

Description Data
transmission:

Profibus



Single Smart Controller - SSC

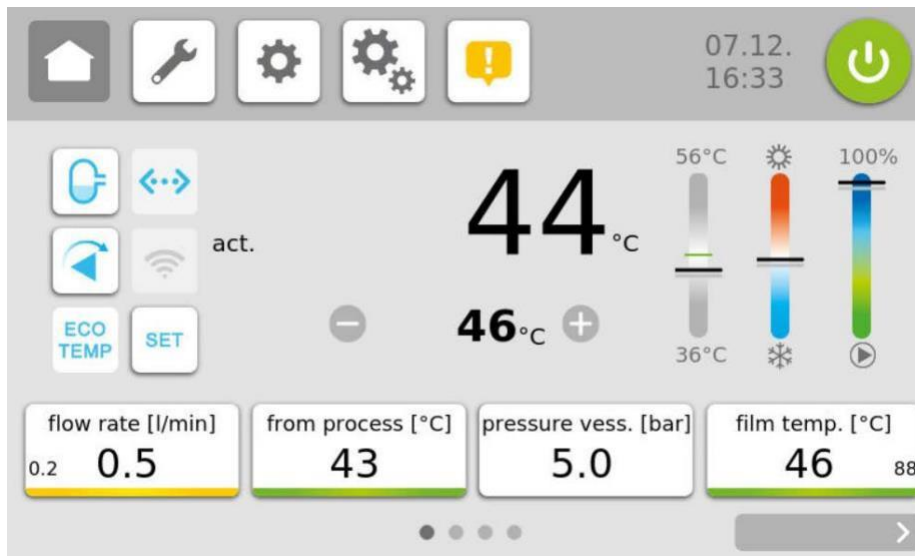


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Foreword

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1 Interface, general description

The "Single Smart Control" **SSC** (also called control device) is suitable for connection to the Profibus-DP bus system.



This makes it possible to have the controller monitored and controlled by a master (e.g. an industrial or personal computer or a PLC) via Profibus-DP according to EN 50170.

The sequence of a communication is always controlled by the master. The downstream control device operates as a "slave". Each control device has its own device address.

If the controller detects transmission errors or plausibility errors (e.g. range limits exceeded) it does not accept this data. The previously existing, valid data will continue to exist.

Controller settings:

Device address: The controller address 1...125 is set on the controller.
See parameter: "Adr"

Baud rate: 93.75 kBaud ... 12 MBaud (with automatic detection)

It is essential to observe the operating instructions belonging to the control unit.

GSD - file:

Please order via: SINGLE Temperiertechnik GmbH, Ostring 17-19, D-73269 Hochdorf. Internet: www.single-temp.de

1.1 Commissioning

Note

The commissioning of the control unit with Profibus DP connection may only be carried out by trained personnel in compliance with the safety regulations.

It is indispensable that you have profound experience in handling Profibus- DP. Please also regard our FAQ list.

You will need the following components for commissioning:

- ◆ Connector plug for PROFIBUS connection to the control device
- ◆ PROFIBUS cable (This cable is usually already installed on site!)
- ◆ Floppy disk with GSD file
- ◆ Any configuration tool for PROFIBUS-DP

To ensure proper operation of the controller, it is essential that you perform the following steps during commissioning:

PROFIBUS connection: Connect the controller with the PROFIBUS cable.

Set the following parameters on the controller:

Protocol" parameter set to "Profibus DP
Parameter "Address" to the required Profibus address. (Default address is2)
Parameter "Baud rate" No setting possible
 The required baud rate is automatically detected and
 displayed. Display "ndt" = no baud rate detected.

Diagnostic displays:

The following diagnostic displays are shown in the "Status" parameter:

Data Exchange:	The device is in data exchange mode. Communication is in order. Data exchange with the master takes place.
Wait param.:	The bus connection is recognized. The controller waits for parameterization by the master. This is done automatically.
No verb.:	The controller is not properly connected to the bus. e.g.: - There may be a wiring error present - The master not active - The protocol is not set correctly
DP HW-Err:	Error in the Profibus hardware of the controller. Send the device in for inspection. However, normal regular operation of the device is still possible. For more information, see Alarm list.

2 Parameter transfer

Communication:

The master sends data to the controller.

In the opposite direction the controller sends a response to the Profibus master. This sequence takes place cyclically and is controlled by the master.

The controller is configured using the GSD file. The following

modules are available for the SSC controller:

- | | |
|---|--|
| 1. Process image: | Module: "Single process data" |
| 2. Configuration channel: | Module: "Parameter channel" |
| 3. Process image and configuration channel: | Module: "Single process data + parameter". |

As of software version V21/19, the following modules are implemented.

They offer extended functionalities:

- | | |
|--|--|
| 4. Process image (extended): | Module: "Single process data extended" |
| 5. Process image (extended) and config. channel: | Module: "Single proc. data extended + pc." |

2.1 Process reflection

In the process image, certain parameters are transferred according to a fixed scheme.

2.1.1 From the master to the controller: Transmission of setpoint 1 and control word

Byte 1	Byte 2	Byte 3
Set point High byte	Set point Low byte	Control word

Setpoint: The parameter value consists of two data bytes:

<u>Example:</u>	<u>Dec.</u>	<u>Hex.</u>	<u>High-Byte</u>	<u>Low-Byte</u>
Setpoint :	230	00E6	00	E6

Corresponds e.g. to 230°C or 230°F or 23.0°C depending on parameter "CF" (see parameter list of the controller).

The numerical value is treated as shown in the display.

150	-> 15.0 with comma
150	-> 150 without comma

Tax Word:	Bit 0: Device "on" / "off"	1 = on
	Bit 1: Unit "cool down" and "off"	1 = on
	Bit 2: Sensor internal/external Leak	1 =
	Bit 3: stop operation Mold emptying	external
	Bit 4*: Setback setpoint (2nd	1 = on
	Bit 5: setpoint) Optimization	1 = on
	Bit 6*: —	1 = on
	Bit 7:	1 = on
		—

***To bit 4 "Mould emptying":**

The change from "0" to "1" causes the mold to be emptied once. To trigger emptying again, the bit must be set to "0" once in the meantime. The current device status can be read in the status of the process data. When mold emptying is complete, "Device off and mold emptying off" is reported as the status.

***To bit 6 "Optimization**

The change from "0" to "1" causes a one-time optimization. To trigger an optimization again, the bit must be set to "0" once in the meantime. If bit 6 is set to "0", a possibly running optimization is aborted. The current optimization status can be read in the status of the process data.

2.1.2 From the control device to the master: Transmission of the process data

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5
Status default	Actual value, current. Control sensor High byte	Actual value, current. Control sensor Low byte	Actual value, return High Byte	Actual value, return Low Byte

Byte 6	Byte 7	Byte 8	Byte 9	Byte 10	Byte 11
Flow rate High byte	Flow rate Low byte	Print High byte	Print Low byte	Power High byte	Power Low byte

Byte 12	Byte 13	Byte 14	Byte 15	Byte 16	Byte 17
Film temperature High Byte	Film temperature Low Byte	Output level 0x9C...0x64	Alarms 1	Alarms 2	Status

Definition "Status default": indicates whether a range error occurred when writing the setpoint value has occurred.
0 = Setpoint value OK.
1 = Setpoint specification faulty

Definition "Alarms 1": Bit 0 = collective alarm (alarms marked with * are not included in the collective alarm)
Bit 1 = Alarm 1 *
Bit 2 = ---
Bit 3 = Alarm pump (motor protection switch has tripped, phase, direction of rotation) Bit 4 = Alarm level, level
Bit 5 = Alarm flow / flow monitor Bit 6 = System error
Bit 7 = Optimization error *

Definition "Alarms 2": Bit 0 = ---
Bit 1 = ---
Bit 2 = Alarm film temperature
Bit 3 = Alarm sensor break (current control sensor) Bit 4 = Alarm pressure too high (option)
Bit 5 = ---
Bit 6 = Nearly empty *

Bit 7 = —

Definition "Status"

Bit 0 = Device on / off 1 = on
 Bit 1 = Device cool down and off 1 = on
 Bit 2 = Sensor internal/external 1 = external
 Bit 3 = Leakage stop operation 1 = on
 Bit 4 = Mold emptying 1 = on
 Bit 5 = Setback setpoint (2nd setpoint) 1 = on
 Bit 6 = Optimization 1 = on
 Bit 7 = Manual / remote operation 1 = hand

2.1.3 From the master to the controller:

Transmission example for transmission of setpoint 1 and control word

Prerequisite: Parameter "Unit" = °C and not °F or 0.1°C

Byte 1 + 2: A setpoint of 50°C is to be transmitted to the control device
 Setpoint:50 decimal = 0x0032 hexadecimal as 16 bit integer value

Byte 3: The control is to be switched on (bit 0 = 1).

Byte 1	Byte 2	Byte 3
Setpoint High Byte	Set point low byte	Control word
0x00	0x32	0x01

Response from the control device to the master: Transmission of the process image

The controller shows the following parameter values (parameter unit = °C):

Byte 1: Status preset: The last preset was OK
 Byte 2 + 3:Actual value: 55(decimal) = 0x0037 (hexadecimal as 16 bit integer value)
 Byte 4 + 5:Actual value return: 50 (dec.) = 0x0032(hex)
 Byte 6 + 7: Actual value flow: (only if available) 0 (dec.) = 0x0000 (hex.) Byte 8 + 9:Actual value pressure: (onlyif available) 0 (dec.) = 0x0000 (hex.)
 Byte 10 +11:Power: (onlyif available) 0 (dec.) = 0x0000 (hex.)
 Byte 12 + 13: Actual value film temperature: 100 (dec.) = 0x0064 (hex.)
 Byte 14: Output level: -33 (dec.) = 0xDF (hex. as 8 bitinteger value)
 Byte 15 Alarms 1 The common alarm has responded
 Byte 16: Alarms 2 Thefilm temperature alarm has responded.
 Byte 17: StatusThe controller is switched on.

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5
Status default	Actual value, current. Control sensor High byte	Actual value, current. Control sensor Low byte	Actual value, return High Byte	Actual value, return Low Byte
0x00	0x00	0x37	0x00	0x32

Byte 6	Byte 7	Byte 8	Byte 9	Byte 10	Byte 11
--------	--------	--------	--------	---------	---------

Flow rate High byte	Flow rate Low byte	Print High byte	Print Low byte	Power High byte	Power Low byte
0x00	0x00	0x00	0x00	0x00	0x00

Byte 12	Byte 13	Byte 14	Byte 15	Byte 16	Byte 17
Film temperature High Byte	Film temperature Low Byte	Output level -100...+100	Alarms 1	Alarms 2	Status (read)
0x00	0x64	0xDF	0x01	0x04	0x01

2.2 Configuration channel

Each parameter can be addressed individually via the configuration channel. The master in the Profibus- DP has the possibility to read out all available data of the controllers and to change them, if permitted.

The command or parameter transfer takes place in both directions via defined data blocks.

Terms

Command code **[BC]**: "tells" the device what it has to "do" (1 byte)
 Parameter code **[PC]**: designates each individual parameter that can be called up in the controller (1 byte)
 Parameter value **[PW]**: indicates the value of a parameter (3 bytes)

Number ranges

Command code **[BC]**: 0x10, 0x20, 0x21
 Parameter code **[PC]**: 0x00...0xFF
 Parameter value **[PW]**: the parameter value (16 bit integer) is composed of from the pure numerical value **PWH** and **PWL** and the decimal place **PWK**

Parameter value high byte **[PWH]**
 Parameter value low byte **[PWL]**
 Decimal place **[PWK]**

2.2.1 Configuring the parameters via the configuration channel.

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
Sequence number	always:	Command	always:	Parameter code	Parameter value	Parameter value	Decimal place
0x00 ... 0xFF	0x01	code BC 0x10, 0x20 or 0x21	0x00	PC 0x00 ... 0xFF	PWH High-Byte	PWL Low byte	PWK 0x00 ... 0xFF

Byte 1

Sequence number: The master should prefix each new request with a new sequence number.
Request This is repeated by the controller in the response. So it is possible to assign and response to each other.

Byte 2: Always 0x01

Byte 3

Command code, BC: 0x10 : Read parameter
0x20 : Write parameter
0x21 : Write parameters and save them power-failure-proof
The power-failure-proof semiconductor memory (EAROM, EEPROM) allows a maximum of 1,000,000 write cycles.

Byte 4: Always 0x00

Byte 5

Parameter code, PC: Request: Addresses the parameter to be configured (see table).

Response:
If the reading process from the controller was error-free, byte 5 in the response contains of the controller the parameter code PC.
If the write operation to the controller was error-free, byte 5 contains the value 00H (acknowledge).
In case of faulty communication, the following error messages may occur in byte 5:

- 03 H- Procedure error (invalid command code).
Device is not in remote operation
- 04 H -Range specification not observed (value too large or toosmall)
- 05 H - Byte 2≠ 0
-the addressed parameter is a "readonly parameter" 08 H
- parameter code invalid
- 09 H- command execution not possible
(e.g. optimization cannot be triggered) FEH- error
when writing to the mains fail-safe memory FFH- general error

Byte 6, 7 and 8

Parameter value: Bytes 6, 7 and 8 contain the parameter value **PWH** and **PWL** and the decimal place **PWK**.

The parameter value consists of three data bytes:
2 data bytes (numerical value), 1 data byte (decimal place).

Examples:	Dec.	Hex.	PWH	PWL	
<u>Decimal place</u>					
Actual value (°C or °F):	215	00D7	00	D7	00
Set point (°C or °F):	230	00E6	00	E6	00
Output level, "cool" (%):	-16	FFF0	FF	F0	00
Setpoint ramp (°C/min):	2,2	0016	00	16	01

The parameter value is calculated as follows:
Dec.: 2,2 = 22 with one decimal place
Hex.: = 0016 (PWH PWL)
= 01 (1 decimal place)

Negative values:
Formation by the binary 2's complement.

2.2.2 Parameter codes (Table 1)

Parameter	Para-Code	Read Write	Other
Cockpit			
1. set point	0x21	RW	
Expert			
Actual value temperature	0x10	RO	
Return temperature	0x12	RO	
Flow temperature	0x13	RO	
Film temperature	0x14	RO	
current output level	0x60	RO	
Flow rate	0x15	RO	
Supply pressure	0x16	RO	
Flow rate	0x17	RO	
Device functions			
Alarm value	0x38	RW	
Leakage stop mode On/Off	0xA7	RW	
Remote On/Off	-		
Mould emptying active	-		
Pump follow-up	0xD4	RW	Cooling down before switching off
Pump control on/off	0xB3	RW	An=1
Basic settings			
Language	0xD9	RW	
Unit	0x1B	RW	
Keyboard lock	0x85	RW	
Lock code	-		
Factory access single	-		
Pressure unit	0xE5	RW	Option
Flow unit	0xE6	RW	Option
Device control			
Filling	0xD0	RW	
Direct cooling	0x94	RW	
Shutdown temperature	0x93	RW	
Emptying time	0xA1	RW	
Setpoint source	0xD6	RW	Option
Aquatimer start time	0xA9	RW	
Aquatimer	0xA0	RW	
Filling time monitoring	0xB0	RW	
Reclosing lockout	0x90	RW	Emergency-Off
External sensor	0xD7	RW	Option On=1 Off=0
Actual value output upper value	0x87	RW	
Actual value output lower value	0x89	RW	

Temperature control				
2. set point		0x22	RW	
Output level limitation heating		0x64	RW	
Output level limitation cooling		0x69	RW	
XP - Heating		0x40	RW	
TV - Heating		0x41	RW	
TN -Heating		0x42	RW	
XP - Cooling		0x50	RW	
TV - Cooling		0x51	RW	
TN - Cooling		0x52	RW	
Switching hysteresis heating / cooling		0x46	RW	
Switching cycle time heating		0x43	RW	
Switching cycle time cooling		0x53	RW	
Upper set point limit		0x2C	RW	
lower setpoint limit		0x2B	RW	
System closure temperature		0xA2	RW	
Setpoint ramp-increasing		0x2F	RW	
Setpoint ramp-falling		0x2E	RW	
Switching hysteresis Switch-on cooling		0x5A	RW	Only for 2-point cooling
Switching hysteresis Switching off Cooling		0x59	RW	Only for 2-point cooling
Cascade control		0x33	RW	
Offset values				
Offset internal temperature sensor		0xAB	RW	
Offset external temperature sensor		0xAC	RW	
Offset film temperature sensor		0xAF	RW	
Offset return sensor		0xAD	RW	
Offset flow sensor		0xAE	RW	
Analog values 4..20mA/0..10V		0x84	RW	
Flow offset		0x8E	RW	Option
Alarms and limits				
Alarm1 configuration		0x34	RW	
Film temperature limit		0x39	RW	
Alarm forward		0x3A	RW	
Alarm Flow		0x3B	RW	
Limit value return		0x3C	RW	
Alarm ΔT		0xA3	RW	
Alarm pressure too high		0x3E	RW	
Alarm pressure low		0x3F	RW	
Communication				
Protocol		-		
Address		-		
Baud rate		-		Serial only
Data format		-		
Status		-		

Pump control				
Pump control selection		0xB1	RW	
Fixed set point		0xB2	RW	
Desired flow rate value		0xE7	RW	
Pressure limitation		0xB8	RW	
Deviation dT		0xB4	RW	
XP Flow rate		0xB5	RW	
Tv flow rate		0xB6	RW	
Tn Flow rate		0xB7	RW	

Parameter code (Table 2)

Other parameters				
Parameter		Para-Code	Read Write	Other
act. Actual value temperature		0x10	RO	
act. Set point		0x20	RO	
Device on/off		0x8F	RW	
Device type		0x01	RO	
SW version		0x02	RO	

2.2.3 Transmission example to configuration channel, command code 10 H

The controller should send the parameter (actual value, 10 H) to the master.
The actual value has the value of 225 degrees C. 225 (Decimal) = 0xE1 (Hex)

Master to controller:	Dec.	Hex
sequence number:	1	0x01
always:	1	0x01
parameters:	16	0x10
always:	0	0x00
Parameter code (actual value):	16	0x10
Parameter value (high byte):	0	0x00
Parameter value (Low -Byte):	0	0x00
Decimal place:	0	0x00

Transmission to the controller: 0x01, 0x01 0x10, 0x00, 0x10, 0x00, 0x00, 0x00

Control device to master:	Dec.	Hex
sequence number of the request:	1	0x01
always:	1	0x01
parameters:	16	0x10
always:	0	0x00
Parameter code (actual value):	16 *)	0x10
Parameter value (high byte):	0	0x00
Parameter value (Low -Byte):	225	0xE1
Decimal place:	0	0x00

Transmission to master: 0x01, 0x01 0x10, 0x00, 0x10, 0x00, 0xE1, 0x00

*) Repeat PC = 16 because the read operation was error-free.

2.2.4 Transmission example to the configuration channel, command

code 20 H The controller receives the command :
"Transfer parameter XP-Heating (parameter code: 40H, parameter value: 5.0 %) to the data memory (RAM)".

Master to controller:	Dec.	Hex
sequence number:	2	0x02
always:	1	0x01
Command code:	32	0x20
always:	0	0x00
Parameter code (xp-heat)	64	0x40
Parameter value (high byte):	0	0x00
Parameter value (Low -Byte):	50	0x32
Decimal place:	1	0x01

Transmission to the control device: 0x02, 0x01, 0x20, 0x00, 0x40, 0x00, 0x32, 0xFF

Control device to master:	Dec.	Hex
sequence number of the request:	2	0x02
always:	1	0x01
Command code:	32	0x20
always:	0	0x00
Parameter code:	0 *)	0x00
Parameter value (high byte):	0	0x00
Parameter value (Low -Byte):	0	0x00
Decimal place:	0	0x00

Transmission to the master: 0x02, 0x01, 0x20, 0x00, 0x00, 0x00, 0x00

*) Has the controller "understood" the command of the master,

it responds with the parameter code PC = 00 because the write operation was error-free.
In case of transmission or other (e.g. formal) errors, the controller responds at this point with a corresponding error code.

2.2.5 Transmission example to configuration channel, command code

21 H The controller receives the command:
"Accept parameter SP1 = 200 °C (setpoint1, parameter code: 0x21) and save power failure safe".

Master to controller:	Dec.	Hex
sequence number:	3	0x03
always:	1	0x01
Command code:	33	0x21
always:	0	0x00
Parameter code (SP1):	33	0x21
Parameter value (high byte):	0	0x00
Parameter value (Low -Byte):	200	0xC8
Decimal place:	0	0x00

Transmission to the controller: 0x03, 0x01, 0x21, 0x00, 0x21, 0x00, 0xC8, 0x00

Control device to master:	Dec.	Hex
sequence number of the request:	3	0x03
always:	1	0x01
Command code:	33	0x21
always:	0	0x00
Parameter code:	0 *)	0x00
Parameter value (high byte):	0	0x00
Parameter value (Low -Byte):	0	0x00
Decimal place:	0	0x00

Transmission to the master: 0x03, 0x01, 0x21, 0x00, 0x00, 0x00, 0x00

*) Has the controller "understood" the command of the master,
it responds with the parameter code PC = 00 because the write operation was error-free.
In case of transmission or other (e.g. formal) errors, the controller responds at this point with a corresponding error code.

2.3 Process image and configuration channel

Process image and configuration channel can also be transmitted simultaneously. For this purpose, the bytes of the configuration channel are appended to those of the process image.

2.3.1 Master to controller:

Byte 1	Byte 2	Byte 3
Set point High byte	Set point Low byte	Control word

Byte 4	Byte 5	Byte 6	Byte 7	Byte 8	Byte 9	Byte 10	Byte 11
Sequence number	always: 0x01	Command code BC	always: 0x00	Parameter code PC	Parameter value PWH High byte	Parameter value PWL Low byte	Decimal place PWK

2.3.2 Control device to master:

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5
Status default	Actual value, current. Control sensor High byte	Actual value, current. Control sensor Low byte	Actual value, return / external High Byte	Actual value, return / external low byte

Byte 6	Byte 7	Byte 8	Byte 9	Byte 10	Byte 11
Flow rate High byte	Flow rate Low byte	Print High byte	Print Low byte	Power Low byte	Power Low byte

Byte 12	Byte 13	Byte 14	Byte 15	Byte 16	Byte 17
Film temperature High Byte	Film temperature Low Byte	Output level	Alarms 1	Alarms 2	Read status

Byte 18	Byte 19	Byte 20	Byte 21	Byte 22	Byte 23	Byte 24	Byte 25
Sequence number	always: 0x01	Command code BC	always: 0x00	Parameter code PC	Parameter value PWH High-Byte	Parameter value PWL Low byte	Decimal place PWK

2.4 Process Image (Extended)

as of software version 29/19

2.4.1 Actual value specification

The actual temperature value required for control can be specified via the Profibus.

Transmission of process data SC, extended:

From master to controller: transmission of setpoint, control word, recipe selection and actual value

Byte 1		Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
Set point High byte		Set point Low byte	Control word	Actual value via Profibus High Byte	Actual value via Profibus Low Byte	Reserved	Reserved

Setpoint: The parameter value consists of two data bytes:

Example: Dec. Hex. High-Byte Low-Byte

Setpoint : 230 00E6 00 E6

Corresponds e.g. to 230°C or 230°F or 23.0°C depending on parameter "CF" (see parameter list of the controller).

Control word: 129 81 81 Device On, actual value via

Profibus

Actual value (°C): 110 006E 00 6E

The numerical value is treated as shown in the display.

110-> 11.0 with decimal point

110-> 110 without comma

Tax Word,	Bit 0: Device "on" / "off"	1 = on
Byte 3:	Bit 1: Device "cool down" and "off"	1 = on
	Bit 2: Sensor internal / external	0 = internal / 1 = external
	Bit 3: Leakage stop operation	1 = on
	Bit 4: Mold emptying	1 = on
	Bit 5: Setback setpoint (2nd setpoint)	1 = on
	Bit 6: Optimization	1 = on
	Bit 7: Actual value via Profibus	1 = on / 0 = actual value selection acc. to bit 2

Via the control word (byte 3) the parameter "external sensor" is selected as follows:

Sensor internal / external Bit 2 =	Actual value via Profibus Bit 7 =	Parameters external sensor
0	0	Off: Control on int. sensor
1	0	On: Control to ext. sensor
0	1	Sensor Profibus: Actual value from byte 4 and 5 is used for the control.
1	1	

If "Sensor Profibus" is selected as actual value, the system automatically switches to the internal actual value in the following cases.

1. The transmitted value is outside the measuring range. (-30°C / 400°C)
2. The Profibus connection is disturbed.



3. Remote operation is not activated.

2.4.2 Actual value output

The following actual temperature values can be output via the Profibus and via the analog output, depending on the preselection.

The preselection is made by means of the parameter "Actual value output / Profibus" in the menu

"Device control". Options:

"Current control sensor" → The current actual control value (either internal or external sensor) is output via the Profibus and analog output.

"External sensor" → The value of the external sensor is output via the Profibus and analog output. If the external sensor is in sensor break, the value of the internal sensor is automatically output.

"Internal sensor" → The internal actual value is output via Profibus and analog output.

Transmission of process data SC, extended: From the control device to the master:

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5
Status default	Actual value, current. Control sensor High byte	Actual value, current. Control sensor Low byte	Actual value, return / external High Byte	Actual value, return / external low byte

Byte 6	Byte 7	Byte 8	Byte 9	Byte 10	Byte 11
Flow rate High byte	Flow rate Low byte	Print High byte	Print Low byte	Power Low byte	Power Low byte

Byte 12	Byte 13	Byte 14	Byte 15	Byte 16	Byte 17
Film temperature High Byte	Film temperature Low Byte	Output level	Alarms 1	Alarms 2	Read status

Byte 18	Byte 19	Byte 20	Byte 21	Byte 22	Byte 23
Reserve 1	Reserve2	Reserve 3	Reserve 4	Reserve 5	Reserve 6

Definition "Status default": indicates whether a range error has occurred when writing the setpoint or actual value.

Bit 0 = 0 → Setpoint specification OK. Bit 0

= 1 → Setpoint specification faulty

Reserve: not used at the moment.

2.5 Process image (extended) and configuration channel

as of software version 29/19

Process image and configuration channel can also be transmitted simultaneously. For this purpose, the bytes of the configuration channel are appended to those of the process image.

Master to controller:

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
Set point High byte	Set point Low byte	Control word	Actual value via Profibus High Byte	Actual value via Profibus Low Byte	Reserved	Reserved

Byte 6	Byte 5	Byte 6	Byte 7	Byte 8	Byte 9	Byte 10	Byte 11
Sequence number	always: 0x01	Command code BC	always: 0x00	Parameter code PC	Parameter value PWH High byte	Parameter value PWL Low byte	Decimal place PWK

Control device to master:

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5
Status default	Actual value, current. Control sensor High byte	Actual value, current. Control sensor Low byte	Actual value, return / external High Byte	Actual value, return / external low byte

Byte 6	Byte 7	Byte 8	Byte 9	Byte 10	Byte 11
Flow rate High byte	Flow rate Low byte	Print High byte	Print Low byte	Power Low byte	Power Low byte

Byte 12	Byte 13	Byte 14	Byte 15	Byte 16	Byte 17
Film temperature High Byte	Film temperature Low Byte	Output level	Alarms 1	Alarms 2	Read status

Byte 18	Byte 19	Byte 20	Byte 21	Byte 22	Byte 23
Reserve 1	Reserve2	Reserve 3	Reserve 4	Reserve 5	Reserve 6

Byte 24	Byte 25	Byte 26	Byte 27	Byte 28	Byte 29	Byte 30	Byte 31
Sequence number	always: 0x01	Command code BC	always: 0x00	Parameter code PC	Parameter value PWH High-Byte	Parameter value PWL Low byte	Decimal place PWK

3 Connection example

3.1 Profibus connection

