2OP_EN.

3.1.11 MANUAL-LINKED / MANUAL-OPERATOR

In manual operation, the control commands are set by the operator either at the OS or through linked inputs. It is possible to switch between these two options, again either through the OS or through a linkable input. If MAN_SEL=TRUE, the setting of linkable input MAN_L is active, otherwise control input MANON_OP is active.

The required operator enabling signal QMANLOP is set depending on MAN_SEL and enable signal MANLOPEN.

The active setting is output through QMAN_MOP (1=MANUAL-LINKED; 0=MANUAL-OPERATOR).

3.1.12 Monitoring of Control Commands

- The monitoring logic checks that the output commands match the read check-back signals. It sets a monitoring error (QMON_ERR=1) if a check-back signal changes unexpectedly (e.g. due to a command enabled directly at the SIMOCODE-DP Local Control Station in REMOTE mode), or if an output command has not become active after the TIME_MON period has elapsed.
- The monitoring error is reset at the OS through the RESET input or through linkable input L_RESET.If L_RESET=1 is set continuously, output QMON_ERR remains set for one program cycle if the above conditions are present.
- Monitoring is active if a QMONITOR=TRUE output is set. This is the case if MONITOR=TRUE, TIME_MON>0 and SAMPLE_T>0.
- Monitoring is not active while lock time QLTA is running, or if a higher-level error (QCSF) or general fault in SIMOCODE-DP (QG_FLT) is present.

3.1.13 Motor Current Monitoring

This block monitors the read motor current. Any value above or below the limit value is indicated by corresponding outputs, and indicated where appropriate.

The limit values are configured at the OS through inputs CUR_AH, CUR_WH, CUR_WL, and CUR_AL. A hysteresis value HYS can also be set. The indications are provided through outputs QCUR_AH, QCUR_WH, QCUR_WL, and QCUR_AL. Output QCUR is used to indicate whether a current is flowing.

Motor monitoring is only active when the current goes above minimum value CUR_MIN (default value of CUR_MIN=20%). Also, motor monitoring is inhibited after the motor is switched on, i.e. when the signal edge of QCUR (0->1) changes for the duration of TIME_CLASS (default value 10s). The time set with the TIME_CLASS parameter should match the time class configured in the SIMOCODE-DP. Special case: the duration for STAR is 2.1 x TIME_CLASS.

The display range and limits for the motor current are set through inputs MO_PVHR and MO_PVLR.

3.1.14 Statistic and Diagnostic Functions

If configured accordingly (see Configuration), SIMOCODE-DP provides data records containing statistic and diagnostic information.

When SIMO_DPV1 is enabled, the system functions RD_REC and WR_REC are used to access the data records 130, 131, and 133. Input SIMO_DPV1 and address LADDR are configured through the CFC Generate Module Drivers function, using the hardware configuration.

For controls from the OS, enable signal QENSDCS is also required. In this case, output QENSDCS is set depending on inputs SIMO_DPV1 and EN_SD_CS.

Diagnostic data reading

The reading of data record 130 is triggered either by linkable input parameter L_CS_UPD, or by the OS when the associated faceplate views are opened, or by an OS control (CS_UPD). Also, data record 130 is read automatically after a general warning or general fault in SIMOCODE-DP, i.e. if there is a change of signal edge (0->1) in QG_WRN or QG_FLT.

If read successfully, the read diagnostic data is output to CS_0...CS_9. If reading was not possible, outputs CS_0..CS_9 are cleared and output QERR_RCS is set.

Statistic data reading

The reading of record 131 is triggered either by linkable input parameter L_SD_UPD, or by the OS when the associated faceplate views are opened, or by an OS control (SD_UPD).

The read data are output on parameters OPH (operating hours), N_START (number of starts), N_OVL (number of overload trips), COUNT1, COUNT2 (counter statuses), COOL_T (cooling time), TRIP_CUR (trip current), and SENSOR (analog sensor value). If reading was not possible, the values are cleared and output QERR_RSD is set.

Statistic data writing

The operating hours (OPH_S), number of starts (N_START_S), and number of overload trips (N_OVL_S) can be written on data record 133 in the SIMOCODE-DP. Writing is triggered when these setpoints change.

If written successfully, the reading of the statistic data is triggered again in order to update the values in the block. If writing was not possible, output QERR_WSD is set.

After the statistic data is read, or after a write error, inputs OPH_S, N_START_S, and N_OVL_S are set to the corresponding active values.

3.1.15 Reset Response

When SIMOCODE-DP detects a fault, it signals this through the general fault output (QG_FLT). Faults must be acknowledged through linkable input L_SIMORESET, or input SIMO_RESET, which can be controlled from the OS.

Some faults can also be acknowledged by an OFF command. In control function VALVE and POS, some faults can only, or also, be acknowledged by a counteraction (OPEN or CLOSE). For a detailed overview of how the various faults are acknowledged, please refer to the SIMOCODE-DP manual, chapter 5.2, p. 5-4.

3.1.16 Additional Functions

This block provides two additional outputs QADD_F1 and QADD_F2 which can be controlled and monitored. Operator control is through inputs ADDF1 and ADDF2, and operator enabling is performed through the two inputs ADDF1_EN and ADDF2_EN (QADDF1OP and QADDF2OP). These additional functions do not affect the internal block functions, and can be used for controlling any of the binary signals.

3.1.17 Startup Response

After CPU startup (restart), the current statuses for LOCAL/REMOTE, MANUAL/AUTO, MANUAL OPERATOR/MANUAL LINKED are retained. Commands are not output again. Depending on the configured SIMOCODE-DP error response, a CPU STOP either causes a SIMOCODE-DP fault (default setting), or (if "response PLC-CPU fault: retain status" is set) causes the current mode status to be retained.

After startup, the number of cycles configured in the RUNUPCYC block I/O are inhibited.

3.1.18 Time-related Characteristics

The block must be called through a watchdog interrupt OB. The block sampling time is set in parameter SAMPLE_T.

3.1.19 Bumpless Changeover

A command is reset in the block if the associated check-back signal is present. Consequently, operating inputs ON1_OP, OFF_OP, and ON2_OP do not have to be tracked.

However, mode selections REMON_OP, AUTON_OP, and MANON_OP are always tracked in the active settings.

3.1.20 Error Handling

For arithmetic program errors, ENO=0 or QERR=1 are set.

3.1.21 Messages

The SIMO_CHN block uses the Alarm_8P block for generating messages.

Messages can be triggered by:

- monitoring of motor current limit values
- SIMOCODE_DP signals
- linkable message input.

3.1.22 Faceplate actuation

Special signals are generated in the block to actuate the block icon and faceplate. These signals are SIMO_OVL, SIMO_STAT, VSTATUS, and VSTATUS1.

SIMO_OVL is a binary output, which is set if SIMOCODE is configured as overload (OVL).

Refer AS block parameters in the CFC (Page 31).

3.2 Inputs / Outputs

I/O Parameter	Meaning	Data Type	Default setting	Type	OCM	Permissible Values
ADD_F1	operator input: 1=additional function 1 active	BOOL	FALSESi	I	+	
ADD_F2	operator input: 1=additional function 2 active	BOOL	FALSE	I	+	
ADDF1_EN	ENABLE: 1=operator may input ADD_F1	BOOL	TRUE	I		
ADDF2_EN	ENABLE: 1=operator may input ADD_F2	BOOL	TRUE	I		
AUT_L	Linkable Input for Manual/Auto Mode	BOOL	FALSE	I		
AUTO_M	1=AUTO_ON1, AUTO_OFF, AUTO_ON2 active 0=AUTO_ON, AUTO_OPT active	BOOL	FALSE	I		
AUTO_OFF	AUTO: AUTO_M=1: 1=switch off/stop	BOOL	FALSE	I		
AUTO_ON	AUTO: AUTO_M=0: 1=on; 0=off/stop	BOOL	FALSE	I		
AUTO_ON1	AUTO: AUTO_M=1: 0->1=switch on slow/reverse/close	BOOL	FALSE	I		
AUTO_ON2	AUTO: AUTO_M=1: 0->1=switch on fast/forward/open	BOOL	FALSE	I		
AUTO_OPT	AUTO: AUTO_M=0: 1=slow/reverse/close; 0=fast/forward/open	BOOL	FALSE	I		
AUTON_OP	operator input mode: 1=AUTO; 0=MANUAL	BOOL	FALSE	I	+	
AUTOP_EN	ENABLE: 1=operator may input AUTO	BOOL	TRUE	I		
BA_EN	Batch enable	BOOL	FALSE	I	+	
BA_ID	Batch ID	DWORD	16#0	I	+	
BA_NA	BATCH name	STRING[32]	‘’	I	+	
COOL_T	cooling time in [s]	WORD	16#0	O	+	
COUNT1	counter 1	WORD	16#0	O		
COUNT2	counter 2	WORD	16#0	O		
CS_0	control/signal data (record 130) byte 0	BYTE	16#0	O		
CS_1	control/signal data (record 130) byte 1	BYTE	16#0	O		
CS_2	control/signal data (record 130) byte 2	BYTE	16#0	O		
CS_3	control/signal data (record 130) byte 3	BYTE	16#0	O		
CS_4	control/signal data (record 130) byte 4	BYTE	16#0	O		
CS_5	control/signal data (record 130) byte 5	BYTE	16#0	O		
CS_6	control/signal data (record 130) byte 6	BYTE	16#0	O		
CS_7	control/signal data (record 130) byte 7	BYTE	16#0	O		
CS_8	control/signal data (record 130) byte 8	BYTE	16#0	O		
CS_9	control/signal data (record 130) byte 9	BYTE	16#0	O		
CS_UPD	0->1: update Diagnostic Data	BOOL	FALSE	IO	+	
CUR	motor current in %Ie	REAL	0	O	+	
CUR_AH	HH Alarm LIMIT in %Is	REAL	130.0	I	+	
CUR_AL	LL Alarm Limit in %Is	REAL	70	I	+	
CUR_MIN	Discrimination threshold for monitoring Cur in %Is	REAL	20	I		>=20

I/O Parameter	Meaning	Data Type	Default setting	Type	OCM	Permissible Values
CUR_QC	Quality Code for Cur	BYTE	16#80	O	+	
CUR_WH	H Alarm Limit (Warning) in %Is	REAL	115	I	+	
CUR_WL	L Alarm Limit (Warning) in %Is	REAL	80	I	+	
EM_START	SIMOCODE DP 0.4: 1=emergency start	BOOL	FALSE	I	+	
EN_SD_CS	1= enable operator updating of record 131/130	BOOL	TRUE	I		
EXTMSGTXT	Text of external Message	STRING[1 6]	''	I		
EXTMSGVAL	external Message Value	DWORD	16#0	I		
HYS	Hysteresis of current, (Hys>=0)	REAL	3	I	+	>=0
I1_0	SIMOCODE: DP Receive Bit 1.0	BOOL	FALSE	I		
I1_1	SIMOCODE: DP Receive Bit 1.1	BOOL	FALSE	I		
I1_2	SIMOCODE: DP Receive Bit 1.2	BOOL	FALSE	I		
I1_3	SIMOCODE: DP Receive Bit 1.3	BOOL	FALSE	I		
I1_4	SIMOCODE: DP Receive Bit 1.4	BOOL	FALSE	I		
I1_5	SIMOCODE: DP Receive Bit 1.5	BOOL	FALSE	I		
I1_6	SIMOCODE: DP Receive Bit 1.6	BOOL	FALSE	I		
I1_7	SIMOCODE: DP Receive Bit 1.7	BOOL	FALSE	I		
I23	SIMOCODE: DP Receive Bit 2.0 - 3.7	WORD	16#0	I		
INBT2_01	process value DP 0.0-1.7 basic type 2	WORD	16#0	I		
INBT2_23	process value motor current basic type 2	WORD	16#0	I		
L_CS_UPD	linkable input: 0->1: update record 130	BOOL	FALSE	I		
L_OFF	MANUAL LINKED: 1=switch off/stop	BOOL	FALSE	I		
L_ON1	MANUAL LINKED: 0->1=switch slow/reverse/close	BOOL	FALSE	I		
L_ON2	MANUAL LINKED: 0->1=switch on/fast/forward/open	BOOL	FALSE	I		
L_RESET	Linkable Input RESET	BOOL	FALSE	I		
L_SD_UPD	linkable input: 0->1: update record 131	BOOL	FALSE	I		
L_SIMORESET	Linkable Input SIMORESET	BOOL	FALSE	I		
LADDR	Logical address of module	INT	0	I		
LIOP_SEL	Operating mode: 1=linking; 0=operator active	BOOL	FALSE	I		
LOCK	1=Lock/Lock to SS_POS	BOOL	FALSE	I	+	
LOCK_ON	1=Lock ON	BOOL	FALSE	I	+	
LOCK_OPT	LOCK_ON=1: 0=ON2, 1=ON1	BOOL	FALSE	I	+	
LOCKED	1=SIMOCODE - LOCKED	BOOL	FALSE	O	+	
LOCOP_EN	ENABLE: 1=operator may input LOCAL	BOOL	TRUE	I		
M_SUP_C	1=Suppress current limit messages	BOOL	FALSE	IO	+	
M_SUP_EXT	1=Suppress external Message	BOOL	FALSE	I	+	
M_SUP_SMC	1=Suppress SIMOCODE messages	BOOL	FALSE	I	+	

I/O Parameter	Meaning	Data Type	Default setting	Type	OCM	Permissible Values
MAN_L	linkable input for switchover between MANUAL LINKED and MANUAL OP	BOOL	FALSE	I		
MAN_SEL	MANUAL: 1=linking; 0=operator active	BOOL	FALSE			
MANLOPEN	ENABLE: 1=operator may input MANUAL OP	BOOL	TRUE	I		
MANON_OP	operator input: remote operator 1=MANUAL LINKED; 0=MANUAL OPERATOR	BOOL	FALSE	IO	+	
MANOP_EN	ENABLE: 1=operator may input MANUAL	BOOL	TRUE	I		
MO_PVHR	High Limit Bar Range	REAL	200.0		+	
MO_PVLR	Low Limit Bar Range	REAL	0	I	+	
MODE	MODE Input parameter, linked with OMODE SIMOCODE_DIAG	DWORD	16#80000 000	I		
MONITOR	Select: 1=Monitoring ON, 0=Monitoring OFF	BOOL	TRUE	I	+	
MSG_ACK	Message: ACK_STATE output	WORD	16#0	O		
MSG_EVID	Message ID	DWORD	16#0	I		
MSG_LOCK	Enable 1=Messages locked	BOOL	FALSE	I	+	
MSG_STAT	Message: STATUS Output	WORD	16#0	O		
N_OVL	number of overload trips	WORD	16#0	O	+	
N_OVL_S	set value number of overload trips	WORD	16#0	IO	+	
N_STRT	number of starts	DWORD	16#0	O	+	
N_STRT_S	set value number of starts	DWORD	16#0	IO	+	
OBT2_01	process value DP 0.0-1.7 basic type 2	WORD	16#0	O		
OBT2_23	process value DP 2.0-3.7 basic type 2	WORD	16#0	O		
OCCUPIED	occupied by Batch	BOOL	FALSE	I	+	
OFF_OP	operator input: command 1=switch off/stop	BOOL	FALSE	IO	+	
OFFOP_EN	ENABLE: 1=operator may input OFF	BOOL	TRUE	I		
ON1_OP	operator input: command 1=switch slow/reverse/close	BOOL	FALSE	IO	+	
ON1OP_EN	ENABLE: 1=operator may input ON1	BOOL	TRUE	I		
ON2_OP	operator input: command 1=switch fast/forward/open	BOOL	FALSE	IO	+	
ON2OP_EN	ENABLE: 1=operator may input ON2	BOOL	TRUE	I		
OPH	operating hours in [h] modulo 10	WORD	16#0	O	+	
OPH_S	set value operating hours modulo 10	WORD	16#0	IO	+	
Q1_2	SIMOCODE DP 1.2: POS: status positioner run open; otherwise: not used	BOOL	FALSE	O	+	
Q1_3	SIMOCODE DP 1.3: POS: status positioner drive closed; otherwise: not used	BOOL	FALSE	O	+	
Q1_4	SIMOCODE DP 1.4: not used	BOOL	FALSE	O		
Q1_5	SIMOCODE DP 1.5: not used	BOOL	FALSE	O		
Q1_6	SIMOCODE DP 1.6: not used	BOOL	FALSE	O		

I/O Parameter	Meaning	Data Type	Default setting	Type	OCM	Permissible Values
Q1_7	SIMOCODE DP 1.7: not used	BOOL	FALSE	O		
QADD_F1	1=additional function 1 active	BOOL	FALSE	O	+	
QADD_F2	1=additional function 2 active	BOOL	FALSE	O	+	
QADDF1OP	1=operator enabled for input ADD F1	BOOL	FALSE	O	+	
QADDF2OP	1=operator enabled for input ADD F2	BOOL	FALSE	O	+	
QAUTOP	1=operator enabled for input AUTO	BOOL	FALSE	O	+	
QBAD	1=invalid process value	BOOL	FALSE	O		
QCSF	Control System Fault: 1=External Error	BOOL	FALSE	O	+	
QCST	SIMOCODE DP 1.0: Test (CST)	BOOL	FALSE	O	+	
QCTA	SIMOCODE DP 1.1: cooling time active	BOOL	FALSE	O	+	
QCUR	motor current is flowing	BOOL	FALSE	O	+	
QCUR_AH	1=current high limit alarm reached	BOOL	FALSE	O		
QCUR_AL	1=current low limit alarm reached	BOOL	FALSE	O		
QCUR_WH	1=current high LIMIT warning reached	BOOL	FALSE	O		
QCUR_WL	1=current low limit warning reached	BOOL	FALSE	O		
QEM_START	SIMOCODE DP 0.4: 1=emergency start active	BOOL	FALSE	O		
QENSDCS	1=enable internal updating of record 130/131/133	BOOL	TRUE	O	+	
QERR	1=Program error	BOOL	FALSE	O	+	
QERR_RCS	1=error reading control/signal data (record 130)	BOOL	FALSE	O		
QERR_RSD	1=error reading statistic data (record 131)	BOOL	FALSE	O		
QERR_WSD	1=error writing statistic data (record 133)	BOOL	FALSE	O		
QG_FLT	SIMOCODE DP 0.6: general fault	BOOL	FALSE	O	+	
G_WRN	SIMOCODE DP 0.7 AND NOT DP 0.3: general warning	BOOL	FALSE	O	+	
QLOCOP	1=operator enabled for input LOCAL/REMOTE	BOOL	FALSE	O	+	
QLTA	SIMOCODE DP 0.4: lock time active	BOOL	FALSE	O	+	
QMAN_AUT	1=AUTO; 0=MANUAL	BOOL	FALSE	O	+	
QMAN_MOP	1=MANUAL-LINKED; 0=MANUALOPERATOR	BOOL	FALSE	O	+	
QMANLOP	1=operator enabled for input MANUAL LINKED/MANUAL OP	BOOL	FALSE	O	+	
QMANOP	1=operator enabled for input MANUAL	BOOL	FALSE	O	+	

I/O Parameter	Meaning	Data Type	Default setting	Type	OCM	Permissible Values
QMON_ERR	1=Monitoring Error	BOOL	FALSE	O	+	
QMONITOR	1=Monitoring active	BOOL	TRUE	O	+	
QMSG_ERR	1=Message ERROR	BOOL	FALSE	O		
QMSG_SUP	1=Message Suppression Active	BOOL	FALSE	O	+	
QOFF	SIMOCODE DP 0.1: status OFF	BOOL	FALSE	O	+	
QOFFOP	1=operator enabled for input OFF	BOOL	FALSE	O	+	
QON1	SIMOCODE DP 0.0: status ON1	BOOL	FALSE	O	+	
QON1OP	1=operator enabled for input ON1	BOOL	FALSE	O	+	
QON2	SIMOCODE DP 0.2: status ON2	BOOL	FALSE	O	+	
QON2OP	1=operator enabled for input ON2	BOOL	FALSE	O	+	
QOVL	SIMOCODE DP 0.3: status overload warning	BOOL	FALSE	O	+	
QREMOTE	SIMOCODE DP 0.5: 1=REMOTE; 0=LOCAL SIMOCODE	BOOL	FALSE	O	+	
QSIM	1=Simulation active	BOOL	FALSE	O	+	
REM_L	linkable input for LOCAL/REMOTE	BOOL	FALSE	I		
REM_SEL	REMOTE: 1=linking; 0=operator active	BOOL	FALSE	I		
REMON_OP	operator input: Remote 1=REMOTE; 0=LOCAL SIMOCODE	BOOL	TRUE	IO	+	
RESET	Operator Input: 1=Reset Monitoring Error	BOOL	FALSE	IO	+	
RUNUPCYC	Lag: Number of Run Up Cycles (>0)	INT	3	I		>0
SAMPLE_T	Sample Time[s] (>0)	REAL	1.0	I		>0

I/O Parameter	Meaning	Data Type	Default setting	Type	OCM	Permissible Values
SD_UPD	0->1: update Statistic Data	BOOL	FALSE	IO	+	
SENSOR	sensor value in Ohm	WORD	16#0	O	+	
SETEXTMSG	1=Set external Message	BOOL	FALSE	I		
SIM_I01	simulated value DP 0.0-1.7 basic type 2 16#0001: SIMOCODE DP 0.0, status ON1 16#0002: SIMOCODE DP 0.1, status OFF 16#0004: SIMOCODE DP 0.2, status ON2 16#0008: SIMOCODE DP 0.3, status overload 16#0010: SIMOCODE DP 0.4, lock time active 16#0020: SIMOCODE DP 0.5, remote 16#0040: SIMOCODE DP 0.6, general fault 16#0080: SIMOCODE DP 0.7, general warning 16#0100: SIMOCODE DP 1.0, status CST 16#0200: SIMOCODE DP 1.1, status idle time active 16#0400: SIMOCODE DP 1.2, status positioner run open 16#0800: SIMOCODE DP 1.3, status positioner run closed 16#1000: SIMOCODE DP 1.4, positioner closed 16#2000: SIMOCODE DP 1.5, positioner open 16#4000: SIMOCODE DP 1.6, torque closed 16#8000: SIMOCODE DP 1.7, torque open	WORD	16#0	I		
SIM_I23	Simulated value motor current basic type 2	WORD	16#0	I		
SIM_ON	1=activate simulation	BOOL	FALSE	I		
SIMO_DPV1	1=DPV1 - Mode	BOOL	FALSE	I		
SIMO_FCT	SIMOCODE Function	INT	0	I		0..8
SIMO_OVL	Simocode Function: 1=OVL	BOOL	FALSE	O	+	

I/O Parameter	Meaning	Data Type	Default setting	Type	OCM	Permissible Values
SIMO_STAT	Status Simocode	INT	0	O	+	
SIMO_TXT	tech. term of Simocode Function	STRING[9]	‘’	O	+	
SIMORESET	Operator Input: 1=Reset Simocode Faults	BOOL	FALSE	IO	+	
SS_POS	Safe Position. 1=Open, 0=Close	BOOL	FALSE	I	+	
STEP_NO	Batch Step Number	DWORD	16#0	I	+	
TIME_CLASS	time in [s] to suppress current alarms after current flows	REAL	10	I		
TIME_MON	Monitoring Time for ON1/OFF/ON2 [s] (>0)	REAL	5	I	+	>0
TRIP_CUR	tripping current in %Is	WORD	16#0	O	+	
VL_CLOSE	1=Lock to CLOSE	BOOL	FALSE	I	+	
VL_HOLD	1=Lock to current position		FALSE	I	+	
VL_OPEN	1=Lock to OPEN		FALSE	I	+	
VSTATUS	Status-WORD	DWORD	16#0	O	+	
VSTATUS 1	Status WORD1	DWORD	16#0	O	+	

Refer

SIMO_CHN Message Texts and Auxiliary Process Values (Page 29)

Status display VSTATUS and VSTATUS1 (Page 40)

Status display SIMO_STAT (Page 39)

3.3 Message Texts and Auxiliary Process Values

3.3.1 Message Texts and Auxiliary Process Values

Assignment of message texts and message class to block parameters

Message Number	Block Parameter	Text	Message Class	Can be inhibited by
1	QCUR_AH	$$BlockComment$$ Current HH Alarm	AH	MSG_LOCK, M_SUP_C
2	QCUR_WH	$$BlockComment$$ Current H Warning	WH	MSG_LOCK, M_SUP_C
3	QCUR_WL	$$BlockComment$$ Current L Warning	WL	MSG_LOCK, M_SUP_C
4	QCUR_AL	$$BlockComment$$ Current LL Alarm	AL	MSG_LOCK, M_SUP_C
5	QG_WRN	$$BlockComment$$ General Warning @4%d@/@5%d@	S	MSG_LOCK, M_SUP_SMC
6	QG_FLT	$$BlockComment$$ General Fault @6%d@/@7%d@/@8%d@	S	MSG_LOCK, M_SUP_SMC
7	QCST	$$BlockComment$$ Test (CST)	S	MSG_LOCK, M_SUP_SMC
8	SETEXTMSG	$$BlockComment$$ External Signal @9%s@/@10%X@	S	MSG_LOCK, M_SUP_EXT

The auxiliary process values are assigned as follows:

Auxiliary Process Value	Block Parameter	Meaning
1	BA_NA	BATCH name
2	STEP_NO	Batch Step Number
3	BA_ID	Batch ID
4	CS_4	Data record 130, byte 4: General warning additional info 1
5	CS_5	Data record 130, byte 5: General warning additional info 2
6	CS_6	Data record 130, byte 6: General fault additional info 1
7	CS_7	Data record 130, byte 7: General fault additional info 2
8	CS_8	Data record 130, byte 8: General fault additional info 3
9	EXTMSGTXT	Auxiliary process text for freely configurable message
10	EXTMSGVAL	Numeric auxiliary process value for freely configurable message

- QMSG_SUP is set for MSG_STAT=21 or MSG_LOCK=1.
- To indicate a general warning or general fault in SIMOCODE-DP, the current diagnostic information is transferred in the form of auxiliary process values, provided that the required enable signals are present. By updating this information, the output of messages QG_FLT and QG_WRN can be delayed (by up to 10 processing cycles maximum).
- The Check-back Signal Test (CST) is derived directly from the SIMOCODE-DP information (DP 1.0 Send).
- A variety of other faults and statuses are available at the SIMO_CHN block, e.g. higher-level fault, simulation, emergency start, monitoring fault, etc. These are not all indicated.
- Linkable message input SETEXTMSG has therefore been provided, for creating freely configurable messages. To do this, the input must be linked to the desired output. Since this gives each SIMOCODE-DP individual message characteristics, the cause of the message must be defined through input EXTMSGTXT. In addition, a numerical value can be passed through input EXTMSGVAL. Both of these are output as auxiliary process values with the message.

Refer SIMO_CHN Function Block Inputs/Outputs (Page 11).

3.4 AS block parameters in the CFC

Assignment of AS block parameters to the I/O Fields of the faceplate (default):

Parameter	S7_shortcut	S7_unit	S7_string_0	S7_string_1
ADD_F1			AddFct1=OFF	AddFct1=ON
ADD_F2			AddFct2=OFF	AddFct2=ON
AUTON_OP			Mode=MANUAL	Mode=AUTO
COOL_T	Cooling Time	S		
COUNT1	COUNT1			
COUNT2	COUNT2			
CS_UPD			0	DiagData=Update
CUR	CUR	%		
CUR_AH	HH alarm			
CUR_WH	H alarm			
CUR_WL	L alarm			
CUR_AL	LL alarm			
EM_START			Emerg. Start=OFF	Emerg. Start=ON
HYS	Hysteresis			
M_SUP_C			Enable Cur Alarm	Suppr. Cur Alarm
M_SUP_EXT			Enable Ext.Alarm	Suppr. Ext.Alarm
M_SUP_SIMO			Enabl.SIMO Alarm	Suppr SIMO Alarm
MANON_OP			Station=OPERATOR	Station=LINKED
MO_PVHR	Bar UL			
MO_PVLR	Bar LL			
MONITOR			Monitoring=OFF	Monitoring=ON
MSG_LOCK			Enable Alarms	Suppr. Alarms
N_OVL	No. OVL Trips			
N_OVL_S	No. OVL Trips			
N_STRT	No. of Starts			
N_STRT_S	No. of Starts			
OFF_OP			0	Command=OFF
ON1_OP			0	Command=ON1
ON2_OP			0	Command=ON2
OPH	Operating Hours	X 10h		
OPH_S	Operating Hours	X 10h		
REMON_OP			Operation=LOCAL	Operation=REMOTE
RESET			0	Mon. Err=RESET
SD_UPD			0	StatData=Update
SENSOR	Sensor Value	Ohm		
SIMORESET			0	SIMO Fault=RESET

Parameter	S7_shortcut	S7_unit	S7_string_0	S7_string_1
TIME_CLASS	Class Time	S		
TIME_MON	Mon. Time	S		
TRIP_CUR	Trip Current	%		
LOCK_OPT			ON2	ON1
SS_POS			OFF	ON2
QON1			0	ON1
QOFF			0	OFF
QON2			0	ON2

Assignment of AS block parameters contained in the CFC Template OVL to the I/O fields of the faceplate

Parameter	S7_string_0	S7_string_1
ON1_OP	0	Command=not act.
OFF_OP	0	Command=not act.
ON2_OP	0	Command=not act.
QON1	0	not act.
QOFF	0	not act.
QON2	0	not act.
LOCK_OPT	not act.	not act.
SS_POS	not act.	not act.

Assignment of AS block parameters contained in CFC Template DIR/SOFT/STAR to the I/O fields of the faceplate

Parameter	S7_string_0	S7_string_1
ON1_OP	0	Command=not act.
OFF_OP	0	Command=OFF
ON2_OP	0	Command=ON
QON1	0	not act.
QOFF	0	OFF
QON2	0	ON
LOCK_OPT	ON	not act.
SS_POS	not act.	not act.

Assignment of AS block parameters contained in the CFC Template REV to the I/O fields of the faceplate

Parameter	S7_string_0	S7_string_1
ON1_OP	0	Command=REVERSE
OFF_OP	0	Command=OFF
ON2_OP	0	Command=FORWARD
QON1	0	REVERSE
QOFF	0	OFF
QON2	0	FORWARD
LOCK_OPT	ON	REVERSE
SS_POS	not act.	not act.

Assignment of AS block parameters contained in the CFC Template POL/DAHL to the I/O fields of the faceplate

Parameter	S7_string_0	S7_string_1
ON1_OP	0	Command=SLOW
OFF_OP	0	Command=OFF
ON2_OP	0	Command=FAST
QON1	0	SLOW
QOFF	0	OFF
QON2	0	FAST
LOCK_OPT	ON	SLOW
SS_POS	not act.	not act.

3.5 Description of Parameters

3.5.1 Control Functions

Active commands depending on control functions DIR, POL, REV, SOFT, STAR

	AUTO_M=0	AUTO_M=1	OVL	DIR STAR SOFT	REV	POL
AUTO_ON	X		not active	0=Off 1=On	0=Off 1=Forw./Rev.	0=Off 1=Fast/Slow
AUTO_OPT	X		not active	not active	0=Forw. 1=Rev.	0=Fast 1=Slow
AUTO_ON1		X	not active	not active	1=Rev.	1=Slow
AUTO_OFF		X	not active	1=Off	1=Off	1=Off
AUTO_ON2		X	not active	1=On	1=Forw.	1=Fast
L_ON1	not active	not active	not active	not active	1=Rev.	1=Slow
L_OFF	not active	not active	not active	1=Off	1=Off	1=Off
L_ON2	not active	not active	not active	1=On	1=Forw	1=Fast
ON1_OP	not active	not active	not active	not active	1=Rev.	1=Slow
OFF_OP	not active	not active	not active	1=Off	1=Off	1=Off
ON2_OP	not active	not active	not active	1=On	1=Forw.	1=Fast

Active commands depending on control functions DAHL, VALVE, POS

	AUTO_M=0	AUTO_M=1	DAHL	VALVE	POS
AUTO_ON	X		0=Off 1=On	0=Off 1=Forw./Rev.	0=Off 1=Fast/Slow
AUTO_OPT	X		not active	0=Forw. 1=Rev.	0=Fast 1=Slow
AUTO_ON1		X	not active	1=Rev.	1=Slow
AUTO_OFF		X	1=Off	1=Off	1=Off
AUTO_ON2		X	1=On	1=Forw.	1=Fast
L_ON1	not active	not active	not active	1=Rev.	1=Slow
L_OFF	not active	not active	1=Off	1=Off	1=Off
L_ON2	not active	not active	1=On	1=Forw	1=Fast
ON1_OP	not active	not active	not active	1=Rev.	1=Slow
OFF_OP	not active	not active	1=Off	1=Off	1=Off
ON2_OP	not active	not active	1=On	1=Forw.	1=Fast

Priorities in the block when setting commands

1. Restart or higher-level error (QCSF)
2. Local operation or Simocode Overload (OVL) function
3. Interlocking with LOCK
4. Interlocking with LOCK_ON and LOCK_OPT or VL_OPEN, VL_CLOSE, VL_HOLD
5. AUTO with AUTO_M
6. AUTO
7. MANUAL LINKED
8. MANUAL OPERATOR

The commands are set in positions 3-8. A command is reset when the associated check-back signal is present, or an associated equivalent signal, or a higher-level error or general fault occur in SIMOCODE DP.

Note

For control functions REV, POL, and POS, the appropriate opposite direction or speed is switched on only after the lock time configured in SIMOCODE-DP has elapsed (this is indicated on output QLTA and the Lock time active display in the Standard view.

3.5.2 INBT2 assignment

Assignment of INBT2_01: SIMOCODE-DP check-back signals

The assignment of bits 0.0-0.7 corresponds to the default configuration of SIMOCODE-DP and should not be changed. The signals are available at the corresponding block outputs (QON1, QOFF, QON2, QOVL, QLTA, QREMOTE, QG_WRN, QG_FLT).

The assignment of bits 1.0 and 1.1 does not correspond to the default configuration, and must be completed as required. The signals are available at block outputs QCST and QCTA.

Bits 1.2-1.7 are available for all control functions (except POS), for user-specific assignment at block outputs Q1_2 - Q1_7. They are not evaluated internally by the block.

For control function POS, additional bits 1.2 and 1.3 must be assigned as required. The signals are available at block outputs Q1_2 and Q1_3.

Bit	Meaning	Configuration in PDM/WinSIMOCODE-DP
0.0	Status On1 - QON1	Profibus-DP Byte 0 - DP Bit 0.0 Send -> [144] Status On1
0.1	Status Off - QOFF	Profibus-DP Byte 0 - DP Bit 0.1 Send -> [145] Status Off
0.2	Status On2 - QON2	Profibus-DP Byte 0 - DP Bit 0.2 Send -> [145] Status On2
0.3	Overload warning - QOVL	Profibus-DP Byte 0 - DP Bit 0.3 Send -> [147] Status overload warning
0.4	Interlock time active - QLTA	Profibus-DP Byte 0 - DP Bit 0.4 Send -> [148] Status lock time active
0.5	Local/Remote - QREMOTE	Profibus-DP Byte 0 - DP Bit 0.5 Send -> [149] Status Automatic
0.6	General fault - QG_FLT	Profibus-DP Byte 0 - DP Bit 0.6 Send -> [150] Status general fault
0.7	General fault - QG_WRN	Profibus-DP Byte 0 - DP Bit 0.7 Send -> [151] Status general fault
1.0	Test operation - QCST	Profibus-DP Byte 1 - DP Bit 1.0 Send -> [157] Status RMT
1.1	Status cooling time active - QCTA	Profibus-DP Byte 1 - DP Bit 1.1 Send -> [156] Status Cooling time active
1.2	Only for control function POS: Status run open - Q1_2	POS: Profibus-DP Byte 1 - DP Bit 1.2 Send -> [158] Status run open Otherwise: user-specific assignment
1.3	Only for control function POS: Status run closed - Q1_3	POS: Profibus-DP Byte 1 - DP Bit 1.3 Send -> [159] Status run closed Otherwise: user-specific assignment
1.4	Q1_4	user-specific assignment
1.5	Q1_5	user-specific assignment
1.6	Q1_6	user-specific assignment
1.7	Q1_7	user-specific assignment

The motor current is transferred as an unsigned 2 byte value on input parameter INBT2_23. SIMOCODE-DP always transfers the current as a percentage of the set current, in a range from 0 to 1000%. The motor current is output through output CUR.

The block detects higher-level errors, e.g. a device failure, through the MODE input. Quality code CUR_QC is taken from the high byte of the MODE input. If the byte = 16#80, the read values in the process image are valid, otherwise the values are treated as invalid and output "QCSF" is set.

CUR_QC can have the following values:

State	CUR_QC
Valid value	16#80 or 16#20
Simulation	16#60
Invalid value	Otherwise, e.g. 16#00

The settings in the low word of the MODE input parameter are not taken into account.

When using the CFC "Generate module driver" function, the MODE input is automatically linked to the CMODE output at block SIMODIAG or PADP_L00.

Refer OBT2 assignment. (Page 38)

3.5.3 OBT2 assignment

Assignment of OBT2_01 and OBT2_23: command outputs at SIMOCODE-DP

The assignment of bits 0.0-0.7 corresponds to the default SIMOCODE-DP configuration and should not be changed.

For user-specific assignment, bits 1.0 - 1.7 are provided at inputs I1_0-I1_7 and bits 2.0 - 3.7 at input I23. These are not used internally by the block.

Bit	Meaning	Configuration in PDM / WinSIMOCODE-DP
0.0	On1 - command	SPS/PLS[DP] - On1 -> [056] DP Bit 0.0 Receive
0.1	Off - command	SPS/PLS[DP] - Off -> [057] DP Bit 0.1 Receive
0.2	On2 - command	SPS/PLS[DP] - On2 -> [058] DP Bit 0.2 Receive
0.3	Not used	Standard function blocks - Test1 -> [059] DP Bit 0.3 Receive
0.4	Emergency start - EM_START	Standard function blocks - Emergency start -> [060] DP Bit 0.4 Receive
0.5	Local/Remote REM_L; REMON_OP	Operating mode switch S1 -> [061] DP Bit 0.5 Receive Operating Mode Switch S2 -> [254] fixed level 1
0.6	SIMORESET; L_SIMORESET	Standard function blocks - Reset1 -> [062] DP Bit 0.6 Receive
0.7	Always output by the block as TRUE	Fault response -> PLC-CPU Signal -> [063] DP Bit 0.7 Receive
1.0 : 1.7	I1_0 : I1_7	user-specific assignment
2.0 - 3.7	I23	user-specific assignment

Refer INBT2 assignment. (Page 36)

3.5.4 SIMO_STAT Status Display

SIMO_STAT is used to actuate the status display:

- Low Byte: identifier for the respective device state (see: Actuation of Status Display)
- High Byte: identifier for Simocode Function
  - 16#00: OVL
  - 16#08: SOFT
  - 16#10: DIR
  - 16#20: REV
  - 16#30: STAR
  - 16#40: DAHL
  - 16#50: POL
  - 16#60: VALVE
  - 16#70: POS

3.5.5 VSTATUS and VSTATUS1 Status Display

The most important statuses and enable signals are passed through VSTATUS and VSTATUS1.

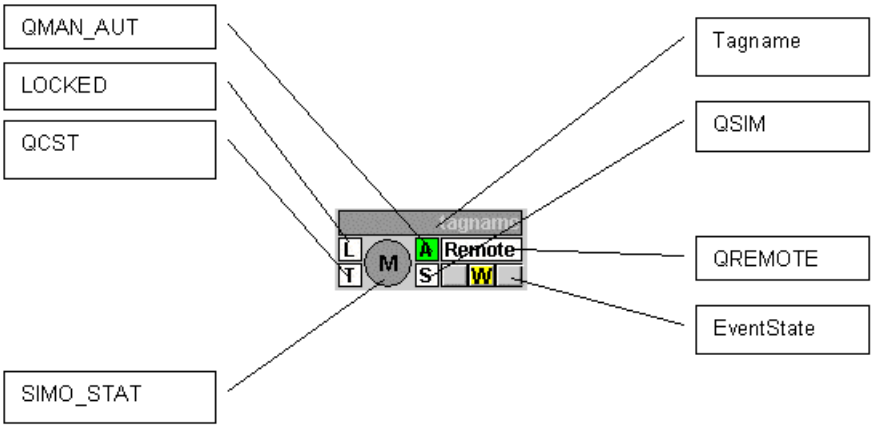
VSTATUS Bit_31:=QCSF;
VSTATUS Bit_30:=QOFF;
VSTATUS Bit_29:=QON2;
VSTATUS Bit_28:=QON1;
VSTATUS Bit_27:=QCUR;
VSTATUS Bit_26:=QG_FLT;
VSTATUS Bit_25:=QG_WRN;
VSTATUS Bit_24:=Q1_2;
VSTATUS Bit_23:=Q1_3;
VSTATUS Bit_22:=Q1_4;
VSTATUS Bit_21:=Q1_5;
VSTATUS Bit_20:=QMAN_AUT;
VSTATUS Bit_19:=QREMOTE;
VSTATUS Bit_18:=QCST;
VSTATUS Bit_17:=QSIM;
VSTATUS Bit_16:=LOCKED;
VSTATUS Bit_15:=LOCK;
VSTATUS Bit_14:=LOCK_ON;
VSTATUS Bit_13:=LOCK_OPT;
VSTATUS Bit_12:=VL_OPEN;
VSTATUS Bit_11:=VL_CLOSE;
VSTATUS Bit_10:=VL_HOLD;
VSTATUS Bit_09:=SS_POS;
VSTATUS Bit_08:=QCTA;
VSTATUS Bit_07:=QLTA;
VSTATUS Bit_06:=QOVL;
VSTATUS Bit_05:=QADD_F1;
VSTATUS Bit_04:=QADD_F2;
VSTATUS Bit_03:=Q1_6;
VSTATUS Bit_02:=Q1_7;
VSTATUS Bit_01:=QMON_ERR;
VSTATUS Bit_00:=QMAN_MOP;

VSTATUS1 Bit_31:=QAUTOP;
VSTATUS1 Bit_30:=QMANOP;
VSTATUS1 Bit_29:=QMANLOP;
VSTATUS1 Bit_28:=QLOCOP;
VSTATUS1 Bit_27:=QON2OP;
VSTATUS1 Bit_26:=QON1OP;
VSTATUS1 Bit_25:=QOFFOP;
VSTATUS1 Bit_24:=QMONITOR;
VSTATUS1 Bit_23:=QMSG_SUP;
VSTATUS1 Bit_22:=QENSDCS;
VSTATUS1 Bit_21:=not used;
VSTATUS1 Bit_20:=not used;
VSTATUS1 Bit_19:=not used;
VSTATUS1 Bit_18:=not used;
VSTATUS1 Bit_17:=not used;
VSTATUS1 Bit_16:=not used;
VSTATUS1 Bit_15:=not used;
VSTATUS1 Bit_14:=not used;
VSTATUS1 Bit_13:=not used;
VSTATUS1 Bit_12:=not used;
VSTATUS1 Bit_11:=not used;
VSTATUS1 Bit_10:=not used;
VSTATUS1 Bit_09:=not used;
VSTATUS1 Bit_08:=not used;
VSTATUS1 Bit_07:=PLC CPU monitoring;
VSTATUS1 Bit_06:=Reset;
VSTATUS1 Bit_05:=REMON_OP;
VSTATUS1 Bit_04:=QEM_START;
VSTATUS1 Bit_03:=OverloadTest;
VSTATUS1 Bit_02:=On2;
VSTATUS1 Bit_01:=Off;
VSTATUS1 Bit_00:=On1;

3.6 Display in WinCC

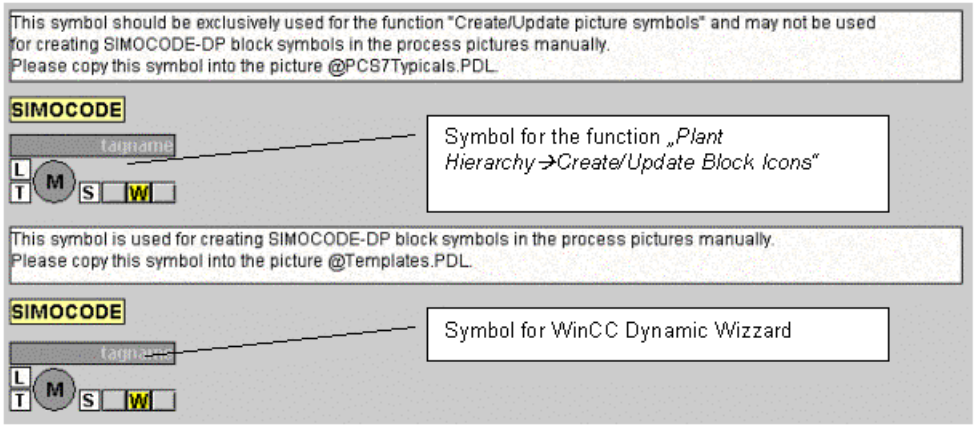
3.6.1 Views

Picture Symbol

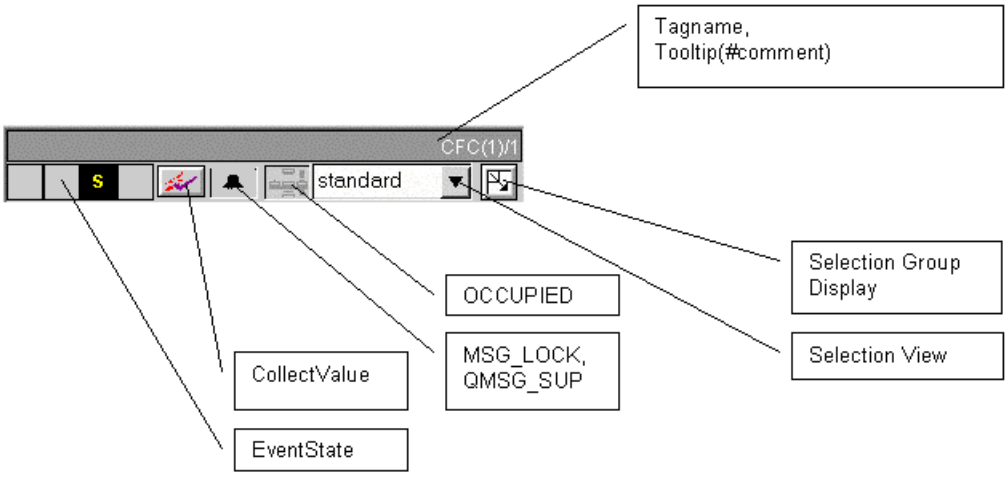


The upper SIMOCODE symbol in picture @SIMO_CHN_SYMBOL.PDL must be copied to the picture @PCS7Typicals.PDL, so that the SIMOCODE symbol can be automatically inserted in the corresponding pictures when executing the "Plant Hierarchy > Create / Update Picture Symbols" function.

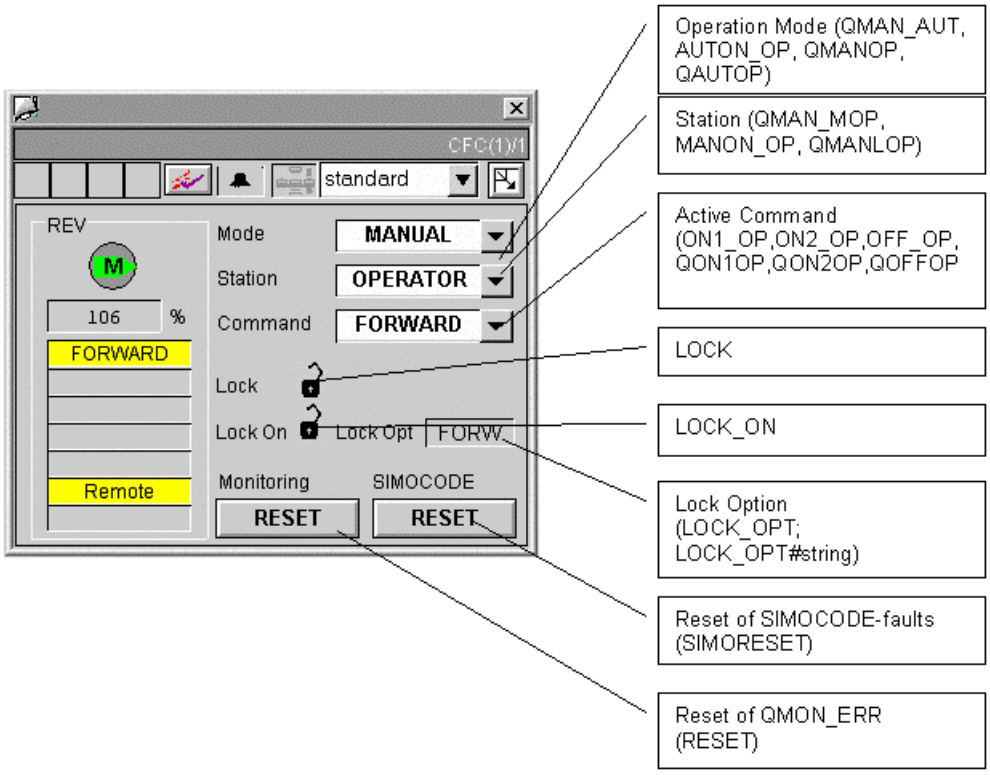
If you want to insert the SIMOCODE symbol into a process picture manually, copy the lower SIMOCODE symbol into picture @Templates.PDL and use it for this configuration.

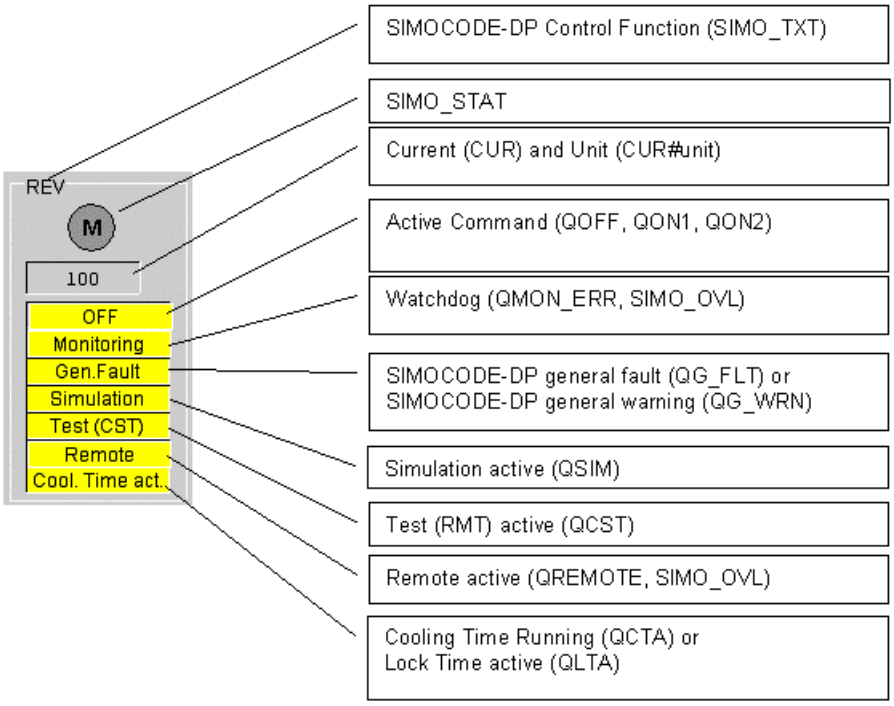


Overview window



Standard view



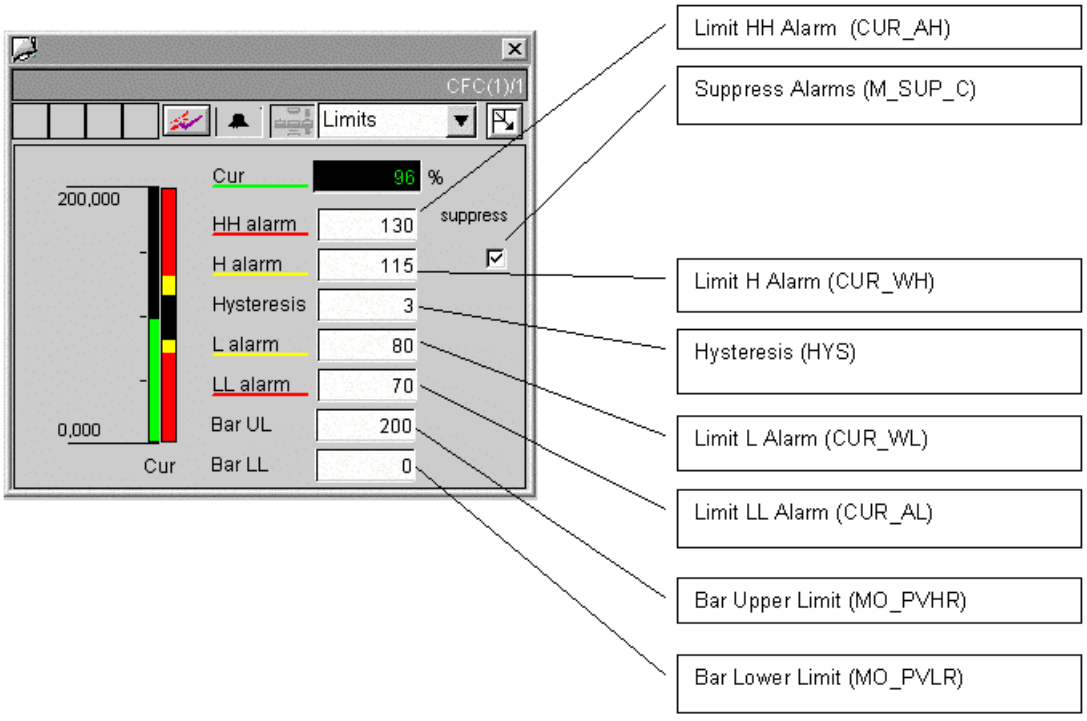


In the SIMOCODE-DP "Overload" (OVL) control function, the display of operating mode, station, command, and monitoring is disabled. In SIMOCODE-DP control function "Direct starter (DIR), Star/Delta(STAR), Soft starter (SOFT), and Solenoid valve (VALVE), the operation of the ON1 command is disabled.

In the symbol picture and the standard view, a device failure is indicated by a change of colour in the status display.

All inputs require operator level5. Operator enabling at login is through the direct connection of picture element @Level5 (Operator Enabling) -> Permissions (Operator Enabling). The operator enabling and background colours for the other I/O fields are then defined in the "Permissions" picture element by means of a C-script.

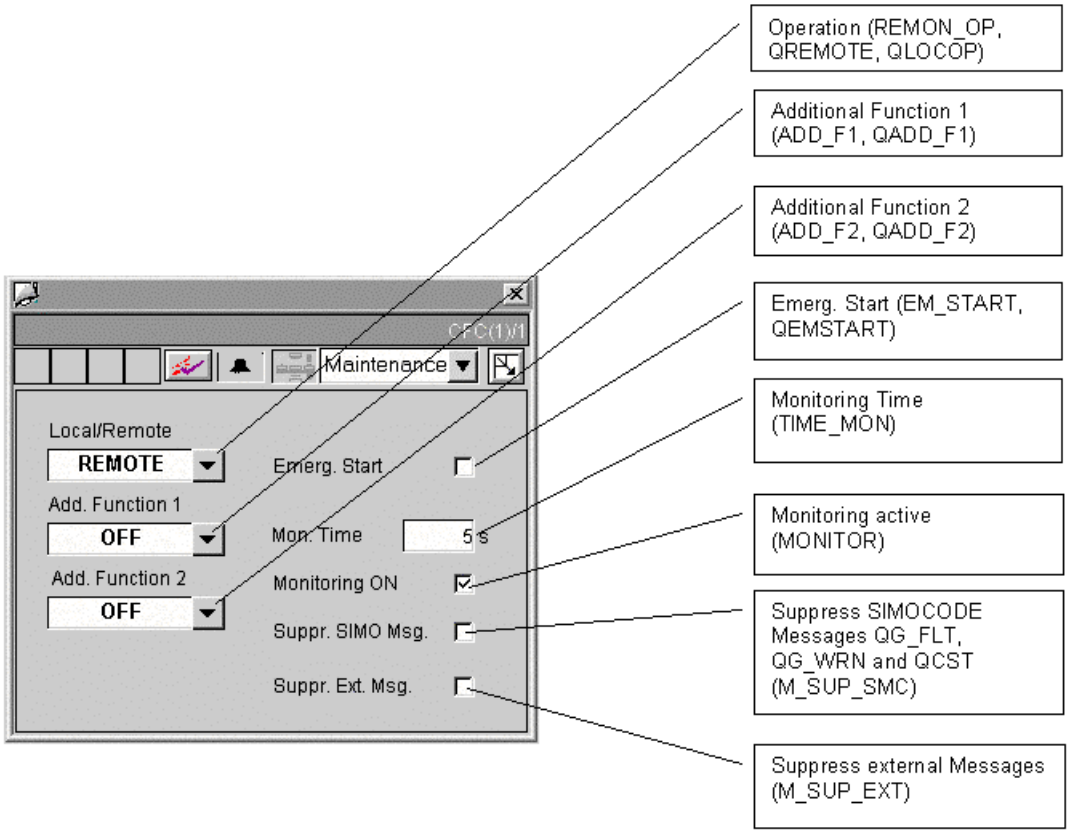
Limits view



In the SIMOCODE "Solenoid Valve" (VALVE) function, limit value inputs and message suppression are disabled.

All inputs require operator level6. Operator enabling at login is linked through the direct connection of picture element @Level6 (Operator Enabling) -> Permissions (Operator Enabling). The operator enabling and background colors for the other I/O fields are then defined in the "Permissions" picture element by means of a C-script.

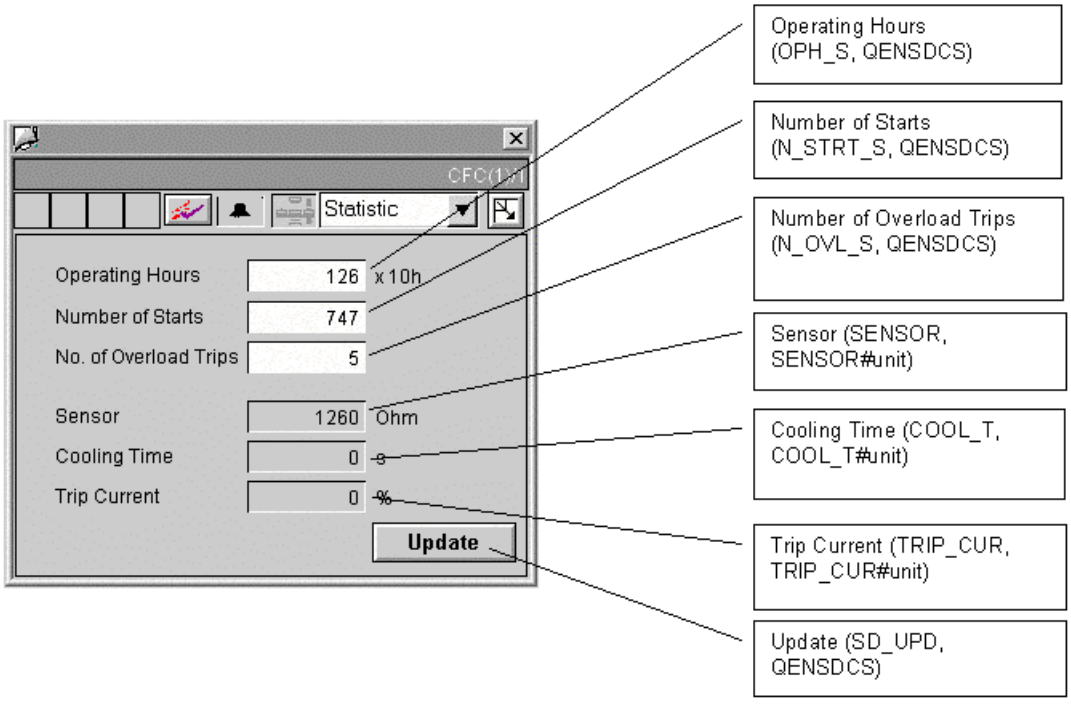
Maintenance view



In the SIMOCODE "Overload" (OVL) function, the display of Local/Remote, Mon. Time, and Monitoring ON is disabled. In the Solenoid Valve (VALVE) function, Emerg.Start is disabled.

Inputs Local/Remote, Add.Function1, and Add-Function2 require operator level5; all other inputs require operator level6. Operator enabling at login is linked through the direct connection of picture element @Level5 resp Level6(Operator Enabling) -> Permissions (Operator Enabling). The operator enabling and background colors for the other I/O fields are then defined in the "Permissions" picture element by means of a C-script.

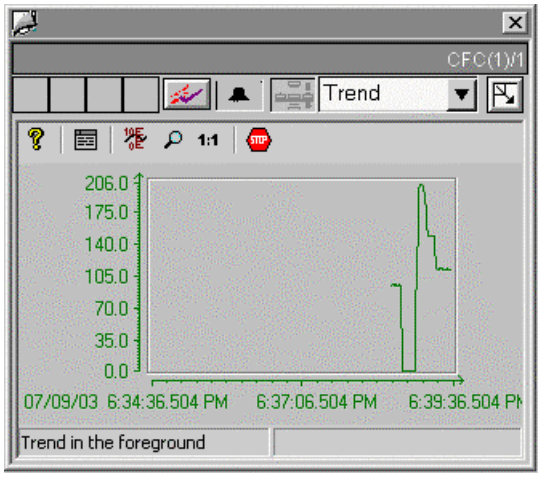
Statistic view



When a picture is selected, SD_UPD is set.

Input Update requires operator level5; all other inputs require operator level6. Operator enabling at login is linked through the direct connection of picture element @Level5 (Operator Enabling) -> Permissions (Operator Enabling). The operator enabling and background colours of the other I/O fields are then defined in picture element "Permissions" by means of a C-script.

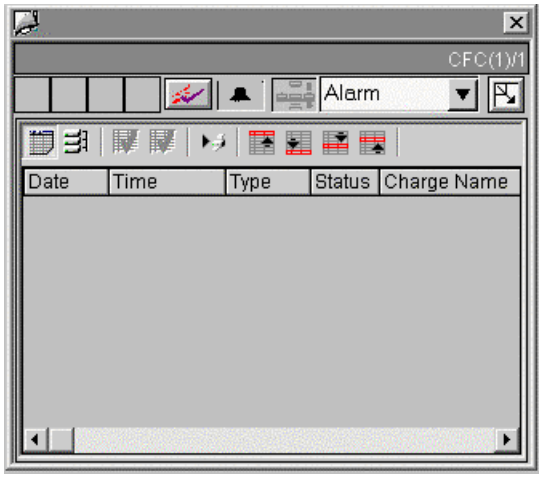
Trend view



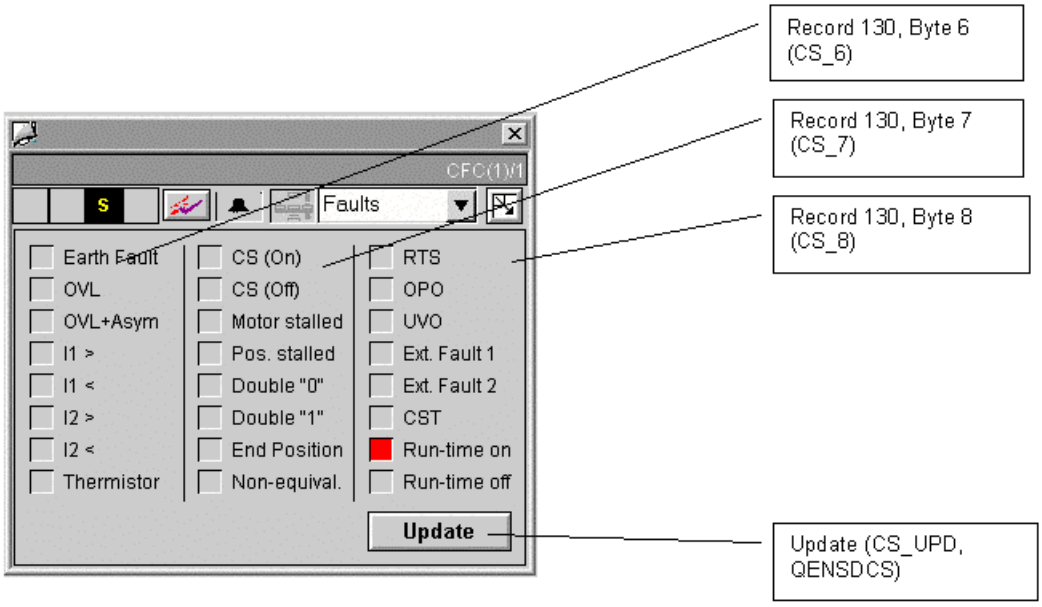
Picture @CONL1_Standard.PDL is output. Motor current CUR is displayed as an online variable. No archiving is necessary.

The settings can be changed on the picture symbol through the ReturnPath property.

Alarms view



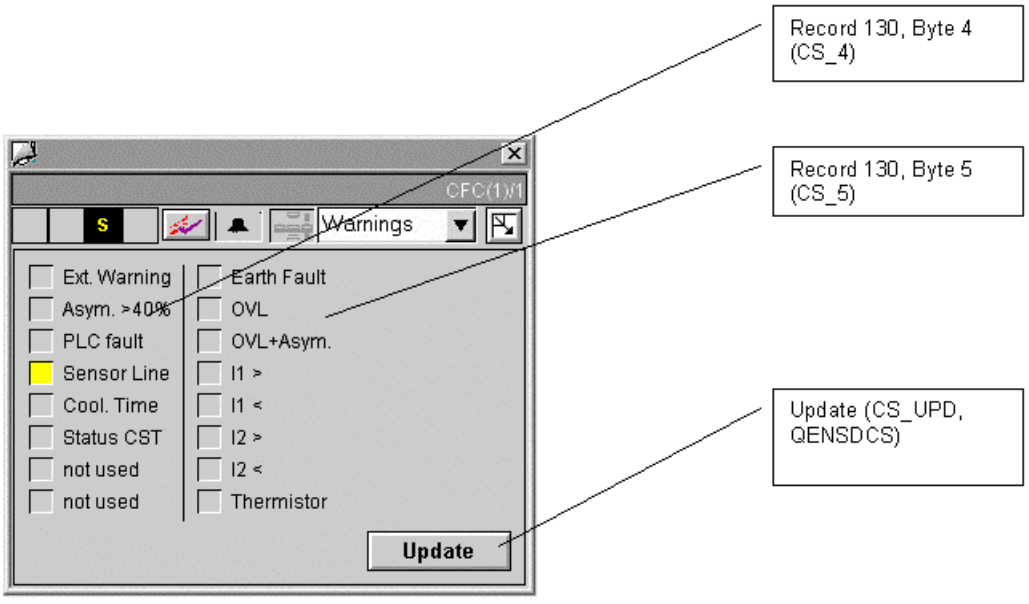
Faults view



When a picture is selected, CS_UPD is set. Status bytes CS_6, CS_7, and CS_8 are linked to I/O fields (hidden). In these I/O fields, the "Flashing Background Active" property is enabled in displays CS_60..67, CS_70..77 or CS_80..87 by means of C-scripts. This indicates which bits are set in the status byte. The colors of the individual indicators can be defined through the "Background Flashing Color On" and "Background Flashing Color Off" property.

Input Update requires operator level5; operator enabling at login is linked through the direct connection of picture element @Level5 (Operator Enabling) -> Permissions (Operator Enabling). The operator enabling and background colors for the other I/O fields are then defined in the "Permissions" picture element by means of a C-script.

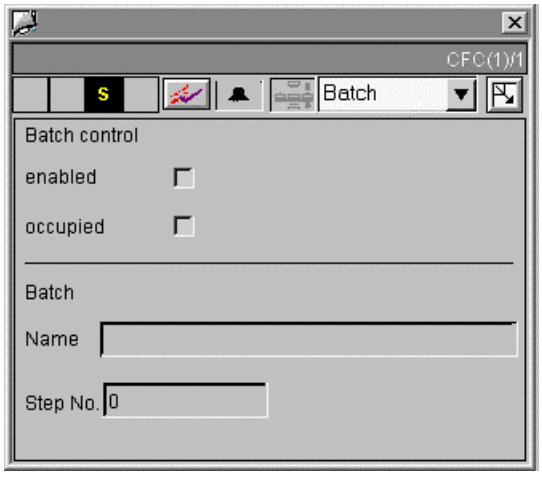
Warnings view



When a picture is selected, CS_UPD is set. Status bytes CS_4 and CS_5 are linked to I/O fields (hidden). In these I/O fields, the "Flashing Background Active" property is enabled in displays CS_40..47 or CS_50..57 by C-scripts. This indicates which bits are set in the status byte. The colors of the individual indicators can be defined through the "Background Flashing Color On" and "Background Flashing Color Off" property.

Input Update requires operator level5; operator enabling at login is linked through the direct connection of picture element @Level5 (Operator Enabling) -> Permissions (Operator Enabling). The operator enabling and background colors for the other I/O fields are then defined in the "Permissions" picture element by means of a C-script.

Batch view


CFC(1)/1
Batch
Batch control
enabled
occupied
Batch
Name
Step No.
0

3.6.2 Status display

Actuation of the SIMO_CHN Status Display

Actuation of the Status Display in the Picture Symbol and in the Standard View

Bitpos	15-8	7	6	5	4	3	2	1	0	Control word	Picture
Name	Control Function	Q1_2	Q1_3	QG_FLT	QCUR	QON1	QON2	QOFF	QCSF		
OVL	00	-	-	0	-	-	-	-	0	0	@SimoOvl2.emf
	00	-	-	-	-	-	-	-	1	1	@SimoOvl3.emf
	00	-	-	0	-	-	-	-	0	0	
	00	-	-	1	-	-	-	-	0	32	@SimoOvl1.emf
SOFT	08	-	-	-	-	-	0	0	0	2048	@SimoMotorDefault.emf
(80)	08	-	-	-	-	-	-	-	1	2049	@Motor_error.emf
	08	-	-	-	-	-	-	1	0	2050	@Motor_is_off.emf
	08	-	-	-	-	-	1	0	0	2052	@motor_is_on.emf
DIR	10	-	-	-	-	-	0	0	0	4096	@SimoMotorDefault.emf
	10	-	-	-	-	-	-	-	1	4097	@Motor_error.emf
	10	-	-	-	-	-	-	1	0	4098	@Motor_is_off.emf
	10	-	-	-	-	-	1	0	0	4100	@Motor_is_on.emf
REV	20	-	-	-	-	0	0	0	0	8192	@SimoMotorDefault.emf
	20	-	-	-	-	-	-	-	1	8193	@Motor_error.emf
	20	-	-	-	-	-	-	1	0	8194	@Motor_is_off.emf
	20	-	-	-	-	-	1	0	0	8200	@Motor_is_rev.emf
	20	-	-	-	-	1	0	0	0	8196	@Motor_is_forw.emf
STAR	30	-	-	-	0	-	0	0	0	12288	@SimoMotorDefault.emf
	30	-	-	-	-	-			1	12289	@Motor_error.emf
	30	-	-	-	-	-	-	1	0	12290	@Motor_is_off.emf
	30	-	-	-	1	-	1	0	0	12292	@SimoStar2.emf
	30	-	-	-	1	1	0	0	0	12296	@SimoStar1.emf
DAHL	40	-	-	-	-	0	0	0	0	16384	@SimoMotorDefault.emf
	40	-	-	-	-	-	-	-	1	16385	@Motor_error.emf
	40	-	-	-	-	-	-	1	0	16386	@Motor_is_off.emf
	40	-	-	-	-	-	1	0	0	16388	@motor_is_on.emf
	40	-	-	-	-	1	0	0	0	16392	@motor_is_slow.emf

Bitpos	15-8	7	6	5	4	3	2	1	0	Control word	Picture
POL	50	-	-	-	-	0	0	0	0	20480	@SimoMotorDefault.emf
	50	-	-	-	-	-	-	-	1	20481	@Motor_error.emf
	50	-	-	-	-	-	-	1	0	20482	@Motor_is_off.emf
	50	-	-	-	-	-	1	0	0	20484	@motor_is_on.emf
	50	-	-	-	-	1	0	0	0	20488	@motor_is_slow.emf
VALVE	60	-	-	-	-	-	0	0	0	24576	@vho_undef.emf
	60	-	-	-	-	-	-	-	1	24577	@VHO_error.emf
	60	-	-	-	-	-	-	1	0	24578	@vho_closed.emf
	60	-	-	-	-	-	1	0	0	24580	@vho_opened.emf
POS	70	0	0	-	-	0	0	0	0	28672	@vho_undef.emf
	70	-	-	-	-	-	-	-	1	28673	@VHO_error.emf
	70	-	-	-	-	-	-	1	0	28674	@vho_undef.emf
	70	-	-	-	-	-	1	0	0	28676	@vho_opened.emf
	70	-	-	-	-	1	0	0	0	28680	@vho_closed.emf
	70	0	1	-	-	-	-	-	0	28736	@vho_closed.emf (blink)
	70	1	0	-	-	-	-	-	0	28800	@vho_opened.emf (blink)

Note

Settings with "-" are ignored.

Bitmaps for Status Display