

# SIEMENS



## N 605D41

**Thermal drive actuator 6 x AC 24...230 V**

**Application program description**

## Supplementary information

### Purpose of the application program description

The application program description contains detailed information on the parameters and communication objects of the ETS application program as well as a description of the functions that can be set via the different parameters.

### Target audience of the application program description

The application program description is intended for people who have attended an ETS course and want to commission or reconfigure the N 605D41 product.

### Product documentation and support

#### Product documentation

Documents related the product, such as operating and installation instructions, application program description, product database, additional software and CE declarations can be downloaded from the following website:

<http://www.siemens.com/gamma-td>



#### Frequently asked questions

For frequently asked questions about the product and their solutions, see:

<https://support.industry.siemens.com/cs/products?dtp=FAQ&mf=ps&lc=en-WW>



#### Support

Contact details for additional questions relating to the product:

Tel.: +49 89 9221-8000

<http://www.siemens.com/supportrequest>



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# 1 Information on the thermal drive actuator and on the application program

**Product family:** Heating, Air conditioning, Ventilation

**Product type:** Heater

**Manufacturer:** Siemens

Type	Order number	Application program
Thermal drive actuator N 605D41	5WG1605-1DB41	07 B0 A6 Thermal Drive Actuator 6-fold 9A1903

## 2 Functional description

### 2.1 Functions of the thermal drive actuator

Application program "07 B0 A6 Thermal Drive Actuator 6-fold 9A1903" can be used for the corresponding KNX device described in the section "Information on the thermal drive actuator and on the application program [→ 5]." This is briefly described below.

Application program "" can be used for the corresponding KNX device described in the section "Information on the thermal drive actuator and on the application program." This is briefly described below.

The thermal drive actuator N 605D41 is a KNX device with 6 semiconductor output channels and is installed as a rail-mounted device for heating and cooling applications in distributions. The bus is connected via a bus terminal block; the power supply for the device electronics uses the bus voltage.

The thermal drive actuator is a KNX device with 2 semiconductor output channels and is installed into automation module box AP 118 or automation module box AP 641 as a rail-mounted device for heating and cooling applications in distributions. The bus is connected via a bus terminal block; the power supply for the device electronics uses the bus voltage.

The device has the characteristics described in the following:

#### Control of electro-thermal actuators

The core functions of the thermal drive actuator is to control electro-thermal drive actuators for water-based heating and cooling systems. The actuator comes with 6 separate channels or semiconductor outputs. These channels/outputs can be used to silently control several AC 230 V or AC 24 V actuators according to their power consumption. The actuator controls both de-energized closed and de-energized open actuators.

The thermal drive actuator receives control value telegrams for heating and cooling from a room temperature controller in 1-bit (2-point controller control) or 1-byte (PI controller control) format. Depending on the format of the incoming control value telegram, the actuator controls the valve outputs directly by switching or it converts the continuous control value into a switching signal via pulse width modulation or via limit value evaluation.

The incoming control values can be monitored individually with an individually adjustable monitoring time for each actuator channel. If no control value is received, the affected channel goes into emergency mode. For this emergency mode, individual control value can be configured for summer or winter time.

If the actuator converts continuous control values into a pulse width modulated signal, control value limitations can be specified for this. For basic temperature control or to increase the valve service life, a maximum and minimum control value can be set. Specific valve characteristics can also be taken into account, e.g. that the valve should always be closed or always open above certain thresholds.

#### Safety functions, service und maintenance (overrides)

The thermal drive actuator offers up to 6 override blocks per channel for specific applications. These can be used to configure settings for lock function, forced control, forced position, service mode and user-defined settings. Their effectiveness can be individually set according to priorities.

Certain situations, for example, require safety functions with a lock or a defined forced behavior for the valve outputs. For maintenance or installation, a service mode must take effect that locks certain valve positions against incoming control value commands from the room temperature controller.

### Valve flushing

If the thermal actuators are not controlled for a longer period of time, they may calcify or get stuck. The "Valve flushing" function can prevent this by causing the actuated valves to pass through the valve stroke for a configurable duration. This valve flushing can be started manually or take place at predetermined cycle times (= time intervals). Within automatic valve flushing, automatic demand-driven flushing is also possible. This flushing is only started if the effect control value and therefore the desired valve hub are within a threshold range.

## Counting of operating hours and switching cycles

An operating hours counter can record the operating hours in hours or seconds at the valve output using various evaluation methods.

On the one hand, the times can be counted during the individual switch-on processes when electrical voltage is present at the output, or the complete time for heating and/or cooling can be recorded when the control value exceeds an adjustable threshold value. In addition to the current operating hours counter readings, exceedances of an adjustable threshold value can also be sent via the bus.

Counting of switching cycles records the switching operations on the valve output. If an adjustable threshold value is exceeded, a message is sent via the bus.

## Error messages

The thermal drive actuator detects a failure of the shared valve supply voltage and indicates the failure via simultaneous flashing (1 Hz) of all error 6 LEDs on the front of the device. This failure can also be reported via the bus.

In addition, each channel or a channel group of the thermal drive actuator detects an overload or a short circuit. To do so, a diagnostic routine is executed, which works group by group for the channel outputs A/B/C or D/E/F.

If a short circuit or an overload is detected, the respective channel outputs are disabled to protect the device against damage.

In the event of a total current overflow of a group of channel outputs, the error LEDs of the affected channel group (A/B/C or D/E/F) on the front of the device light up continuously. This overload is also reported via the bus.

In the event of an overload/short circuit fault on an individual channel output, the affected fault LED of the individual channel on the front of the device flashes (10 Hz), while the overload/short circuit fault is reported to the respective channel via the bus at the same time.

## Room temperature control

The thermal drive actuator contains up to 6 internal room temperature controllers as appropriate for the number of valve outputs. These can be used externally or internally assigned directly to the valve outputs. The various control values of the controller are transferred directly to the control value inputs of the valve outputs without external bus communication. Only a single KNX bus device is used for valve control for single room temperature control.

The valve outputs can also receive their control values via communication objects from external room temperature controllers, such as those integrated into sensors or room control units.

In addition, the room temperature controllers can be used as separate, independent function blocks in a KNX system. In this case, the various control values are linked via communication objects to external thermal drive actuators, motor actuators or fan coil actuators that do not include a controller function.

The room temperature controllers are designed for various types of system. They are used for heating, cooling or heating and cooling. A two-point controller or a continuous PI controller can be selected for the control behavior. Depending on the control behavior that has been configured, switching or continuous control values are available for transfer to the valve output.

Different room operating modes can be switched using the corresponding display and operating units or sensors. The setpoint can be specified as absolute values for all operating modes in heating and/or cooling mode or by using a central basic setpoint with a setpoint shift in the individual operating modes in heating and/or cooling mode.

The powerful calculation module can be used to weight up to 12 actual room temperature values per channel at the same time. The result is internally made available directly to the room temperature controllers.



## Power saving functions for a primary system

The thermal drive actuator makes it possible to use cross-device power saving functions for a primary system.

For heating and cooling requirement requests, the assigned control values of the valve outputs are evaluated. Based on the result, relevant switching inputs to burner and boiler controls are switched according to demand via a KNX switching actuator.

Determining the largest control value of all assigned valve outputs in the device also contributes to energy efficiency in buildings. External devices from the entire KNX installation can also be taken into account. The calculator module can be used to evaluate up to 12 valve outputs with regard to their maximum value and to send the result as a 1-byte control value directly to a primary system with integrated KNX interface. The flow temperature can thus be adjusted to the demand from the rooms.

Pump control also contributes to making the building energy efficient by providing two controls or input channels for circulating pumps. These can be used separately for a heating cycle and a cooling cycle. This also evaluates the assigned control value of the valve outputs. According to the result, the pump is switched on demand via a KNX switching actuator if the control values have been exceeded to a sufficient extent. In addition, separate fixed position protection for each pump control channel prevents the pumps from jamming if the pumps have not been switched for an extended period of time.

## Logic operations

The thermal drive actuator has 6 independent logic blocks with which different mathematical operations are possible: AND, OR, XOR, TRIGGER, LOCK.

The inputs can be linked internally in the device with the status output of the valve control values of a channel or with any KNX communication objects, including external devices. The logic result is sent via a KNX communication object. The data types of the logic inputs and outputs can be selected freely.

## Functional design of the thermal drive actuator

The following figure “Functional design of the thermal drive actuator [→ 9]” illustrates the interactions between the functions of thermal drive actuator:

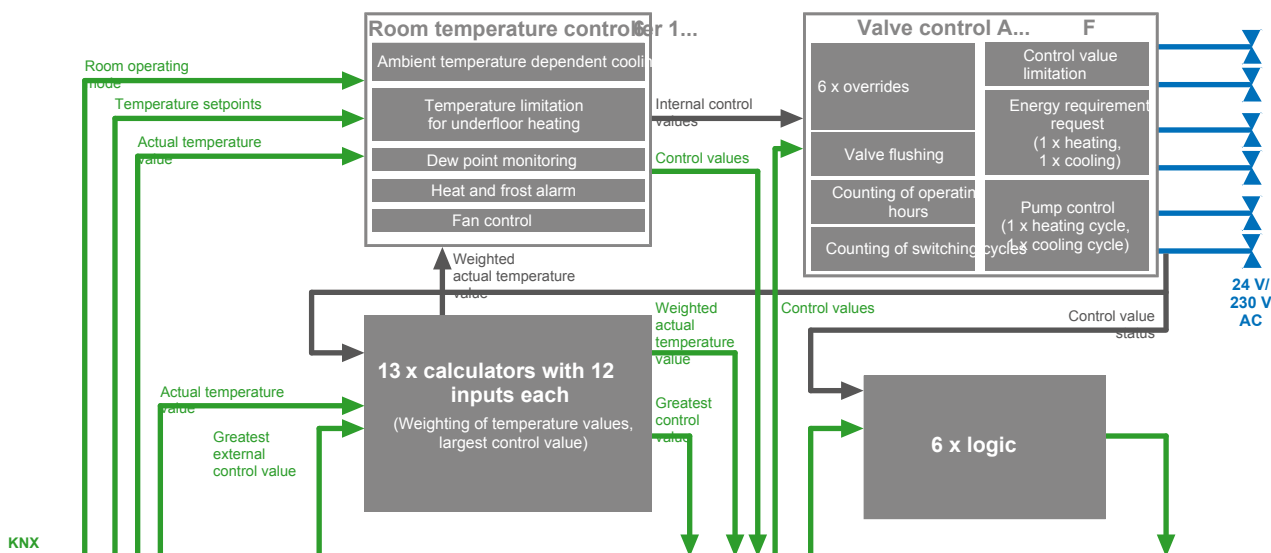


Fig. 1: Functional design of the thermal drive actuator

### See also

- 📖 Information on the thermal drive actuator and on the application program [→ 5]
- 📖 Device errors [→ 44]
- 📖 Configuring the thermal drive [→ 57]

- 📄 [Temperature control \[→ 168\]](#)
- 📄 [Energy requirement request \[→ 253\]](#)
- 📄 [Pump control \[→ 260\]](#)
- 📄 [Calculator \[→ 268\]](#)
- 📄 [Logic operations \[→ 299\]](#)

## 2.2 Operating and display elements and connections

### 2.2.1 Operating and display elements

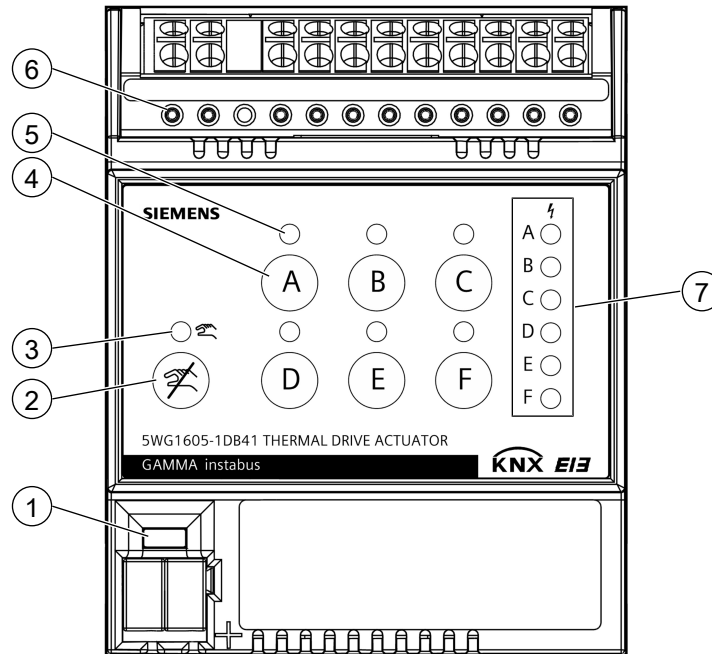


Fig. 2: Operating and display elements Thermal Drive Actuator N 605D41, 6 x AC 24...230 V

Pos.	Operating or display element	Function
1	Programming LED (red), Programming button	<p>Short push of button (&lt;2 s):</p> <ul style="list-style-type: none"> <li>• Activate programming mode, display status (LED on = active).</li> </ul> <p>Very long push of button (&gt; 20 s):</p> <ul style="list-style-type: none"> <li>• Reset to factory settings (after 20 s, the LED starts flashing for about 8 s).</li> </ul>
2	Button: Deactivate direct operation	<p>Short push of button:</p> <ul style="list-style-type: none"> <li>• Deactivate direct operation for all channels.</li> </ul> <p>Hold down the button and briefly press the "Open/close valve" button of a channel (4):</p> <ul style="list-style-type: none"> <li>• Deactivate the direct operation of the respective channel.</li> </ul>
3	Status LED of direct operation (yellow)	LED flashes if direct operation is active for at least one channel.

Pos.	Operating or display element	Function
4	Button: Open/close valve of a channel	<p>Short push of button (&lt; 5 s):</p> <ul style="list-style-type: none"> <li>• Open/close valve</li> <li>• Activate direct operation for the channel.</li> </ul> <p>The "Open" or "Close" function is executed according to the configuration of the valve control direction. In the factory settings, the setting "Valve in de-energized state: Closed" is active.</p> <p>Long push of the button of channel A, B or C (&gt; 5 s):</p> <ul style="list-style-type: none"> <li>• Start diagnostic routine for error detection for channel group A/B/C.</li> </ul> <p>Long push of the button of channel D, E or F (&gt; 5 s):</p> <ul style="list-style-type: none"> <li>• Start diagnostic routine for error detection for channel group D/E/F.</li> </ul>
5	Status LED of a channel (red)	<p>Indicates the status of the respective channel.</p> <p>Bus operation:</p> <ul style="list-style-type: none"> <li>• 2-point controller/2-point operation: <ul style="list-style-type: none"> <li>– LED ON: Valve is opened under consideration of the valve control direction.</li> <li>– LED OFF: Valve is closed under consideration of the valve control direction.</li> </ul> </li> <li>• PWM mode: <ul style="list-style-type: none"> <li>– LED ON: Control value 100%, valve is opened under consideration of the valve control direction.</li> <li>– LED OFF: Control value 0%, valve is closed under consideration of the valve control direction.</li> <li>– The LED flashes asymmetrically for a period of approx. 5 sec. and thus maps the control value.</li> </ul> </li> </ul> <p>Example:</p> <p>LED 0.5 s ON, 4.5 s OFF: Control value 10 %  LED 2.0 s ON, 3.0 s OFF: Control value 40 %  LED 3.5 s ON, 1.5 s OFF: Control value 70 %  LED 4.5 s ON, 0.5 s OFF: Control value 90 %</p> <p>Direct operation:</p> <ul style="list-style-type: none"> <li>• LED flashes alternately with the status LED for direct operation: Valve is opened under consideration of the valve control direction.</li> <li>• LED flashes simultaneously to the status LED for direct operation: Valve is closed under consideration of the valve control direction.</li> </ul>
6	Test contacts	Metering point for voltage testing
7	Error LEDs	Indicate the error detection status (Error display on the device [→ 45]).

**See also**

- 📖 Error display on the device [→ 45]
- 📖 Setting the valve control direction [→ 59]
- 📖 Direct operation [→ 161]

## 2.2.2 Connections

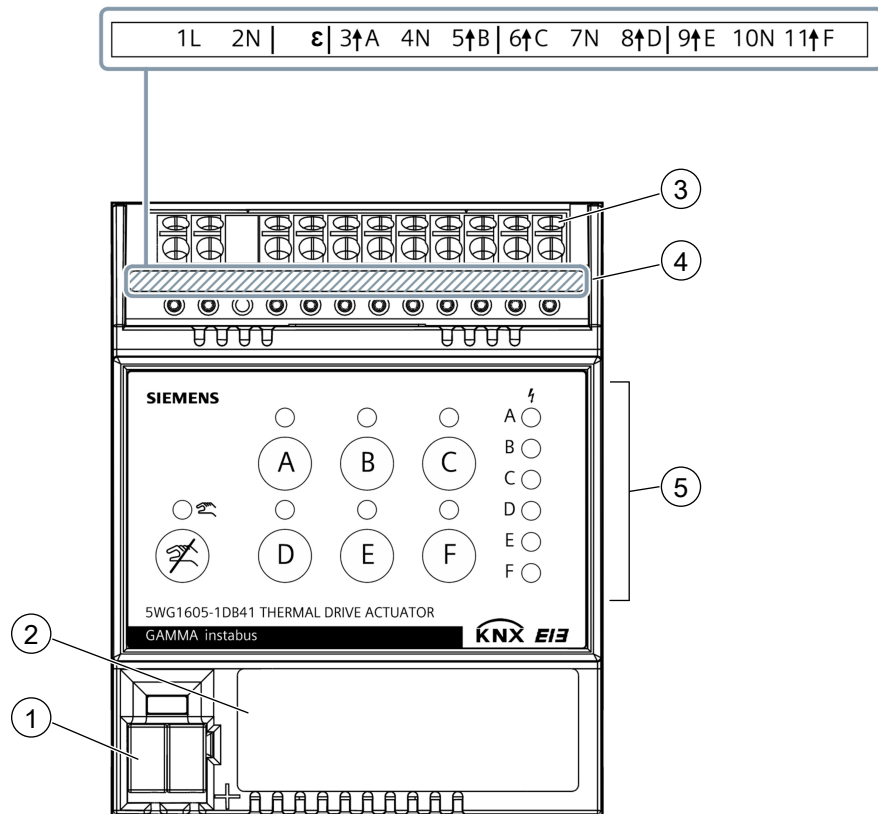


Fig. 3: Position and function of the connections and labeling, Thermal Drive Actuator N 605D41, 6 x AC 24...230 V

Pos.	Element	Function
1	Connection pins for KNX bus terminal block, screwless	Connect the KNX bus.
2	Label field	Enter the physical address.
3	Connection terminals	Connect input and loads.
4	Labeling of the control outputs	
5	Membrane keypad with LEDs	Execute direct operation. Open and close valve. Display status, diagnostic routine and error messages.

### See also

- 📖 Error display on the device [→ 45]
- 📖 Direct operation [→ 161]

## 2.3 Factory settings

In the factory settings, the functions control value transfer for a "switching control value (1 bit)" and a "continuous control value (8 bit)" are assigned to the building site function for all channels (outputs). Direct operation is enabled.

### See also

- 📄 Resetting the device to factory settings [→ 36]

## 2.4 Building site function

In the factory settings, the building site function enables transfer for a "switching control value (1 bit)" and a "continuous control value (8 bit)" for controlling the thermal actuators via a corresponding bus pushbutton, even if these devices are yet to be commissioned via the Engineering Tool Software (ETS).

## 2.5 Programming mode

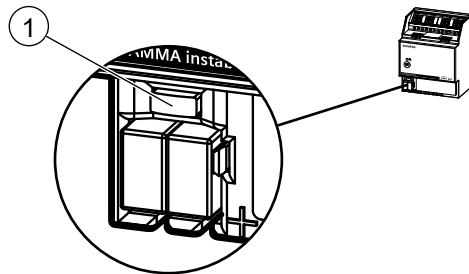


Fig. 4: Programming button and programming LED (exemplary illustration)



After bus voltage recovery, wait several seconds before pushing the programming (1) button (not before booting is complete).

### Activate programming mode

- ◆ Briefly press the programming button (1) (< 2 seconds).
- ⇒ Programming mode is activated.
- ⇒ The programming LED (1) illuminates continuously.

### Deactivating programming mode

- ▷ Programming mode is activated. The programming LED (1) illuminates continuously.
- ◆ Briefly press the programming button (1) (< 2 seconds).
- ⇒ Programming mode is deactivated.
- ⇒ The programming LED (1) is not illuminated.

## 2.6 Behavior on unloading the application program

After unloading the application program with the ETS, the unloaded device has no functions.

## 2.7 Behavior on voltage failure/recovery

The electronics of the device are bus powered. Therefore, a mains voltage failure only leads to a functional failure of the device if the bus voltage also fails as a result of the mains voltage failure.

In the event of a bus voltage failure, the current status and other values for each channel are saved permanently so that they can be restored when the bus voltage is recovered.

When bus voltage is recovered, the configured actions for each channel are executed and, depending on the parameters set, new statuses are reported.

For each active override, a starting behavior on bus voltage recovery can be configured (Off, On, Deactivated, Last value).

## 3 Communication objects

The application program is loaded in the device ex works.

The device is configured and commissioned with Engineering Tool Software (ETS) version ETS 5 or higher.

With the help of the ETS the specific parameters and addresses can be assigned.

The objects and corresponding parameter settings are described with the functions.

The following lists show all communication objects of the device for one channel. The communication objects are identical for every channel with the only difference being the number.



The number and designation of the communication objects displayed in the ETS menu can vary as they depend on the parameter settings. Numbers missing in this table are not assigned.

Maximum number of group addresses: 2000

Maximum number of group assignments: 2000

### 3.1 Cross-channel communication objects

#### Status device function and Send status values

No.	Object name	Function	Datapoint type	Flags
1	Status device function	Ok/Defect	1.005 alarm	CRT
2	Send status values	request	1.017 trigger	CW

#### Communication objects for configuring summer/winter mode

No.	Object name	Function	Datapoint type	Flags
3	Operation mode	Summer/winter	1.002 boolean	CW
4	Summer/winter mode status	Summer/winter	1.002 boolean	CRT

#### Communication objects for errors and for the diagnostic run

No.	Object name	Function	Datapoint type	Flags
5	Start diagnostic run channels A/B/C	trigger	1.017 trigger	CW
6	Start diagnostic run channels D/E/F	trigger	1.017 trigger	CW
7	Diagnostic run status of channels A/B/C	On/Off	1.001 switch	CRT
8	Diagnostic run status of channels D/E/F	On/Off	1.001 switch	CRT
9	Status failure no voltage	1 = Failure	1.002 boolean	CRT
10	Overload error status of channels A/B/C	1 = Failure	1.002 boolean	CRT



No.	Object name	Function	Datapoint type	Flags
11	Overload error status of channels D/E/F	1 = Failure	1.002 boolean	CRT



Communication object "A Status failure short circuit/overload" (No. 74) is shown for each channel and listed under "Communication objects of the individual channels [→ 17]."

## 3.2 Communication objects of the individual channels

The following table shows all communication objects of the device for one channel.

No./channel	Object name	Function	Datapoint type	Flags
A*				
22	A Control value	On/Off	1.001 switch	CW
24	A Control value	8-bit value	5.001 percentage (0..100%)	CW
25	A Status switching	On/Off	1.001 switch	CRT
26	A Status control value (1 bit)	On/Off	1.001 switch	CRT
28	A Status control value (8 bit)	0...100 %	5.001 percentage (0..100%)	CRT
29	A Control value failure	1 = Failure	1.005 alarm	CRT
30	A Control value limitation	On/Off	1.001 switch	CWTU
31	A Status control value limitation	On/Off	1.011 state	CRT
34	A Start/Stop decalcification	Start/Stop	1.010 start/stop	CW
35	A Status decalcification	Active/inactive	1.011 state	CRT
38	A Override 1, Forced position A Override 1, Lock A Override 1, service mode A Override 1, User-defined Control	On/Off	1.003 enable	CW
39	A Override 1, Forced Control	On/Off	2.001 switch control	CW

No./ channel	Object name	Function	Datapoint type	Flags
<b>A*</b>				
40	A Override 1, Forced position, Control A Override 1, Lock, Control A Override 1, User-defined Control, Control Value	Value	5.001 percentage (0..100%) 5.010 counter pulses (0..255) 7.* 2-byte unsigned value 8.* 2-byte signed value 9.001 temperature (°C) 9.004 lux (Lux) 9.005 speed (m/s) 9.021 current (mA) 9.024 power (kW) 9.028 wind speed (km/h) 9.* 2-byte float value 12.* 4-byte unsigned value 13.* 4-byte signed value 14.056 power (W) 14.* 4-byte float value	CW
41	A Override 1, Forced position, Status A Override 1, Forced Control, Status A Override 1, Lock, Status A Override 1, service mode, status A Override 1, User-defined Control, Status	On/Off	1.002 boolean	CRT
42	A Override 2, Forced position A Override 2, Lock A Override 2, service mode A Override 2, User-defined Control	On/Off	1.003 enable	CW
43	A Override 2, Forced Control	On/Off	2.001 switch control	CW

No./channel	Object name	Function	Datapoint type	Flags
<b>A*</b>				
44	A Override 2, Forced position, Control A Override 2, Lock, Control A Override 2, User-defined Control, Control Value	Value	5.001 percentage (0..100%) 5.010 counter pulses (0..255) 7.* 2-byte unsigned value 8.* 2-byte signed value 9.001 temperature (°C) 9.004 lux (Lux) 9.005 speed (m/s) 9.021 current (mA) 9.024 power (kW) 9.028 wind speed (km/h) 9.* 2-byte float value 12.* 4-byte unsigned value 13.* 4-byte signed value 14.056 power (W) 14.* 4-byte float value	CW
45	A Override 2, Forced position, Status A Override 2, Forced Control, Status A Override 2, Lock, Status A Override 2, service mode, status A Override 2, User-defined Control, Status	On/Off	1.002 boolean	CRT
46	A Override 3, Forced position A Override 3, Lock A Override 3, service mode A Override 3, User-defined Control	On/Off	1.003 enable	CW
47	A Override 3, Forced Control	On/Off	2.001 switch control	CW

No./ channel	Object name	Function	Datapoint type	Flags
<b>A*</b>				
48	A Override 3, Forced position, Control A Override 3, Lock, Control A Override 3, User-defined Control, Control Value	Value	5.001 percentage (0..100%) 5.010 counter pulses (0..255) 7.* 2-byte unsigned value 8.* 2-byte signed value 9.001 temperature (°C) 9.004 lux (Lux) 9.005 speed (m/s) 9.021 current (mA) 9.024 power (kW) 9.028 wind speed (km/h) 9.* 2-byte float value 12.* 4-byte unsigned value 13.* 4-byte signed value 14.056 power (W) 14.* 4-byte float value	CW
49	A Override 3, Forced position, Status A Override 3, Forced Control, Status A Override 3, Lock, Status A Override 3, service mode, status A Override 3, User-defined Control, Status	On/Off	1.002 boolean	CRT
50	A Override 4, Forced position A Override 4, Lock A Override 4, service mode A Override 4, User-defined Control	On/Off	1.003 enable	CW
51	A Override 4, Forced Control	On/Off	2.001 switch control	CW

No./channel	Object name	Function	Datapoint type	Flags
<b>A*</b>				
52	A Override 4, Forced position, Control A Override 4, Lock, Control A Override 4, User-defined Control, Control Value	Value	5.001 percentage (0..100%) 5.010 counter pulses (0..255) 7.* 2-byte unsigned value 8.* 2-byte signed value 9.001 temperature (°C) 9.004 lux (Lux) 9.005 speed (m/s) 9.021 current (mA) 9.024 power (kW) 9.028 wind speed (km/h) 9.* 2-byte float value 12.* 4-byte unsigned value 13.* 4-byte signed value 14.056 power (W) 14.* 4-byte float value	CW
53	A Override 4, Forced position, Status A Override 4, Forced Control, Status A Override 4, Lock, Status A Override 4, service mode, status A Override 4, User-defined Control, Status	On/Off	1.002 boolean	CRT
54	A Override 5, Forced position A Override 5, Lock A Override 5, service mode A Override 5, User-defined Control	On/Off	1.003 enable	CW
55	A Override 5, Forced Control	On/Off	2.001 switch control	CW

No./ channel	Object name	Function	Datapoint type	Flags
<b>A*</b>				
56	A Override 5, Forced position, Control A Override 5, Lock, Control A Override 5, User-defined Control, Control Value	Value	5.001 percentage (0..100%) 5.010 counter pulses (0..255) 7.* 2-byte unsigned value 8.* 2-byte signed value 9.001 temperature (°C) 9.004 lux (Lux) 9.005 speed (m/s) 9.021 current (mA) 9.024 power (kW) 9.028 wind speed (km/h) 9.* 2-byte float value 12.* 4-byte unsigned value 13.* 4-byte signed value 14.056 power (W) 14.* 4-byte float value	CW
57	A Override 5, Forced position, Status A Override 5, Forced Control, Status A Override 5, Lock, Status A Override 5, service mode, status A Override 5, User-defined Control, Status	On/Off	1.002 boolean	CRT
58	A Override 6, Forced position A Override 6, Lock A Override 6, service mode A Override 6, User-defined Control	On/Off	1.003 enable	CW
59	A Override 6, Forced Control	On/Off	2.001 switch control	CW

No./channel	Object name	Function	Datapoint type	Flags
A*				
60	A Override 6, Forced position, Control A Override 6, Lock, Control A Override 6, User-defined Control, Control Value	Value	5.001 percentage (0..100%) 5.010 counter pulses (0..255) 7.* 2-byte unsigned value 8.* 2-byte signed value 9.001 temperature (°C) 9.004 lux (Lux) 9.005 speed (m/s) 9.021 current (mA) 9.024 power (kW) 9.028 wind speed (km/h) 9.* 2-byte float value 12.* 4-byte unsigned value 13.* 4-byte signed value 14.056 power (W) 14.* 4-byte float value	CW
61	A Override 6, Forced position, Status A Override 6, Forced Control, Status A Override 6, Lock, Status A Override 6, service mode, status A Override 6, User-defined Control, Status	On/Off	1.002 boolean	CRT
62	A Overrides status	1 = Active	1.002 boolean	CRT
63	A Operating hours	Value (in hours)	12.001 counter pulses (unsigned)	CRT
64	A Operating hours	Value (in seconds)	13.100 time lag (s)	CRT
65	A Operating hours	Set value (in hours)	12.001 counter pulses (unsigned)	CW
66	A Threshold for operating hours	Set/Request value (in hours)	12.001 counter pulses (unsigned)	CRW
67	A Exceedance of threshold for operating hours	On/Off	1.002 boolean	CRT
68	A Number of switching cycles	Value (in cycles)	12.001 counter pulses (unsigned)	CRT
69	A Number of switching cycles	Set value (in cycles)	12.001 counter pulses (unsigned)	CW
70	A Threshold for switching cycles	Set/Request value (in cycles)	12.001 counter pulses (unsigned)	CRW

No./ channel	Object name	Function	Datapoint type	Flags
A*				
71	A Exceedance of threshold for switching cycles	On/Off	1.002 boolean	CRT
72	A Status direct operation	On/Off	1.002 boolean	CRT
73	A Direct operation lock	On/Off	1.003 enable	CW
74	A Status failure short circuit/overload	1 = Failure	1.002 boolean	CRT

\* For each additional channel, add the value "53." Example: Channel A, no. 22 = channel B, no. 75 = channel C, no. 128.

### 3.3 Communication objects for temperature control

No.	Object name	Function	Datapoint type	Flags
1*				
340	Temperature control 1, controller	On/Off	1.001 switch	CW
341	Temperature control 1, controller status	On/Off	1.011 state	CRT
342	Temperature control 1, room mode (automatic operation)	1 ... 4	20.102 HVAC mode	CW
343	Temperature control 1, room mode (manual operation)	0 ... 4	20.102 HVAC mode	CW
344	Temperature control 1, room operating mode, automatic mode	On	1.001 switch	CW
345	Temperature control 1, room operating mode (manual operation), comfort mode	On	1.001 switch	CW
346	Temperature control 1, room operating mode (manual operation), pre-comfort mode	On	1.001 switch	CW
347	Temperature control 1, room operating mode (manual operation), power saving mode	On	1.001 switch	CW
348	Temperature control 1, room operating mode (manual operation), protection mode	On	1.001 switch	CW
349	Temperature control 1, status of room mode (manual operation)	0 ... 4	20.102 HVAC mode	CRT



No.	Object name	Function	Datapoint type	Flags
1*				
350	Temperature control 1, status of room operating mode, automatic mode	On/Off	1.011 state	CRT
351	Temperature control 1, status of room operating mode (manual operation), comfort mode	On/Off	1.011 state	CRT
352	Temperature control 1, status of room operating mode (manual operation), pre-comfort mode	On/Off	1.011 state	CRT
353	Temperature control 1, status of room operating mode (manual operation), power saving mode	On/Off	1.011 state	CRT
354	Temperature control 1, status of room operating mode (manual operation), protection mode	On/Off	1.011 state	CRT
355	Temperature control 1, room mode status	1 ... 4	20.102 HVAC mode	CRT
356	Temperature control 1, comfort extension	0 = Stop/1 = Start	1.010 start/stop	CW
357	Temperature control 1, comfort extension status	On/Off	1.011 state	CRT
358	Temperature control 1, permanent protective mode	On/Off	1.001 switch	CWTU
359	Temperature control 1, actual temperature value	°C value	9.001 temperature (°C)	CWTU
360	Temperature control 1, heat alarm	0 = No alarm/1 = Alarm	1.005 alarm	CRT
361	Temperature control 1, frost alarm	0 = No alarm/1 = Alarm	1.005 alarm	CRT
362	Temperature control 1, status error actual temperature value	1 = Failure	1.002 boolean	CRT
363	Temperature control 1, window contact status	0 = closed/1 = open	1.019 window/door	CRT
364	Temperature control 1, dew point alert	0 = No alarm/1 = Alarm	1.005 alarm	CWTU

No.	Object name	Function	Datapoint type	Flags
1*				
365	Temperature control 1, dew point alarm status	0 = No alarm/1 = Alarm	1.005 alarm	CRT
366	Temperature control 1, presence	On/Off	1.018 occupancy	CWTU
367	Temperature control 1, window 1	0 = closed/1 = open	1.019 window/door	CWTU
368	Temperature control 1, window 2	0 = closed/1 = open	1.019 window/door	CWTU
369	Temperature control 1, window 3	0 = closed/1 = open	1.019 window/door	CWTU
370	Temperature control 1, window 4	0 = closed/1 = open	1.019 window/door	CWTU
371	Temperature control 1, outside temperature	°C value	9.001 temperature (°C)	CW
372	Temperature control 1, status error ambient temperature	1 = Failure	1.002 boolean	CRT
373	Temperature control 1, controller mode	0 = cooling/1 = heating	1.100 cooling/heating	CWTU
374	Temperature control 1, basic setpoint	°C value	9.001 temperature (°C)	CW
375	Temperature control 1, setpoint offset	K value	9.002 temperature difference (K)	CW
376	Temperature control 1, heating setpoint, comfort mode	°C value	9.001 temperature (°C)	CW
377	Temperature control 1, heating setpoint, pre-comfort mode	°C value	9.001 temperature (°C)	CW
378	Temperature control 1, heating setpoint, power saving mode	°C value	9.001 temperature (°C)	CW
379	Temperature control 1, heating setpoint, protection mode	°C value	9.001 temperature (°C)	CW
380	Temperature control 1, heating setpoints (°C)	°C value	275.100 Temperature setpoint setting for 4 HVAC Modes	CRW
382	Temperature control 1, cooling setpoint, comfort mode	°C value	9.001 temperature (°C)	CW
383	Temperature control 1, cooling setpoint, pre-comfort mode	°C value	9.001 temperature (°C)	CW
384	Temperature control 1, cooling setpoint, power saving mode	°C value	9.001 temperature (°C)	CW

No.	Object name	Function	Datapoint type	Flags
1*				
385	Temperature control 1, cooling setpoint, protection mode	°C value	9.001 temperature (°C)	CW
386	Temperature control 1, cooling setpoint (°C)	°C value	275.100 Temperature setpoint setting for 4 HVAC Modes	CRW
388	Temperature control 1, status of current basic setpoint	°C value	9.001 temperature (°C)	CRT
389	Temperature control 1, setpoint offset status	K value	9.002 temperature difference (K)	CRT
390	Temperature control 1, status of current setpoint	°C value	9.001 temperature (°C)	CRT
391	Temperature control 1, status of effective cooling setpoint	°C value	9.001 temperature (°C)	CRT
392	Temperature control 1, status of effective heating setpoint	°C value	9.001 temperature (°C)	CRT
393	Temperature control 1, status of effective cooling setpoints	°C value	275.100 Temperature setpoint setting for 4 HVAC Modes	CRT
394	Temperature control 1, status of effective heating setpoints	°C value	275.100 Temperature setpoint setting for 4 HVAC Modes	CRT
395	Temperature control 1, temperature limitation heating mode, actual temperature value	°C value	9.001 temperature (°C)	CWTU
396	Temperature control 1, temperature limitation heating mode, status error actual temperature value	1 = Failure	1.002 boolean	CRT
397	Temperature control 1, temperature limitation in heating mode, status	On/Off	1.011 state	CRT
398	Temperature control 1, cooling, control value switching	On/Off	1.001 switch	CRT
399	Temperature control 1, cooling, control value switching (sequence 2)	On/Off	1.001 switch	CRT
400	Temperature control 1, heating/cooling, control value switching	On/Off	1.001 switch	CRT
401	Temperature control 1, heating/cooling, control value switching (sequence 2)	On/Off	1.001 switch	CRT

No.	Object name	Function	Datapoint type	Flags
1*				
402	Temperature control 1, cooling, control value steady	0...100 %	5.001 percentage (0..100%)	CRT
403	Temperature control 1, cooling, control value steady (sequence 2)	0...100 %	5.001 percentage (0..100%)	CRT
404	Temperature control 1, heating/cooling, control value steady	0...100 %	5.001 percentage (0..100%)	CRT
405	Temperature control 1, heating/cooling, control value steady (sequence 2) Temperature control 1, heating, control value steady (sequence 2)	0...100 %	5.001 percentage (0..100%)	CRT
406	Temperature control 1, ventilator mode	0 = automatic operation/1 = manual operation	1.003 enable	CW
407	Temperature control 1, ventilator speed (manual operation)	0...100 %	5.001 percentage (0..100%)	CW
408	Temperature control 1, ventilator level (manual operation)	0 ... 3	5.100 fan stage (0..255)	CW
409	Temperature control 1, ventilator mode status	0 = automatic operation/1 = manual operation	1.003 enable	CRT
410	Temperature control 1, ventilation, control value for manual operation	0...100 %	5.001 percentage (0..100%)	CRT
411	Temperature control 1, ventilation, current control value	0...100 %	5.001 percentage (0..100%)	CRT
412	Temperature control 1, controller mode status	0 = cooling/1 = heating	1.100 cooling/heating	CRT
413	Temperature control 1, collective status (RTSM)	8-bit status	21.107 combined status RTSM	CRT
414	Temperature control 1, collective status (RTC)	16-bit status	22.103 combined status RTC	CRT
415	Temperature control 1, controller status (Eberle)	8-bit status	-	CRT
416	Temperature control 1, controller status (RHCC)	16-bit status	22.101 RHCC status	CRT

No.	Object name	Function	Datapoint type	Flags
1*				
417	Temperature control 1, controller status (DPT_HVACContrMode)	8-bit status	20.105 HVAC control mode	CRT

\* For each additional temperature control, add the value "78." Example: Temperature control 1, no. 340 = temperature control 2, no. 418 = temperature control 3, no. 496.

### 3.4 Communication objects for the calculator

No.	Object name	Function	Datapoint type	Flags
1*				
808	Calculator 1, % value 1 Calculator 1, temperature value 1	% value °C value	5.001 percentage (0..100%) 9.001 temperature (°C)	CW
809	Calculator 1, % value 2 Calculator 1, temperature value 2	% value °C value	5.001 percentage (0..100%) 9.001 temperature (°C)	CW
810	Calculator 1, % value 3 Calculator 1, temperature value 3	% value °C value	5.001 percentage (0..100%) 9.001 temperature (°C)	CW
811	Calculator 1, % value 4 Calculator 1, temperature value 4	% value °C value	5.001 percentage (0..100%) 9.001 temperature (°C)	CW
812	Calculator 1, % value 5 Calculator 1, temperature value 5	% value °C value	5.001 percentage (0..100%) 9.001 temperature (°C)	CW
813	Calculator 1, % value 6 Calculator 1, temperature value 6	% value °C value	5.001 percentage (0..100%) 9.001 temperature (°C)	CW
814	Calculator 1, % value 7 Calculator 1, temperature value 7	% value °C value	5.001 percentage (0..100%) 9.001 temperature (°C)	CW
815	Calculator 1, % value 8 Calculator 1, temperature value 8	% value °C value	5.001 percentage (0..100%) 9.001 temperature (°C)	CW
816	Calculator 1, % value 9 Calculator 1, temperature value 9	% value °C value	5.001 percentage (0..100%) 9.001 temperature (°C)	CW
817	Calculator 1, % value 10 Calculator 1, temperature value 10	% value °C value	5.001 percentage (0..100%) 9.001 temperature (°C)	CW
818	Calculator 1, % value 11 Calculator 1, temperature value 11	% value °C value	5.001 percentage (0..100%) 9.001 temperature (°C)	CW

No.	Object name	Function	Datapoint type	Flags
1*				
819	Calculator 1, % value 12 Calculator 1, temperature value 12	% value °C value	5.001 percentage (0..100%) 9.001 temperature (°C)	CW
820	Calculator 1, %, result Calculator 1, temperature, result	% value °C value	5.001 percentage (0..100%) 9.001 temperature (°C)	CRT

\* For each additional calculator, add the value "13." Example: Calculator 1, no. 808 = calculator 2, no. 821.

### 3.5 Communication objects for logic operations

No.	Object name	Function	Datapoint type	Flags
1*				
977	Logic operation 1 input value Logic operation 1 lock input Logic operation 1 input value 1	Value	1.001 switch 5.001 percentage (0..100%) 5.010 counter pulses (0..255) 6.010 counter pulses (-128..127) 7.001 pulses 7.012 current (mA) 7.600 absolute colour temperature (K) 7.* 2-byte unsigned value 8.001 pulses difference 8.* 2-byte signed value 9.001 temperature (°C) 9.004 lux (Lux) 9.005 speed (m/s) 9.007 humidity (%) 9.008 parts/million (ppm) 9.021 current (mA) 9.024 power (kW) 9.026 rain amount (l/m <sup>2</sup> ) 9.027 temperature (°F) 9.028 wind speed (km/h) 9.* 2-byte float value 12.001 counter pulses (unsigned) 12.* 4-byte unsigned value 13.001 counter pulses (signed) 13.* 4-byte signed value 14.019 electric current (A) 14.031 energy (J) 14.056 power (W) 14.065 speed (m/s) 14.068 temperature (°C) 14.* 4-byte float value	CW

No.	Object name	Function	Datapoint type	Flags
1*				
978	Logic operation 1 input value 2 – 6	Value	1.001 switch	CW
979			5.001 percentage (0..100%)	
980			5.010 counter pulses (0..255)	
981			6.010 counter pulses (-128..127)	
982			7.001 pulses	
			7.012 current (mA)	
			7.600 absolute colour temperature (K)	
			7.* 2-byte unsigned value	
			8.001 pulses difference	
			8.* 2-byte signed value	
	9.001 temperature (°C)			
	9.004 lux (Lux)			
	9.005 speed (m/s)			
	9.007 humidity (%)			
	9.008 parts/million (ppm)			
	9.021 current (mA)			
	9.024 power (kW)			
	9.026 rain amount (l/m <sup>2</sup> )			
	9.027 temperature (°F)			
	9.028 wind speed (km/h)			
	9.* 2-byte float value			
	12.001 counter pulses (unsigned)			
	12.* 4-byte unsigned value			
	13.001 counter pulses (signed)			
	13.* 4-byte signed value			
	14.019 electric current (A)			
	14.031 energy (J)			
	14.056 power (W)			
	14.065 speed (m/s)			
	14.068 temperature (°C)			
	14.* 4-byte float value			



No.	Object name	Function	Datapoint type	Flags
1*				
983 990 997 1004 1011 1018	Logic operation 1 – 6 output value	Value	1.001 switch 5.001 percentage (0..100%) 5.010 counter pulses (0..255) 6.010 counter pulses (-128..127) 7.001 pulses 7.012 current (mA) 7.600 absolute colour temperature (K) 7.* 2-byte unsigned value 8.001 pulses difference 8.* 2-byte signed value 9.001 temperature (°C) 9.004 lux (Lux) 9.005 speed (m/s) 9.007 humidity (%) 9.008 parts/million (ppm) 9.021 current (mA) 9.024 power (kW) 9.026 rain amount (l/m <sup>2</sup> ) 9.027 temperature (°F) 9.028 wind speed (km/h) 9.* 2-byte float value 12.001 counter pulses (unsigned) 12.* 4-byte unsigned value 13.001 counter pulses (signed) 13.* 4-byte signed value 14.019 electric current (A) 14.031 energy (J) 14.056 power (W) 14.065 speed (m/s) 14.068 temperature (°C) 14.* 4-byte float value	CRT

No.	Object name	Function	Datapoint type	Flags
1*				
977	Logic operation 1 lock input	Value	1.001 switch 5.001 percentage (0..100%) 5.010 counter pulses (0..255) 6.010 counter pulses (-128..127) 7.001 pulses 7.012 current (mA) 7.600 absolute colour temperature (K) 7.* 2-byte unsigned value 8.001 pulses difference 8.* 2-byte signed value 9.001 temperature (°C) 9.004 lux (Lux) 9.005 speed (m/s) 9.007 humidity (%) 9.008 parts/million (ppm) 9.021 current (mA) 9.024 power (kW) 9.026 rain amount (l/m <sup>2</sup> ) 9.027 temperature (°F) 9.028 wind speed (km/h) 9.* 2-byte float value 12.001 counter pulses (unsigned) 12.* 4-byte unsigned value 13.001 counter pulses (signed) 13.* 4-byte signed value 14.019 electric current (A) 14.031 energy (J) 14.056 power (W) 14.065 speed (m/s) 14.068 temperature (°C) 14.* 4-byte float value	CW

\* For each additional logic operation, add the value "7." Example: Logic operation 1, no. 977 = logic operation 2, no. 984.

## 4 Overview of the user interface

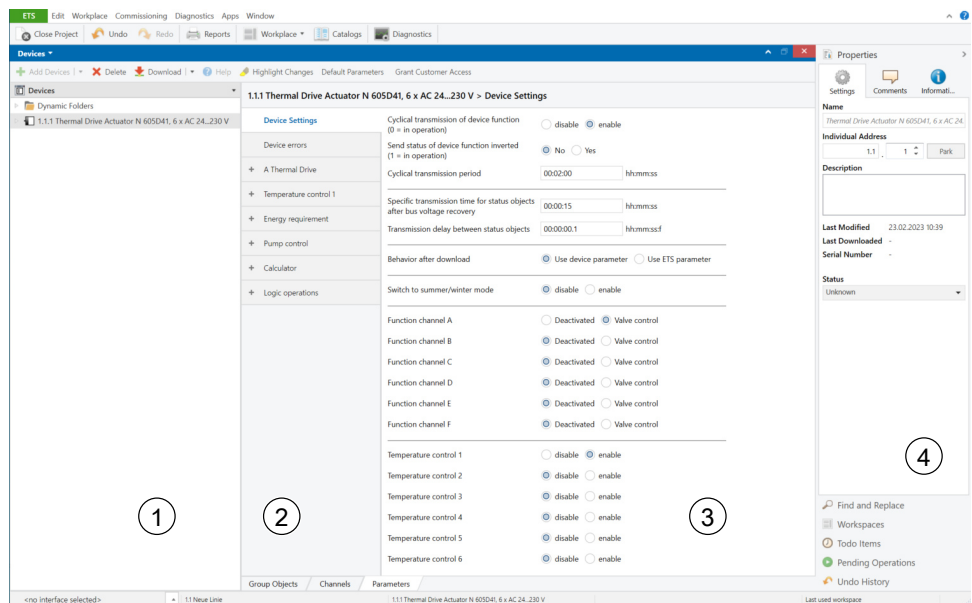


Fig. 5: User interface

- 1 Tree view of devices and channels
- 2 Listing of parameter cards. Depending on which parameters have been enabled or configured in the parameter area (3), additional parameter cards are displayed here.
- 3 Parameter area. In this area, parameters are set, enabled or disabled. With some parameters, after enable additional rows or additional parameter cards are displayed.
- 4 Properties area. This area displays the properties of the device.



You can use the 'Highlight changes' button in the ETS to highlight in yellow any parameters that do not have the default settings.

## 5 Resetting the device to factory settings

### NOTICE



#### Loss of data due to resetting device!

When you reset the device, all parameters and settings entered are deleted.

- Ensure that the device is really supposed to be reset.

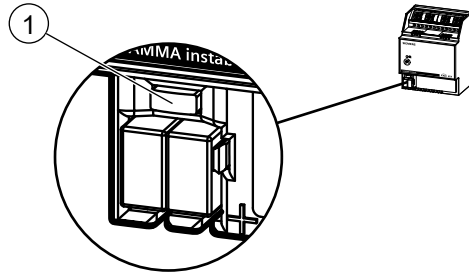


Fig. 6: Programming button and programming LED (exemplary illustration)

- ◆ Press the programming button (1) (at least 20 seconds) until the programming LED (1) starts flashing quickly.
- ⇒ The programming (1) LED flashes for 8 seconds.
- ⇒ The device has been reset to factory settings. All parameter settings have been deleted. The building site function from the factory settings is re-activated.

## 6 Device settings

In this parameter window, the cross-function and cross-channel definitions are made.

This includes monitoring the device function, the sending behavior of the status objects after voltage recovery and the behavior after an ETS download.

In order to set different control value defaults in an emergency mode or in case of certain overrides in the summer and winter cycle, a switchover between summer and winter operation can be activated in the actuator.

You can specify which channels are to be activated or deactivated for valve control.

Up to 6 room temperature controllers can be enabled.

### 6.1 Parameters on the "Device settings" parameter card

Cyclical transmission of device function (0 = in operation)

Parameter	Settings
Cyclical transmission of device function (0 = in operation)	disable enable

#### Function:

This parameter is used to disable or enable the cyclic sending of the device function.

If the device is functioning properly, the value "0" is transmitted cyclically.

If the device no longer transmits cyclically, this indicates a device failure. A higher-level system can monitor the cyclic sending and trigger a warning or alarm message if the status message is not transmitted.

#### Note:

Sending first takes place after the time configured in the "Cyclical transmission period" parameter.

#### Other parameters:

If the parameter is set to "enable" the following parameters appear:

- "Send status of device function inverted"
- "Cyclical transmission period"

#### More information:

- "Status device function" communication object [→ 42]
- "Send inverted status for device function" parameter [→ 37]
- "Cyclical sending period" parameter [→ 38]

Send status of device function inverted (1 = in operation)

Parameter	Settings
Send status of device function inverted (1 = in operation)	No Yes

#### Function:

This parameter can be used to transmit the status of the device function in inverted form. In this case the value "1" is transmitted cyclically when the device is functioning properly.

#### Availability:

The "Send status of device function inverted (1 = in operation)" parameter is displayed if the following parameters have been configured:

- Parameter "Cyclical transmission of device function (0 = in operation)" on the "device settings" parameter card
  - Setting: "enable"

#### More information:

**Cyclical transmission period**

"Cyclical sending of device function (0 = in operation)" parameter [→ 37]

Parameter	Settings
Cyclical transmission period (hh:mm:ss)	00:00:01 ... 18:12:15

**Function:**

This parameter can be used to select the time interval for cyclic sending of the device function status.

**Note:**

The device status is also sent for the first time after bus voltage failure and bus voltage recovery after the time set here.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Cyclical transmission of device function (0 = in operation)" on the "device settings" parameter card
  - Setting: "enable"

**More information:**

- "Cyclical sending of device function (0 = in operation)" parameter [→ 37]

**Specific transmission time for status objects after bus voltage recovery**

Parameter	Settings
Specific transmission time for status objects after bus voltage recovery (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter is used to ensure that no unnecessary bus load is generated by status telegrams immediately after bus voltage recovery and after a re-start of the device.

The time of sending after bus voltage recovery must be set high enough that other KNX devices that have to receive and process the status have also already completed their initialization.

The time of sending applies to the stored status values after bus voltage recovery. If the state changes during bus voltage failure or after bus voltage recovery (e.g. due to switching), the respective status is transmitted immediately and once again after the elapse of the time set here.

**Note:**

The sending time does not apply if a status request of all status objects is initiated via the "send status values" communication object.

If a status request is initiated directly after bus voltage recovery and before this sending time (e.g. via the "send status values" communication object), then this request is discarded. Separate sending of the status objects is possible only after the regular sending of the status.

**Transmission delay between status objects**

Parameter	Settings
Transmission delay between status objects (hh:mm:ss.f)	00:00:00.1 ... 00:01:00.0

**Function:**

This parameter is used to set with which minimum wait time two successive status telegrams are to be sent to ensure that no excessive bus load is generated by status telegrams sent in quick succession during operation.

**Note:**

This transmission delay only applies after bus voltage recovery and with the function "Send status values."

**More information:**

- Communication object "Send status values" [→ 42]

**Behavior after download**

Parameter	Settings
Behavior after download	Use device parameter Use ETS parameter

**Function:**

This parameter is used to set whether the parameters of the device or the parameters of the ETS software are to be used after downloading the ETS to the device.

**The following settings are possible:**

- Use device parameter:  
With this setting, parameters that the device has received from other sources via the communication objects are retained and are not overwritten by the parameters set in the ETS.  
The settings of the channels are not re-initialized and the current status is retained.
- Use ETS parameter:  
With this setting, the parameters stored in the device are overwritten and the parameters set in the ETS are used. The behavior for bus voltage recovery configured in the ETS is also executed.

**Recommendation:**

If the device does not behave as expected, set this parameter to "Use ETS parameter."

**Switch to summer/winter mode**

Parameter	Settings
Switch to summer/winter mode	disable enable

**Function:**

This parameter can be used to enable communication object "Operation mode." This object can be used to switch between summer and winter mode.

**The following settings are possible:**

- disable:  
The thermal drive actuator does not distinguish between summer and winter mode.
- enable:  
The thermal drive actuator distinguishes between summer and winter mode. If this setting has been selected, the corresponding parameters for summer and winter mode are shown in the "Control value setting" and "Override x" function blocks of the valve output and the communication object "Operation mode" is made available for switching the between "Summer"/"Winter" operating mode.

**Other parameters:**

If the parameter is set to "enable" the following parameters are displayed:

- "Polarity summer/winter"
- "Operation mode after ETS download"
- "Object summer/winter mode status"

**Communication object:**

If the parameter is set to "enable," the following communication object is displayed:

- "Operation mode"

**More information:**

- "Operating mode" communication object [→ 42]
- "Summer/winter polarity" parameter [→ 39]
- "Operating mode after ETS download" parameter [→ 40]
- "Object summer/winter mode status" parameter [→ 40]

**Polarity summer/winter**

Parameter	Settings
Polarity summer/winter	1 = summer/0 = winter 0 = summer/1 = winter

**Operation mode after ETS download****Function:**

This parameter can be used to switch the polarity of the "Operation mode" object.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Switch to summer/winter mode"
  - Setting: "enable"

**More information:**

- Parameter "Switch to summer/winter mode" [→ 39]

Parameter	Settings
Operation mode after ETS download	No change Summer Winter

**Function:**

This parameter is used to set the operating mode with which the thermal drive actuator starts after an ETS download.

**The following settings are possible:**

- No change:  
The thermal drive actuator starts with the same operating mode as prior to the ETS download.
- Summer:  
The thermal drive actuators starts with summer operating mode after the ETS download.
- Winter:  
The thermal drive actuators starts with winter operating mode after the ETS download.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Switch to summer/winter mode"
  - Setting: "enable"

**More information:**

- Parameter "Switch to summer/winter mode" [→ 39]

**Object summer/winter mode status**

Parameter	Settings
Object summer/winter mode status	disable enable

**Function:**

This parameter can be used to enable or disable the object "Summer/winter mode status."

This communication object can be used to send the status for summer/winter mode.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Switch to summer/winter mode"
  - Setting: "enable"

**Other parameters/parameter cards:**

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under "Additional information"):

- "Send status on request"
- "Send status on change of status"
- "Block time for sending of status"
- "Send status cyclically"



**Communication object:**

If the parameter is set to "enable," the following communication object is displayed:

- "Summer/winter mode status"

**More information:**

- "Summer/winter mode status" communication object [→ 42]
- Parameter "Switch to summer/winter mode" [→ 39]
- Parameters that are visible if the "Status..." parameter is set to "enable" [→ 283]

**Function of channel A – F**

Parameter	Settings
Function of channel A – F	Deactivated Valve control

**Function:**

This parameter determines if valve control is to be enabled and configurable for the respective channel.

**The following settings are possible:**

- Deactivated:  
With this setting, no valve control is enabled for the channel.
- Valve control:  
This function determines if the valve control is configured via the channel.

**Other parameters/parameter card:**

If the parameter is set to "Valve control," the parameter card "Thermal drive" with the sub-parameter cards "Functions, objects" and "Control value configuration" is displayed for the respective channel.

**Communication object:**

If the parameter is set to "Valve control," the following communication object is displayed:

- "A Control value"

**More information:**

- Communication object "A control value" (1 bit) [→ 93]
- Communication object "A control value" (8 bit) [→ 93]

**Temperature control 1 – 6**

Parameter	Settings
Temperature control 1 – 6	disable enable

**Function:**

This parameter determines if the "Temperature control" function module is to be enabled and configurable.

**Other parameters/parameter cards:**

If the parameter is set to "enable," the parameter card "Temperature control [number]" with the respective sub-parameter cards "Temperature control," "Room operating mode," "Temperature actual value," "Temperature setpoints," "Heating"/"Cooling"/"Heating/cooling" is displayed for the respective room temperature controller.

**Communication objects:**

If the parameter is set to "enable," the corresponding communication objects are displayed depending on the further configuration.

**More information:**

- "Temperature control" communication objects [→ 231]

**See also**

- Control value configuration [→ 59]
- Temperature control [→ 168]

## 6.2 Communication objects

### Status device function

No.	Object name	Function	Datapoint type	Flags
1	Status device function	Ok/Defect	1.005 alarm	CRT

#### Function:

This object is used to regularly transmit the value “0” when the device is operating. If the device no longer transmits cyclically, this indicates a device failure.

A higher-level system can monitor the cyclic sending and trigger a warning or alarm message if the status message is not transmitted.

The “Send status of device function inverted” parameter can be used to set that this value is inverted. In this case, the value “1” is transmitted cyclically when the device is functioning properly.

#### Note:

Sending first takes place after the time configured in the “Cyclical transmission period” parameter.

#### Availability:

The communication object “Status device function” is displayed if the following configuration has been made:

- Parameter “Cyclical transmission of device function (0 = in operation)” on the “device settings” parameter card
  - Setting: “enable”

#### More information:

- “Cyclical sending of device function (0 = in operation)” parameter [→ 37]

### Send status values

No.	Object name	Function	Datapoint type	Flags
2	Send status values	request	1.017 trigger	CW

#### Function:

This object is used to trigger the sending of the current status values for all status objects for which the sending is set to “send on request” in the configuration when a telegram with any value (“1” or “0”) is received.

### Operation mode

No.	Object name	Function	Datapoint type	Flags
3	Operation mode	Summer/ winter	1.002 boolean	CW

#### Function:

This communication object is used to switch operating mode (summer/winter).

#### Availability:

The communication object is displayed if the following configuration was made:

- Parameter “Switch to summer/winter mode“ (“Device settings” parameter card)
  - Setting: “enable“

### Summer/winter mode status

No.	Object name	Function	Datapoint type	Flags
4	Summer/winter mode status	Summer/ winter	1.002 boolean	CRT

#### Function:

This communication object can be used to send the status for summer/winter mode.

Depending on the setting of parameter “Polarity summer/winter,” a 1-bit telegram is sent with a corresponding value content, whether summer or winter mode is used.

#### Availability:

The communication object is displayed if the following configuration was made:

- Parameter “Switch to summer/winter mode” (“Device settings” parameter card)
  - Setting: “enable”
- Parameter “Object summer/winter mode status”
  - Setting: “enable”

## 7 Device errors

The thermal drive actuator detects a failure of the shared valve supply voltage and indicates the failure via simultaneous flashing (1 Hz) of all error 6 LEDs on the front of the device. This failure can also be reported via the bus.

In addition, each channel or a channel group of the thermal drive actuator detects an overload or a short circuit. To do so, a diagnostic routine is executed, which works group by group for the channel outputs A/B/C or D/E/F.

If a short circuit or an overload is detected, the respective channel outputs are disabled to protect the device against damage.

In the event of a total current overflow of a group of channel outputs, the error LEDs of the affected channel group (A/B/C or D/E/F) on the front of the device light up continuously. This overload is also reported via the bus.

In the event of an overload/short circuit fault on an individual channel output, the affected fault LED of the individual channel on the front of the device flashes (10 Hz), while the overload/short circuit fault is reported to the respective channel via the bus at the same time.

The parameters for error detection are located on the “Device errors” parameter card.

### NOTICE



#### **Damage to the device due to improper operation in the event of a permanent short circuit on the channel or a channel group**

The device can be damaged if the diagnostic routine is started repeatedly (via a telegram or via the channel key) when a short circuit is permanently present.

- Before starting the diagnostic routine, the short circuit fault must be resolved.

#### See also

- 📄 Parameters on the “Device errors” parameter card [→ 50]
- 📄 Communication objects [→ 54]

## 7.1 Error display on the device

On the front of the thermal drive actuator, the error LEDs indicate whether there is an error on the device and what type of error it is. The buttons can be used to start the diagnostic routine.

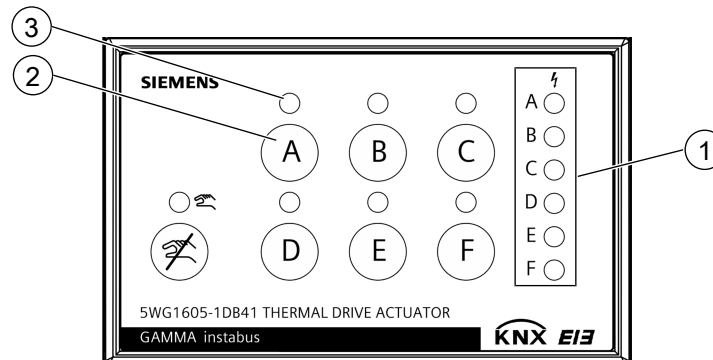


Fig. 7: Error display on the device

- 1 Error LEDs: Error display of the channels and channel groups
- 2 Button: Open/close valve of a channel
- 3 Status LED of a channel (red)

### See also

- 📄 Operating and display elements [→ 11]
- 📄 Parameters on the “Device errors” parameter card [→ 50]
- 📄 Communication objects [→ 54]

## 7.2 Diagnostic processes

### 7.2.1 Error cycle in case of mains voltage failure

The thermal drive actuator detects a failure of the common valve voltage supply. The failure is indicated via the error LEDs on the front of the device. The failure of the valve voltage supply can be reported via the bus. The parameter “Status failure no voltage” must be enabled.

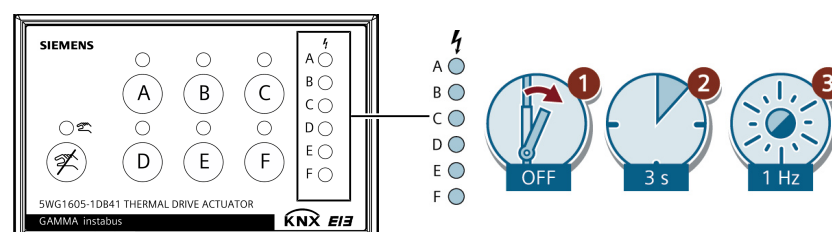


Fig. 8: Error display on mains voltage failure

#### Description

- Failure of the AC 24 V or AC 230 V valve supply voltage.
- All 6 error LEDs flash simultaneously with a frequency of 1 Hz.
- The failure of the mains voltage is also reported via a 1-bit error message via the KNX bus.

## Process

1. If the common valve voltage supply fails, the status LEDs of the channels initially remain lit and then go out after 3 s (fig. “Error display on the device [→ 45],” 3).
2. All 6 error LEDs flash simultaneously with a frequency of 1 Hz (fig. “Error display on the device [→ 45],” 1). The status object “Status failure no voltage” is sent with status “1” via a bus telegram.
3. When the common valve voltage supply is switched on, all 6 error LEDs go out (fig “Error display on the device [→ 45],” 1). The status object “Status failure no voltage” is sent with status “0” (no error) via a bus telegram.
4. The status of the valve output is active again after valve voltage recovery.
5. Telegrams that arrive during the valve voltage failure are temporarily stored and updated after valve voltage recovery.

### See also

- 📖 Operating and display elements [→ 11]
- 📖 Parameters on the “Device errors” parameter card [→ 50]
- 📖 Communication objects [→ 54]

## 7.2.2 Diagnostic routine

Each channel or a channel group of the thermal drive actuator detects an overload or a short circuit on the valve outputs. Here, a diagnostic routine is executed, which works group by group for the channel outputs A/B/C or D/E/F and takes approx. 60 s.

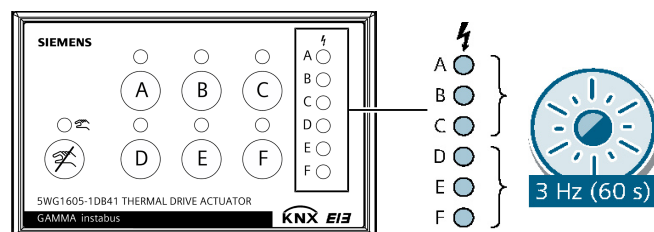


Fig. 9: Display of the diagnostic routine

### Description

- The affected error LEDs of channel group A/B/C and/or D/E/F flash at a frequency of 3 Hz for approx. 60 s.

There are three different ways in which a diagnostic routine can be started:

- Automatic start when a fault is detected (overload).
- Manual start using a long push of a button (> 5 s) on channel A, B or C to start the diagnostic routine for channel group A/B/C or on channel D, E or F to start the diagnostic routine for channel group D/E/F (Fig.: “Error display on the device [→ 45],” 2).
- When sending a start telegram via the communication object (“Start diagnostic run channels A/B/C” or “Start diagnostic run channels D/E/F”).

### See also

- 📖 Error display on the device [→ 45]
- 📖 Communication objects [→ 54]

### 7.2.3 Error cycle for short circuit/overload per channel

In the event of an overload/short-circuit fault on a single channel output, the affected fault LED on the front of the device flashes at a frequency of 10 Hz (fig. "Error display on the device [→ 45]," 1).

The overload/short circuit error for the respective channel can be reported via the bus.

The parameters "Overload error status of channels A/B/C," "Overload error status of channels D/E/F" and "Status failure short circuit/overload" must be enabled.

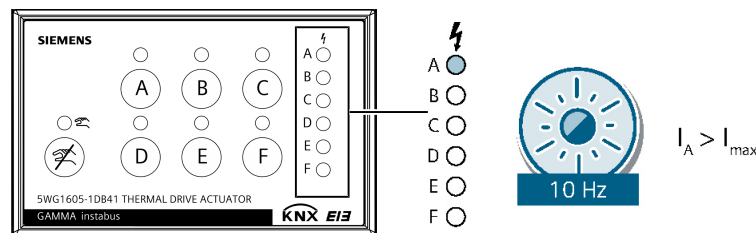


Fig. 10: Error display for short circuit/overload per channel

#### Description

- The error LED of the affected channel flashes with a frequency of 10 Hz (example channel A).

#### Process

1. If a short circuit has been detected on the individual channel, the corresponding channel group (A/B/C or D/E/F) is deactivated ( $I > I_{max}$ ).  
The status LEDs of the channel group (A/B/C or D/E/F) indicate the current status of the valve output according to the control value (fig. "Error display on the device [→ 45]," 4).
2. The diagnostic routine starts automatically (duration approx. 60 s):
  - The status object "Diagnostic run status of channels A/B/C" or "Diagnostic run status of channels D/E/F" with the status "On" is sent via a bus telegram.  
The error LEDs of the channel group (A/B/C or D/E/F) flash at a frequency of 3 Hz (fig. "Error display on the device [→ 45]," 1).
  - Each channel of the group is checked individually to determine whether there is a short circuit or not.
  - If a short circuit has been detected, the affected channel is blocked.  
The error LED of the channel flashes at a frequency of 10 Hz (fig. "Error display on the device [→ 45]," 1). The status object "A Status failure short circuit/overload" with the status "On" is sent via a bus telegram.
  - The status object "Diagnostic run status of channels A/B/C" or "Diagnostic run status of channels D/E/F" with the status "Off" is sent via a bus telegram.
3. The functions of all non-affected channels continue to be performed.

**See also**

- 📖 Operating and display elements [→ 11]
- 📖 Error display on the device [→ 45]
- 📖 Parameters on the “Device errors” parameter card [→ 50]
- 📖 Communication objects [→ 54]

**7.2.4 Error cycle for overload on the channel groups**

In the event of a total current overflow of a group of channel outputs, the error LEDs of the affected channel group on the front of the device light up continuously (fig. “Error display on the device [→ 45],” 1).

The overload can be reported via the bus.

The parameters “Overload error status of channels A/B/C,” “Overload error status of channels D/E/F” and “Status failure short circuit/overload” must be enabled.

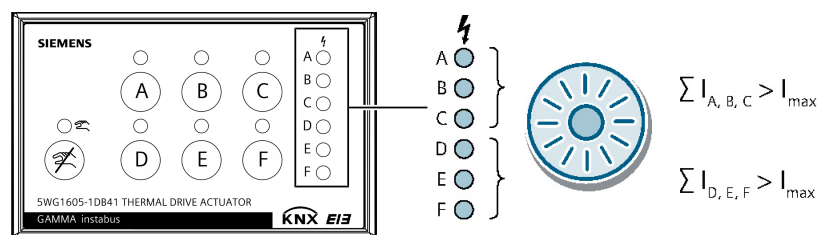


Fig. 11: Error display for overload on the channel groups

**Description**

- The error LEDs of the affected channel groups A/B/C and/or D/E/F light up permanently.

**Process**

1. If a total current overflow of a channel group A/B/C or D/E/F has been detected ( $\sum I_{A, B, C} > I_{max}$  or  $\sum I_{D, E, F} > I_{max}$ ), the corresponding channel group (A/B/C or D/E/F) is disabled.
2. The status LEDs of the channel group (A/B/C or D/E/F) indicate the current status of the valve output according to the control value (fig. “Error display on the device [→ 45],” 4).
3. The diagnostic routine starts automatically (duration approx. 60 s):
  - The error LEDs of the channel group (A/B/C or D/E/F) flash at a frequency of 3 Hz (fig. “Error display on the device [→ 45],” 1).
  - The status object “Diagnostic run status of channels A/B/C” or “Diagnostic run status of channels D/E/F” with the status “On” is sent via a bus telegram.
  - Each channel of the group is checked individually to determine whether there is a short circuit or not.
  - If a short circuit has been detected, the affected channel is blocked. The error LED flashes at a frequency of 10 Hz (fig. “Error display on the device [→ 45],” 1).
  - The status object “A Status failure short circuit/overload” with the status “On” is sent via a bus telegram. (Example for channel A. Applies analogously for all other channels.)
  - The status object “Diagnostic run status of channels A/B/C” or “Diagnostic run status of channels D/E/F” with the status “Off” is sent via a bus telegram.
  - If no short circuit was detected, a test is carried out to determine if there is an overload in the total of the channel group.



- Each channel of the group is switched in a row with a break of 5 s in between.
  - If an excess current is detected at the group in total, the affected channels (A/B/C or D/E/F) in the group are deactivated. The corresponding error LEDs (A/B/C or D/E/F) light up permanently.
  - The status object “Overload error status of channels A/B/C” or “Overload error status of channels D/E/F” with the status “On” is sent via a bus telegram.
  - The status object “Diagnostic run status of channels A/B/C” or “Diagnostic run status of channels D/E/F” with the status “Off” is sent via a bus telegram.
4. The thermal drive actuator switches back to normal mode if no excess load was detected. The status object “Diagnostic run status of channels A/B/C” or “Diagnostic run status of channels D/E/F” with the status “Off” is sent via a bus telegram.
  5. The functions at the valve outputs that are not affected continue to be performed.

If the error occurs again within 8 days:

1. Steps 1 – 3 of the process are repeated.
2. If no short circuit has been detected again, the error LEDs of the channel group (A/B/C or D/E/F) light up permanently. The individual channels are blocked.
3. But the status LEDs of the channel group (A/B/C or D/E/F) are off.
4. The status object “Overload error status of channels A/B/C” or “Overload error status of channels D/E/F” with the status “On” is sent via a bus telegram.
5. The status object “Diagnostic run status of channels A/B/C” or “Diagnostic run status of channels D/E/F” with the status “Off” is sent via a bus telegram.
6. The functions of a channel group that is not affected continue to be performed.

#### See also

- 📖 Operating and display elements [→ 11]
- 📖 Error display on the device [→ 45]
- 📖 Parameters on the “Device errors” parameter card [→ 50]
- 📖 Communication objects [→ 54]

## 7.2.5 Error cycle in case of overload on the device

In the event of a total current overload on the device, the overload can be reported via the bus.

The parameters “Overload error status of channels A/B/C,” “Overload error status of channels D/E/F” and “Status failure short circuit/overload” must be enabled.

### Process

1. If a sum current overflow of both channels A and B has been detected ( $\sum I_{A,B} > I_{max}$ ), both channels are disabled.
2. The diagnostic routine starts automatically (duration approx. 60 s):
  - The status object “” with the status “On” is sent via a bus telegram.
  - Each channel is checked individually to determine whether there is a short circuit or not.
  - If a short circuit has been detected, the affected channel is blocked.
  - The status object “” with the status “On” is sent via a bus telegram (Example for channel A. Applies analogously to channel B.)
  - The status object “” with the status “Off” is sent via a bus telegram.
  - If no short circuit was detected, a test is carried out to determine if there is an overload in the total of both channels.

- Each channel of the group is switched in a row with a break of 5 s in between.
  - If there is an overload in the total of both channels, both channels are disabled.
  - The status object “” with the status “On” is sent via a bus telegram.
  - The status object “” with the status “Off” is sent via a bus telegram.
3. The thermal drive actuator switches back to normal mode if no excess load was detected. The status object “” with the status “Off” is sent via a bus telegram.
  4. The functions at the valve outputs that are not affected continue to be performed.

If the error occurs again within 8 days:

1. Steps 1 – 3 of the process are repeated.
2. If no short circuit has been detected, the individual channels are blocked.
3. The status object “” with the status “On” is sent via a bus telegram.
4. The status object “” with the status “Off” is sent via a bus telegram.
5. The functions of a channel group that is not affected continue to be performed.

#### See also

- 📖 Error display on the device [→ 45]
- 📖 Parameters on the “Device errors” parameter card [→ 50]
- 📖 Communication objects [→ 54]
- 📖 Operating and display elements [→ 11]

## 7.3 Parameters on the “Device errors” parameter card

The status objects for the different error types are enabled in the “Errors” section. In the “Diagnostic run” section, diagnostic routines can be started for each channel group by sending a start telegram via the communication object.

### Parameters in the “Errors” section

#### Status failure no voltage

Parameter	Settings
Status failure no voltage	disable enable

#### Function:

This parameter is used to set, whether a communication object “Status failure no voltage” is to be made available.

The status object is used to report whether there is a mains voltage failure on the device.

If a logical “1” is sent, there is a mains voltage failure.

For more information on the error display on the device and the process, see “Error cycle in case of mains voltage failure [→ 45].”

#### Other parameters:

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information”):

- “Send status on request“
- “Send status on change of status“
- “Block time for sending of status“
- “Send status cyclically“

**Communication object:**

If the parameter is set to "enable," the following communication object is displayed:

- "Status failure no voltage"

**More information:**

- Communication object "Status error mains voltage failure" [→ 55]
- Parameters that are visible if the "Status..." parameter is set to "enable" [→ 283]
- Error cycle in case of mains voltage failure [→ 45]

**Overload error status of channels A/B/C**

Parameter	Settings
Overload error status of channels A/B/C	disable enable

**Function:**

This parameter is used to set whether a communication object "Overload error status of channels A/B/C" is to be made available for channel group A/B/C.

The communication object can be used to report a failure of channel group A/B/C due to excessive connected load.

If a logical "1" is sent, there is an overload on channel group A/B/C.

For more information on the error display on the device and the process, see "Error cycle for overload on the channel groups [→ 48]."

**Other parameters:**

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under "Additional information"):

- "Send status on request"
- "Send status on change of status"
- "Block time for sending of status"
- "Send status cyclically"

**Communication object:**

If the parameter is set to "enable," the following communication object is displayed:

- "Overload error status of channels A/B/C"

**More information:**

- Communication object "Status overload error channels A/B/C"
- Parameters that are visible if the "Status..." parameter is set to "enable" [→ 283]
- Error cycle for short circuit/overload per channel [→ 47]
- Error cycle for overload on the channel groups [→ 48]

**Overload error status of channels D/E/F**

Parameter	Settings
Overload error status of channels D/E/F	disable enable

**Function:**

This parameter is used to set whether a "Overload error status of channels D/E/F" communication object is to be made available for channel group D/E/F.

The communication object can be used to report a failure of channel group D/E/F due to excessive connected load.

If a logical "1" is sent, there is an overload on channel group D/E/F.

For more information on the error display on the device and the process, see "Error cycle for overload on the channel groups [→ 48]."

**Other parameters:**

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under "Additional information"):

- “Send status on request“
- “Send status on change of status“
- “Block time for sending of status“
- “Send status cyclically“

**Communication object:**

If the parameter is set to “enable,” the following communication object is displayed:

- “Overload error status of channels D/E/F“

**More information:**

- Communication object “Status overload error channels D/E/F” [→ 56]
- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]
- Error cycle for short circuit/overload per channel [→ 47]
- Error cycle for overload on the channel groups [→ 48]

**Status failure short circuit/overload**

Parameter	Settings
Status failure short circuit/overload	disable enable

**Function:**

This parameter is used to set whether a “A Status failure short circuit/overload” communication object is to be made available for each enabled channel (for channel A in the example).

The communication object can be used to report a short circuit of the affected channel.

If a logical “1” is sent, there is a short circuit on the channel.

For more information on the error display on the device and the process, see “Error cycle for short circuit/overload per channel [→ 47].”

**Other parameters:**

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information”):

- “Send status on request“
- “Send status on change of status“
- “Block time for sending of status“
- “Send status cyclically“

**Communication object:**

If the parameter is set to “enable,” the following communication object is displayed (example for channel A):

- “A Status failure short circuit/overload“

**More information:**

- Communication object “A Status short circuit/overload error” [→ 56]
- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]
- Error cycle for short circuit/overload per channel [→ 47]

**Parameters in the “Diagnostic run” section****Diagnostic run channels A/B/C**

Parameter	Settings
Diagnostic run channels A/B/C	disable enable

**Function:**

This parameter can be used to enable the communication object “Start diagnostic run channels A/B/C“ for channel group A/B/C.

This communication object can be used to start the diagnostic routine for the diagnostic run for channel group A/B/C.

For more information on the error display on the device and the process, see "Diagnostic routine [→ 46]."

**Other parameters:**

If the parameter is set to "enable," the following parameter is displayed:

- "Diagnostic run status"

**Communication object:**

If the parameter is set to "enable," the following communication object is displayed:

- "Start diagnostic run channels A/B/C"

**More information:**

- Communication object "Start diagnostic run channels A/B/C"
- Parameter – "Status diagnostic run" [→ 53]
- Diagnostic routine [→ 46]

**Diagnostic run status**

Parameter	Settings
Diagnostic run status	disable enable

**Function:**

This parameter can be used to display the communication object "Diagnostic run status of channels A/B/C."

This communication object can be used to report the status of the diagnostic run for channel group A/B/C.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Diagnostic run channels A/B/C"
  - Setting: "enable"

**Other parameters:**

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under "Additional information"):

- "Send status on request"
- "Send status on change of status"
- "Block time for sending of status"
- "Send status cyclically"

**Communication object:**

If the parameter is set to "enable," the following communication object is displayed:

- "Diagnostic run status of channels A/B/C"

**More information:**

- Communication object "Status diagnostic run channels A/B/C"
- Parameter "Diagnostic run channels A/B/C" [→ 52]
- Parameters that are visible if the "Status..." parameter is set to "enable" [→ 283]

**Diagnostic run channels D/E/F**

Parameter	Settings
Diagnostic run channels D/E/F	disable enable

**Function:**

This parameter can be used to enable the communication object "Start diagnostic run channels D/E/F" for channel group D/E/F.

This communication object can be used to start the diagnostic routine for the diagnostic run for channel group D/E/F.

For more information on the error display on the device and the process, see "Diagnostic routine [→ 46]."

**Other parameters:**

If the parameter is set to “enable,” the following parameter is displayed:

- “Diagnostic run status“

**Communication object:**

If the parameter is set to “enable,” the following communication object is displayed:

- “Start diagnostic run channels D/E/F“

**More information:**

- Communication object “Start diagnostic run channels D/E/F” [→ 55]
- Parameter – “Status diagnostic run” [→ 54]

**Diagnostic run status**

Parameter	Settings
Diagnostic run status	disable enable

**Function:**

This parameter can be used to display the communication object “Diagnostic run status of channels D/E/F.”

This communication object can be used to report the status of the diagnostic run for channel group D/E/F.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Diagnostic run channels D/E/F“
  - Setting: “enable”

**Other parameters:**

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information”):

- “Send status on request“
- “Send status on change of status“
- “Block time for sending of status“
- “Send status cyclically“

**Communication object:**

If the parameter is set to “enable,” the following communication object is displayed:

- “Diagnostic run status of channels D/E/F“

**More information:**

- Communication object “Status diagnostic run channels D/E/F” [→ 55]
- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]

**See also**

- 📄 Error cycle for short circuit/overload per channel [→ 47]

## 7.4 Communication objects

No.	Object name	Function	Datapoint type	Flags

**Function:**

This communication object can be used to start the diagnostic routine for the diagnostic run for channels A and C.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter: ““
  - Setting: “enable”

**Start diagnostic run channels D/E/F**

No.	Object name	Function	Datapoint type	Flags
6	Start diagnostic run channels D/E/F	trigger	1.017 trigger	CW

**Function:**

This communication object can be used to start the diagnostic routine for the diagnostic run for channel group D/E/F.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Diagnostic run channels D/E/F"
  - Setting: "enable"

No.	Object name	Function	Datapoint type	Flags

**Function:**

This communication object can be used to report the status of the diagnostic run for channels A and B.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter: ""
  - Setting: "enable"

**Diagnostic run status of channels D/E/F**

No.	Object name	Function	Datapoint type	Flags
8	Diagnostic run status of channels D/E/F	On/Off	1.001 switch	CRT

**Function:**

This communication object can be used to report the status of the diagnostic run for channel group D/E/F.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Diagnostic run status"
  - Setting: "enable"

**Status failure no voltage**

No.	Object name	Function	Datapoint type	Flags
9	Status failure no voltage	1 = Failure	1.002 boolean	CRT

**Function:**

The status object is used to report whether there is a mains voltage failure on the device.

If a logical "1" is sent, there is a mains voltage failure; if a logical "0" is sent, there is no mains voltage failure.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Status failure no voltage"
  - Setting: "enable"

No.	Object name	Function	Datapoint type	Flags

**Function:**

The communication object can be used to report a failure of channels A and B due to excessive connected load.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "" ("Device settings" parameter card)
  - Setting "enable"

**Overload error status of channels D/E/F**

No.	Object name	Function	Datapoint type	Flags
11	Overload error status of channels D/E/F	1 = Failure	1.002 boolean	CRT

**Function:**

The communication object can be used to report a failure of channel group D/E/F due to excessive connected load.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Overload error status of channels D/E/F"
  - Setting: "enable"

**A Status failure short circuit/overload**

No.	Object name	Function	Datapoint type	Flags
74*	A Status failure short circuit/overload	1 = Failure	1.002 boolean	CRT

**Function:**

The communication object "A Status failure short circuit/overload" can be used to report a short circuit of the affected channel.

\* The corresponding numbers of the communication objects of the other override channels are shown in the table of all communication objects (Communication objects of the individual channels [→ 17]).

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Status failure short circuit/overload"
  - Setting: "enable"



## 8 Setting functions

### 8.1 Configuring the thermal drive

The “Thermal drive” parameter card is displayed if the parameter “Function channel A” on the “Device settings” parameter card is set to “Valve control,” (Example for channel A. The same applies analogously to all other channels.)

The basic functions for valve control are configured using the parameters underneath the “Thermal drive” parameter card. Depending on the configuration, additional parameter cards for the functions on the valve output are displayed under this parameter card.

#### 8.1.1 Overview of functions on the valve output

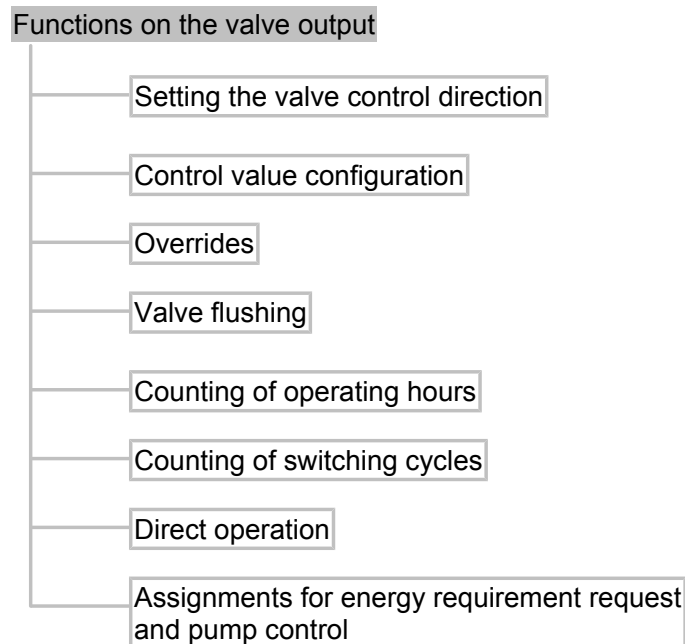


Fig. 12: Overview of functions on the valve output

### 8.1.2 Process diagram

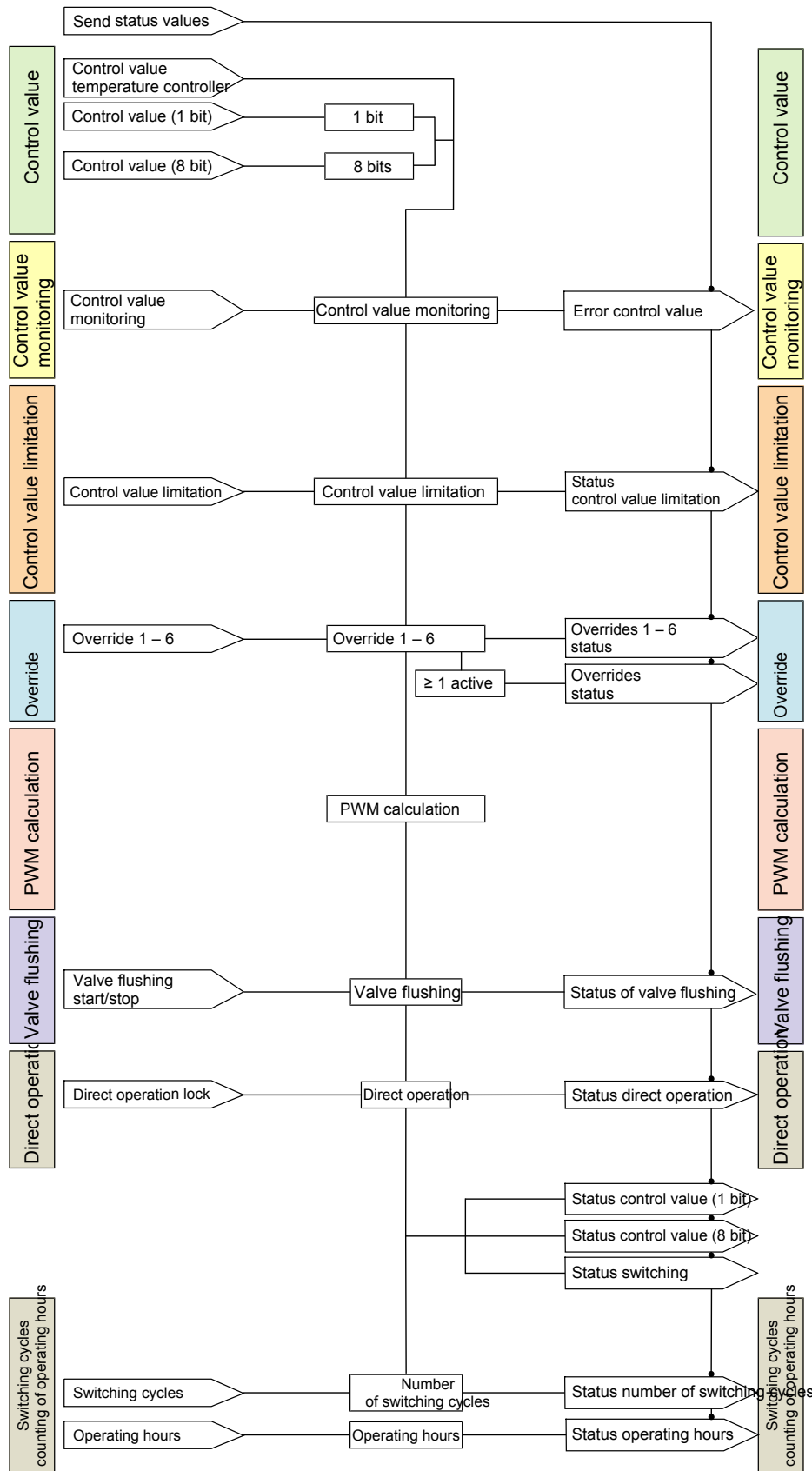


Fig. 13: Valve control flow chart

### 8.1.3 Setting the valve control direction

De-energized closed or de-energized open thermal actuators can be connected to the thermal drive actuator. The valve control direction is set to take this behavior into account in the further electrical valve control.

The parameter "Valve in de-energized state" is underneath the "Thermal drive" parameter card in the "Functions, objects" parameter card in the "Setting the valve control direction" section.

Valve in de-energized state

Parameter	Settings
Valve in de-energized state	Closed Open

**Function:**

This parameter is used to set whether the valve connected to the respective output is closed or open in the de-energized state.

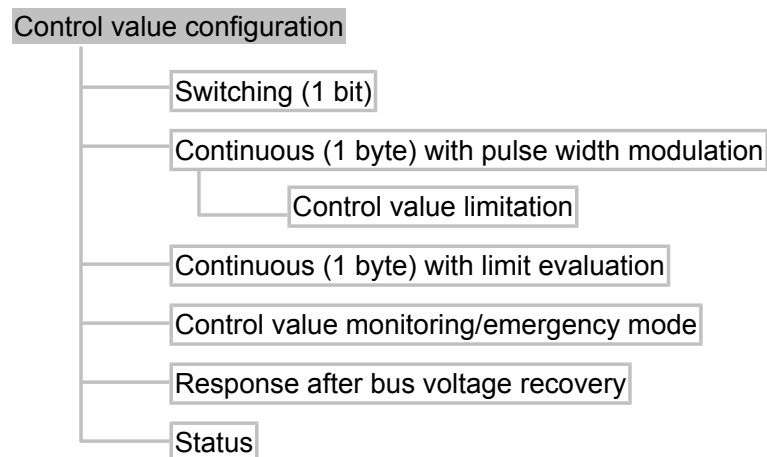
**Note:**

Only thermal actuators with the same valve control direction can be connected to a valve output. The drive type must match the configuration.

In the factory settings, the parameter "Valve in de-energized state" has been set to "Closed" for all valve outputs.

### 8.1.4 Control value configuration

#### Overview of the control value settings



The thermal drive actuator receives control values in the format 1 bit (switching) or 1 byte (continuous) from the internal room temperature controllers or also as a KNX telegram from external room temperature controllers.

With a continuous control value, a switching signal for the valve output can be generated in two different ways: either via pulse width modulation (PWM) or via limit value evaluation (with upper and lower limit).

In addition to the conversion of the control value to the valve output, control value monitoring can be set up. If no control signal is received from the external room temperature controller after a configured time, a defined emergency behavior can be set. When "Continuous (1 Byte) with pulse width modulation (PWM)" is selected, a control value limitation can also be applied. A behavior on bus voltage recovery can also be specified.

#### Switching control value

The valve is opened or closed via a 1-bit command (On/Off).

If the valve output is overridden by a continuous control value (e.g. override, emergency mode), then the output is controlled via a pulse width modulation. The set value of parameter "Period duration of pulse width modulation" [→ 82] is used for this purpose.

### Continuous control value via pulse width modulation

Pulse width modulation (PWM) converts a continuous value into a continuously switching signal whose duration varies. The conversion takes place according to a certain algorithm, either with fixed or variable period duration.

A control cycle consists of an on and an off switching operation and forms a PWM period.

#### Fixed period duration

When using the fixed period duration, the algorithm is configured via the "Period duration of pulse width modulation" parameter. For a control value of 50 %, the continuous value must be mapped to a symmetrical on-off signal (switching) as a function of the period duration.

With the fixed period duration, the ratio between pulse-on times and pulse-off times changes depending on the manipulated control value.

The following applies here:

- The defined period duration does not take effect if the control values are set to 100 % and 0 %. A control value of 100 % always means "On" and a control value of 0 % means "Off".
- With a control value specification of 50 %, the duration of the on and off time is the same.
- With a control value specification of 25 %, the On time is one quarter of the period duration, the Off time is three quarters of the period duration.

#### Fixed period duration example

The following example assumes this configuration:

The fixed period duration is configured to 10 minutes. The duration of the switch-on time and switch-off time changes within the configured period duration depending on the setting of the control value. Refer to the table "Fixed period duration (example) [→ 60]" and the figure "Fixed period duration, graphic illustration (example) [→ 60]."

With a fixed period duration of 10 minutes and a control value of 25 %, the system is switched on for 2.5 minutes and then switched off after 7.5 minutes.

Control value	Switch-on time	Switch-off time	Period duration
0 %	0 min	10 min	10 min
25 %	2.5 min	7.5 min	10 min
50 %	5 min	5 min	10 min
90 %	9 min	1 min	10 min
100 %	10 min	0 min	10 min

Table 1: Fix period duration (example)

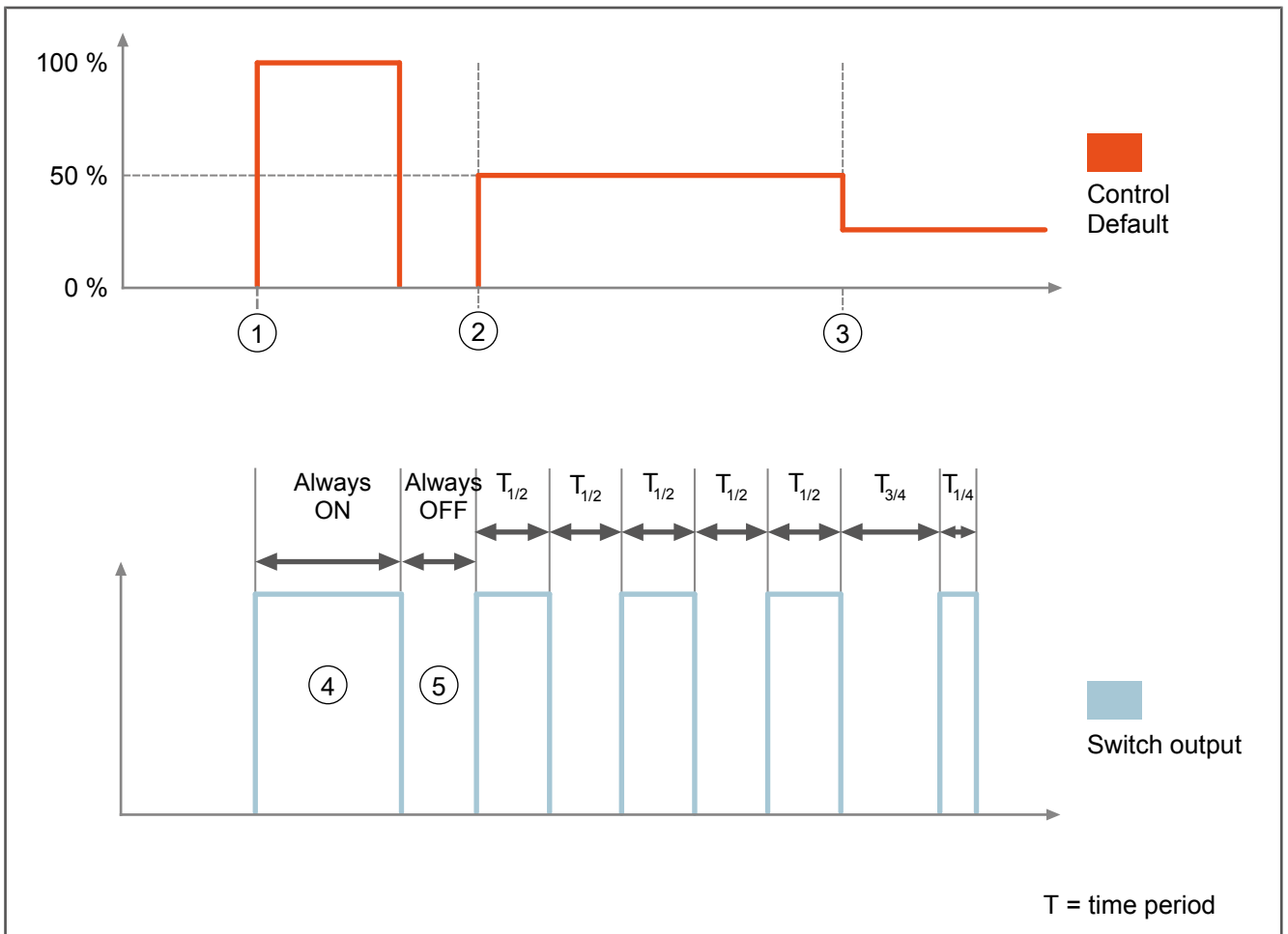


Fig. 14: Fix period duration, illustration (example)

- 1 The calculated control value is 100 %.
  - 2 The calculated control value is 50 %.
  - 3 The calculated control value is 25 %.
  - 4 If the calculated control value goes to 100 %, the switch-on time is 10 min and the switch-off time is 0 min.
  - 5 If the calculated control value goes to 0 %, the switch-on time is 0 min and the switch-off time is 10 min.
- $T_{1/2}$  If the calculated control value goes to 50 %, the switch-on time and the switch-off time are both 5 min.
- $T_{3/4}$  If the calculated control value goes to 25 %, the switch-off time is 7.5 min.
- $T_{1/4}$  If the calculated control value goes to 25 %, the switch-on time is 2.5 min.

**More information:**

- Parameters for setting a fixed period duration [→ 72]

**Variable period duration**

Instead of a fixed period duration, a variable period duration can also be configured. When a variable period duration is used, the valve output maintains a basic temperature. This means that the valve can be actuated faster than in the cold state and the valve service life is increased.

The variable period duration is calculated from the control value and the value of parameter “Minimum on off time.” With the variable period duration, two stages act simultaneously. These cannot be separated from each other. For ease of understanding, these are referred to as “stage 1” and the subsequent “stage 2.”

**Example of a variable period duration, simplified illustration**

The standard configuration of the thermal drive actuator is used in the following example.

The standard configuration for the thermal drive actuator is:

- Minimum on off time: 400 s
- Minimum puls rate (%): 5 %
- Maximum puls rate (%): 50 %

The following figure “Variable period duration: Pulse-pause rate, simplified illustration (example) [→ 62]” uses the standard configuration to illustrate the pulse-pause rate: During an Off phase, short On pulses are sent as well, while short Off pulses are also sent during an On phase.

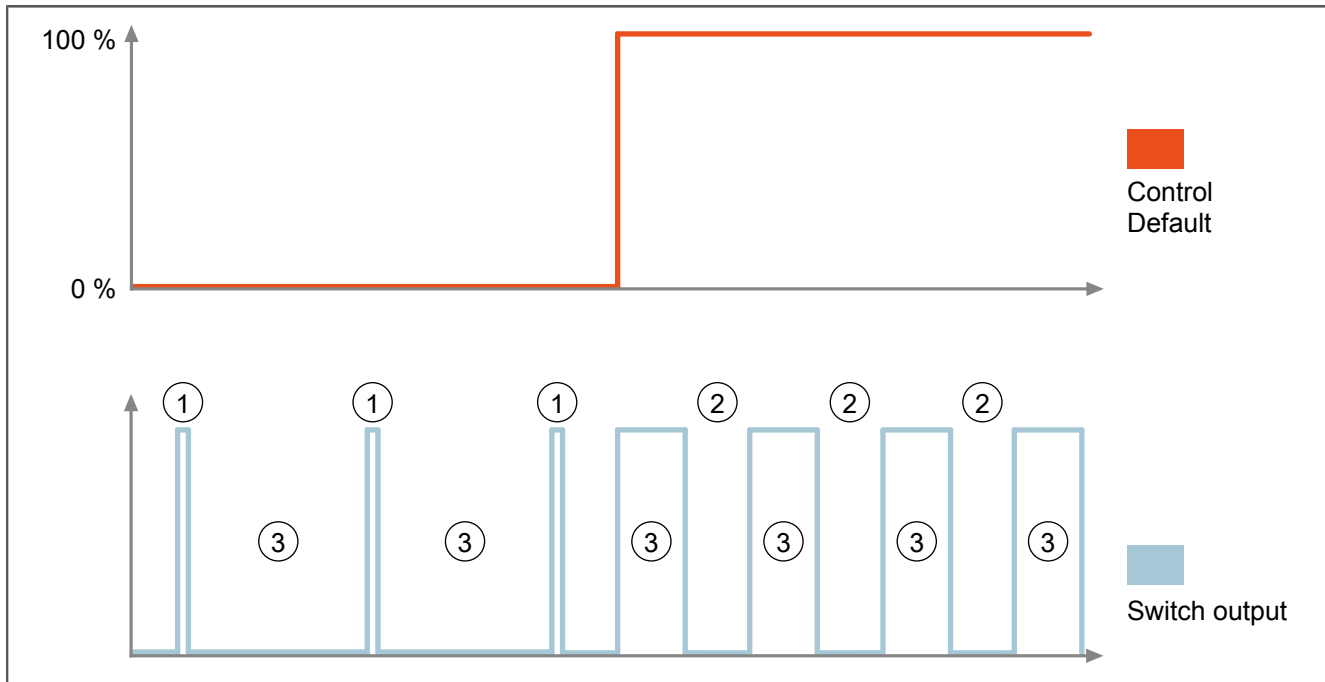


Fig. 15: Variable period duration: Pulse-pause rate, simplified illustration (example)

- 1 Even if the control value is set to 0 %, the valve is always energized briefly at intervals during the actually continuous Off phase. This prevents the thermal valve from cooling down completely and ensures that a minimum basic temperature is maintained during the heating period. This means that the thermal valve reacts quicker when a control value of > 0 % is to be executed.  
The length of the additional pulse depends on the parameter “Minimum puls rate (%). [→ 72]” This example uses the standard configuration of 5 %.
- 2 When the control value is set to 100 %, the current is interrupted at a time interval during the otherwise continuous On-phase. This prevents unnecessary overheating and can increase the lifespan of the valves. Depending on the valve type, complete opening or closing is also possible here with the appropriate valve model.  
The length of the additional pulse pause depends on parameter “Maximum puls rate (%).” [→ 72] This example uses the standard configuration of 50 %.
- 3 The period durations in the control value specification of 0 % and 100 % are not symmetrical and depend on the set parameters. The time intervals shown here are for illustration purposes only and are not to scale.

#### Example for variable period duration, stage 1 and stage 2

Stage 1:

For a variable period duration, a Minimum on off time of 400 seconds is configured, for example.

Control value	Switch-on time	Switch-off time	Period duration
1 %	400 s	39600 s	40000 s
5 %	400 s	7600 s	8000 s
25 %	400 s	1200 s	1600 s
50 %	400 s	400 s	800 s
75 %	1200 s	400 s	1600 s
90 %	3600 s	400 s	4000 s
99 %	39600 s	400 s	40000 s

Table 2: Variable period duration, stage 1 (example)

#### Stage 2 (overlay of stage 1):

The PWM of stage 2 depends on the current switching state of stage 1.

With a minimum switch-on/off time of 1 second, a minimum pulse-pause rate of 5%, and a maximum pulse-pause rate of 50%, the period duration for ON is 2 seconds.

The following example shows the superposition in stage 2 of the pulse width modulation:

PWM stage 1	PWM stage 2	Switch-on time	Switch-off time	Period duration
ON	50 %	1 s	1 s	2 s
OFF	5 %	1 s	19 s	20 s

Table 3: Variable period duration, stage 2 (example)

#### Example of a variable period duration with three different control value specifications

The following figure "Variable period duration, stage 1 with respective On/Off ratio of stage 2 (example with three different manipulated variable values) [→ 63]" illustrates pulse width modulation with variable period duration with three different manipulated variable values. The values in the table "Variable period duration, stage 1 (example) [→ 62]" are used.

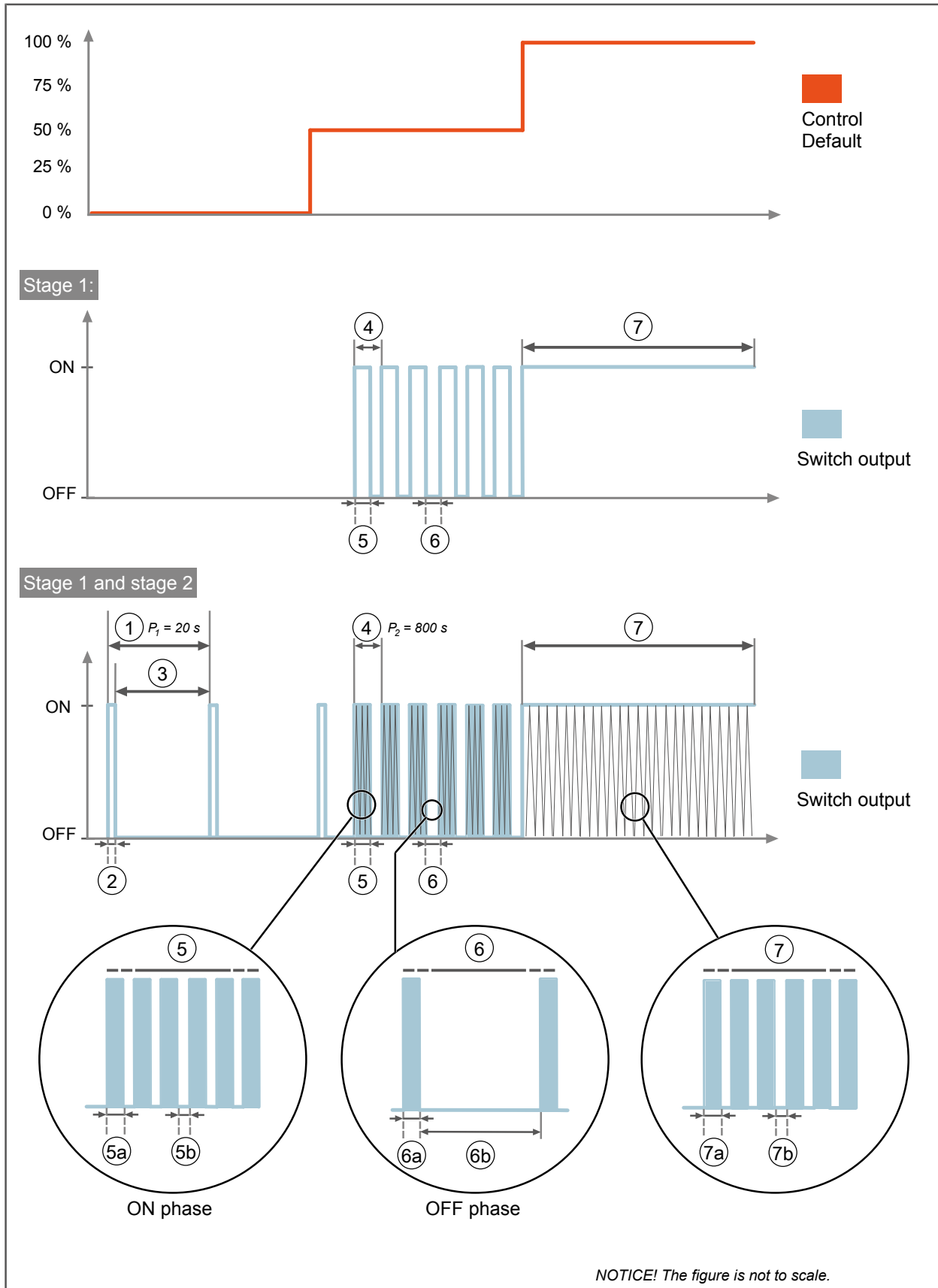


Fig. 16: Graphic - Variable period duration, stage 1 with respective On/Off ratio of stage 2 (example with three different control value specifications)

The table below explains the figure.



No.	Stage 1:	Stage 2
<b>Control specification: 0 %</b>		
1	0 % is controlled Permanent Off: In stage 1, there is no switching on at 0 %.	In stage 2, the minimum pulse-pause rate of 5% takes effect at 0%.
2	Permanent Off: In stage 1, there is no switching on at 0 %.	An On pulse is generated for a duration of 1 s.
3	The switch-off time in period duration $P_1$ is 39,600 s.	An Off pulse is generated for a duration of 19 s.
<b>Control specification: 50 %</b>		
4	50 % are controlled With a control value specification of 50 %, the period duration $P_2 = 800$ s.	The On and Off pulses of stage 1 superimpose stage 2 with their signals depending on whether an on or off pulse is to be superimposed.
5	The switch-on time in period duration $P_2$ is 400 s.	The PWM of stage 2 overlays the signal of stage 1. For an On pulse, parameter "Maximum puls rate (%)" takes effect, in this case, with 50 %.
5a		An On pulse is generated for a duration of 1 s.
5b		An Off pulse is generated for a duration of 1 s.
6	The switch-off time in period duration $P_2$ is 400 s.	The PWM of stage 2 overlays the signal of stage 1. For an Off pulse, parameter "Minimum puls rate (%)" takes effect, in this case, with 5 %. The On pulse is a series of pulses for ON and for OFF.
6a		An On pulse is generated for a duration of 1 s.
6b		An Off pulse is generated for a duration of 19 s.
<b>Control specification: 100 %</b>		
7	On duration: In stage 1, it is switched on permanently at 100 %.	The PWM of stage 2 overlays the signal of stage 1 using the parameter "Maximum puls rate (%)," here with 50 %. No continuous signal is generated, but an On/Off pulse is always sent at intervals of 1 s.
7a		An On pulse is generated for a duration of 1 s.
7b		An Off pulse is generated for a duration of 1 s.

**More information:**

- Parameters for setting a variable period duration [→ 71]

**Continuous control value via limit value evaluation (two-point operation)**

In limit value evaluation, a continuous control value is converted into a switching signal via configurable limit values for opening and closing the valve.

**Examples:**

- With a configured limit value for closing the valve of 40 %, the valve is closed when control values  $\leq 40$  % are received (corresponds to "Off" or "0 %" compared to PWM).
- At a configured limit value for opening the valve of 60 % and the receipt of a control value  $\geq 60$  %, the valve is opened (corresponds to "On" or "100 %" compared to PWM).

If the valve output is overridden by a continuous control value (e.g. override, emergency mode), then the output is controlled via a pulse width modulation. The set value of parameter "Period duration of pulse width modulation" [→ 82] is used for this purpose.

**See also**

- 📖 Setting the control value type [→ 67]
- 📖 Parameters for a continuous control value with "pulse width modulation" [→ 69]
- 📖 Parameters for a continuous control value with "threshold value evaluation" [→ 80]
- 📖 Parameters for "Control value monitoring" and "Emergency mode" [→ 85]
- 📖 Parameters for "behavior after bus voltage recovery" [→ 89]
- 📖 Parameter for the "status" of the control value [→ 90]
- 📖 Communication objects "Control value configuration" [→ 91]

### 8.1.4.1 Setting the control value type

For each valve output, the control value type (switching or continuous) is configured first.

#### Control value type

Parameter	Settings
Control value type	Switching (1Bit) Continuous (1 Byte) with pulse width modulation (PWM) Continuous (1 Byte) with limit evaluation

#### Function:

This parameter can be used to set for each output whether the output is controlled via a switching control value with On/Off switching commands or via a continuous control value with positioning commands in percent.

#### The following settings are possible:

- “Switching (1Bit):”  
The output is controlled using a switching control value with On/Off switching commands.
- “Continuous (1 Byte) with pulse width modulation (PWM):”  
The output is controlled via a continuous control value with positioning commands in percent. Pulse width modulation is used to convert the continuous signal into a constantly switching signal.
- “Continuous (1 Byte) with limit evaluation:”  
The output is controlled via a continuous control value with positioning commands in percent. The limit value evaluation is used to convert the continuous signal into a continuous switched on/off signal.

For all three settings, the sections “Control value monitoring,” “Behavior after bus voltage recovery” and “Status” are available.

#### Other parameters:

- If the parameter is set to “Switching (1Bit),” the following parameter is displayed:
  - “Period duration of pulse width modulation“
- If the parameter is set to “Continuous (1 Byte) with pulse width modulation (PWM),” the following additional parameters and the “Control value limitation” section are displayed:
  - “Source of control value“
  - “PWM mode“
  - “Period duration of pulse width modulation“
- If the parameter is set to “Continuous (1 Byte) with limit evaluation“ the following parameters are displayed:
  - “Source of control value“
  - “Limit for closing valve (%) (Valve closed: control value <= limit)“
  - “Threshold for opening valve (%) (open valve: control value >= threshold)“
  - “Period duration of pulse width modulation“

#### Communication object:

- If the parameter is set to “Switching (1Bit),” the following communication object is displayed:
  - “A Control value” (1 bit)
- If the parameter is set to “Continuous (1 Byte) with pulse width modulation (PWM)” or “Continuous (1 Byte) with limit evaluation,” the following communication object is displayed:
  - “A Control value” (8 bit)

#### More information:

- Communication object “A control value” (1 bit) [→ 91]
- Communication object “A control value” (8 bit) [→ 91]

- Parameter “PWM mode” [→ 70]
- Parameter “Limit for closing valve (%)” [→ 82]
- Parameter “Limit for opening valve (%)” [→ 82]
- Parameter “Source of control value” [→ 69]
- Parameter “Period duration of pulse width modulation” [→ 82]

#### See also

- 📖 Parameters for switching control value [→ 68]
- 📖 Parameters for a continuous control value with “pulse width modulation” [→ 69]
- 📖 Parameters for a continuous control value with “threshold value evaluation” [→ 80]
- 📖 Parameters for “Control value limitation” [→ 72]
- 📖 Parameters for “Control value monitoring” and “Emergency mode” [→ 85]
- 📖 Parameters for “behavior after bus voltage recovery” [→ 89]
- 📖 Parameter for the “status” of the control value [→ 90]

### 8.1.4.2 Parameters for switching control value

For switching control values (1 bit), the internal link with a corresponding telegram from the room temperature controller cannot be selected. Here, the control value is received exclusively via the communication object.

The following parameter is displayed if the parameter “Control value type” is set to “Switching (1-bit).”

#### Period duration of pulse width modulation

Parameter	Settings
Period duration of pulse width modulation (hh:mm)	00:01 ... 00:30

#### Function:

This parameter sets the duration of a fixed period of pulse width modulation of an output.

The setting of this parameter is used in case of an override or emergency mode. For normal operation via limit value evaluation, the setting of this parameter is not used.

#### Note:

The selected period duration of pulse width modulation must not be shorter than the sum of the heating and cooling time of the thermal drives.

### 8.1.4.3 Parameters for a continuous control value with “pulse width modulation”

The following parameters are shown if the parameter “Control value type“ is set to “Continuous (1 Byte) with pulse width modulation (PWM).”

#### Parameters for “pulse width modulation”

Source of control value

Parameter	Settings
Source of control value	External object Temperature control

**Function:**

This parameter is used to select the source for the control value.

**The following settings are possible:**

- External object:  
A communication object that receives the control value via the bus is used as the source.
- Temperature control:  
An internal control value, which comes directly from a temperature controller from the device, is used as the source. Additional parameters for assignment are then displayed.

**Other parameters:**

- If the parameter is set to “Temperature control“ the following parameters are displayed:
  - “Temperature controller selection“
  - “Control value selection“

**More information:**

- Parameter “Temperature controller selection“ [→ 69]
- Parameter “Control value selection“ [→ 70]

Temperature controller selection

Parameter	Settings
Temperature controller selection	Temperature control 1 Temperature control 2 Temperature control 3 Temperature control 4 Temperature control 5 Temperature control 6

**Function:**

This parameter is used to select the temperature controller (1-6) from which the control value is used.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Source of control value“
  - Setting: “Temperature control“

**Note:**

The assignment can only be made if the selected temperature controller has been configured correctly:

- Parameter “Control behavior“ (parameter card “Heating/cooling,” “Heating” or “Cooling” of the selected temperature controller)
  - Setting: “PI control“
- Parameter “Type of control value output“ (parameter card “Heating/cooling,” “Heating” or “Cooling” of the selected temperature controller)

- Setting: “Steady (8-bit)“

**More information:**

- Parameter “Source of control value” [→ 69]
- Parameter “Control behavior” (temperature control) [→ 210]
- Parameter “Type of control value output” (temperature control) [→ 217]

**Control value selection**

Parameter	Settings
Control value selection	Heating control value (%) Heating control value (%), sequence 2 Cooling control value (%) Cooling control value (%), sequence 2

**Function:**

This parameter is used to select one of the control values provided by the temperature controller. The type of control value corresponds to the configuration of the temperature controller.

**The following assignments are possible:**

The following list describes the assignment of the output to the control value of the temperature controller for the controller operating mode “Heating.” The assignment for the controller operating modes “Cooling” and “Heating and cooling” is made in the same way and therefore not listed separately.

- If, for the selected temperature controller, parameter “Controller mode” is set to “Heating” the “Heating control value (%)” is assigned. A further selection is not possible as this is not made available by the temperature controller.
- If, for the selected temperature controller, parameter “Controller mode” is set to “Heating” and the parameter “Sequence control” is set to “enable you can select between “Heating control value (%)” and “Heating control value (%), sequence 2.”
- If, for the selected temperature controller, parameter “Controller mode” is set to “Heating and cooling” and parameter “Sequence control” is set to “enable,” you can therefore select between four available control values.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Source of control value“
  - Setting: “Temperature control“

**Note:**

The assignment can only be made if the selected temperature controller has been configured correctly:

- Parameter “Control behavior” (parameter card “Heating/cooling,” “Heating” or “Cooling” of the selected temperature controller)
  - Setting: “PI control“
- Parameter “Type of control value output” (parameter card “Heating/cooling,” “Heating” or “Cooling” of the selected temperature controller)
  - Setting: “Steady (8-bit)“

**More information:**

- Parameter “Source of control value” [→ 69]
- Parameter “Control behavior” [→ 210] (temperature control)
- Parameter “Type of control value output” [→ 217] (temperature control)

**PWM mode**

Parameter	Settings
PWM mode	Variable period time Fix period time

**Function:**

This parameter is used to set the type of pulse width modulation for the output.

Using a variable period duration can increase the service life of the actuators/thermostatic valves and ensure efficient heating/cooling mode.

**The following settings are possible:**

- Variable period time:  
The period duration varies depending on the incoming control value and the setting of the corresponding parameters. A minimum switch-on and switch-off time are defined. In addition, a minimum and maximum ratio between pulse and pause until the next period can be set.  
For examples of the calculation, see: "Variable period duration example [→ 62]"
- Fix period time:  
The duration of a PWM cycle is fixed. The switch-on and switch-off times are calculated from the percentage control value.  
For examples of the calculation, see: "Fixed period duration example [→ 60]"

**Other parameters:**

- If the parameter is set to "Fix period time," the Parameter "Period duration of pulse width modulation" is used to set the duration of the PWM period.
- If the parameter is set to "Variable period time," the parameter "Period duration of pulse width modulation" is hidden and the following parameters are displayed for setting a variable PWM cycle time:
  - "Minimum on off time"
  - "Minimum puls rate (%)"
  - "Maximum puls rate (%)"

**More information:**

- Parameter "Minimum On/Off time" [→ 71]
- Parameter "Minimum pulse-pause rate (%)" [→ 72]
- Parameter "Maximum pulse-pause rate (%)" [→ 72]

**Parameters for setting a variable period duration**

The following parameters are shown if the parameter "PWM mode" is set to "Variable period time."

**Minimum on off time**

Parameter	Settings
Minimum on off time (hh:mm:ss)	00:00:01 ... 18:12:15

**Function:**

This parameter is used to define the minimum duration of the switch-on/off time for PWM stage 1, i.e. the pulse-pause rate must not be shorter than the configuration made here. The length of the superordinate period for the output is the result of this time and the control value (in %). Despite a variable calculation of the period duration, this minimum switch-on/off time must not be undershot even with 0% and 100% control value specification

- For examples of the calculation, see "Fixed period duration example [→ 60]" and "Variable period duration example [→ 62]."

**Note:**

In addition, a minimum and maximum rate between the pulse and the pause until the next pulse can be set. Parameters "Minimum puls rate (%)" and "Maximum puls rate (%)" can be used to do this. The parameters for the pulse-pause rate define the control value for the superimposed PWM stage 2.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "PWM mode"
  - Setting: "Variable period time"

**More information:**

- Parameter "PWM mode" [→ 70]

**Minimum puls rate (%)**

Parameter	Settings
Minimum puls rate (%)	0...100

**Function:**

This parameter is used to set the rate between pulse and pause of pulse width modulation, which is the minimum that can be achieved.

The parameter "Minimum puls rate (%)" defines the control value for the superimposed PWM stage 2.

- For examples of the calculation, see "Fixed period duration example [→ 60]" and "Variable period duration example [→ 62]."

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "PWM mode"
  - Setting: "Variable period time"

**More information:**

- Parameter "PWM mode" [→ 70]

**Maximum puls rate (%)**

Parameter	Settings
Maximum puls rate (%)	0...100

**Function:**

This parameter is used to set the rate between pulse and pause of pulse width modulation, which is the maximum that can be achieved.

The parameter "Maximum puls rate (%)" defines the control value for the superimposed PWM stage 2.

**Example:**

- For examples of the calculation, see "Fixed period duration example [→ 60]" and "Variable period duration example [→ 62]."

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "PWM mode"
  - Setting: "Variable period time"

**More information:**

- Parameter "PWM mode" [→ 70]

**Parameters for setting a fixed period duration**

The following parameter is displayed if the parameter "PWM mode" is set to "Fix period time."

**Period duration of pulse width modulation**

Parameter	Settings
Period duration of pulse width modulation (hh:mm)	00:01 ... 00:30

**Function:**

This parameter sets the duration of a fixed period of pulse width modulation of an output (setting: "Fix period time" in parameter "PWM mode").

**Note:**

The selected period duration of pulse width modulation must not be shorter than the sum of the heating and cooling time of the thermal drives.

**Parameters for "Control value limitation"**



The control value received by the room temperature controller can be limited with a control value limit. The control value can be set to a maximum and minimum threshold value. This setting can be used for basic temperature control or to increase the service life of the thermal drives. To optimally consider the valve characteristics, threshold values can also be configured as to when the valve should always be closed or always open.

The control value limitation can be permanently active or enabled via the "Control value limitation" object if required.

The parameters for setting the control value limitation of the output are only shown when pulse width modulation is active, see Parameter "Control value type [→ 67]."

## Examples for control value limitation

### Example 1:

No limitation: Control value specification from 100 % to 0 %.

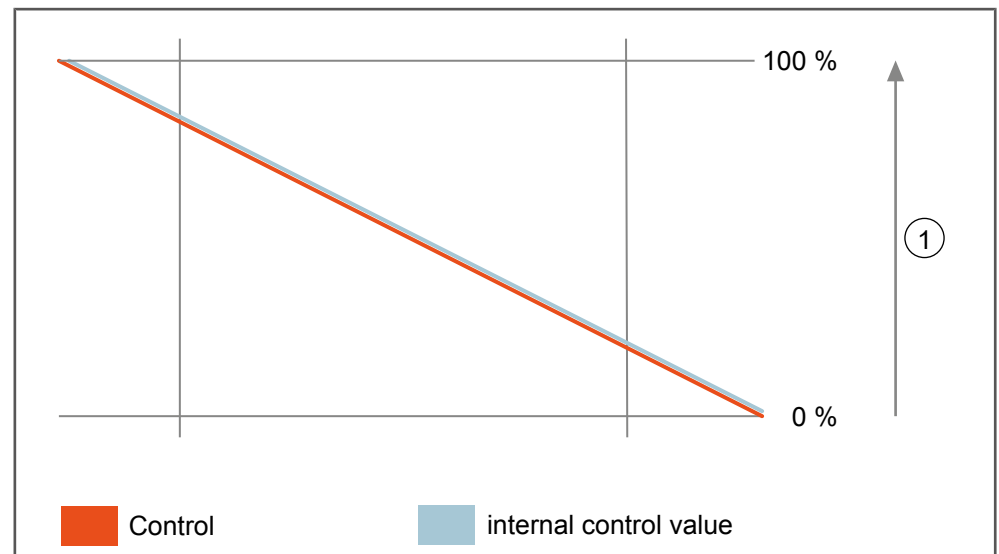


Fig. 17: Example 1: No limitation configured

#### 1 Control of control value specification

### Example 2:

Use e.g. as wind trap

- The maximum threshold is configured as 80 %, the minimum threshold as 20 %. The control value output therefore never exceeds 80 % and never falls below 20 %.
- The wind trap therefore never cools down completely and is never heated to the maximum.
- Configuration in the ETS:
  - Parameter "Mode of minimum control value limitation"  
Setting: "Control value < limit: control value = limit"
  - Parameter "Limit: Minimum control value (%)"  
Setting: "20"
  - Parameter "Mode of maximum control value limitation"  
Setting: "Control value > limit: control value = limit"
  - Parameter: "Limit: Maximum control value (%)"  
Setting: "80"

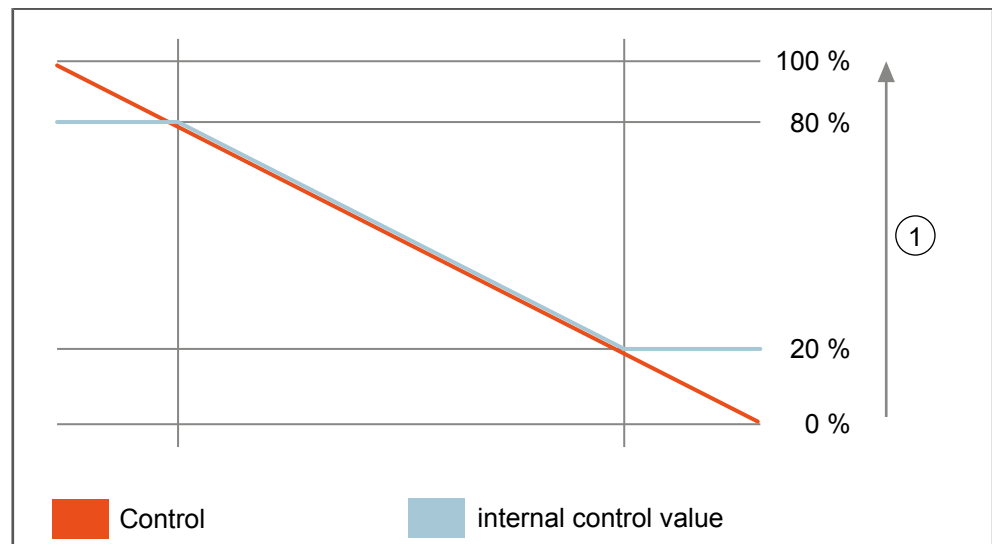


Fig. 18: Example 2: Threshold values for wind trap configured

### 1 Control of control value specification

#### Example 3:

Application for maximum utilization of the valve lift to compensate for the valve characteristics:

- The maximum threshold is configured as 80 %, the minimum threshold as 20 %. The control value is thus always increased to 100 % immediately from 80 %, and 0 % is always set for control values below 20 %.
- Configuration in the ETS:
  - Parameter “Mode of minimum control value limitation“  
Setting: “Control value < limit: control value = 0 %“
  - Parameter “Limit: Valve always closed if control value lower than (%)“  
Setting: “80“
  - Parameter “Mode of maximum control value limitation“  
Setting: “Control value > limit: control value = 100 %“
  - Parameter: “Limit: Valve always open if control value greater than (%)“  
Setting: “20“

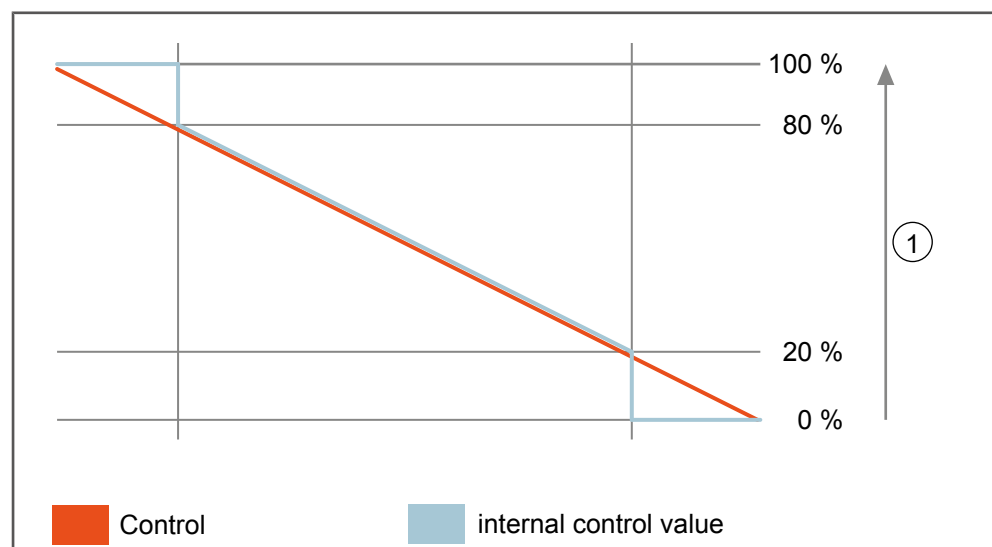


Fig. 19: Example 3: Threshold values configured to compensate for the valve characteristics

### 1 Control of control value specification

**Control value limitation**

**Parameter**

To configure the function "Control value limitation," set parameter "Control value limitation" to "enable."

Parameter	Settings
Control value limitation	disable enable

**Function:**

This parameter can be used to enable or disable the limitation of a control value on the valve output.

Control value limitation is therefore permanently activated. Object "A Control value limitation" is also made available. This object can be used to activate or deactivate control value limitation via the bus as required.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Control value type"
  - Setting: "Continuous (1 Byte) with pulse width modulation (PWM)"

**Other parameters:**

If the parameter is set to "enable" the following parameters are displayed:

- "Invert object "Control value limitation" (0 = On/1 = Off)"
- "Mode of minimum control value limitation"
- "Valve always closed if control value lower than (%)"
- "Mode of maximum control value limitation"
- "Limit: Valve always open if control value greater than (%)"
- "Behaviour control value limitation after bus power return"
- "Object "Status control value limitation"

**Communication object:**

If the parameter is set to "enable," the following communication object is displayed:

- "A Control value limitation"

**More information:**

- Communication object "A control value limitation" [→ 92]
- Parameter "Control value type" [→ 67]
- Parameter "Invert object "Control value limitation" (0 = On/1 = Off)" [→ 75]
- Parameter "Type of minimum control value limitation" [→ 76]
- Parameter "Threshold: Valve always closed if control value lower than (%)" [→ 76]
- Parameter "Type of maximum control value limitation" [→ 77]
- Parameter "Threshold: Valve always open if control value greater than (%)" [→ 78]
- Parameter "Behavior control value limitation after bus voltage recovery" [→ 78]
- Parameter "Object" control value limitation status" [→ 78]

**Invert object "Control value limitation" (0 = On/1 = Off)**

Parameter	Settings
Invert object "Control value limitation" (0 = On/1 = Off)	No Yes

**Function:**

If this parameter is set to "Yes," the object for control value limitation is evaluated in inverted form.

If a logical "0" is received, control value limitation is enabled, if a logical "1" is received, control value limitation is disabled.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Control value limitation”
  - Setting: “enable”

**More information:**

- Parameter “Control value limitation” [→ 75]

**Mode of minimum control value limitation**

Parameter	Settings
Mode of minimum control value limitation	Control value < limit: control value = limit Control value < limit: control value = 0 %

**Function:**

This parameter is used to set how the control value is limited to the minimum.

**The following settings are possible:**

- Control value < limit: control value = limit:  
The specified threshold value is retained as the current control value. Even if the temperature rises in such a way that the valve could actually be closed by the falling actuating value, heating continues. This prevents the floor from cooling down, e.g. in the case of underfloor heating, even if the desired room temperature has already been reached by an additional heating system (e.g. a tiled stove).
- Control value < limit: control value = 0 %:  
When the heat demand is so minimal that no heating energy should be invested, the valve is completely closed.

**Other parameters:**

- If the parameter is set to “Control value < limit: control value = limit,” the following parameter is displayed:
  - “Limit: Minimum control value (%)”
- If the parameter is set to “Control value < limit: control value = 0 %,” the following parameter is displayed:
  - “Limit: Valve always closed if control value lower than (%)”

**Example:**

- See: Examples for control value limitation [→ 73]

**More information:**

- Parameter “Threshold: Valve always closed if control value lower than (%)” [→ 76]
- Parameter “Threshold: Minimum control value (%)” [→ 76]

**Limit: Minimum control value (%)**

Parameter	Settings
Limit: Minimum control value (%)	0...100

**Function:**

This parameter specifies in percent how large the minimum control value may be with control value limitation of the output.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Mode of minimum control value limitation”
  - Setting: “Control value < limit: control value = limit”

**More information:**

- Parameter “Type of minimum control value limitation” [→ 76]

**Limit: Valve always closed if control value lower than (%)**

Parameter	Settings
Limit: Valve always closed if control value lower than (%)	0...100

**Function:**

This parameter is used to set the percentage of the control value up to which the control value output is always 0 % ("OFF"). By reducing the switching frequency in this way, the valve characteristics can be included, therefore making it possible to save energy.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Mode of minimum control value limitation"
  - Setting: "Control value < limit: control value = 0 %"

**More information:**

- Parameter "Type of minimum control value limitation" [→ 76]

**Mode of maximum control value limitation**

Parameter	Settings
Mode of maximum control value limitation	Control value > limit: control value = limit Control value > limit: control value = 100 %

**Function:**

This parameter is used to set how the control value is limited to the maximum.

**The following settings are possible:**

- Control value > limit: control value = limit:  
The specified threshold value is retained as the current control value. Even if the temperature drops so that the valve could be opened even further by the higher control value, it remains at the limit control value. This prevents these rooms from being excessively heated, e.g. in entrance areas (wind traps or similar). Energy can thus be saved because these types of rooms are very often subject to forced ventilation anyway.
- Control value > limit: control value = 100 %:  
If the heating demand is so high that the room should not cool down too far in extreme cases, the valve is opened continuously.

**Other parameters:**

- If the parameter is set to "Control value > limit: control value = limit," the following parameter is displayed:
  - "Limit: Maximum control value (%)"
- If the parameter is set to "Control value > limit: control value = 100 %," the following parameter is displayed:
  - "Valve always open if control value greater than (%)"

**Example:**

- See: Examples for control value limitation [→ 73]

**More information:**

- Parameter "Threshold: Valve always open if control value greater than (%)" [→ 78]
- Parameter "Threshold: Maximum control value (%)" [→ 77]

**Limit: Maximum control value (%)**

Parameter	Settings
Limit: Maximum control value (%)	0...100

**Function:**

This parameter specifies in percent how large the maximum control value may be with control value limitation of the output.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Mode of maximum control value limitation"
  - Setting: "Control value > limit: control value = limit"

**More information:**

- Parameter "Type of maximum control value limitation" [→ 77]

Limit: Valve always open if control value greater than (%)

Parameter	Settings
Limit: Valve always open if control value greater than (%)	0...100

**Function:**

This parameter is used to set the percentage of the control value from which the control value output is always 100 % ("ON"). To reduce the switching frequency, this can be adapted to the valve characteristics.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Mode of maximum control value limitation"
  - Setting: "Control value > limit: control value = 100 %"

**More information:**

- Parameter "Type of maximum control value limitation" [→ 77]

Behaviour control value limitation after bus power return

Parameter	Settings
Behaviour control value limitation after bus power return	Off On Last value Query via bus

**Function:**

This parameter can be used to set the desired behavior of control value limitation on bus voltage recovery.

**The following settings are possible:**

- Off:  
Control value limitation is disabled on bus voltage recovery.
- On:  
Control value limitation is enabled on bus voltage recovery.
- Last value:  
Control value limitation takes on the last value on bus voltage recovery.
- Query via bus:  
With this setting, the following actions are executed:
  - A query is sent via the bus.
  - If a response is received, this response is stored in the communication object and used further.
  - If no response is received, the last internal value is used.

**More information:**

- Parameters for "behavior after bus voltage recovery" [→ 89]

Object "Status control value limitation"

Parameter	Settings
Object "Status control value limitation"	disable enable

**Function:**

This parameter can be used to or disable the object "A Status control value limitation" for the output.

This object is used to output the status of the current state of the control value limitation ("On" or "Off"). This can be queried, for example, by a pushbutton or a visualization in order to check and, if necessary, adjust the control value limitation.

**Other parameters:**

If the parameter is enabled, additional parameters for configuring the status are displayed.

**Communication object:**

If the parameter is set to “enable,” the following communication object is displayed:

- “A Status control value limitation“

**More information:**

- Communication object “A control value limitation status” [→ 93]
- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]

### 8.1.4.4 Parameters for a continuous control value with “threshold value evaluation”

In limit value evaluation, a continuous control value is converted into a switching signal via configurable limit values for opening and closing the valve.

#### Examples:

- With a configured limit value for closing the valve of 40 %, the valve is closed when control values  $\leq 40$  % are received (corresponds to "Off" or "0 %" compared to PWM).
- At a configured limit value for opening the valve of 60 % and the receipt of a control value  $\geq 60$  %, the valve is opened (corresponds to "On" or "100 %" compared to PWM).

The following parameters are shown if the parameter “Control value type” is set to “Continuous (1 Byte) with limit evaluation.”

#### Source of control value

Parameter	Settings
Source of control value	External object Temperature control

#### Function:

This parameter is used to select the source for the control value.

#### The following settings are possible:

- External object:  
A communication object that receives the control value via the bus is used as the source.
- Temperature control:  
An internal control value, which comes directly from a temperature controller from the device, is used as the source. Additional parameters for assignment are then displayed.

#### Other parameters:

- If the parameter is set to “Temperature control” the following parameters are displayed:
  - “Temperature controller selection“
  - “Control value selection“

#### More information:

- Parameter “Temperature controller selection” [→ 80]
- Parameter “Control value selection” [→ 81]
- Parameter “Type of control value output” (temperature control) [→ 217]

#### Temperature controller selection

Parameter	Settings
Temperature controller selection	Temperature control 1 Temperature control 2 Temperature control 3 Temperature control 4 Temperature control 5 Temperature control 6

#### Function:

This parameter is used to select the temperature controller (1-6) from which the control value is used.

#### Availability:

The parameter is displayed if the following configuration has been made:

- Parameter “Source of control value“
  - Setting: “Temperature control“

#### Note:



The assignment can only be made if the selected temperature controller has been configured correctly:

- Parameter “Control behavior” (parameter card “Heating/cooling,” “Heating” or “Cooling” of the selected temperature controller)
  - Setting: “PI control”
- Parameter “Type of control value output” (parameter card “Heating/cooling,” “Heating” or “Cooling” of the selected temperature controller)
  - Setting: “Steady (8-bit)”

**More information:**

- Parameter “Source of control value” [→ 80]
- Parameter “Control behavior” (temperature control) [→ 210]
- Parameter “Type of control value output” (temperature control) [→ 217]

**Control value selection**

Parameter	Settings
Control value selection	Heating control value (%) Heating control value (%), sequence 2 Cooling control value (%) Cooling control value (%), sequence 2

**Function:**

This parameter is used to select one of the control values provided by the temperature controller. The type of control value corresponds to the configuration of the temperature controller.

**The following assignments are possible:**

The following list describes the assignment of the output to the control value of the temperature controller for the controller operating mode “Heating.” The assignment for the controller operating modes “Cooling” and “Heating and cooling” is made in the same way and therefore not listed separately.

- If, for the selected temperature controller, parameter “Controller mode” is set to “Heating” the “Heating control value (%)” is assigned. A further selection is not possible as this is not made available by the temperature controller.
- If, for the selected temperature controller, parameter “Controller mode” is set to “Heating” and the parameter “Sequence control” is set to “enable you can select between “Heating control value (%)” and “Heating control value (%), sequence 2.”
- If, for the selected temperature controller, parameter “Controller mode” is set to “Heating and cooling” and parameter “Sequence control” is set to “enable,” you can therefore select between four available control values.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Source of control value”
  - Setting: “Temperature control”

**Note:**

The assignment can only be made if the selected temperature controller has been configured correctly:

- Parameter “Control behavior” (parameter card “Heating/cooling,” “Heating” or “Cooling” of the selected temperature controller)
  - Setting: “PI control”
- Parameter “Type of control value output” (parameter card “Heating/cooling,” “Heating” or “Cooling” of the selected temperature controller)
  - Setting: “Steady (8-bit)”

**More information:**

- Parameter “Source of control value” [→ 80]
- Parameter “Control behavior” [→ 210] (temperature control)
- Parameter “Type of control value output” [→ 217] (temperature control)

**Limit for closing valve (%)**

Parameter	Settings
Limit for closing valve (%) (Valve closed: control value <= limit)	0...100

**Function:**

This parameter can be used to set the percentage limit value for closing the valve. If the received control value is less than or equal to the limit value set here, the control value goes to 0 and the valve is closed according to the configured valve control direction.

**Note:**

The limit value for closing the valve must always be lower than the limit value for opening the valve.

**Example:**

- For examples, see “Parameters for a continuous control value with “threshold value evaluation” [→ 80]“

**Threshold for opening valve (%)**

Parameter	Settings
Threshold for opening valve (%) (open valve: control value >= threshold)	0...100

**Function:**

This parameter can be used to set the percentage limit value for opening the valve. If the received control value is greater than or equal to the limit value set here, the control value goes to 1 and the valve is opened according to the configured valve control direction.

**Note:**

The limit value for opening the valve must always be higher than the limit value for closing the valve.

**Example:**

- For examples, see “Parameters for a continuous control value with “threshold value evaluation” [→ 80]“

**Period duration of pulse width modulation**

Parameter	Settings
Period duration of pulse width modulation (hh:mm)	00:01 ... 00:30

**Function:**

This parameter sets the duration of a fixed period of pulse width modulation of an output (setting: “Fix period time” in parameter “PWM mode”).

The setting of this parameter is used in case of an override or emergency mode. For normal operation via limit value evaluation, the setting of this parameter is not used.

**Note:**

The selected period duration of pulse width modulation must not be shorter than the sum of the heating and cooling time of the thermal drives.

**See also**

- ▣ Parameters for a continuous control value with “threshold value evaluation” [→ 80]

### 8.1.4.5 Parameters for a continuous control value with “threshold value evaluation”

In limit value evaluation, a continuous control value is converted into a switching signal via configurable limit values for opening and closing the valve.

**Examples:**

- With a configured limit value for closing the valve of 40 %, the valve is closed when control values  $\leq 40$  % are received (corresponds to "Off" or "0 %" compared to PWM).
- At a configured limit value for opening the valve of 60 % and the receipt of a control value  $\geq 60$  %, the valve is opened (corresponds to "On" or "100 %" compared to PWM).

The following parameters are shown if the parameter "Control value type" is set to "Continuous (1 Byte) with limit evaluation."

Source of control value

Parameter	Settings
Source of control value	External object Temperature control

**Function:**

This parameter is used to select the source for the control value.

**The following settings are possible:**

- External object:  
A communication object that receives the control value via the bus is used as the source.
- Temperature control:  
An internal control value, which comes directly from a temperature controller from the device, is used as the source. Additional parameters for assignment are then displayed.

**Other parameters:**

- If the parameter is set to "Temperature control" the following parameters are displayed:
  - "Temperature controller selection"
  - "Control value selection"

**More information:**

- Parameter "Temperature controller selection" [→ 83]
- Parameter "Control value selection" [→ 84]
- Parameter "Type of control value output" (temperature control) [→ 217]

Temperature controller selection

Parameter	Settings
Temperature controller selection	

**Function:**

This parameter is used to select the internal temperature controller (1 or 2) from which the control value is used.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Source of control value"
  - Setting: "Temperature control"

**Note:**

The assignment can only be made if the selected temperature controller has been configured correctly:

- Parameter "Control behavior" (parameter card "Heating/cooling," "Heating" or "Cooling" of the selected temperature controller)
  - Setting: "PI control"
- Parameter "Type of control value output" (parameter card "Heating/cooling," "Heating" or "Cooling" of the selected temperature controller)
  - Setting: "Steady (8-bit)"

**More information:**

- Parameter “Source of control value” [→ 83]
- Parameter “Control behavior” (temperature control) [→ 210]
- Parameter “Type of control value output” (temperature control) [→ 217]

#### Control value selection

Parameter	Settings
Control value selection	Heating control value (%) Heating control value (%), sequence 2 Cooling control value (%) Cooling control value (%), sequence 2

#### Function:

This parameter is used to select one of the control values provided by the temperature controller. The type of control value corresponds to the configuration of the temperature controller.

#### The following assignments are possible:

The following list describes the assignment of the output to the control value of the temperature controller for the controller operating mode “Heating.” The assignment for the controller operating modes “Cooling” and “Heating and cooling” is made in the same way and therefore not listed separately.

- If, for the selected temperature controller, parameter “Controller mode” is set to “Heating” the “Heating control value (%)” is assigned. A further selection is not possible as this is not made available by the temperature controller.
- If, for the selected temperature controller, parameter “Controller mode” is set to “Heating” and the parameter “Sequence control” is set to “enable you can select between “Heating control value (%)” and “Heating control value (%), sequence 2.”
- If, for the selected temperature controller, parameter “Controller mode” is set to “Heating and cooling” and parameter “Sequence control” is set to “enable,” you can therefore select between four available control values.

#### Availability:

The parameter is displayed if the following configuration has been made:

- Parameter “Source of control value”
  - Setting: “Temperature control”

#### Note:

The assignment can only be made if the selected temperature controller has been configured correctly:

- Parameter “Control behavior” (parameter card “Heating/cooling,” “Heating” or “Cooling” of the selected temperature controller)
  - Setting: “PI control”
- Parameter “Type of control value output” (parameter card “Heating/cooling,” “Heating” or “Cooling” of the selected temperature controller)
  - Setting: “Steady (8-bit)”

#### More information:

- Parameter “Source of control value” [→ 83]
- Parameter “Control behavior” [→ 210] (temperature control)
- Parameter “Type of control value output” [→ 217] (temperature control)

#### Limit for closing valve (%)

Parameter	Settings
Limit for closing valve (%) (Valve closed: control value <= limit)	0...100

#### Function:

This parameter can be used to set the percentage limit value for closing the valve. If the received control value is less than or equal to the limit value set here, the control value goes to 0 and the valve is closed according to the configured valve control direction.

**Note:**

The limit value for closing the valve must always be lower than the limit value for opening the valve.

**Example:**

- For examples, see “Parameters for a continuous control value with “threshold value evaluation” [→ 82]“

**Threshold for opening valve (%)**

Parameter	Settings
Threshold for opening valve (%) (open valve: control value >= threshold)	0...100

**Function:**

This parameter can be used to set the percentage limit value for opening the valve. If the received control value is greater than or equal to the limit value set here, the control value goes to 1 and the valve is opened according to the configured valve control direction.

**Note:**

The limit value for opening the valve must always be higher than the limit value for closing the valve.

**Example:**

- For examples, see “Parameters for a continuous control value with “threshold value evaluation” [→ 82]“

**Period duration of pulse width modulation**

Parameter	Settings
Period duration of pulse width modulation (hh:mm)	00:01 ... 00:30

**Function:**

This parameter sets the duration of a fixed period of pulse width modulation of an output (setting: “Fix period time” in parameter “PWM mode“).

The setting of this parameter is used in case of an override or emergency mode. For normal operation via limit value evaluation, the setting of this parameter is not used.

**Note:**

The selected period duration of pulse width modulation must not be shorter than the sum of the heating and cooling time of the thermal drives.

**See also**

- 📖 Parameters for a continuous control value with “threshold value evaluation” [→ 82]

### 8.1.4.6 Parameters for “Control value monitoring” and “Emergency mode”

If control value monitoring is enabled for a valve output, monitoring takes place at a configurable time interval to determine whether the control value telegram of an external room temperature controller is received cyclically. In addition, for the failure of the control value telegram, it is possible to define how the valve should behave in the absence of a control value (emergency mode).

**Control value monitoring** To configure the function “Control value monitoring,” set the parameter “Control value monitoring“ to “enable:”

Parameter	Settings
Control value monitoring	disable enable

**Function:**

This parameter enables or disables monitoring of the cyclically incoming control values for each valve output.

If the parameter is set to “enable,” and no control value telegrams are received within the configured monitoring time, it is possible to define for the failure of the control value telegram how the valve should behave in the absence of a control value (emergency mode).

The selected behavior of the parameter “Behavior on control value failure” is used. The actuator uses status object “A Control value failure” to send an error message, if the parameter “Object "Control value failure"” is enabled.

#### Other parameters:

If the parameter is set to “enable” the following parameters are displayed:

- “Monitoring time”
- “Behavior on control value failure”
- “Control value emergency mode (%)” (or if the parameter “Switch to summer/winter mode” is enabled: “Control value emergency mode, summer (%)” and “Control value emergency mode, winter (%)”)
- “Object "Control value failure"”

#### More information:

- Parameter “Monitoring time” [→ 86]
- Parameter “Behavior on control value failure” [→ 86]
- Parameter “Object "Control value failure"” [→ 87]
- Parameter “Control value in emergency mode (%)” [→ 87]
- Parameter “Control value emergency mode, summer (%)” [→ 87]
- Parameter “Control value emergency mode, winter (%)” [→ 88]
- Parameter “Switch to summer/winter mode” [→ 39]

#### Monitoring time

Parameter	Settings
Monitoring time (hh:mm)	00:00 ... 18:12

#### Function:

This parameter can be used to defined the control value monitoring duration for each valve output. During this period, at least one telegram must arrive, otherwise the configured value of parameter “Behavior on control value failure” is used. With a parameter value of 00:00, no monitoring takes place.

#### More information:

- Parameter “Behavior on control value failure” [→ 86]

#### Behavior on control value failure

Parameter	Settings
Behavior on control value failure	Off No change Control value emergency mode

#### Function:

This parameter can be used to define the behavior that is to be executed when the control value telegram is not received.

Once the control value is received again, the set Behavior on control value failure is reversed and the value of the currently received control value is used.

**The following settings are possible:**

- Off:  
The control value is set to 0 %. The thermal drive does not heat or cool any further.
- No change:  
The control value retains the value as before the failure of the control value telegram.
- Control value emergency mode:  
If the control value is not received, the control value receives the value of parameter "Control value emergency mode (%)."

**Object "Control value failure"**

Parameter	Settings
Object "Control value failure"	disable enable

**Function:**

This parameter can be used to enable or disable communication object "A Control value failure."

If control value monitoring is activated for an output and no control value telegrams are received within the configured monitoring time, the control value of emergency mode is activated for the corresponding valve output or the valve is closed or the current value is maintained.

The selected behavior of the parameter "Behavior on control value failure" is used. The actuator uses status object "A Control value failure" to send an error message.

**Other parameters:**

If the parameter is enabled, additional parameters for configuring the status are displayed.

**Communication object:**

If the parameter is set to "enable," the following communication object is displayed:

- "A Control value failure"

**More information:**

- Communication object "A control value error" [→ 92]
- Parameters that are visible if the "Status..." parameter is set to "enable" [→ 283]

**Control value emergency mode (%)**

Parameter	Settings
Control value emergency mode (%)	0...100

**Function:**

This parameter is used to set the value of the control value in emergency mode via a percentage value.

This control value prevents the rooms from cooling down or overheating in the absence of the regular control value.

Emergency mode is activated if no more control value telegrams are received when control value monitoring is enabled and the parameter "Behavior on control value failure" is set to "Control value emergency mode"

**Control value in emergency mode when using summer/winter mode**

If the operating mode of the device is set to summer and winter mode, two independent parameters for emergency mode will appear. Accordingly, a different control value can be selected for cooling in summer than for heating in winter. For this purpose, the following parameters can be configured for the control value in emergency mode.

- For more information on summer/winter mode, see: Parameter "Switch to summer/winter mode" (device settings) [→ 39]

**Control value emergency mode, summer (%)**

Parameter	Settings
Control value emergency mode, summer (%)	0...100

**Function:**

This parameter is used to set the size of the control value in emergency mode for the summer operating mode via a percentage value.

This control value prevents the rooms from overheating in the absence of the regular control value.

Emergency mode is activated if no more control value telegrams are received when control value monitoring is enabled and the parameter "Behavior on control value failure" is set to "Control value emergency mode"

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Switch to summer/winter mode" (parameter card "Device settings," "Functions, objects")
  - Setting: "Switch to summer/winter mode"

**More information:**

- Parameter "Switch to summer/winter mode" [→ 39]

**Control value  
emergency mode, winter  
(%)**

Parameter	Settings
Control value emergency mode, winter (%)	0...100

**Function:**

This parameter is used to set the size of the control value in emergency mode for the "Winter" operating mode via a percentage value.

This control value prevents the rooms from cooling down in the absence of the regular control value.

Emergency mode is activated if no more control value telegrams are received when control value monitoring is enabled and the parameter "Behavior on control value failure" is set to "Control value emergency mode"

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Switch to summer/winter mode" (parameter card "Device settings," "Functions, objects")
  - Setting: "enable"

**More information:**

- Parameter "Switch to summer/winter mode" [→ 39]



### 8.1.4.7 Parameters for “behavior after bus voltage recovery”

#### Initial value after bus voltage recovery

Parameter	Settings
Initial value after bus voltage recovery	Off On Starting value according to parameter: control value on bus voltage recovery Last status of control value (8 bit) Last received control value Control value emergency mode

**Function:**

This parameter is used to set the desired start value of the “Control value” communication object when bus voltage is recovered.

**The following settings are possible:**

- Off:  
On bus voltage recovery, the communication object receives the value “Off.”
- On:  
On bus voltage recovery, the communication object receives the value “On.”
- Starting value according to parameter: control value on bus voltage recovery:  
On bus voltage recovery, the communication object receives the value that has been entered for the control value under the parameter “Control value on bus voltage recovery (%).”
- Last status of control value (8 bit):  
The value of the communication object is set to the control value stored in the event of a bus voltage failure.
- Last received control value:  
On bus voltage recovery, the communication object receives the value of the last received control value.
- Control value emergency mode:  
On bus voltage recovery, the communication object receives the value of the control value that has been configured for emergency mode.

**Other parameters:**

If the parameter is set to “Starting value according to parameter: control value on bus voltage recovery,” the following parameter is displayed:

- “Control value on bus voltage recovery (%)”

**More information:**

- Parameter “Control value on bus voltage recovery (%)” [→ 89]

#### Control value on bus voltage recovery (%)

Parameter	Settings
Control value on bus voltage recovery (%)	0...100

**Function:**

This parameter can be used to specify the control value in percent that is to be set after bus voltage recovery.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Initial value after bus voltage recovery”
  - Setting: “Starting value according to parameter: control value on bus voltage recovery”

**More information:**

- Parameter “Initial value after bus voltage recovery” [→ 89]

### 8.1.4.8 Parameter for the “status” of the control value

#### Status switching

Parameter	Settings
Status switching	disable enable

**Function:**

This parameter is used to set whether communication object “A Status switching” is supposed to be available. The current status of the control is stored in the associated communication object.

- If the parameter “Valve in de-energized state” is set to “Closed:”  
If a logical “1” is sent, the output is opened (“ON”). If a logical “0” is sent, the output is closed (“OFF”).
- If the parameter “Valve in de-energized state” is set to “Open:”  
If a logical “1” is sent, the output is closed (“OFF”). If a logical “0” is sent, the output is opened (“ON”).

**Other parameters/parameter cards:**

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information”):

- “Send status on request“
- “Send status on change of status“
- “Block time for sending of status“
- “Send status cyclically“

**Communication object:**

If the parameter “Status switching“ is set to “enable,” the following communication object is displayed:

- “A Status switching“

**More information:**

- Communication object “A Status switching” [→ 92]
- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]

#### Status control value (1 bit)

Parameter	Settings
Status control value (1 bit)	disable enable

**Function:**

This parameter is used to set whether a 1-bit status object is sent for the control value of the output when pulse width modulation is applied.

When a logical “1” (“ON”) is sent, the control value is greater than 0 %. Heating and/or cooling is active via pulse width modulation.

When a logical “0” (“OFF”) is sent, the control value is equal to 0 %. Heating and/or cooling via pulse width modulation is not active.

**Other parameters:**

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information”):

- “Send status on request“
- “Send status on change of status“
- “Block time for sending of status“
- “Send status cyclically“

**Communication object:**

If the parameter is set to “enable,” the following communication object is displayed:

- A Status control value (1 bit)“

**More information:**

- Communication object “A Status control value” (1 bit) [→ 93]
- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]

Status control value (8 bit)

Parameter	Settings
Status control value (8 bit)	disable enable

**Function:**

This parameter is used to set whether an 8-bit status object is sent for the control value of the output when pulse width modulation is applied. The corresponding communication object sends the current control value in % (0...100).

**Other parameters:**

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information”):

- “Send status on request“
- “Send status on change of status“
- “Value change since last sent (%)“
- “Block time for sending of status“
- “Send status cyclically“

**Communication object:**

If the parameter is set to “enable,” the following communication object is displayed:

- “A Status control value (8 bit)“

**More information:**

- Communication object “A Status control value (8 bit)” [→ 93]
- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]

### 8.1.4.9 Communication objects “Control value configuration”

As the communication objects for the 6 valve outputs are the same and only differ in their numbers, the following describes only the communication objects of function block 1. The respective numbers of the communication objects of the other function blocks are shown in the table of all communication objects (Communication objects of the individual channels [→ 17]).

A Control value (On/Off)

No.	Object name	Function	Datapoint type	Flags
22	A Control value	On/Off	1.001 switch	CW

**Function:**

This communication object is used to open or close the valve on the output. This object is used to receive telegrams for a switching control value for the output.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter “Control value type“
  - Setting: “Switching (1Bit)“

A Control value (8-bit value)

No.	Object name	Function	Datapoint type	Flags
24	A Control value	8-bit value	5.001 percentage (0..100%)	CW

**Function:**

This communication object is used for opening or closing the valve on the output. This object is used to receive telegrams for a continuous control value for the output.

The valve is therefore not opened or closed immediately, but depending on the configuration of the continuous control value is used for calculating the PWM or for switching the output via an evaluation over an upper and lower limit.

#### Availability:

The communication object is displayed if the following configuration was made:

- Parameter "Control value type"
  - Setting: "Continuous (1 Byte) with pulse width modulation (PWM)" or "Continuous (1 Byte) with limit evaluation"

#### A Control value failure

No.	Object name	Function	Datapoint type	Flags
29	A Control value failure	1 = Failure	1.005 alarm	CRT

#### Function:

This communication object is used to send a telegram regarding the failure of a control value to the bus.

If control value monitoring is activated for an output and no control value telegrams are received within the configured monitoring time, the control value of emergency mode is activated for the corresponding valve output or the valve is closed or the current value is maintained.

The selected behavior of the parameter "Behavior on control value failure" is used. The actuator uses status object "A Control value failure" to send an error message.

If a logical "1" is sent, there is a fault and no setting telegram has been received during the configured cycle time. On a control value telegram is received, this value is reset to "0" and resent, if appropriate.

#### Availability:

The communication object is displayed if the following configuration was made:

- Parameter "Control value monitoring"
  - Setting: "enable"
- Parameter "Object "Control value failure""
  - Setting: "enable"

#### A Control value limitation

No.	Object name	Function	Datapoint type	Flags
30	A Control value limitation	On/Off	1.001 switch	CWTU

#### Function:

This communication object is used to activate or deactivate control value limitation.

Depending on the setting in parameter "Invert object "Control value limitation" (0 = On/1 = Off)," control value limitation is activated or deactivated with a "1" or a "0" via the communication object. Accordingly, the receipt of "0" or "1" (depending on the configured inversion) leads to the deactivation of the control value limitation.

#### Availability:

The communication object is displayed if the following configuration was made:

- Parameter "Control value limitation"
  - Setting: "enable"

#### A Status switching

No.	Object name	Function	Datapoint type	Flags
25	A Status switching	On/Off	1.001 switch	CRT

#### Function:

The thermal drive uses this status object to send a telegram regarding the current switching status of the corresponding output.

This status object contains the information whether voltage is present at the valve due to pulse width modulation at the output.

- If the parameter “Valve in de-energized state” is set to “Closed:”  
If a logical “1” is sent, the output is opened (“ON”). If a logical “0” is sent, the output is closed (“OFF”).
- If the parameter “Valve in de-energized state” is set to “Open:”  
If a logical “1” is sent, the output is closed (“OFF”). If a logical “0” is sent, the output is opened (“ON”).

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter “Status switching“
  - Setting: “enable“

**A Status control value (1 bit)**

No.	Object name	Function	Datapoint type	Flags
26	A Status control value (1 bit)	On/Off	1.001 switch	CRT

**Function:**

Via this 1-bit status object, the actuator sends a telegram whether the control value is greater than 0 % (“ON”) or equal to 0 % (“OFF”).

This status object provides the information whether this channel is in operation (heating or cooling), independent of the current switching state at the channel output.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter “Status control value (1 bit)“
  - Setting: “enable“

**A Status control value (8 bit)**

No.	Object name	Function	Datapoint type	Flags
28	A Status control value (8 bit)	0...100 %	5.001 percentage (0..100%)	CRT

**Function:**

If pulse width modulation is active, the thermal drive uses this 8-bit status object to send a telegram with the current value of the control value in percent (0...100).

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter “Status control value (8 bit)“
  - Setting: “enable“

**A Status control value limitation**

No.	Object name	Function	Datapoint type	Flags
31	A Status control value limitation	On/Off	1.011 state	CRT

**Function:**

This object is used to output the status of the current state of the control value limitation (“On” or “Off”). This can be queried, for example, by a pushbutton or a visualization in order to check and, if necessary, adjust the control value limitation.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter “Control value limitation“
  - Setting: “enable“
- Parameter “Object “Status control value limitation”“
  - Setting: “enable“

## 8.1.5 Overrides

The thermal drive actuator can be used to configure up to six different override function blocks, which can be used in the following situations, for example:

- In a heating and cooling system, safety functions with a lockout or a defined forced behavior for the valve outputs are required.
- For maintenance or installation, a service mode must take effect that locks certain valve positions against incoming control values.

The override function block can be configured for overriding the control values individually per channel and individually.

The priority of the override function blocks is determined by the position in the processing chain. Override block 6 has the highest priority, while override block 1 has the lowest priority.

### See also

- Parameters of the “Functions, objects” parameter card [→ 94]
- Lock [→ 95]
- Forced control [→ 102]
- Forced position [→ 108]
- Service mode [→ 119]
- User defined [→ 125]

### 8.1.5.1 Parameters of the “Functions, objects” parameter card

#### Override 1 – 6

Parameter	Settings
Override 1 – 6	Deactivated Lock Forced Control Forced position Service mode User defined

#### Function:

These parameters can be used to set 6 overrides per channel. The priority of the override function blocks is determined by the position in the processing chain. Override block 6 has the highest priority, while override block 1 has the lowest priority.

#### Other parameter cards:

If an override is activated, the parameter card “override [number], [type of override]” is displayed.

#### Communication objects:

Depending on which override was activated and which settings were made, different communication objects are displayed.

## 8.1.5.2 Lock

The “Lock” override can be configured as a safety function for locking the valve output for the current valve position.

### Parameters on the “Functions, objects” parameter card of the thermal drive



The parameters are configured in the same way for all 6 channels and are therefore just described once for override 1.

#### Override 1 – 6

As the prerequisite for function “Lock,” set the parameter “Override 1-6” on the “Functions, objects” parameter card as follows:

Parameter	Settings
Override 1 – 6	Lock

#### Function:

These parameters can be used to set 6 overrides. The priority of the override function blocks is determined by the position in the processing chain. Override block 6 has the highest priority, while override block 1 has the lowest priority.

#### Other parameters:

If an override is activated, the parameter “Overrides status” is also displayed.

#### Other parameter cards:

If the override “Lock” is activated, the parameter card “Override 1, lock” is displayed.

#### Communication object:

If the override “Lock” is activated, the following communication object is displayed:

- “A Override 1, Lock“

#### More information:

- Communication object “A Override 1, lock” [→ 101]
- Parameter “Overrides status” [→ 95]
- Parameters on the “Override 1, lock” parameter card [→ 96]

#### Overrides status

Parameter	Settings
Overrides status	enable disable

#### Function:

This parameter is used to activate or deactivate the communication object for the status of the overrides. This corresponding communication object is used to report whether at least one override is active.

#### Availability:

The parameter “Overrides status” is displayed as soon as at least one override is activated.

#### Other parameters:

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information”):

- “Send status on request“
- “Send status on change of status“
- “Send status cyclically“

#### Communication object:

If the parameter “Overrides status“ is set to “enable“ the communication object “A Overrides status“ is displayed.

**More information:**

- Communication object “Overrides status“ [→ 102]
- Parameters that are visible if the “Status...” parameter is set to “enable“ [→ 283]

## Parameters on the “Override 1, lock” parameter card

### Control Value Input

Parameter	Settings
Control Value Input	disable enable

**Function:**

This parameter can be used to set whether instead of the switching input, a control value input should be used for the activation and deactivation of the override function.

**Other parameters:**

If the parameter is set to “enable“ the following parameters are displayed:

- “Control Value Input Data Type“
- “Threshold for Off (<=)“
- “Threshold for On (>=)“

**Communication object:**

If the parameter “Control Value Input“ is in status “enable,” the communication object “A Override 1, lock“ is hidden and the communication object “A Override 1, lock, control value“ is displayed.

**More information:**

- Communication object “A Override 1, lock, control value“ [→ 101]
- Parameter “Control value input data type“ [→ 96]
- Parameter “Threshold for Off (<=)“ [→ 97]
- Parameter “Threshold for On (>=)“ [→ 98]

### Control Value Input Data Type

Parameter	Settings
Control Value Input Data Type	Percentage (%) DPT 5.001 Value (8-bit) DPT 5.010 2-byte unsigned value DPT 7.x 2-byte signed value DPT 8.x 2-byte floating point number DPT 9.x Temperature (°C) DPT 9.001 Illuminance (lx) DPT 9.004 Wind speed (m/s) DPT 9.005 Current (mA) DPT 9.021 Power (kW) DPT 9.024 Wind speed (km/h) DPT 9.028 4-byte unsigned value DPT 12.x 4-byte signed value DPT 13.x 4-byte floating point number DPT 14.x Power (W) DPT 14.056

**Function:**

This parameter is used to set the data type of the “Control value“ communication object.

**The following settings are possible:**



- Percentage (%) DPT 5.001:  
Corresponds to the datapoint type “5.001 percent (0...100 %).”
- Value (8-bit) DPT 5.010:  
Corresponds to the datapoint type “5.010 counting impulses (0...255).”
- 2-byte unsigned value DPT 7.x:  
Corresponds to the datapoint type “2 bytes without prefix.”
- 2-byte signed value DPT 8.x:  
Corresponds to the datapoint type “2 bytes with prefix.”
- 2-byte floating point number DPT 9.x:  
Corresponds to the datapoint type “2 bytes floating value.”
- Temperature (°C) DPT 9.001:  
Corresponds to the datapoint type “9.001 temperature °C.”
- Illuminance (lx) DPT 9.004:  
Corresponds to the datapoint type “9.004 illuminance lx.”
- Wind speed (m/s) DPT 9.005:  
Corresponds to the datapoint type “9.005 speed (m/s).”
- Current (mA) DPT 9.021:  
Corresponds to the datapoint type “9.021 current mA.”
- Power (kW) DPT 9.024:  
Corresponds to the datapoint type “9.024 output kW.”
- Wind speed (km/h) DPT 9.028:  
Corresponds to the datapoint type “9.028 wind speed (km/h).”
- 4-byte unsigned value DPT 12.x:  
Corresponds to the datapoint type “4 bytes without prefix.”
- 4-byte signed value DPT 13.x:  
Corresponds to the datapoint type “4 bytes with prefix.”
- 4-byte floating point number DPT 14.x:  
Corresponds to the datapoint type “4 bytes floating value.”
- Power (W) DPT 14.056:  
Corresponds to the datapoint type “14.056 output W.”

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: “Control Value Input”
  - Setting: “enable”

**More information:**

- Parameter “Control value input” [→ 96]

**Threshold for Off (<=)**

Parameter	Settings
Threshold for Off (<=)	Additional values depending on the selected data type and its value range

**Function:**

This parameter determines the threshold for “Off.”

If the value of this communication object is equal to or smaller than the configured threshold for “Off,” then the determined switching value is equal to “Off” (0).

The permitted values for the threshold depend on the selected data type.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: “Control Value Input”
  - Setting: “enable”

**Note:**

If both entered threshold values for “Off” and “On” are equal, then when exactly this value is received this is interpreted as the “threshold for ON.”

If the “threshold for OFF” is configured such that it is greater than the “threshold for ON,” then the higher value is automatically used as the “threshold for ON.”

**More information:**

- Parameter “Control value input” [→ 96]

**Threshold for On (>=)**

Parameter	Settings
Threshold for On (>=)	Additional values depending on the selected data type and its value range

**Function:**

This parameter determines the threshold for “On.”

If the value of this communication object is equal to or greater than the configured threshold for “On,” then the determined switching value is equal to “On” (1).

The permitted values for the threshold depend on the selected data type.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: “Control Value Input“
  - Setting: “enable“

**Note:**

If both entered threshold values for “Off” and “On” are equal, then when exactly this value is received this is interpreted as the “threshold for ON.”

If the “threshold for OFF” is configured such that it is greater than the “threshold for ON,” then the higher value is automatically used as the “threshold for ON.”

**More information:**

- Parameter “Control value input” [→ 96]

**Invert Override Control**

Parameter	Settings
Invert Override Control	No Yes

**Function:**

This parameter is used to set whether the input value of communication object “A Override 1, Lock” should be used directly or inverted.

**More information:**

- Communication object “A Override 1, lock” [→ 101]

**Behavior on override deactivation**

Parameter	Settings
Behavior on override deactivation	No change Control value according to parameter Updated value

**Function:**

This parameter is used to define how the device responds when an override is deactivated.

**The following settings are possible:**

- No change:  
The value at the output is retained until a new value arrives at the input of the function block.
- Control value according to parameter:  
The valve output moves to the value set in the parameter “Control value at deactivation (%).”
- Updated value:  
The valve output moves to the value at the input of the function block.

**Other parameters:**

If the parameter is set to “Control value according to parameter“ the following parameters are displayed:

- “Control value at deactivation (%)“

If summer/winter mode has been configured for the thermal drive actuator (parameter "Switch to summer/winter mode" on the "Device settings" parameter card):

- "Control value at deactivation, summer (%)"
- "Control value at deactivation, winter (%)"

**More information:**

- Parameter "Control value at deactivation (%)" [→ 99]
- Parameter "Control value at deactivation, summer (%)" [→ 99]
- Parameter "Control value at deactivation, winter (%)" [→ 99]
- Parameter "Switch to summer/winter mode" [→ 39]

**Control value at deactivation (%)**

Parameter	Settings
Control value at deactivation (%)	0...100

**Function:**

This parameter is used to specify the value of the control value in percent to be set when the override is deactivated.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Behavior on override deactivation"
  - Setting: "Control value according to parameter"

**More information:**

- Parameter "Behavior on override deactivation" [→ 98]

**Control value at deactivation, summer (%)**

Parameter	Settings
Control value at deactivation, summer (%)	0...100

**Function:**

This parameter is used to specify the value of the control value for the "Summer" operating mode in percent, which is to be set when the override is deactivated if summer/winter mode has been configured for the thermal drive actuator.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Switch to summer/winter mode" (parameter card "Device settings," "Functions, objects")
  - Setting: "Switch to summer/winter mode"
- Parameter "Behavior on override deactivation"
  - Setting: "Control value according to parameter"

**More information:**

- Parameter "Switch to summer/winter mode" [→ 39]
- Parameter "Behavior on override deactivation" [→ 98]

**Control value at deactivation, winter (%)**

Parameter	Settings
Control value at deactivation, winter (%)	0...100

**Function:**

This parameter is used to specify the value of the control value for the "summer" operating mode in percent, which is to be set when the override is deactivated if summer/winter mode has been configured for the thermal drive actuator.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Switch to summer/winter mode" (parameter card "Device settings," "Functions, objects")
  - Setting: "Switch to summer/winter mode"
- Parameter "Behavior on override deactivation"

- Setting: “Control value according to parameter“

**More information:**

- Parameter “Switch to summer/winter mode” [→ 39]
- Parameter “Behavior on override deactivation” [→ 98]

**Lock valve flushing if override is active**

Parameter	Settings
Lock valve flushing if override is active	No Yes

**Function:**

This parameter is used to set, whether valve flushing is locked if an override is activated.

**Note:**

This parameter is also displayed if valve flushing has not been generally enabled for the respective actuator. The valve flushing setting when an override is active is irrelevant in that case.

**Status Override**

Parameter	Settings
Status Override	disable enable

**Function:**

This parameter is used to activate or deactivate the communication object for the status of the “Lock” override.

This communication object is used to report whether the “Lock” override is active.

**Other parameters:**

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information”):

- “Send status on request“
- “Send status on change of status“
- “Send status cyclically“

**More information:**

- Communication object “A Override 1, lock, status” [→ 102]
- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]

**Start value/behavior of override input on bus voltage recovery**

Parameter	Settings
Start value/behavior of override input on bus voltage recovery	Off On Deactivated Last value

**Function:**

This parameter can be used to set the desired starting value or the desired start behavior of the override input on bus voltage recovery.

**The following settings are possible:**

- Off:  
The override function block behaves as if an “Off” had been received at the override block input on bus voltage recovery.
- On:  
The override function block behaves as if an “On” had been received at the override block input on bus voltage recovery.

- Deactivated:  
The override function block is deactivated on bus voltage recovery.
- Last value:  
The override input of the function block is then set to the value stored on bus voltage failure.

## Communication objects “Lock”



As the communication objects for the 6 override function blocks are the same and only differ in their numbers, the following lists only the communication objects of override function block 1. The respective numbers of the communication objects of the other override function blocks are shown in the table of all communication objects (Communication objects [→ 54]).

A switching output or a control value input can be used for the “Lock” override. If the parameter “Control Value Input” on parameter card “override 1, lock” is set to “enable,” the communication object is hidden and communication object “A Override 1, Lock” is hidden and communication object “A Override 1, Lock, Control” is displayed instead.

### A Override 1, Lock

No.	Object name	Function	Datapoint type	Flags
38	A Override 1, Lock	On/Off	1.003 enable	CW

#### Function:

This communication object can be used to lock the valve output against changes for as long as the lock is active irrespective of the upstream sub-functions.

The lock is active when the value of the communication object is “On.”

If an inversion is configured, the lock is active when the value of the communication object is “Off.”

#### Availability:

The communication object is displayed if the following configuration was made:

- Parameter: “Override 1” (“Functions, objects” parameter card)
  - Setting: “Lock”

### A Override 1, Lock, Control

No.	Object name	Function	Datapoint type	Flags
40	A Override 1, Lock, Control	Value	5.001 percentage (0..100%) 5.010 counter pulses (0..255) 7.* 2-byte unsigned value 8.* 2-byte signed value 9.001 temperature (°C) 9.004 lux (Lux) 9.005 speed (m/s) 9.021 current (mA) 9.024 power (kW) 9.028 wind speed (km/h) 9.* 2-byte float value 12.* 4-byte unsigned value 13.* 4-byte signed value 14.056 power (W)	CW

#### Function:

This communication object enables the use of a control value as the input value for the override.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter “Override 1” (“Functions, objects” parameter card)
  - Setting: “Lock”
- Parameter “Control Value Input” (“Override 1, lock” parameter card)
  - Setting: “enable”

**A Override 1, Lock, Status**

No.	Object name	Function	Datapoint type	Flags
41	A Override 1, Lock, Status	On/Off	1.002 boolean	CRT

**Function:**

This status object is used to report whether “Override 1, lock” is active. If a logical “0” is sent, no “Lock” override is active; if a logical “1” is sent, a “Lock” override is active.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter “Status Override” (“Override 1, lock” parameter card)
  - Setting: “enable”

**A Overrides status**

No.	Object name	Function	Datapoint type	Flags
62	A Overrides status	1 = Active	1.002 boolean	CRT

**Function:**

This status object is used to report that at least one override is active. If a logical “0” is received, no override is active; if a logical “1” is received, at least one override is active.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter “Overrides status” (“Functions, objects” parameter card)
  - Setting: “enable”

### 8.1.5.3 Forced control

The “Forced control” override can be used to specify a defined valve position and an interlock for subordinate functions via a 2-bit communication object.

## Parameters on the “Functions, objects” parameter card of the thermal drive



The parameters are configured in the same way for all 6 channels and are therefore just described once for override 1.

**Override 1 – 6**

As the prerequisite for function “Forced Control,” set the parameter “Override 1 – 6” on the “Functions, objects” parameter card as follows:

Parameter	Settings
Override 1 – 6	Forced Control

**Function:**

These parameters can be used to set 6 overrides. The priority of the override function blocks is determined by the position in the processing chain. Override block 6 has the highest priority, while override block 1 has the lowest priority.

**Other parameters:**

If an override is activated, the parameter “Overrides status” is also displayed.

**Other parameter cards:**

If the override “Forced Control“ is activated, the parameter card “Override 1, forced control” is displayed.

**Communication object:**

If the override “Forced Control” is activated, the following communication object is displayed:

- “A Override 1, Forced Control“

**More information:**

- Communication object “A Override 1, forced control” [→ 108]
- Parameter “Overrides status” [→ 103]
- Parameters on the “Override 1, forced control” parameter card [→ 103]

**Overrides status**

Parameter	Settings
Overrides status	enable disable

**Function:**

This parameter is used to activate or deactivate the communication object for the status of the overrides. This corresponding communication object is used to report whether at least one override is active.

**Availability:**

The parameter “Overrides status” is displayed as soon as at least one override is activated.

**Other parameters:**

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information”):

- “Send status on request“
- “Send status on change of status“
- “Send status cyclically“

**Communication object:**

If the parameter “Overrides status“ is set to “enable“ the communication object “A Overrides status” is displayed.

**More information:**

- Communication object “A overrides status” [→ 108]
- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]

**Parameters on the “Override 1, forced control” parameter card**

**Delay time for override activation**

Parameter	Settings
Delay time for override activation (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter can be used to set a delay time for the activation of the override. If the parameter value is 00:00:00, no delay takes place.

**Delay time for override deactivation**

Parameter	Settings
Delay time for override deactivation (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter can be used to set a delay time for the deactivation of the override.

If the parameter value is 00:00:00, no delay takes place.

#### Control value at activation (%)

Parameter	Settings
Control value at activation (%)	0...100

#### Function:

This parameter is used to specify the value of the control value in percent to be set on activation.

#### Control value at activation, summer (%)

Parameter	Settings
Control value at activation, summer (%)	0...100

#### Function:

This parameter is used to specify the value of the control value for the "Summer" operating mode in percent, which is to be set on activation if summer/winter mode has been configured for the thermal drive actuator.

#### Availability:

The parameter is displayed if the following configuration has been made:

- Parameter "Switch to summer/winter mode" (parameter card "Device settings," "Functions, objects")
  - Setting: "Switch to summer/winter mode"

#### More information:

- Parameter "Switch to summer/winter mode" [→ 39]

#### Control value at activation, winter (%)

Parameter	Settings
Control value at activation, winter (%)	0...100

#### Function:

This parameter is used to specify the value of the control value for the "Winter" operating mode in percent, which is to be set on activation if summer/winter mode has been configured for the thermal drive actuator.

#### Availability:

The parameter is displayed if the following configuration has been made:

- Parameter "Switch to summer/winter mode" (parameter card "Device settings," "Functions, objects")
  - Setting: "Switch to summer/winter mode"

#### More information:

- Parameter "Switch to summer/winter mode" [→ 39]

#### Behavior on override deactivation

Parameter	Settings
Behavior on override deactivation	No change Control value according to parameter Updated value

#### Function:

This parameter is used to define how the device responds when an override is deactivated.

#### The following settings are possible:

- No change:  
The value at the output is retained until a new value arrives at the input of the function block.
- Control value according to parameter:  
The valve output moves to the value set in the parameter "Control value at deactivation (%)."
- Updated value:  
The valve output moves to the value at the input of the function block.

#### Other parameters:



If the parameter is set to "Control value according to parameter" the following parameters are displayed:

- "Control value at deactivation (%)"

If summer/winter mode has been configured for the thermal drive actuator (parameter "Switch to summer/winter mode" on the "Device settings" parameter card):

- "Control value at deactivation, summer (%)"
- "Control value at deactivation, winter (%)"

**More information:**

- Parameter "Control value at deactivation (%)" [→ 105]
- Parameter "Control value at deactivation, summer (%)" [→ 105]
- Parameter "Control value at deactivation, winter (%)" [→ 105]
- Parameter "Switch to summer/winter mode" [→ 39]

**Control value at deactivation (%)**

Parameter	Settings
Control value at deactivation (%)	0...100

**Function:**

This parameter is used to specify the value of the control value in percent to be set when the override is deactivated.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Behavior on override deactivation"
  - Setting: "Control value according to parameter"

**More information:**

- Parameter "Behavior on override deactivation" [→ 104]

**Control value at deactivation, summer (%)**

Parameter	Settings
Control value at deactivation, summer (%)	0...100

**Function:**

This parameter is used to specify the value of the control value for the "Summer" operating mode in percent, which is to be set when the override is deactivated if summer/winter mode has been configured for the thermal drive actuator.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Switch to summer/winter mode" (parameter card "Device settings," "Functions, objects")
  - Setting: "Switch to summer/winter mode"
- Parameter "Behavior on override deactivation"
  - Setting: "Control value according to parameter"

**More information:**

- Parameter "Behavior on override deactivation" [→ 104]
- Parameter "Switch to summer/winter mode" [→ 39]

**Control value at deactivation, winter (%)**

Parameter	Settings
Control value at deactivation, winter (%)	0...100

**Function:**

This parameter is used to specify the value of the control value for the "summer" operating mode in percent, which is to be set when the override is deactivated if summer/winter mode has been configured for the thermal drive actuator.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Switch to summer/winter mode“ (parameter card “Device settings,” “Functions, objects”)
  - Setting: “Switch to summer/winter mode“
- Parameter “Behavior on override deactivation“
  - Setting: “Control value according to parameter“

**More information:**

- Parameter “Behavior on override deactivation” [→ 104]
- Parameter “Switch to summer/winter mode” [→ 39]

**Lock valve flushing if override is active**

Parameter	Settings
Lock valve flushing if override is active	No Yes

**Function:**

This parameter is used to set, whether valve flushing is locked if an override is activated.

**Note:**

This parameter is also displayed if valve flushing has not been generally enabled for the respective actuator. The valve flushing setting when an override is active is irrelevant in that case.

**Status Override**

Parameter	Settings
Status Override	disable enable

**Function:**

This parameter is used to activate or deactivate the communication object for the status of the “Forced control” override.

This communication object is used to report whether the “Forced control” override is active.

**Other parameters:**

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information”):

- “Send status on request“
- “Send status on change of status“
- “Send status cyclically“

**More information:**

- Communication object “A Override 1, forced control, status” [→ 108]
- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]

**Start value/behavior of override input on bus voltage recovery**

Parameter	Settings
Start value/behavior of override input on bus voltage recovery	Forced valve open Forced valve closed Deactivated Last value

**Function:**

This parameter can be used to set the desired starting value or the desired start behavior of the override input on bus voltage recovery.

**The following settings are possible:**

- Forced valve open:  
The valve output opens the valve and locks this position.
- Forced valve closed:  
The valve output closes the valve and locks this position.

- **Deactivated:**  
The override function block is deactivated on bus voltage recovery.
- **Last value:**  
The override input of the function block is then set to the value stored on bus voltage failure.

## Communication objects “Forced control”



As the communication objects for the 6 override function blocks are the same and only differ in their numbers, the following lists only the communication objects of override function block 1. The respective numbers of the communication objects of the other override function blocks are shown in the table of all communication objects (Communication objects [→ 54]).

### A Override 1, Forced Control

No.	Object name	Function	Datapoint type	Flags
39	A Override 1, Forced Control	On/Off	2.001 switch control	CW

#### Function:

This 2-bit communication object enables forced movement of the valve drives to an open or closed position independent of the upstream sub-functions.

#### The following settings are possible:

Bit 1	Bit 0	Function
0	0	Forced control not active
0	1	Forced control not active
1	0	Forced closing of valve
1	1	Forced opening of valve

#### Availability:

The communication object is displayed if the following configuration was made:

- Parameter “Override 1” (“Functions, objects” parameter card)
  - Setting: “Forced Control”

### A Override 1, Forced Control, Status

No.	Object name	Function	Datapoint type	Flags
41	A Override 1, Forced Control, Status	On/Off	1.002 boolean	CRT

#### Function:

This status object is used to report whether “Override 1, forced control” is active. If a logical “0” is sent, no “Forced control” override is active; if a logical “1” is sent, a “Forced control” override is active.

#### Availability:

The communication object is displayed if the following configuration was made:

- Parameter “Status Override” (“Override 1, forced control” parameter card)
  - Setting: “enable”

### A Overrides status

No.	Object name	Function	Datapoint type	Flags
62	A Overrides status	1 = Active	1.002 boolean	CRT

#### Function:

This status object is used to report that at least one override is active. If a logical “0” is received, no override is active; if a logical “1” is received, at least one override is active.

#### Availability:

The communication object is displayed if the following configuration was made:

- Parameter “Overrides status” (“Functions, objects” parameter card)
  - Setting: “enable”

### 8.1.5.4 Forced position

The “Forced position” override can be used to define a valve position and locking for subordinate functions.

## Parameters on the “Functions, objects” parameter card of the thermal drive



### Override 1 – 6

The parameters are configured in the same way for all 6 channels and are therefore just described once for override 1.

As the prerequisite for function “Forced position,” set the parameter “Override 1-6” on the “Functions, objects” parameter card as follows:

Parameter	Settings
Override 1 – 6	Forced position

#### Function:

These parameters can be used to set 6 overrides. The priority of the override function blocks is determined by the position in the processing chain. Override block 6 has the highest priority, while override block 1 has the lowest priority.

#### Other parameters:

If an override is activated, the parameter “Overrides status” is also displayed.

#### Other parameter cards:

If the override “Forced position” is activated, the parameter card “Override 1, forced position” is displayed.

#### Communication objects:

If the override “Forced position” is activated, the following communication object is displayed:

- “A Override 1, Forced position“

#### More information:

- Communication object “A Override 1, forced position” [→ 117]
- Parameter “Overrides status” [→ 109]
- Parameter on the “Override 1, forced position” parameter card [→ 110]

### Overrides status

Parameter	Settings
Overrides status	enable disable

#### Function:

This parameter is used to activate or deactivate the communication object for the status of the overrides. This corresponding communication object is used to report whether at least one override is active.

#### Availability:

The parameter “Overrides status” is displayed as soon as at least one override is activated.

#### Other parameters:

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information”):

- “Send status on request“
- “Send status on change of status“
- “Send status cyclically“

#### Communication object:

If the parameter “Overrides status” is set to “enable” the communication object “A Overrides status” is displayed.

**More information:**

- Communication object “A overrides status” [→ 118]
- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]

## Parameter on the “Override 1, forced position” parameter card

### Control Value Input

Parameter	Settings
Control Value Input	disable enable

**Function:**

This parameter can be used to set whether instead of the switching input, a control value input should be used for the activation and deactivation of the override function.

**Other parameters:**

If the parameter is set to “enable” the following parameters are displayed:

- “Control Value Input Data Type“
- “Threshold for Off (<=)“
- “Threshold for On (>=)“

**Communication object:**

If the parameter “Control Value Input“ is in status “enable,” the communication object “A Override 1, forced position” is hidden and the parameter “A Override 1, forced position, control value” is displayed.

**More information:**

- Communication object “A Override 1, forced position, control value” [→ 118]
- Parameter “Control value input data type” [→ 110]
- Parameter “Threshold for Off (<=)” [→ 111]
- Parameter “Threshold for On (>=)” [→ 112]

### Control Value Input Data Type

Parameter	Settings
Control Value Input Data Type	Percentage (%) DPT 5.001 Value (8-bit) DPT 5.010 2-byte unsigned value DPT 7.x 2-byte signed value DPT 8.x 2-byte floating point number DPT 9.x Temperature (°C) DPT 9.001 Illuminance (lx) DPT 9.004 Wind speed (m/s) DPT 9.005 Current (mA) DPT 9.021 Power (kW) DPT 9.024 Wind speed (km/h) DPT 9.028 4-byte unsigned value DPT 12.x 4-byte signed value DPT 13.x 4-byte floating point number DPT 14.x Power (W) DPT 14.056

**Function:**

This parameter is used to set the data type of the “Control value” communication object.

**The following settings are possible:**

- Percentage (%) DPT 5.001:  
Corresponds to the datapoint type “5.001 percent (0...100 %).”
- Value (8-bit) DPT 5.010:  
Corresponds to the datapoint type “5.010 counting impulses (0...255).”
- 2-byte unsigned value DPT 7.x:  
Corresponds to the datapoint type “2 bytes without prefix.”
- 2-byte signed value DPT 8.x:  
Corresponds to the datapoint type “2 bytes with prefix.”
- 2-byte floating point number DPT 9.x:  
Corresponds to the datapoint type “2 bytes floating value.”
- Temperature (°C) DPT 9.001:  
Corresponds to the datapoint type “9.001 temperature °C.”
- Illuminance (lx) DPT 9.004:  
Corresponds to the datapoint type “9.004 illuminance lx.”
- Wind speed (m/s) DPT 9.005:  
Corresponds to the datapoint type “9.005 speed (m/s).”
- Current (mA) DPT 9.021:  
Corresponds to the datapoint type “9.021 current mA.”
- Power (kW) DPT 9.024:  
Corresponds to the datapoint type “9.024 output kW.”
- Wind speed (km/h) DPT 9.028:  
Corresponds to the datapoint type “9.028 wind speed (km/h).”
- 4-byte unsigned value DPT 12.x:  
Corresponds to the datapoint type “4 bytes without prefix.”
- 4-byte signed value DPT 13.x:  
Corresponds to the datapoint type “4 bytes with prefix.”
- 4-byte floating point number DPT 14.x:  
Corresponds to the datapoint type “4 bytes floating value.”
- Power (W) DPT 14.056:  
Corresponds to the datapoint type “14.056 output W.”

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: “Control Value Input”
  - Setting: “enable”

**More information:**

- Parameter “Control value input” [→ 110]

**Threshold for Off (<=)**

Parameter	Settings
Threshold for Off (<=)	Additional values depending on the selected data type and its value range

**Function:**

This parameter determines the threshold for “Off.”

If the value of this communication object is equal to or smaller than the configured threshold for “Off,” then the determined switching value is equal to “Off” (0).

The permitted values for the threshold depend on the selected data type.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: “Control Value Input”
  - Setting: “enable”

**Note:**

If both entered threshold values for “Off” and “On” are equal, then when exactly this value is received this is interpreted as the “threshold for ON.”

If the “threshold for OFF” is configured such that it is greater than the “threshold for ON,” then the higher value is automatically used as the “threshold for ON.”

**More information:**

- Parameter “Control value input” [→ 110]

**Threshold for On (>=)**

Parameter	Settings
Threshold for On (>=)	Additional values depending on the selected data type and its value range

**Function:**

This parameter determines the threshold for “On.”

If the value of this communication object is equal to or greater than the configured threshold for “On,” then the determined switching value is equal to “On” (1).

The permitted values for the threshold depend on the selected data type.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: “Control Value Input“
  - Setting: “enable“

**Note:**

If both entered threshold values for “Off” and “On” are equal, then when exactly this value is received this is interpreted as the “threshold for ON.”

If the “threshold for OFF” is configured such that it is greater than the “threshold for ON,” then the higher value is automatically used as the “threshold for ON.”

**More information:**

- Parameter “Control value input” [→ 110]

**Invert Override Control**

Parameter	Settings
Invert Override Control	No Yes

**Function:**

This parameter is used to set whether the input value of communication object “A Override 1, forced position” should be used directly or in inverted form.

**More information:**

- Communication object “A Override 1, forced position” [→ 117]

**Delay time for override activation**

Parameter	Settings
Delay time for override activation (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter can be used to set a delay time for the activation of the override.

If the parameter value is 00:00:00, no delay takes place.

**Delay time for override deactivation**

Parameter	Settings
Delay time for override deactivation (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter can be used to set a delay time for the deactivation of the override.

If the parameter value is 00:00:00, no delay takes place.

**Monitoring time**

Parameter	Settings
Monitoring time (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**



This parameter is used to set whether the cyclical input of telegrams to the communication object for central override should be monitored and how long the monitoring time is.

With a parameter value of 00:00:00, no monitoring takes place.

For all other parameter values, the cyclical input of deactivation telegrams is monitored. If the monitoring time is exceeded, the override is activated automatically.

### Override Duration

Parameter	Settings
Override Duration (hh:mm:ss)	00:00:00 ... 18:12:15

#### Function:

This parameter can be used to set the desired on period with activated override.

The override duration is then re-started with each incoming activation telegram.

With a parameter value of 00:00:00, the override duration is unlimited.

#### Note:

If the monitoring time is simultaneously set not equal to 00:00:00, the following behavior will be observed:

- Monitoring time < override duration:**  
 The override duration is triggered using a cyclically incoming activation telegram. The configured override duration is not effective.
- Monitoring time > override duration:**  
 With the elapse of the override duration, the override is switched off. With the next incoming activation telegram for monitoring, it is re-activated and the override duration begins again.

### Behavior on override activation

Parameter	Settings
Behavior on override activation	Off On No change Control value according to parameter

#### Function:

The parameter is used to specify how the device behaves when an override is activated.

#### The following settings are possible:

- Off:**  
 The valve output closes the valve.
- On:**  
 The valve output opens the valve.
- No change:**  
 The value waiting at the output of the function block is retained. Values arriving at the input of the function block are not passed on to the output.
- Control value according to parameter:**  
 The valve output moves to the value set in parameter "Control value at activation (%)."

#### Other parameters:

If the parameter is set to "Control value according to parameter" the following parameters are displayed:

- "Control value at activation (%)"

If summer/winter mode has been configured for the thermal drive actuator (parameter "Switch to summer/winter mode" on the "Device settings" parameter card):

- "Control value at activation, summer (%)"
- "Control value at activation, winter (%)"

#### More information:

- Parameter “Control value at activation (%)” [→ 114]
- Parameter “Control value at activation, summer (%)” [→ 114]
- Parameter “Control value at activation, winter (%)” [→ 114]
- Parameter “Switch to summer/winter mode” [→ 39]

#### Control value at activation (%)

Parameter	Settings
Control value at activation (%)	0...100

#### Function:

This parameter is used to specify the value of the control value in percent to be set on activation.

#### Availability:

The parameter is displayed if the following configuration has been made:

- Parameter “Behavior on override activation”
  - Setting: “Control value according to parameter”

#### More information:

- Parameter “Behavior on override activation” [→ 113]

#### Control value at activation, summer (%)

Parameter	Settings
Control value at deactivation, summer (%)	0...100

#### Function:

This parameter is used to specify the value of the control value for the "Summer" operating mode in percent, which is to be set when the override is activated if summer/winter mode has been configured for the thermal drive actuator.

#### Availability:

The parameter is displayed if the following configuration has been made:

- Parameter “Switch to summer/winter mode” (parameter card “Device settings,” “Functions, objects”)
  - Setting: “Switch to summer/winter mode”
- Parameter “Behavior on override activation” (“Override 1, forced position” parameter card)
  - Setting: “Control value according to parameter”

#### More information:

- Parameter “Switch to summer/winter mode” [→ 39]
- Parameter “Behavior on override activation” [→ 113]

#### Control value at activation, winter (%)

Parameter	Settings
Control value at activation, winter (%)	0...100

#### Function:

This parameter is used to specify the value of the control value for the “Winter” operating mode in percent, which is to be set on activation if summer/winter mode has been configured for the thermal drive actuator.

#### Availability:

The parameter is displayed if the following configuration has been made:

- Parameter “Switch to summer/winter mode” (parameter card “Device settings,” “Functions, objects”)
  - Setting: “Switch to summer/winter mode”
- Parameter “Behavior on override activation”
  - Setting: “Control value according to parameter”

#### More information:

- Parameter “Switch to summer/winter mode” [→ 39]
- Parameter “Behavior on override activation” [→ 113]

**Behavior on override deactivation**

Parameter	Settings
Behavior on override deactivation	No change Control value according to parameter Updated value

**Function:**

This parameter is used to define how the device responds when an override is deactivated.

**The following settings are possible:**

- No change:  
The value at the output is retained until a new value arrives at the input of the function block.
- Control value according to parameter:  
The valve output moves to the value set in the parameter "Control value at deactivation (%)."
- Updated value:  
The valve output moves to the value at the input of the function block.

**Other parameters:**

If the parameter is set to "Control value according to parameter" the following parameters are displayed:

- "Control value at deactivation (%)"

If summer/winter mode has been configured for the thermal drive actuator (parameter "Switch to summer/winter mode" on the "Device settings" parameter card):

- "Control value at deactivation, summer (%)"
- "Control value at deactivation, winter (%)"

**More information:**

- Parameter "Control value at deactivation (%)" [→ 115]
- Parameter "Control value at deactivation, summer (%)" [→ 115]
- Parameter "Control value at deactivation, winter (%)" [→ 116]
- Parameter "Switch to summer/winter mode" [→ 39]

**Control value at deactivation (%)**

Parameter	Settings
Control value at deactivation (%)	0...100

**Function:**

This parameter is used to specify the value of the control value in percent to be set when the override is deactivated.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Behavior on override deactivation"
  - Setting: "Control value according to parameter"

**More information:**

- Parameter "Behavior on override deactivation" [→ 115]

**Control value at deactivation, summer (%)**

Parameter	Settings
Control value at deactivation, summer (%)	0...100

**Function:**

This parameter is used to specify the value of the control value for the "Summer" operating mode in percent, which is to be set when the override is deactivated if summer/winter mode has been configured for the thermal drive actuator.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Switch to summer/winter mode“ (parameter card “Device settings,” “Functions, objects”)
  - Setting: “Switch to summer/winter mode“
- Parameter “Behavior on override deactivation“
  - Setting: “Control value according to parameter“

**More information:**

- Parameter “Switch to summer/winter mode” [→ 39]
- Parameter “Behavior on override deactivation” [→ 115]

**Control value at deactivation, winter (%)**

Parameter	Settings
Control value at deactivation, winter (%)	0...100

**Function:**

This parameter is used to specify the value of the control value for the “summer” operating mode in percent, which is to be set when the override is deactivated if summer/winter mode has been configured for the thermal drive actuator.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Switch to summer/winter mode“ (parameter card “Device settings,” “Functions, objects”)
  - Setting: “Switch to summer/winter mode“
- Parameter “Behavior on override deactivation“
  - Setting: “Control value according to parameter“

**More information:**

- Parameter “Switch to summer/winter mode” [→ 39]
- Parameter “Behavior on override deactivation” [→ 115]

**Lock valve flushing if override is active**

Parameter	Settings
Lock valve flushing if override is active	No Yes

**Function:**

This parameter is used to set, whether valve flushing is locked if an override is activated.

**Note:**

This parameter is also displayed if valve flushing has not been generally enabled for the respective actuator. The valve flushing setting when an override is active is irrelevant in that case.

**Status Override**

Parameter	Settings
Status Override	disable enable

**Function:**

This parameter is used to activate or deactivate the communication object for the status of the “Forced position” override.

This communication object is used to report whether the “Forced position” override is active.

**Other parameters:**

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information”):

- “Send status on request“
- “Send status on change of status“
- “Send status cyclically“

**More information:**

**Start value/behavior of override input on bus voltage recovery**

- Communication object “A Override 1, forced position, status” [→ 118]
- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]

Parameter	Settings
Start value/behavior of override input on bus voltage recovery	Off On Deactivated Last value

**Function:**

This parameter can be used to set the desired starting value or the desired start behavior of the override input on bus voltage recovery.

**The following settings are possible:**

- Off:  
The override function block behaves as if an “Off” had been received at the override block input on bus voltage recovery.
- On:  
The override function block behaves as if an “On” had been received at the override block input on bus voltage recovery.
- Deactivated:  
The override function block is deactivated on bus voltage recovery.
- Last value:  
The override input of the function block is then set to the value stored on bus voltage failure.

## Communication objects “Forced position”



As the communication objects for the 6 override function blocks are the same and only differ in their numbers, the following lists only the communication objects of override function block 1. The respective numbers of the communication objects of the other override function blocks are shown in the table of all communication objects (Communication objects [→ 54]).

A switching output or a control value input can be used for the “Forced position” override. If the parameter “Control Value Input” on the “Override 1, forced position” parameter card is set to enable, the communication object “A Override 1, Forced position” is hidden and communication object “A Override 1, Forced position, Control” is displayed instead.

**A Override 1, Forced position**

No.	Object name	Function	Datapoint type	Flags
38	A Override 1, Forced position	On/Off	1.003 enable	CW

**Function:**

This communication object moves the valve into a forced position irrespective of the upstream sub-functions. “Forced position” is active, if the value of the communication object is “On.”

If an inversion is configured, the “forced position” is active when the value of the communication object is “Off.”

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter “Override 1” (“Functions, objects” parameter card)
  - Setting: “Forced position”

**A Override 1, Forced position, Control**

No.	Object name	Function	Datapoint type	Flags
40	A Override 1, Forced position, Control	Value	5.001 percentage (0..100%) 5.010 counter pulses (0..255) 7.* 2-byte unsigned value 8.* 2-byte signed value 9.001 temperature (°C) 9.004 lux (Lux) 9.005 speed (m/s) 9.021 current (mA) 9.024 power (kW) 9.028 wind speed (km/h) 9.* 2-byte float value 12.* 4-byte unsigned value 13.* 4-byte signed value 14.056 power (W) 14.* 4-byte float value	CW

**Function:**

This communication object enables the use of a control value as the input value for the override.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Override 1" ("Functions, objects" parameter card)
  - Setting: "Forced position"
- Parameter "Control Value Input"
  - Setting: "enable"

**A Override 1, Forced position, Status**

No.	Object name	Function	Datapoint type	Flags
41	A Override 1, Forced position, Status	On/Off	1.002 boolean	CRT

**Function:**

This status object is used to report whether override 1 is active.

If a logical "0" is sent, no override is active; if a logical "1" is sent, an override is active.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Status Override" ("Override 1, forced position" parameter card)
  - Setting: "enable"

**A Overrides status**

No.	Object name	Function	Datapoint type	Flags
62	A Overrides status	1 = Active	1.002 boolean	CRT

**Function:**

This status object is used to report that at least one override is active. If a logical "0" is received, no override is active; if a logical "1" is received, at least one override is active.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Overrides status" ("Functions, objects" parameter card)
  - Setting: "enable"

### 8.1.5.5 Service mode

The “Service mode” override can be used to move to a specified valve position that is used for maintenance and installation of the system.

#### Parameters on the “Functions, objects” parameter card of the thermal drive



The parameters are configured in the same way for all 6 channels and are therefore just described once for override 1.

#### Override 1 – 6

As the prerequisite for function “Service mode,” set the parameter “Override 1-6” on the “Functions, objects” parameter card as follows:

Parameter	Settings
Override 1 – 6	Service mode

**Function:**

These parameters can be used to set 6 overrides. The priority of the override function blocks is determined by the position in the processing chain. Override block 6 has the highest priority, while override block 1 has the lowest priority.

**Other parameters:**

If an override is activated, the parameter “Overrides status” is also displayed.

**Other parameter cards:**

If the override “Service mode” is activated, the parameter card “Override 1, service mode” is displayed.

**Communication objects:**

If the override “Service mode” is activated, the following communication object is displayed:

- “A Override 1, service mode“

**More information:**

- Communication object “A Override 1, service mode” [→ 124]
- Parameter “Overrides status” [→ 119]
- Parameters on the “Override 1, service mode” parameter card [→ 120]

#### Overrides status

Parameter	Settings
Overrides status	enable disable

**Function:**

This parameter is used to activate or deactivate the communication object for the status of the overrides. This corresponding communication object is used to report whether at least one override is active.

**Availability:**

The parameter “Overrides status” is displayed as soon as at least one override is activated.

**Other parameters:**

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information”):

- “Send status on request“
- “Send status on change of status“
- “Send status cyclically“

**Communication object:**

If the parameter “Overrides status“ is set to “enable“ the communication object “A Overrides status“ is displayed.

**More information:**

- Communication object “A overrides status“ [→ 125]
- Parameters that are visible if the “Status...” parameter is set to “enable“ [→ 283]

## Parameters on the “Override 1, service mode” parameter card

### Invert Override Control

Parameter	Settings
Invert Override Control	No Yes

**Function:**

This parameter is used to set whether the input value of communication object “A Override 1, service mode“ should be used directly or in inverted form.

**More information:**

- Communication object “A Override 1, service mode“ [→ 124]

### Delay time for override activation

Parameter	Settings
Delay time for override activation (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter can be used to set a delay time for the activation of the override. If the parameter value is 00:00:00, no delay takes place.

### Delay time for override deactivation

Parameter	Settings
Delay time for override deactivation (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter can be used to set a delay time for the deactivation of the override. If the parameter value is 00:00:00, no delay takes place.

### Behavior on override activation

Parameter	Settings
Behavior on override activation	Off On No change Control value according to parameter

**Function:**

The parameter is used to specify how the device behaves when an override is activated.

**The following settings are possible:**

- Off:  
The valve output closes the valve.
- On:  
The valve output opens the valve.
- No change:  
The value waiting at the output of the function block is retained. Values arriving at the input of the function block are not passed on to the output.
- Control value according to parameter:  
The valve output moves to the value set in parameter “Control value at activation (%)”.

**Other parameters:**



If the parameter is set to “Control value according to parameter“ the following parameters are displayed:

- “Control value at activation (%)“

If summer/winter mode has been configured for the thermal drive actuator (parameter “Switch to summer/winter mode“ on the “Device settings“ parameter card):

- “Control value at activation, summer (%)“
- “Control value at activation, winter (%)“

**More information:**

- Parameter “Control value at activation (%)“ [→ 121]
- Parameter “Control value at activation, summer (%)“ [→ 121]
- Parameter “Control value at activation, winter (%)“ [→ 121]
- Parameter “Switch to summer/winter mode“ [→ 39]

**Control value at activation (%)**

Parameter	Settings
Control value at activation (%)	0...100

**Function:**

This parameter is used to specify the value of the control value in percent to be set on activation.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Behavior on override activation“
  - Setting: “Control value according to parameter“

**More information:**

- Parameter “Behavior on override activation“ [→ 120]

**Control value at activation, summer (%)**

Parameter	Settings
Control value at deactivation, summer (%)	0...100

**Function:**

This parameter is used to specify the value of the control value for the "Summer" operating mode in percent, which is to be set when the override is activated.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Switch to summer/winter mode“ (parameter card “Device settings,“ “Functions, objects“)
  - Setting: “Switch to summer/winter mode“
- Parameter “Behavior on override activation“ (“Override 1, service mode“ parameter card)
  - Setting: “Control value according to parameter“

**More information:**

- Parameter “Switch to summer/winter mode“ [→ 39]
- Parameter “Behavior on override activation“ [→ 120]

**Control value at activation, winter (%)**

Parameter	Settings
Control value at activation, winter (%)	0...100

**Function:**

This parameter is used to specify the value of the control value for the “Winter“ operating mode in percent, which is to be set on activation if summer/winter mode has been configured for the thermal drive actuator.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Switch to summer/winter mode“ (parameter card “Device settings,” “Functions, objects”)
  - Setting: “Switch to summer/winter mode“
- Parameter “Behavior on override activation“
  - Setting: “Control value according to parameter“

**More information:**

- Parameter “Switch to summer/winter mode” [→ 39]
- Parameter “Behavior on override activation” [→ 120]

**Behavior on override deactivation**

Parameter	Settings
Behavior on override deactivation	No change Control value according to parameter Updated value

**Function:**

This parameter is used to define how the device responds when an override is deactivated.

**The following settings are possible:**

- No change:  
The value at the output is retained until a new value arrives at the input of the function block.
- Control value according to parameter:  
The valve output moves to the value set in the parameter “Control value at deactivation (%).”
- Updated value:  
The valve output moves to the value at the input of the function block.

**Other parameters:**

If the parameter is set to “Control value according to parameter“ the following parameters are displayed:

- “Control value at deactivation (%)“

If summer/winter mode has been configured for the thermal drive actuator (parameter “Switch to summer/winter mode“ on the “Device settings” parameter card):

- “Control value at deactivation, summer (%)“
- “Control value at deactivation, winter (%)“

**More information:**

- Parameter “Control value at deactivation (%)” [→ 122]
- Parameter “Control value at deactivation, summer (%)” [→ 123]
- Parameter “Control value at deactivation, winter (%)” [→ 123]
- Parameter “Switch to summer/winter mode” [→ 39]

**Control value at deactivation (%)**

Parameter	Settings
Control value at deactivation (%)	0...100

**Function:**

This parameter is used to specify the value of the control value in percent to be set when the override is deactivated.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Behavior on override deactivation“
  - Setting: “Control value according to parameter“

**More information:**

- Parameter “Behavior on override deactivation” [→ 122]

**Control value at deactivation, summer (%)**

Parameter	Settings
Control value at deactivation, summer (%)	0...100

**Function:**

This parameter is used to specify the value of the control value for the "Summer" operating mode in percent, which is to be set when the override is deactivated if summer/winter mode has been configured for the thermal drive actuator.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Switch to summer/winter mode" (parameter card "Device settings," "Functions, objects")
  - Setting: "Switch to summer/winter mode"
- Parameter "Behavior on override deactivation"
  - Setting: "Control value according to parameter"

**More information:**

- Parameter "Switch to summer/winter mode" [→ 39]
- Parameter "Behavior on override deactivation" [→ 122]

**Control value at deactivation, winter (%)**

Parameter	Settings
Control value at deactivation, winter (%)	0...100

**Function:**

This parameter is used to specify the value of the control value for the "summer" operating mode in percent, which is to be set when the override is deactivated if summer/winter mode has been configured for the thermal drive actuator.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Switch to summer/winter mode" (parameter card "Device settings," "Functions, objects")
  - Setting: "Switch to summer/winter mode"
- Parameter "Behavior on override deactivation"
  - Setting: "Control value according to parameter"

**More information:**

- Parameter "Switch to summer/winter mode" [→ 39]
- Parameter "Behavior on override deactivation" [→ 122]

**Lock valve flushing if override is active**

Parameter	Settings
Lock valve flushing if override is active	No Yes

**Function:**

This parameter is used to set, whether valve flushing is locked if an override is activated.

**Note:**

This parameter is also displayed if valve flushing has not been generally enabled for the respective actuator. The valve flushing setting when an override is active is irrelevant in that case.

**Status Override**

Parameter	Settings
Status Override	disable enable

**Function:**

This parameter is used to activate or deactivate the communication object for the status of the "Service mode" override.

This communication object is used to report whether the “Service mode” override is active.

**Other parameters:**

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information”):

- “Send status on request“
- “Send status on change of status“
- “Send status cyclically“

**More information:**

- Communication object “A Override 1, service mode, status” [→ 125]
- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]

**Start value/behavior of override input on bus voltage recovery**

Parameter	Settings
Start value/behavior of override input on bus voltage recovery	Off On Deactivated Last value

**Function:**

This parameter can be used to set the desired starting value or the desired start behavior of the override input on bus voltage recovery.

**The following settings are possible:**

- Off:  
The override function block behaves as if an “Off” had been received at the override block input on bus voltage recovery.
- On:  
The override function block behaves as if an “On” had been received at the override block input on bus voltage recovery.
- Deactivated:  
The override function block is deactivated on bus voltage recovery.
- Last value:  
The override input of the function block is then set to the value stored on bus voltage failure.

## Communication objects “Service mode”



As the communication objects for the 6 override function blocks are the same and only differ in their numbers, the following lists only the communication objects of override function block 1. The respective numbers of the communication objects of the other override function blocks are shown in the table of all communication objects (Communication objects [→ 54]).

**A Override 1, service mode**

No.	Object name	Function	Datapoint type	Flags
38	A Override 1, service mode	On/Off	1.003 enable	CW

**Function:**

This communication object moves the valve into a service position irrespective of the upstream sub-functions.

“Service mode” is active, if the value of the communication object is “On.”

If an inversion is configured, then service mode is active when the value of the communication object is “Off.”

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter “Override 1” (“Functions, objects” parameter card)
  - Setting: “Service mode“

**A Override 1, service mode, status**

No.	Object name	Function	Datapoint type	Flags
41	A Override 1, service mode, status	On/Off	1.002 boolean	CRT

**Function:**

This status object is used to report whether override 1 is active. If a logical “0” is sent, no override is active; if a logical “1” is sent, an override is active.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter “Status Override“ (“Override 1, service mode” parameter card)
  - Setting: “enable“

**A Overrides status**

No.	Object name	Function	Datapoint type	Flags
62	A Overrides status	1 = Active	1.002 boolean	CRT

**Function:**

This status object is used to report that at least one override is active. If a logical “0” is received, no override is active; if a logical “1” is received, at least one override is active.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter “Overrides status” (“Functions, objects” parameter card)
  - Setting: “enable“

### 8.1.5.6 User defined

The user-defined override can be used for individual configuration, whereby a valve position and an interlock are defined for subordinate functions.

## Parameters on the “Functions, objects” parameter card of the thermal drive



**Override 1 – 6**

The parameters are configured in the same way for all 6 channels and are therefore just described once for override 1.

As the prerequisite for function “User defined,” set the parameter “Override 1-6” on the “Functions, objects” parameter card as follows:

Parameter	Settings
Override 1 – 6	User defined

**Function:**

These parameters can be used to set 6 overrides. The priority of the override function blocks is determined by the position in the processing chain. Override block 6 has the highest priority, while override block 1 has the lowest priority.

**Other parameters:**

If an override is activated, the parameter “Overrides status” is also displayed.

**Other parameter cards:**

If the override “User defined“ activated, the parameter card “Override 1, user-defined control” is displayed.

**Communication objects:**

If the override “User defined“ is activated, the communication object “A Override 1, User-defined Control“ is displayed.

**More information:**

- Communication object “A Override 1, user-defined“ [→ 134]
- Parameter “Overrides status“ [→ 126]
- Parameters on the “Override 1, user-defined control“ parameter card [→ 126]

**Overrides status**

Parameter	Settings
Overrides status	enable disable

**Function:**

This parameter is used to activate or deactivate the communication object for the status of the overrides. This corresponding communication object is used to report whether at least one override is active.

**Availability:**

The parameter “Overrides status“ is displayed as soon as at least one override is activated.

**Other parameters:**

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information“):

- “Send status on request“
- “Send status on change of status“
- “Send status cyclically“

**Communication object:**

If the parameter “Overrides status“ is set to “enable“ the communication object “A Overrides status“ is displayed.

**More information:**

- Communication object “A overrides status“ [→ 135]
- Parameters that are visible if the “Status...” parameter is set to “enable“ [→ 283]

## Parameters on the “Override 1, user-defined control“ parameter card

**Control Value Input**

Parameter	Settings
Control Value Input	disable enable

**Function:**

This parameter can be used to set whether instead of the switching input, a control value input should be used for the activation and deactivation of the override function.

**Other parameters:**

If the parameter is set to “enable“ the following parameters are displayed:

- “Control Value Input Data Type“
- “Threshold for Off (<=)“
- “Threshold for On (>=)“

**Communication object:**

If the parameter “Control Value Input“ is set to status “enable,” the communication object “Override 1, user-defined control“ is hidden and the parameter “Override 1, user-defined control, control value“ is shown.

**More information:**

- Communication object “A Override 1, user-defined control, control value” [→ 134]
- Parameter “Control value input data type” [→ 127]
- Parameter “Threshold for Off (<=)” [→ 128]
- Parameter “Threshold for On (>=)” [→ 128]

**Control Value Input Data Type**

Parameter	Settings
Control Value Input Data Type	Percentage (%) DPT 5.001 Value (8-bit) DPT 5.010 2-byte unsigned value DPT 7.x 2-byte signed value DPT 8.x 2-byte floating point number DPT 9.x Temperature (°C) DPT 9.001 Illuminance (lx) DPT 9.004 Wind speed (m/s) DPT 9.005 Current (mA) DPT 9.021 Power (kW) DPT 9.024 Wind speed (km/h) DPT 9.028 4-byte unsigned value DPT 12.x 4-byte signed value DPT 13.x 4-byte floating point number DPT 14.x Power (W) DPT 14.056

**Function:**

This parameter is used to set the data type of the “Control value” communication object.

**The following settings are possible:**

- Percentage (%) DPT 5.001:  
Corresponds to the datapoint type “5.001 percent (0...100 %).”
- Value (8-bit) DPT 5.010:  
Corresponds to the datapoint type “5.010 counting impulses (0...255).”
- 2-byte unsigned value DPT 7.x:  
Corresponds to the datapoint type “2 bytes without prefix.”
- 2-byte signed value DPT 8.x:  
Corresponds to the datapoint type “2 bytes with prefix.”
- 2-byte floating point number DPT 9.x:  
Corresponds to the datapoint type “2 bytes floating value.”
- Temperature (°C) DPT 9.001:  
Corresponds to the datapoint type “9.001 temperature °C.”
- Illuminance (lx) DPT 9.004:  
Corresponds to the datapoint type “9.004 illuminance lx.”
- Wind speed (m/s) DPT 9.005:  
Corresponds to the datapoint type “9.005 speed (m/s).”
- Current (mA) DPT 9.021:  
Corresponds to the datapoint type “9.021 current mA.”
- Power (kW) DPT 9.024:  
Corresponds to the datapoint type “9.024 output kW.”
- Wind speed (km/h) DPT 9.028:  
Corresponds to the datapoint type “9.028 wind speed (km/h).”
- 4-byte unsigned value DPT 12.x:  
Corresponds to the datapoint type “4 bytes without prefix.”
- 4-byte signed value DPT 13.x:  
Corresponds to the datapoint type “4 bytes with prefix.”

- 4-byte floating point number DPT 14.x:  
Corresponds to the datapoint type “4 bytes floating value.”
- Power (W) DPT 14.056:  
Corresponds to the datapoint type “14.056 output W.”

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: “Control Value Input“
  - Setting: “enable“

**More information:**

- Parameter “Control value input” [→ 126]

**Threshold for Off (<=)**

Parameter	Settings
Threshold for Off (<=)	Additional values depending on the selected data type and its value range

**Function:**

This parameter determines the threshold for “Off.”

If the value of this communication object is equal to or smaller than the configured threshold for “Off,” then the determined switching value is equal to “Off” (0).

The permitted values for the threshold depend on the selected data type.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: “Control Value Input“
  - Setting: “enable“

**Note:**

If both entered threshold values for “Off” and “On” are equal, then when exactly this value is received this is interpreted as the “threshold for ON.”

If the “threshold for OFF” is configured such that it is greater than the “threshold for ON,” then the higher value is automatically used as the “threshold for ON.”

**More information:**

- Parameter “Control value input” [→ 126]

**Threshold for On (>=)**

Parameter	Settings
Threshold for On (>=)	Additional values depending on the selected data type and its value range

**Function:**

This parameter determines the threshold for “On.”

If the value of this communication object is equal to or greater than the configured threshold for “On,” then the determined switching value is equal to “On” (1).

The permitted values for the threshold depend on the selected data type.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: “Control Value Input“
  - Setting: “enable“

**Note:**

If both entered threshold values for “Off” and “On” are equal, then when exactly this value is received this is interpreted as the “threshold for ON.”

If the “threshold for OFF” is configured such that it is greater than the “threshold for ON,” then the higher value is automatically used as the “threshold for ON.”

**More information:**

- Parameter “Control value input” [→ 126]



### Invert Override Control

Parameter	Settings
Invert Override Control	No Yes

**Function:**

This parameter is used to set whether the input value of communication object “A Override 1, User-defined Control” should be used directly or inverted.

**More information:**

- Communication object “A Override 1, user-defined control” [→ 134]

### Delay time for override activation

Parameter	Settings
Delay time for override activation (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter can be used to set a delay time for the activation of the override. With a parameter value of 00:00, no delay takes place.

### Delay time for override deactivation

Parameter	Settings
Delay time for override deactivation (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter can be used to set a delay time for the deactivation of the override. If the parameter value is 00:00:00, no delay takes place.

### Monitoring time

Parameter	Settings
Monitoring time (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter is used to set whether the cyclical input of telegrams to the communication object for central override should be monitored and how long the monitoring time is.

With a parameter value of 00:00:00, no monitoring takes place.

For all other parameter values, the cyclical input of deactivation telegrams is monitored. If the monitoring time is exceeded, the override is activated automatically.

### Override Duration

Parameter	Settings
Override Duration (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter can be used to set the desired on period with activated override. The override duration is then re-started with each incoming activation telegram. With a parameter value of 00:00:00, the override duration is unlimited.

**Note:**

If the monitoring time is simultaneously set not equal to 00:00:00, the following behavior will be observed:

- **Monitoring time < override duration:**  
The override duration is triggered using a cyclically incoming activation telegram. The configured override duration is not effective.
- **Monitoring time > override duration:**  
With the elapse of the override duration, the override is switched off. With the next incoming activation telegram for monitoring, it is re-activated and the override duration begins again.

**Behavior on override activation**

Parameter	Settings
Behavior on override activation	Off On No change Control value according to parameter

**Function:**

The parameter is used to specify how the device behaves when an override is activated.

**The following settings are possible:**

- Off:  
The valve output closes the valve.
- On:  
The valve output opens the valve.
- No change:  
The value waiting at the output of the function block is retained. Values arriving at the input of the function block are not passed on to the output.
- Control value according to parameter:  
The valve output moves to the value set in parameter "Control value at activation (%)."

**Other parameters:**

If the parameter is set to "Control value according to parameter" the following parameters are displayed:

- "Control value at activation (%)"

If summer/winter mode has been configured for the thermal drive actuator (parameter "Switch to summer/winter mode" on the "Device settings" parameter card):

- "Control value at activation, summer (%)"
- "Control value at activation, winter (%)"

**More information:**

- Parameter "Control value at activation (%)" [→ 130]
- Parameter "Control value at activation, summer (%)" [→ 130]
- Parameter "Control value at activation, winter (%)" [→ 131]
- Parameter "Switch to summer/winter mode" [→ 39]

**Control value at activation (%)**

Parameter	Settings
Control value at activation (%)	0...100

**Function:**

This parameter is used to specify the value of the control value in percent to be set on activation.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Behavior on override activation"
  - Setting: "Control value according to parameter"

**More information:**

- Parameter "Behavior on override activation" [→ 130]

**Control value at activation, summer (%)**

Parameter	Settings
Control value at deactivation, summer (%)	0...100

**Function:**

This parameter is used to specify the value of the control value for the "Summer" operating mode in percent, which is to be set when the override is activated.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Switch to summer/winter mode” (parameter card “Device settings,” “Functions, objects”)
  - Setting: “Switch to summer/winter mode“
- Parameter “Behavior on override activation“
  - Setting: “Control value according to parameter“

**More information:**

- Parameter “Switch to summer/winter mode” [→ 39]
- Parameter “Behavior on override activation” [→ 130]

**Control value at activation, winter (%)**

Parameter	Settings
Control value at activation, winter (%)	0...100

**Function:**

This parameter is used to specify the value of the control value for the “Winter” operating mode in percent, which is to be set on activation if summer/winter mode has been configured for the thermal drive actuator.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Switch to summer/winter mode” (parameter card “Device settings,” “Functions, objects”)
  - Setting: “Switch to summer/winter mode“
- Parameter “Behavior on override activation“
  - Setting: “Control value according to parameter“

**More information:**

- Parameter “Switch to summer/winter mode” [→ 39]
- Parameter “Behavior on override activation” [→ 130]

**Behavior on override deactivation**

Parameter	Settings
Behavior on override deactivation	No change Control value according to parameter Updated value

**Function:**

This parameter is used to define how the device responds when an override is deactivated.

**The following settings are possible:**

- No change:  
The value at the output is retained until a new value arrives at the input of the function block.
- Control value according to parameter:  
The valve output moves to the value set in the parameter “Control value at deactivation (%)”.
- Updated value:  
The valve output moves to the value at the input of the function block.

**Other parameters:**

If the parameter is set to “Control value according to parameter“ the following parameters are displayed:

- “Control value at deactivation (%)“

If summer/winter mode has been configured for the thermal drive actuator (parameter “Switch to summer/winter mode“ on the “Device settings” parameter card):

- “Control value at deactivation, summer (%)“
- “Control value at deactivation, winter (%)“

**More information:**

- Parameter “Control value at deactivation (%)” [→ 132]
- Parameter “Control value at deactivation, summer (%)” [→ 132]
- Parameter “Control value at deactivation, winter (%)” [→ 132]
- Parameter “Switch to summer/winter mode” [→ 39]

#### Control value at deactivation (%)

Parameter	Settings
Control value at deactivation (%)	0...100

#### Function:

This parameter is used to specify the value of the control value in percent to be set when the override is deactivated.

#### Availability:

The parameter is displayed if the following configuration has been made:

- Parameter “Behavior on override deactivation“
  - Setting: “Control value according to parameter“

#### More information:

- Parameter “Behavior on override deactivation” [→ 131]

#### Control value at deactivation, summer (%)

Parameter	Settings
Control value at deactivation, summer (%)	0...100

#### Function:

This parameter is used to specify the value of the control value for the "Summer" operating mode in percent, which is to be set when the override is deactivated if summer/winter mode has been configured for the thermal drive actuator.

#### Availability:

The parameter is displayed if the following configuration has been made:

- Parameter “Switch to summer/winter mode“ (parameter card “Device settings,” “Functions, objects”)
  - Setting: “Switch to summer/winter mode“
- Parameter “Behavior on override deactivation“
  - Setting: “Control value according to parameter“

#### More information:

- Parameter “Switch to summer/winter mode” [→ 39]
- Parameter “Behavior on override deactivation” [→ 131]

#### Control value at deactivation, winter (%)

Parameter	Settings
Control value at deactivation, winter (%)	0...100

#### Function:

This parameter is used to specify the value of the control value for the “summer” operating mode in percent, which is to be set when the override is deactivated if summer/winter mode has been configured for the thermal drive actuator.

#### Availability:

The parameter is displayed if the following configuration has been made:

- Parameter “Switch to summer/winter mode“ (parameter card “Device settings,” “Functions, objects”)
  - Setting: “Switch to summer/winter mode“
- Parameter “Behavior on override deactivation“
  - Setting: “Control value according to parameter“

#### More information:

- Parameter “Switch to summer/winter mode” [→ 39]
- Parameter “Behavior on override deactivation” [→ 131]

**Lock valve flushing if override is active**

Parameter	Settings
Lock valve flushing if override is active	No Yes

**Function:**

This parameter is used to set, whether valve flushing is locked if an override is activated.

**Note:**

This parameter is also displayed if valve flushing has not been generally enabled for the respective actuator. The valve flushing setting when an override is active is irrelevant in that case.

**Status Override**

Parameter	Settings
Status Override	disable enable

**Function:**

This parameter is used to activate or deactivate the communication object for the status of the "User-defined control" override.

This communication object is used to report whether the "User-defined control" override is active.

**Other parameters:**

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under "Additional information"):

- "Send status on request"
- "Send status on change of status"
- "Send status cyclically"

**More information:**

- Communication object "A Override 1, user-defined control, status" [→ 135]
- Parameters that are visible if the "Status..." parameter is set to "enable" [→ 283]

**Start value/behavior of override input on bus voltage recovery**

Parameter	Settings
Start value/behavior of override input on bus voltage recovery	Off On Deactivated Last value

**Function:**

This parameter can be used to set the desired starting value or the desired start behavior of the override input on bus voltage recovery.

**The following settings are possible:**

- Off:  
The override function block behaves as if an "Off" had been received at the override block input on bus voltage recovery.
- On:  
The override function block behaves as if an "On" had been received at the override block input on bus voltage recovery.
- Deactivated:  
The override function block is deactivated on bus voltage recovery.
- Last value:  
The override input of the function block is then set to the value stored on bus voltage failure.

**"User-defined" communication objects**



As the communication objects for the 6 override function blocks are the same and only differ in their numbers, the following lists only the communication objects of override function block 1. The respective numbers of the communication objects of the other override function blocks are shown in the table of all communication objects (Communication objects [→ 54]).

A switching output or a control value input can be used for the “User-defined control” override. If the parameter “Control Value Input” on the “Override 1, user-defined control” parameter card is set to “enable,” this communication object “38s hidden and communication object “A Override 1, User-defined Control, Control Value” is displayed instead.

#### A Override 1, User-defined Control

No.	Object name	Function	Datapoint type	Flags
38	A Override 1, User-defined Control	On/Off	1.003 enable	CW

#### Function:

With this communication object, the user-defined control of the thermal drive actuator has a higher priority than the upstream sub-functions.

The state can be retained permanently or for a limited time.

User-defined control is active when the value of the communication object is “On.”

If an inversion is configured, user-defined control is active when the value of the communication object is “Off.”

The behavior upon activation or deactivation of user-defined control can be configured using a parameter.

The user-defined control object ensures that all upstream function blocks are saved internally, but not evaluated and sent.

#### Availability:

The communication object is displayed if the following configuration was made:

- Parameter “Override 1” (“Functions, objects” parameter card)
  - Setting: “User defined”

#### A Override 1, User-defined Control, Control Value

No.	Object name	Function	Datapoint type	Flags
40	A Override 1, User-defined Control, Control Value	Value	5.001 percentage (0..100%) 5.010 counter pulses (0..255) 7.* 2-byte unsigned value 8.* 2-byte signed value 9.001 temperature (°C) 9.004 lux (Lux) 9.005 speed (m/s) 9.021 current (mA) 9.024 power (kW) 9.028 wind speed (km/h) 9.* 2-byte float value 12.* 4-byte unsigned value 13.* 4-byte signed value 14.* 4-byte float value 14.056 power (W)	CW

#### Function:

With this communication object, the user-defined control of the thermal drive actuator has a higher priority than the upstream sub-functions. The datapoint type of the control value can be selected.

The state can be retained permanently or for a limited time.

User-defined control is active when the value of the communication object is “On.” If an inversion is configured, user-defined control is active when the object value is “Off.”

The behavior upon activation or deactivation of user-defined control can be configured using a parameter.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter “Override 1” (“Functions, objects” parameter card)
  - Setting: “User defined”
- Parameter “Control Value Input” (“Override 1, user-defined control” parameter card)
  - Setting: “enable”

**A Override 1, User-defined Control, Status**

No.	Object name	Function	Datapoint type	Flags
41	A Override 1, User-defined Control, Status	On/Off	1.002 boolean	CRT

**Function:**

This status object is used to report whether override 1 is active. If a logical “0” is sent, no override is active; if a logical “1” is sent, an override is active.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter “Status Override” (“Override 1, user-defined control” parameter card)
  - Setting: “enable”

**A Overrides status**

No.	Object name	Function	Datapoint type	Flags
62	A Overrides status	1 = Active	1.002 boolean	CRT

**Function:**

This status object is used to report that at least one override is active. If a logical “0” is received, no override is active; if a logical “1” is received, at least one override is active.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter “Overrides status” (“Functions, objects” parameter card)
  - Setting: “enable”

## 8.1.6 Valve flushing

Valves that have not been opened or closed for an extended period of time can calcify or jam. The “Valve flushing” function can be enabled to prevent this.



To increase the life span of corner valves, we recommend enabling valve flushing.

### 8.1.6.1 Parameters on the “Functions, objects” parameter card of the thermal drive

#### Decalcification

Parameter	Settings
Decalcification	disable enable

**Function:**

This parameter can be used to enable valve flushing for the output.

**Other parameters/parameter cards:**

If the parameter “Decalcification” is set to “enable,” the “Valve flushing” parameter card is displayed with the parameters for setting up valve flushing.

### 8.1.6.2 Parameters on the “Valve flushing” parameter card

The “Valve flushing” parameter card is displayed, if the parameter “Decalcification” on the “Functions, objects” parameter card of the respective thermal drive channel is set to “enable.”

#### Duration

Parameter	Settings
Duration (hh:mm)	00:01 ... 23:59

**Function:**

This parameter is used to set the valve flushing duration. For the configured duration, the valve is opened half the time and closed the other half of the time.

#### Parameters in the “Automatic valve flushing” section

#### Cyclic valve flushing

Parameter	Settings
Cyclic valve flushing	disable enable

**Function:**

This parameter can be used to enable cyclical valve flushing. With this setting, the valve is opened and closed in cyclic intervals.

You can set whether flushing is performed automatically in weekly cycles (1 - 26 weeks) and additionally depending on a configurable limit value of a minimum control value as required.

With intelligent valve flushing, cyclical flushing is only performed if the configured limit value for the minimum control value has not been exceeded.

**Other parameters:**

If the parameter is set to “enable” the following parameters are displayed:

- “Cycle time (weeks)”
- “Intelligent valve flushing”

**Note:**



If the parameter “Cyclic valve flushing” is enabled and “Intelligent valve flushing” is disabled:

Valve flushing takes place irrespective of the value of the control value according to the configured cycle time.

**Cyclic valve flushing process (example):**

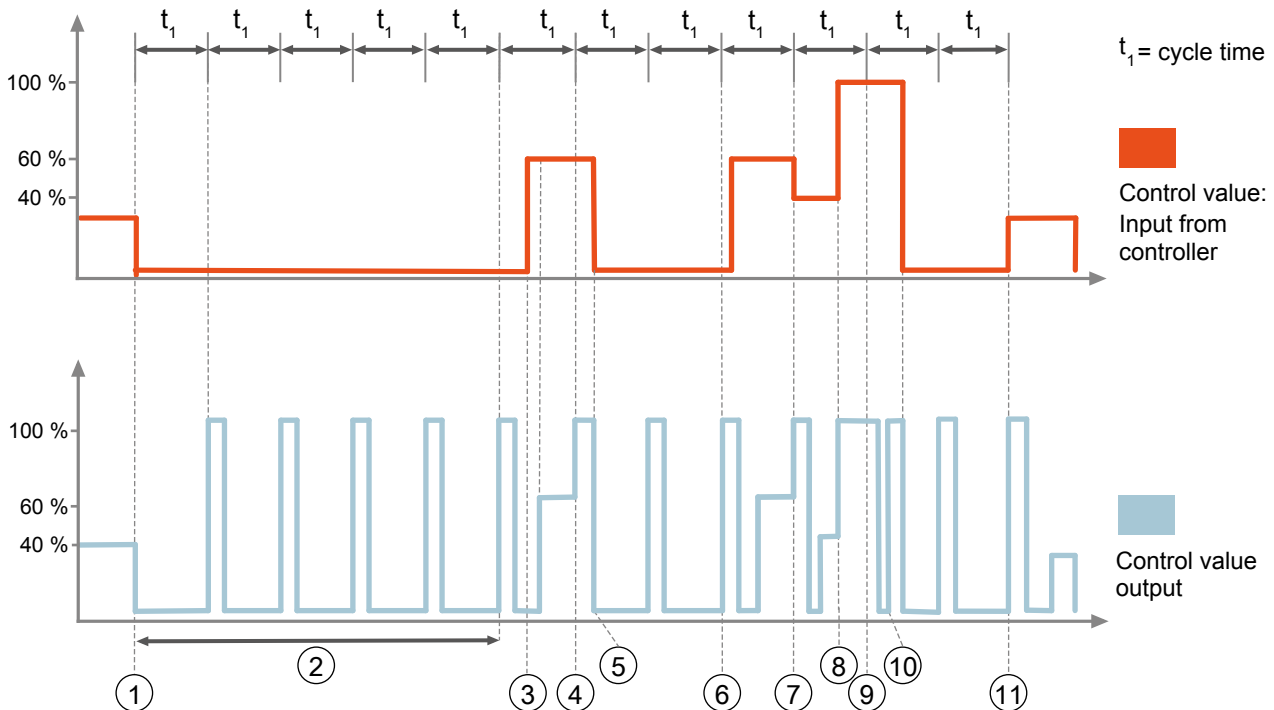


Fig. 20: Cyclic valve flushing process (triggered automatically), graphic display (example)

- 1 The time for cyclic triggering of valve flushing is started.
- 2 In the switched off state, the valve is cyclically controlled with between 100 % and 0 %.
- 3 During the 0 % phase of valve flushing, the valve receives the regular control of 60 % with pulse width modulation. It is only after the end of the 0 % phase of valve flushing, that the 60 % control value specification is implemented during valve flushing and the valve is thus controlled.
- 4 Cyclic valve flushing is triggered while the 60 % setting is executed. The valve is controlled with 100 % for half of the configured valve flushing time. The control setting of 60 % is no longer executed and is temporarily stored until the regular end of the valve flushing time.
- 5 During the Off phase of cyclic valve flushing, the regular control value specification is changed from 60 % to 0 %. The current output of 0 % by the second half of the valve flushing time is not affected by this at first. The new regular setting of the control value is not executed again until the end of the 0 % phase of the valve flushing time. In this case, the new setting has changed the control value setting from 60 % to 0 % in the meantime. The transition between the 0 % of the cyclic valve flushing and the 0 % of the regular control value specification is therefore seamless.
- 6 Valve flushing is triggered shortly before a regular control with 60 %. The desired 60 % is only set after the 100 % and 0 % phases of the valve flushing.
- 7 Valve flushing is triggered at the same time as the desired control value is changed from 60 % to 40 %. First, the 100 % and 0 % phases of valve flushing are executed, and then 40 % is set.
- 8 A new regular control value is set to 100 %.

- 9 While the control value of 100 % is being set, valve flushing is triggered. The 100 % are retained at first, followed by the second phase of valve flushing with 0 %.
- 10 After the 0% phase of valve flushing ends, the regular 100 % of the control value are utilized again.
- 11 Valve flushing is triggered shortly before the regular control value of 20 % is reached. The specified 20 % control value is executed only after the 100 % and 0 % phases of the valve flushing.
- $t_1$  Cycle time 1 week (corresponds to the standard configuration of the thermal drive actuator)

**More information:**

- Parameter "Cycle time (weeks)" [→ 138]
- Parameter "Intelligent valve flushing" [→ 138]

**Cycle time (weeks)**

Parameter	Settings
Cycle time (weeks)	1...26

**Function:**

This parameter is used to set the time interval of automatic valve flushing (1 - 26 weeks).

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Cyclic valve flushing"
  - Setting: "enable"

**More information:**

- Parameter "Cyclic valve flushing" [→ 136]

**Intelligent valve flushing**

Parameter	Settings
Intelligent valve flushing	disable enable

**Function:**

This parameter can be used to enable intelligent valve flushing. If the parameter is enabled, a limit for the minimum control value can be specified. If this limit value is not exceeded, cyclic valve flushing remains active as required.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Cyclic valve flushing"
  - Setting: "enable"

**Other parameters:**

If the parameter is set to "enable," the following parameter is displayed:

- "Minimum control value (%)"

**Intelligent valve flushing process (example):**

The example is based on an assumed configured 30 % blocking limit. Once this blocking limit is reached, valve flushing is prohibited.

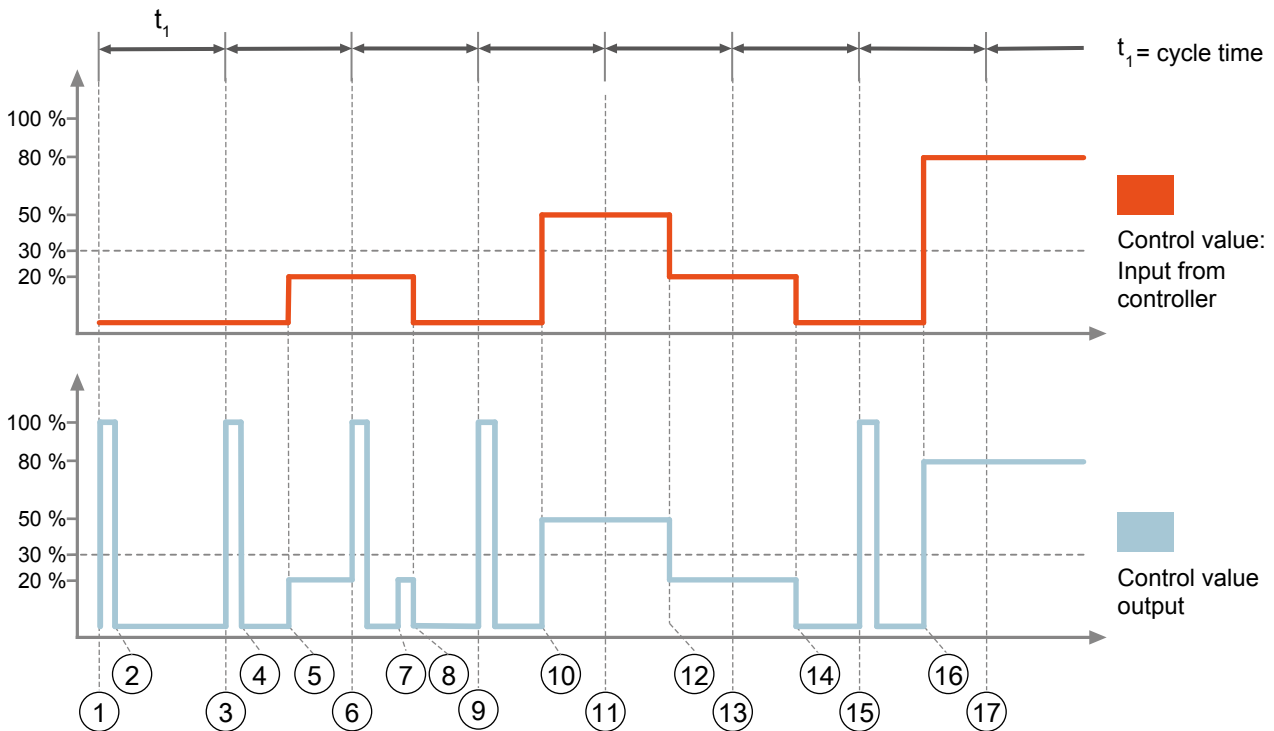


Fig. 21: Intelligent valve flushing process, illustration (example):

- 1 Prior to the first flushing, the control value of the controller is 0 %.  
Valve flushing is triggered.  
The valve is controlled to 100 % during the first half of the configured valve flushing time.
- 2 In the second half of the configured valve flushing time, the valve is controlled with 0 % fixed.  
After that, the regular control value of the controller is used (in the example: 0 %).
- 3 After the first valve flushing, another valve flushing is triggered with the configured values.
- 4 In the second half of the configured valve flushing time, the valve is controlled with 0 % fixed.
- 5 The controller specifies a regular control value for the valve (in the example: 20 %).  
If the control value of the controller is smaller than the configured blocking limit, no future blocking of valve flushing is activated.
- 6 Valve flushing is triggered cyclically.  
If the current control value is smaller than the configured blocking limit, valve flushing is triggered.
- 7 The regular control value of the controller is used once again (in the example: 20 %).
- 8 The current control value of the controller is reduced to 0 %.
- 9 Valve flushing is triggered.  
If the last control value of the controller is smaller than the configured blocking limit, valve flushing is not blocked.

- 10 The controller specifies a regular control value for the valve (in the example: 50 %).  
If the control value of the controller is greater than the configured blocking limit, a future blocking of valve flushing is activated. The block remains active until the controller accepts a control value specification of 0 %.
- 11 Valve flushing is blocked and is not triggered.
- 12 The controller specifies a regular control value for the valve (in the example: 20 %).  
The valve flushing block remains active until the controller applies a control value specification of 0 %.
- 13 Valve flushing is blocked and is not triggered.  
The valve flushing block remains active until the controller applies a control value specification of 0 %.
- 14 The controller specifies a regular control value for the valve (in the example: 0 %).  
The valve flushing block is deactivated.
- 15 Valve flushing is triggered.
- 16 The controller specifies a regular control value for the valve (in the example: 80 %).  
If the control value of the controller is greater than the configured blocking limit, future blocking of valve flushing is activated. The valve flushing block remains active until the controller applies a control value specification of 0 %.
- 17 Valve flushing is blocked and is not triggered.  
The valve flushing block remains active until the controller applies a control value specification of 0 %.
- t<sub>1</sub> Cycle time 1 week (corresponds to the standard configuration of the thermal drive actuator)

**More information:**

- Parameter "Cyclic valve flushing" [→ 136]
- Parameter "Threshold minimum control value (%)" [→ 140]

**Minimum control value (%)**

Parameter	Settings
Minimum control value (%)	10...100

**Function:**

When using a continuous control value:

This parameter can be used to set at which limit automatic valve flushing is to be deactivated. If the control value is greater than or equal to the set limit, automatic valve flushing is deactivated. The cycle is only restarted once the control value goes to 0 %.

When using a switching control value:

If the state of a switching control value (1 bit) is "OFF," this corresponds to the control value 0 %. If the state of a switching control value (1 bit) is "ON," this corresponds to the control value 100 %. If the state is "ON," automatic valve flushing is deactivated. Automatic valve flushing is only restarted when the state is "OFF."

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Intelligent valve flushing"
  - Setting: "enable"

**Example:**

The limit of the minimum control value is set to 10 %. As soon as the value of the control value exceeds 10 % once, cyclic valve flushing stops. The cycle is only restarted once the control value goes to 0 %.

**More information:**

- Parameter “Intelligent valve flushing” [→ 138]

**Parameters in the “Manual valve flushing” section**

Valve flushing can be started and stopped manually via an object.

**Object start/stop valve flushing**

Parameter	Settings
Object start/stop valve flushing	disable enable

**Function:**

This parameter can be used to manually start and stop valve flushing via the communication object “A Start/Stop decalcification.”

If a logical “1” is sent, valve flushing is started, if a logical “0” is sent, valve flushing is stopped

**Other parameters:**

If the parameter “Object start/stop valve flushing” is set to “enable,” the following parameter is displayed:

- “Invert start (0 = start/1 = stop)”

**Communication object:**

If the parameter “Object start/stop valve flushing” is set to “enable,” the following communication objects are displayed:

- “A Start/Stop decalcification”

**More information:**

- Communication object “A Start/stop valve flushing” [→ 146]
- Parameter “Invert start (0 = start/1 = stop)” [→ 141]

**Invert start (0 = start/1 = stop)**

Parameter	Settings
Invert start (0 = start/1 = stop)	No Yes

**Function:**

This parameter can be used to set that the object “A Start/Stop decalcification” is sent in inverted form.

If a logical “0” is sent, valve flushing is started, if a logical “1” is sent, valve flushing is stopped

**Manual valve flushing process (examples):**

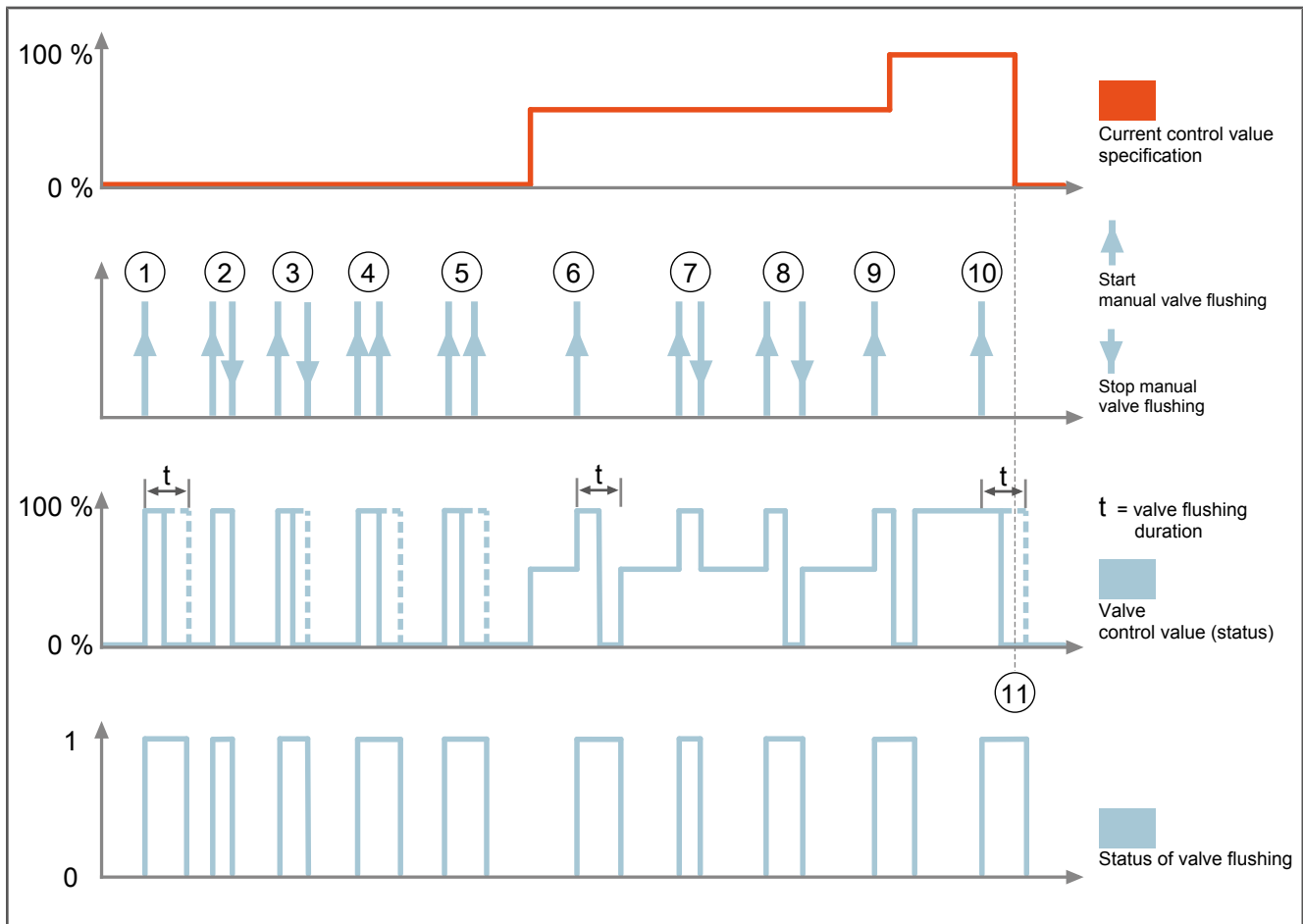


Fig. 22: Manual valve flushing process, illustration (examples):

t Valve flushing time (parameter "Duration")

#### Range with control value = 0 (no. 1 – 5):

The control value is 0 %. This can represent, for example, the summer phase in a building where no heating takes place.

1: During this time period, manual valve flushing takes place until the end of the valve flushing time. There are no additional starts or stops of manual valve flushing.

2 – 5: The started valve flushing runs are influenced with additional telegrams for starting or stopping manual valve flushing. During the switch on or switch off phase of valve flushing, they are terminated with a start or stop command or an attempt is made to restart these.

- 1 Manual valve flushing is triggered with a start command. After the configured valve flushing time  $t$ , valve flushing mode is closed. For the configured duration, the valve is opened half the time and closed the other half of the time.
- 2 During the switch on phase on the valve, a stop command is used to terminate valve flushing prematurely. The regular state is applied based on the control value specification.
- 3 During the switch off phase on the valve, a stop command is used to terminate valve flushing prematurely. The regular state is applied based on the control value specification.
- 4 During the switch on phase on the valve, another start command is received for valve flushing. Valve flushing continues, there is no retriggering. This does not result in an extension of the on phase on the valve.

- 5 During the switch off phase on the valve, another start command is received for valve flushing. Valve flushing continues, there is no retriggering. Valve flushing is not triggered again.

**Range with control value > 0 % (no. 6 – 10):**

The control value is greater than 0 % and increases at 9 and then goes back down to 0 % at 11.

6: During this time period, manual valve flushing takes place until the end of the valve flushing time. There are no additional starts or stops of manual valve flushing.

7 – 10: The started valve flushing runs are influenced with additional telegrams. During the switch on or switch off phase, they are terminated with an on or stop command or an attempt is made to restart these.

- 6 Manual valve flushing is executed with a switch on and switch off phase. After the configured valve flushing time has elapsed, the previous state of the control value is set again or the valve is controlled with it.
- 7 During the on phase, a stop command for manual valve flushing is used to terminate the valve flushing cycle. The previous control value is restored immediately; the off phase of valve flushing is bridged.
- 8 During the off phase, a stop command for manual valve flushing is used to terminate the valve flushing cycle. The previous control value is restored immediately.
- 9 A new set command is received during the valve flushing cycle. The valve flushing cycle is not affected. Once the valve flushing cycle ends, the new control value is applied.
- 10 During the output of 100 % of the predefined control value, manual valve flushing is triggered. In the on phase of manual valve flushing, no difference can therefore be detected in the output signal of the actuator channel.  
The off phase of manual valve flushing superimposes the control value specification of 100 %.
- 11 During the off phase of manual valve flushing, a new control value is specified as 0 %. The off phase of manual valve flushing is not affected by this. At the end of the off phase, the new control value is applied. At 0 %, it corresponds to the off phase so that no difference to the output signal of the actuator channel can be detected.

**Parameters in the “Status” section**

Status

Parameter	Settings
Status	disable enable

**Function:**

This parameter is used to activate or deactivate the communication object for the status of valve flushing.

This communication object is used to report whether valve flushing is currently active.

**Other parameters:**

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information”):

- “Send status on request“
- “Send status on change of status“
- “Block time for sending of status“
- “Send status cyclically“

**Communication object:**

If the parameter is set to “enable,” the following communication object is displayed:

- “A Status decalcification“

**More information:**

- Communication object “A Status valve flushing” [→ 146]
- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]

**Send status on request**

Parameter	Settings
Send status on request	disable enable

**Function:**

This parameter can be used to set whether the status of the communication object is sent upon request or whether requests for the status value will be rejected.

The request is triggered via the communication object “Send status values.”

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Status”
  - Setting: “enable”

**More information:**

- Communication object “Send status values” [→ 42]
- Parameter “Status” [→ 143]

**Send status on change of status**

Parameter	Settings
Send status on change of status	disable enable

**Function:**

This parameter can be used to set whether the value of the status object is automatically sent after each status change.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Status”
  - Setting: “enable”

**More information:**

- Parameter “Status” [→ 143]

**Block time for sending of status**

Parameter	Settings
Block time for sending of status (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter is used to set how much time since the last sending of the status has to have passed in order for it to be sent again. Hence, no additional bus load is generated by status telegrams generated in quick succession during bus mode.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Send status on change of status“
  - Setting: “enable“

**Note:**

The block time does not apply to cyclic sending. If the block time is greater than the cycle time, the value is nonetheless sent at the end of the cycle time.

**More information:**

- Parameter “Send status on change of status” [→ 144]



**Send status cyclically**

Parameter	Settings
Send status cyclically (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter can be used to set the time interval at which the value of the status object is sent cyclically.

If this is set to "00:00:00," cyclic sending is deactivated.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Status"
  - Setting: "enable"

**More information:**

- Parameter "Status" [[→ 143](#)]

### 8.1.6.3 “Valve flushing” communication objects

#### A Start/Stop decalcification

No.	Object name	Function	Datapoint type	Flags
34	A Start/Stop decalcification	Start/Stop	1.010 start/stop	CW

**Function:**

This communication object can be used to manually start and stop valve flushing.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter: “Decalcification” (“Functions, objects” parameter card of the respective thermal drive)
  - Setting: “enable“
- Parameter: “Object start/stop valve flushing” (“Valve flushing” parameter card underneath the “Functions, objects” parameter card of the respective thermal drive)
  - Setting: “enable“

#### A Status decalcification

No.	Object name	Function	Datapoint type	Flags
35	A Status decalcification	Active/inactive	1.011 state	CRT

**Function:**

This communication object is used to report whether valve flushing is currently active.

The "Active" status is valid for the valve both in the heating phase (100 %) and during the cooling phase (0 %) when valve flushing is triggered.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter “Decalcification” (“Functions, objects” parameter card of the respective thermal drive)
  - Setting: “enable“
- Parameter “Status” (“Valve flushing” parameter card underneath the “Functions, objects” parameter card of the respective thermal drive)
  - Setting: “enable“

## 8.1.7 Counting of operating hours

The operating hours counter in the thermal drive actuator can be used to count the operating hours in two ways:

- By recording the on period, i.e. how long electrical voltage is present at the valve output.
- By recording the duration of the active heating or cooling mode, i.e. how long the control values for heating or cooling have exceeded a threshold value to be configured.

The counting of operating hours is active even if the parameter “Counting of operating hours” is set to “Disable.”

For both recording variants, the operating hours can be counted in hours or seconds. Only whole seconds are recorded. After 3600 counted seconds, the object value of the operating hours is raised by one.

Threshold monitoring is available for both variants.

The object “A Exceedance of threshold for operating hours” is only sent with an object value change (one-off). If a new threshold is received or the counter value is reset by writing to the object, then the threshold exceedance is only sent, if a change to the object for threshold monitoring occurs as a result. Once the counter object has reached its maximum value (4 294 967 295), it remains at this value until it is reset.

In case of a bus voltage failure, counting of operating hours cannot be continued.

In case of a bus voltage failure, the values of all three objects for counting of operating hours are saved so they can be restored when bus voltage is recovered. The values of the three objects are not reset by loading the configuration with the ETS.

### 8.1.7.1 Parameters on the “Functions, objects” parameter card of the thermal drive

#### Counting of operating hours

Parameter	Settings
Counting of operating hours	disable enable

#### Function:

The operating hours counter is used to record the operating hours of the output, i.e. how many hours the output has been switched on or how long heating or cooling mode was active.

#### Other parameters/parameter cards:

If the parameter is set to “enable,” the “Operating hours” parameter card is displayed.

#### Communication object:

If the parameter “Counting of operating hours” is set to “enable,” the following communication objects are displayed:

- “A Operating hours (Value (in hours))”
- “A Operating hours (Value (in seconds))”

#### More information:

- Communication object “Operating hours (value in hours)” [→ 153]
- Communication object “Operating hours (set value)” [→ 153]

### 8.1.7.2 Parameters of the “Operating hours” parameter card

The “Operating hours” parameter card is displayed, if the parameter “Counting of operating hours” on the “Functions, objects” parameter card of the respective thermal drive channel is set to “enable.”

#### Parameters in the “General settings” section

Type of counting of operating hours

Parameter	Settings
Type of counting of operating hours	Count at voltage on output Count, if status of control value $\geq$ threshold

#### Function:

This parameter can be used to set whether the operating hours are counted when voltage is applied to the output or as soon as the control value is greater than or equal to a configured threshold value.

#### The following settings are possible:

- Count at voltage on output:  
The operating hours are counted when there is voltage on the output. For a PWM signal, counting only takes place during the on phase. This records how long the thermal valve has received an operating voltage. The cooling down phases of the valve are not counted as active operation. The active operating time of a thermal valve can therefore be recorded and evaluated for preventive maintenance.
- Count, if status of control value  $\geq$  threshold:  
The operating hours are counted as soon as the control value is greater than or equal to a configured threshold value.

#### Other parameters:

If the parameter “Type of counting of operating hours” is set to “Count, if status of control value  $\geq$  threshold,” the following parameter is also displayed:

- “Threshold (%)”

#### More information:

- Parameter “Threshold (%)” [→ 148]

Threshold (%)

Parameter	Settings
Threshold (%)	1...100

#### Function:

This parameter can be used to specify a percentage threshold from which the operating hours will be counted if the control value is greater than or equal to this threshold.

#### Note:

This threshold must be selected so that the valve can be activated at the same time. The setting of the parameter “Minimum control value (%)” must be taken into account.

#### Availability:

The parameter is displayed if the following configuration has been made:

- Parameter “Type of counting of operating hours”
  - Setting: “Count, if status of control value  $\geq$  threshold”

#### More information:

- Parameter “Type of counting of operating hours” [→ 148]

Counting of operating hours in

Parameter	Settings
Counting of operating hours in	Hours Seconds

#### Function:

This parameter can be used to set the counting of operating hours to hours or seconds.

**Communication object:**

If the parameter “Counting of operating hours in“ is set to “Seconds,”“ communication object “A Operating hours – Value (in hours)” is displayed instead of communication object “A Operating hours – Value (in seconds).”

**More information:**

- Communication object “A Operating hours (value in (hours))“ [→ 153]
- Communication object “A Operating hours (value in (seconds))“ [→ 153]

**Parameters in the “Status” section**

**Send status on request**

Parameter	Settings
Send status on request	disable enable

**Function:**

This parameter can be used to set whether the status of the communication object “A Operating hours“ is sent on request or whether requests for the status value will be rejected.

The request is triggered via the communication object “Send status values.”

**More information:**

- Communication object “Send status values” [→ 42]

**Send status on change of status**

Parameter	Settings
Send status on change of status	disable enable

**Function:**

This parameter can be used to set whether the value of the communication object “A Operating hours” is automatically sent after each value change. If “enable“ is selected, an additional parameter is displayed through which it can be defined how much time has to have passed since the last transmission for the value to be sent again.

**Other parameters:**

- If the parameter is set to “enable,” the following parameter is also displayed:
  - “Value change since last sent (hours)“
- If operating hours are counted in seconds, the following parameter is displayed:
  - “Value change since last sent (seconds)“

**More information:**

- Parameter “Counting of operating hours” [→ 148]
- Parameter “Value change since last sent” [→ 149]

**Value change since last sent (hours)**

Parameter	Settings
Value change since last sent (hours)	0...4294967295
Value change since last sent (seconds)	0...4294967295

**Value change since last sent (seconds)**

**Function:**

If the parameter “Send status on change of status” is set to “enable,” this parameter is used to define the change in value since the last transmission that triggers that the value of communication object “A Operating hours” is sent again.

**Availability:**

The parameter “Value change since last sent (hours)” is displayed if the following configuration has been made:

- Parameter “Counting of operating hours in“
  - Setting: “Hours“
- Parameter “Send status on change of status“
  - Setting: “enable“

The parameter “Value change since last sent (seconds)” is displayed if the following configuration has been made:

- Parameter “Counting of operating hours in“
  - Setting: “Seconds“
- Parameter “Send status on change of status“
  - Setting: “enable“

**More information:**

- Communication object “A Operating hours” [→ 153]
- Parameter “Counting of operating hours in” [→ 148]
- Parameter “Send status on change of status” [→ 149]

**Block time for sending of status**

Parameter	Settings
Block time for sending of status (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter is used to set how much time since the last sending of the status has to have passed in order for it to be sent again. Hence, no additional bus load is generated by status telegrams generated in quick succession during bus mode.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Send status on change of status“
  - Setting: “enable“

**Note:**

The block time does not apply to cyclic sending. If the block time is greater than the cycle time, the value is nonetheless sent at the end of the cycle time.

**More information:**

- Parameter “Send status on change of status” [→ 149]

**Send status cyclically**

Parameter	Settings
Send status cyclically (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter can be used to set the time interval at which the value of the communication object “A Operating hours” is sent cyclically.

**More information:**

- Communication object “A Operating hours” [→ 153]

**Parameters in the “Threshold monitoring” section**

**Threshold monitoring**

Parameter	Settings
Threshold monitoring	disable enable

**Function:**

This parameter is used to activate threshold monitoring.

**Other parameters:**

If the parameter “Threshold monitoring” is set to “enable,” the following parameter is also displayed:

- “Threshold for operating hours (in hours)“

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information”):

- “Send status on request“
- “Send status on change of status“
- “Block time for sending of status“
- “Send status cyclically“

**Communication object:**

If the parameter “Threshold monitoring“ is set to “enable,” the following communication objects are displayed:

- “A Threshold for operating hours“
- “A Exceedance of threshold for operating hours“

**More information:**

- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]
- Communication object “Threshold for operating hours” [→ 153]
- Communication object “Exceedance of threshold for operating hours” [→ 154]
- Parameter “Threshold for operating hours (in hours)” [→ 151]

**Threshold for operating hours (in hours)**

Parameter	Settings
Threshold for operating hours (in hours)	0...4294967295

**Function:**

This parameter can be used to configure a threshold value for the respective channel.

If the parameter “Threshold monitoring“ is set to “enable,” a telegram is sent to the bus via the communication object “A Exceedance of threshold for operating hours,” when the threshold is reached or exceeded.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Threshold monitoring“
  - Setting: “enable“

**Note:**

The threshold is specified in whole hours, even if the parameter “Counting of operating hours in” is set to “Seconds.”

**More information:**

- Parameter “Threshold monitoring” [→ 150]

**Send status on request**

Parameter	Settings
Send status on request	disable enable

**Function:**

This parameter can be used to set whether the status of the communication object “A Operating hours“ is sent on request or whether requests for the status value will be rejected.

The request is triggered via the communication object “Send status values.”

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Threshold monitoring“
  - Setting: “enable“

**More information:**

- Parameter “Threshold monitoring” [→ 150]

**Send status on change of status**

Parameter	Settings
Send status on change of status	disable enable

**Function:**

This parameter can be used to set whether the value of the communication object "A Operating hours" is automatically sent after each value change. If "enable" is selected, an additional parameter is displayed through which it can be defined how much time has to have passed since the last transmission for the value to be sent again.

**Other parameters:**

- If the parameter is set to "enable," the following parameter is also displayed:
  - "Block time for sending of status"

**Block time for sending of status**

Parameter	Settings
Block time for sending of status (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter is used to set how much time since the last sending of the status has to have passed in order for it to be sent again. Hence, no additional bus load is generated by status telegrams generated in quick succession during bus mode.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Threshold monitoring"
  - Setting: "enable"
- Parameter "Send status on change of status"
  - Setting: "Enable"

**Note:**

The block time does not apply to cyclic sending. If the block time is greater than the cycle time, the value is nonetheless sent at the end of the cycle time.

**More information:**

- Parameter "Threshold monitoring" [→ 150]
- Parameter "Send status on change of status" [→ 149]



### 8.1.7.3 Communication objects “Counting of operating hours”

#### A Operating hours

No.	Object name	Function	Datapoint type	Flags
63	A Operating hours	Value (in hours)	12.001 counter pulses (unsigned)	CRT

#### Function:

This object can be used to request the current number of operating hours of the output, i.e. how many hours the output received power or how long heating or cooling mode was active via the bus at any time.

#### Availability:

The communication object is displayed if the following configuration was made:

- Parameter “Counting of operating hours” (“Functions, objects” parameter card of the respective thermal drive)
  - Setting: “enable”
- Parameter “Counting of operating hours in” (“Operating hours” parameter card of the respective thermal drive)
  - Setting: “Hours”

#### A Operating hours

No.	Object name	Function	Datapoint type	Flags
65	A Operating hours	Set value (in hours)	12.001 counter pulses (unsigned)	CW

#### Function:

This object can be used to set the value for counting of operating hours for the output to an integer value in the range from 0 to 4 294 967 295 via the bus.

#### Availability:

The communication object is displayed if the following configuration was made:

- Parameter “Counting of operating hours” (“Functions, objects” parameter card of the respective thermal drive)
  - Setting: “enable”

#### A Operating hours

No.	Object name	Function	Datapoint type	Flags
64	A Operating hours	Value (in seconds)	13.100 time lag (s)	CRT

#### Function:

This object can be used to request the current number of operating hours of the output, i.e. how many seconds the output received power or how long heating or cooling mode was active in seconds via the bus at any time.

#### Availability:

The communication object is displayed if the following configuration was made:

- Parameter “Counting of operating hours” (“Functions, objects” parameter card of the respective thermal drive)
  - Setting: “enable”
- Parameter “Counting of operating hours in” (“Operating hours” parameter card of the respective thermal drive)
  - Setting: “Seconds”

#### A Threshold for operating hours

No.	Object name	Function	Datapoint type	Flags
66	A Threshold for operating hours	Set/Request value (in hours)	12.001 counter pulses (unsigned)	CRW

#### Function:

This object can be used to transmit and read the threshold value for counting of operating hours for output as an integer value in the range of 1 to 4 294 967 295 via the bus to the thermal drive actuator.

The threshold is transmitted in whole hours.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter “Counting of operating hours” (“Functions, objects” parameter card of the respective thermal drive)
  - Setting: “enable“
- Parameter “Threshold monitoring” (“Operating hours” parameter card of the respective thermal drive)
  - Setting: “enable“

**A Exceedance of threshold for operating hours**

No.	Object name	Function	Datapoint type	Flags
67	A Exceedance of threshold for operating hours	On/Off	1.002 boolean	CRT

**Function:**

This object is used to report the hitting or exceeding of the respective threshold value for counting of operating hours or to query via the bus whether the threshold value has been exceeded.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter “Counting of operating hours” (“Functions, objects” parameter card of the respective thermal drive)
  - Setting: “enable“
- Parameter “Threshold monitoring” (“Operating hours” parameter card of the respective thermal drive)
  - Setting: “enable“

## 8.1.8 Counting of switching cycles

The switching cycle counter is used to monitor the connected load.

The counter is updated with each transition from “On” to “Off.” If switching is still ongoing during bus voltage failure and a threshold exceedance occurs, this is transmitted when bus voltage is recovered.

The object “A Exceedance of threshold for switching cycles” is only sent with an object value change (once). That is, if a new threshold is received or the counter value is reset, threshold exceedance is only sent if a change to the object for threshold monitoring occurs as a result. Once the counter object has reached its maximum possible value (4 294 967 295), it remains at this value until it is reset.

The reset is executed by writing a value in the object “A Number of switching cycles (Set value (in cycles))”.

In case of bus voltage failure, the values of all three objects of switching cycle counting are saved to enable their recovery when bus voltage is recovered. After a parameter download, the three objects are not reset.

The counting of switching cycles is active even if the parameter “Counting of switching cycles” is set to “enable.” If activated, the valid count at that point in time in the object “A Number of switching cycles” is used.

### 8.1.8.1 Parameters on the “Functions, objects” parameter card of the thermal drive

#### Counting of switching cycles

Parameter	Settings
Counting of switching cycles	disable enable

#### Function:

This parameter can be used to activate the counting of switching cycles for the respective output (i.e. how frequently an output was switched on and off). The switching cycle counter is used to monitor the connected load.

#### Other parameter cards:

If the parameter “Counting of switching cycles” is set to “enable” the “Counting of switching cycles” parameter card is displayed.

#### Communication object:

If the parameter “Counting of switching cycles” is set to “enable,” the following communication objects are displayed:

- “A Number of switching cycles (Value (in cycles))”
- “A Number of switching cycles (Set value (in cycles))”

#### More information:

- Communication object “A Number of switching cycles (value (switching cycles))” [→ 159]
- Communication object “A Number of switching cycles (Set value (in cycles))” [→ 159]

### 8.1.8.2 Parameters of the “Counting of switching cycles” parameter card

The “Counting of switching cycles” parameter card is displayed, if the parameter “Counting of switching cycles” on the “Functions, objects” parameter card of the respective thermal drive channel is set to “enable.”

## Parameters in the “Status” section

### Send status on request

Parameter	Settings
Send status on request	disable enable

#### Function:

This parameter can be used to set whether the status of the communication object is sent upon request or whether requests for the status value will be rejected.

The request is triggered via the communication object “Send status values.”

#### More information:

- Communication object “Send status values” [→ 42]

### Send status on change of status

Parameter	Settings
Send status on change of status	disable enable

#### Function:

This parameter can be used to set whether the value of the status object is automatically sent after each status change.

### Value change since last sent (cycles)

Parameter	Settings
Value change since last sent (cycles)	0...4294967295

#### Function:

If the parameter “Send status on change of status“ is set to “enable,” this parameter is used to specify the change in value since the last transmission of communication object “A Number of switching cycles” at which it is sent again.

#### Note:

The configurable value “0” is interpreted as “1.”

#### Availability:

The parameter is displayed if the following configuration has been made:

- Parameter “Send status on change of status“
  - Setting: “enable“

#### More information:

- Communication object “A Number of switching cycles (value (switching cycles))“ [→ 159]
- Parameter “Send status on change of status” [→ 158]

### Block time for sending of status

Parameter	Settings
Block time for sending of status (hh:mm:ss)	00:00:00 ... 18:12:15

#### Function:

This parameter is used to set which time since the last sending of the status has to be exceeded in order for it to be sent again. Hence, no additional bus load is generated by status telegrams generated in quick succession during bus mode.

#### Availability:

The parameter “Block time for sending of status” is displayed if the following configuration has been made:

- Parameter “Send status on change of status“
  - Setting: “enable“

#### Note:

The block time does not apply to cyclic sending. If the block time is greater than the cycle time, the value is nonetheless sent at the end of the cycle time.

**More information:**

- Parameter “Send status on change of status” [→ 158]

**Send status cyclically**

Parameter	Settings
Send status cyclically (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter can be used to set the time interval at which the value of the status object is sent cyclically.

If this is set to “00:00:00,” cyclic sending is deactivated.

**Parameters in the “Threshold monitoring” section**

**Threshold monitoring**

Parameter	Settings
Threshold monitoring	disable enable

**Function:**

This parameter is used to activate threshold monitoring.

**Other parameters:**

If the parameter “Threshold monitoring” is set to “enable,” the parameter “tThreshold for switching cycles” and parameters for sending the status of the threshold are also displayed.

**Communication objects:**

If the parameter “Threshold monitoring” is set to “enable,” the following communication objects are also displayed:

- “A Threshold for switching cycles“
- “A Exceedance of threshold for switching cycles“

**More information:**

- Communication object “Threshold for switching cycles” [→ 159]
- Communication object “Exceedance of threshold for switching cycles” [→ 159]
- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]

**Threshold for switching cycles**

Parameter	Settings
Threshold for switching cycles	0...4294967295

**Function:**

This parameter can be used to configure a threshold for the number of switching cycles.

If the parameter “Threshold monitoring” is set to “enable,” a telegram is sent to the bus via the communication object “A Exceedance of threshold for switching cycles,” when the threshold is reached or exceeded.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Threshold monitoring“
  - Setting: “enable“

**More information:**

- Communication object “ A Exceedance of threshold for switching cycles” [→ 159]
- Parameter “Threshold monitoring” [→ 157]

**Send status on request**

Parameter	Settings
Send status on request	disable enable

**Function:**

This parameter can be used to set whether the status of the communication object is sent upon request or whether requests for the status value will be rejected.

The request is triggered via the communication object "Send status values."

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Threshold monitoring"
  - Setting: "enable"

**More information:**

- Communication object "Send status values" [→ 42]
- Parameter "Threshold monitoring" [→ 157]

**Send status on change of status**

Parameter	Settings
Send status on change of status	disable enable

**Function:**

This parameter can be used to set whether the value of the status object is automatically sent after each status change.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Threshold monitoring"
  - Setting: "enable"

**More information:**

- Parameter "Threshold monitoring" [→ 157]

**Block time for sending of status**

Parameter	Settings
Block time for sending of status (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter is used to set which time since the last sending of the status has to be exceeded in order for it to be sent again. Hence, no additional bus load is generated by status telegrams generated in quick succession during bus mode.

**Availability:**

The parameter "Block time for sending of status" is displayed if the following configuration has been made:

- Parameter "Send status on change of status"
  - Setting: "enable"

**Note:**

The block time does not apply to cyclic sending. If the block time is greater than the cycle time, the value is nonetheless sent at the end of the cycle time.

**More information:**

- Parameter "Send status on change of status" [→ 158]

**Send status cyclically**

Parameter	Settings
Send status cyclically (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter can be used to set the time interval at which the value of the status object is sent cyclically.

If this is set to "00:00:00," cyclic sending is deactivated.

### 8.1.8.3 Communication objects “Counting of switching cycles”

#### A Number of switching cycles

No.	Object name	Function	Datapoint type	Flags
68	A Number of switching cycles	Value (in cycles)	12.001 counter pulses (unsigned)	CRT

**Function:**

This communication object can be used to request the number of switching cycles of this channel via the bus at any time. The value is increased by 1 as soon as the channel has been switched off and back on again.

If the parameter “Threshold monitoring” is set to “enable” (“Counting of switching cycles” parameter card), a telegram is sent to the bus if the threshold value is exceeded.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter “Counting of switching cycles” (“Functions, objects” parameter card of the respective thermal drive)
  - Setting: “enable”

#### A Number of switching cycles

No.	Object name	Function	Datapoint type	Flags
69	A Number of switching cycles	Set value (in cycles)	12.001 counter pulses (unsigned)	CW

**Function:**

This communication object can be used to set the value for switching cycle counting for the output to an integer value in the range from 0 to 4 294 967 295 via the bus.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter “Counting of switching cycles” (“Functions, objects” parameter card of the respective thermal drive)
  - Setting: “enable”

#### A Threshold for switching cycles

No.	Object name	Function	Datapoint type	Flags
70	A Threshold for switching cycles	Set/Request value (in cycles)	12.001 counter pulses (unsigned)	CRW

**Function:**

This communication object can be used to read and set the threshold value for switching cycle counting for the output to an integer value in the range from 1 to 4 294 967 295 via the bus.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter “Counting of switching cycles” (“Functions, objects” parameter card of the respective thermal drive)
  - Setting: “enable”
- Parameter “Threshold monitoring” (“Counting of switching cycles” parameter card of the respective thermal drive)
  - Setting: “enable”

#### A Exceedance of threshold for switching cycles

No.	Object name	Function	Datapoint type	Flags
71	A Exceedance of threshold for switching cycles	On/Off	1.002 boolean	CRT

**Function:**

This communication object is used to report the hitting or exceeding of the respective threshold value for switching cycle counting or to query via the bus whether the threshold value has been exceeded.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter “Counting of switching cycles” (“Functions, objects” parameter card of the respective thermal drive)
  - Setting: “enable“
- Parameter “Threshold monitoring” (“Counting of switching cycles” parameter card of the respective thermal drive)
  - Setting: “enable“



## 8.1.9 Direct operation

The membrane keypad on the device front can be used to operate the actuators directly. A status LED for each channel shows the status of the valve.

Direct operation enables the installer to test the installation and thermal actuators prior to configuration with ETS. For each channel, a button can be used to open and close the valve. The status LED shows if the valve is open or closed. The configured valve control direction is taken into account here.

Direct operation can be locked or enabled on the “Functions, objects” parameter card. By making the corresponding configuration, it is possible to reset direct operation after a set time or via a “A Direct operation lock” communication object.



After bus voltage recovery, direct operation is deactivated.

### 8.1.9.1 Operation in direct operation



Operation for direct operation is described for channel A as an example. The description applies analogously to channels B - F.

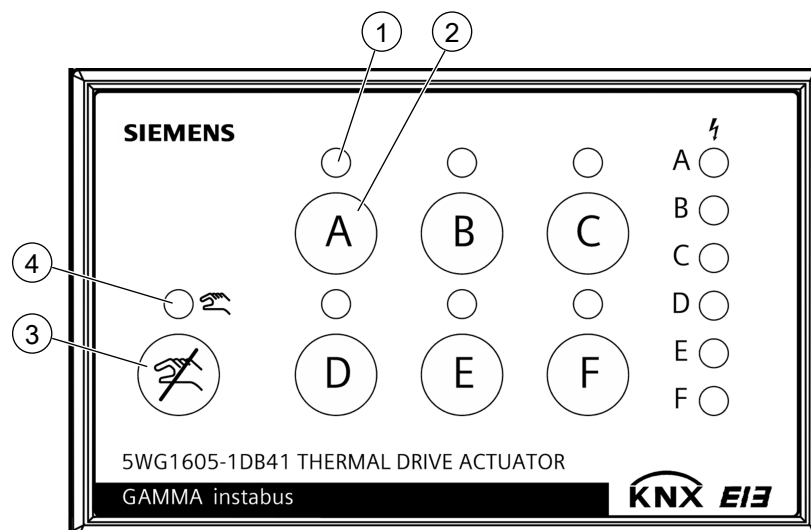


Fig. 23: Operation in direct operation, Thermal Drive Actuator N 605D41, 6 x AC 24...230 V

- |  |   |
|--|---|
| <p>1 Status LED of the channel (red)</p>                       | <p>Indicates the status of the respective channel.</p> <ul style="list-style-type: none"> <li>• The LED flashes inversely to the frequency of the status LED for direct operation (4): Valve is opened under consideration of the valve control direction.</li> <li>• The LED flashes at the frequency of the status LED for direct operation (4): Valve is closed under consideration of the valve control direction.</li> </ul> |
| <p>2 Button: Open/close valve, channel in direct operation</p> | <p>Short push of button (&lt; 5 s):</p> <ul style="list-style-type: none"> <li>• Open/close valve</li> <li>• Activate direct operation for the channel.</li> </ul>  |
| <p>3 Button: Deactivate direct operation</p>                   | <p>Short push of button:</p> <ul style="list-style-type: none"> <li>• Deactivate direct operation for all channels.</li> </ul> <p>Pushing the button and pushing the “Open/close valve” (2) button of a channel:</p> <ul style="list-style-type: none"> <li>• Deactivate the direct operation of the respective channel.</li> </ul>   |

- 4 Status LED of direct operation (yellow) LED flashes if direct operation is active for at least one channel.

### Activating direct operation for one channel and operating the channel

- ▷ Direct operation is enabled (“Direct operation [→ 163]” parameter).
- ◆ On the front of the device, push the “Open/close valve” button (2).
  - ⇒ Direct operation is activated for this channel.
  - ⇒ When the valve is closed, the status LED of the channel (1) and the status LED of direct operation (4) flash at the same frequency.
  - ⇒ When the valve is open, the status LED of the channel (1) and the status LED of direct operation (4) each flash with inverse frequency.
  - ⇒ The valve is always opened or closed under consideration of the valve control direction.

### Deactivating direct operation for one channel

- ▷ Direct operation is active.
- 1. Push and hold the “Deactivate direct operation” button (3).
- 2. Push and release the “Open/close valve” button (2) of the respective channel.
- 3. Release the “Deactivate direct operation” button (3).
  - ⇒ Direct operation is deactivated for this channel.
  - ⇒ The channel is in bus mode.
  - ⇒ The status LED of channel (1) indicates the valve status triggered by bus commands.

### Deactivating direct operation for all channels

- ▷ Direct operation is active.
- ◆ Push and release the “Deactivate direct operation” button (3).
  - ⇒ Direct operation is deactivated for all channels.
  - ⇒ The status LED of direct operation (4) goes out.
  - ⇒ The channels are in bus mode.
  - ⇒ The status LEDs of channels (1) indicate the valve statuses triggered by bus commands.

### 8.1.9.2 Parameters on the “Functions, objects” parameter card of the thermal drive

The parameters for direct operation are located in the "Direct operation" section on the "Functions, objects" parameter card under the “Thermal drive" parameter card of the channel.

#### Direct operation

Parameter	Settings
Direct operation	disable enable

#### Function:

This parameter is used to disable or enable the operation of the thermal drive actuator directly on the device.

#### Other parameters:

If the parameter “Direct operation“ is set to “enable,” additional parameters are displayed, which can be used to set when direct operation can be automatically reset and if direct operation is to be restricted. It can also be defined whether the status of direct operation should be disabled or enabled and whether the status on change of status should be sent cyclically or on request:

- Parameter “Direct operation auto reset“
- Parameter “Direct operation lockable“
- Parameter “Status direct operation“

If the parameter “Status direct operation“ is set to “enable,” additional parameters for configuring the status are displayed.

#### More information:

- Direct operation [→ 161]
- Parameter “Direct operation auto reset“ [→ 163]
- Parameter “Direct operation lockable“ [→ 163]
- Communication object “A Direct operation lock“ [→ 164]
- Parameter “Status direct operation“ [→ 164]
- Communication object “A Status direct operation“ [→ 164]
- Parameters that are visible if the “Status...” parameter is set to “enable“ [→ 283]

#### Direct operation auto reset

Parameter	Settings
Direct operation auto reset (hh:mm:ss)	00:00:00 ... 18:12:15

#### Function:

This parameter is used to set the time after which direct operation is automatically deactivated.

The setting “00:00:00” means that direct operation is not automatically reset but can only be deactivated directly on the device or through bus voltage failure and recovery.

#### Note:

If direct operation has been activated on the device, the device can only be controlled directly and not remotely. This parameter can be used to prevent direct operation from being unintentionally left switched on.

#### Direct operation lockable

Parameter	Settings
Direct operation lockable	disable enable

#### Function:

This parameter can be used to control the enabling of direct operation via a communication object.

**Communication objects:**

If the parameter “Direct operation lockable” is set to “enable,” the following communication object is displayed:

- “A Direct operation lock“

**More information:**

- Communication object “A Direct operation lock” [→ 164]

**Status direct operation**

Parameter	Settings
Status direct operation	disable enable

**Function:**

This parameter is used to activate or deactivate the communication object for the status of direct operation. This corresponding communication object is used to report whether direct operation is active.

**Other parameters:**

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information”):

- “Send status on request“
- “Send status on change of status“
- “Send status cyclically“

**Communication object:**

If the parameter “Status direct operation” is set to “enable,” the following communication object is displayed:

- “A Status direct operation“

**More information:**

- Communication object “A Status direct operation” [→ 164]
- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]

### 8.1.9.3 Communication objects “direct operation”

The following communication objects are used to control the “Direct operation” function:

**A Status direct operation**

No.	Object name	Function	Datapoint type	Flags
72	A Status direct operation	On/Off	1.002 boolean	CRT

**Function:**

This communication object is used to report whether direct operation is active or not.

If a logical “0” is sent, direct operation is deactivated, if a logical “1” is sent, direct operation is activated.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter “Direct operation” (“Functions, objects” parameter card)
  - Setting: “enable“
- Parameter “Status direct operation” (“Functions, objects” parameter card)
  - Setting: “enable“

**A Direct operation lock**

No.	Object name	Function	Datapoint type	Flags
73	A Direct operation lock	On/Off	1.003 enable	CW

**Function:**

This communication object can be used to lock or enable direct operation (operation directly on the device).

If a logical "0" is received, direct operation is locked, if a logical "1" is received, direct operation is enabled.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Direct operation" ("Functions, objects" parameter card)
  - Setting: "enable"
- Parameter "Direct operation lockable" ("Functions, objects" parameter card)
  - Setting: "enable"

**Example:**

Enabling direct operation through a key switch.

**Note:**

When bus voltage is recovered the setting is reset.

### 8.1.10 Assignment of energy requirement request and pump control

The valve outputs can be assigned to the function modules "Energy requirement request" and "Pump control." This allows the energy requirement from the rooms to be transferred to a primary system and circulating pumps to be controlled according to demand.

To assign the valve outputs to an energy requirement request or pump control, parameter "Energy requirement request 1" and/or "Energy requirement request 2" ("Energy requirement request" parameter card) and/or parameter "Pump control 1" and/or "Pump control 2" ("Pump control" parameter card) must be set to "enable." The parameters for the assignment of energy requirement request and pump control are located on the "Functions, objects" parameter card in the "Assignments" section underneath the "Thermal drive" parameter card of the channel. These parameters make it possible to assign a valve output (thermal drive) to an energy requirement request or pump control. The control value of the assigned valve output thus participates in the evaluation of the internal energy demand.

#### Energy requirement request

Parameter	Settings
Energy requirement request	No assignment Energy requirement request 1 Energy requirement request 2

#### Function:

The valve output is assigned to a heat requirement or cooling requirement control with regard to the evaluation of its control value.

#### The following settings are possible:

- No assignment:  
The valve output is not assigned to any energy requirement request, even if these have been enabled.
- Energy requirement request 1:  
If the parameter "Energy requirement request 1" is set to "enable," this setting can be used to assign the selected valve output to the energy requirement request 1 (e.g. a heating requirement request).
- Energy requirement request 2:  
If the parameter "Energy requirement request 2" is set to "enable," this setting can be used to assign the selected valve output to the energy requirement request 2 (e.g. a cooling requirement request).

#### Availability:

The parameter is displayed if the following configuration has been made:

- Parameter "Energy requirement request 1" or "Energy requirement request 2" ("Energy requirement request" parameter card)
  - Setting: "enable"

#### More information:

- Energy requirement request [→ 253]
- Parameter "Energy requirement request 1"/"Energy requirement request 2" [→ 253]

#### Pump control

Parameter	Settings
Pump control	No assignment Pump control 1 Pump control 2

#### Function:

The valve output is assigned to a pump control with regard to the evaluation of its control value.

#### The following settings are possible:

- **No assignment:**  
The valve output is not assigned to any pump control, even if these have been enabled.
- **Pump control 1:**  
If the parameter "Pump control 1" is set to "enable," this setting can be used to assign the selected valve output to the pump control 1 (e.g. a heating cycle pump).
- **Pump control 2**  
If the parameter "Pump control 2" is set to "enable," this setting can be used to assign the selected valve output to the pump control 2 (e.g. a cooling cycle pump).

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Pump control 1" or "Pump control 2" ("Pump control" parameter card)
  - Setting: "enable"

**More information:**

- Pump control [→ 260]
- Parameter "Pump control 1"/"Pump control 2" [→ 261]

## 8.2 Temperature control

The thermal drive actuator contains up to 6 internal room temperature controllers as appropriate for the number of valve outputs. These can be internally assigned directly to the valve outputs. The various control values of the controller are transferred directly to the control value inputs of the valve outputs without external bus communication. This means that only one KNX bus device is used for individual room temperature control with valve control.

In addition, the room temperature controllers can be used as separate, independent function blocks in a KNX system. In this case, the various control values are linked via communication objects to external thermal drive actuators, motor actuators or fan coil actuators that do not include a controller function.

### Room temperature control (controller)

The room temperature can be controlled exclusively via "Heating" or via "Cooling" or via "Heating and cooling." The room temperature control can be set separately for heating and cooling and can be performed either via a 2-point controller or a continuous PI controller or a continuous PI controller with sequence control.

#### 2-point control

The 2-point control checks the current actual temperature value at discrete time intervals (cycle time). Depending on whether the actual value is above or below the setpoint, heating/cooling is switched on or off (see figure "2-point control for "Heating" [→ 168]" and figure "2-point control for "Cooling" [→ 168]" ).

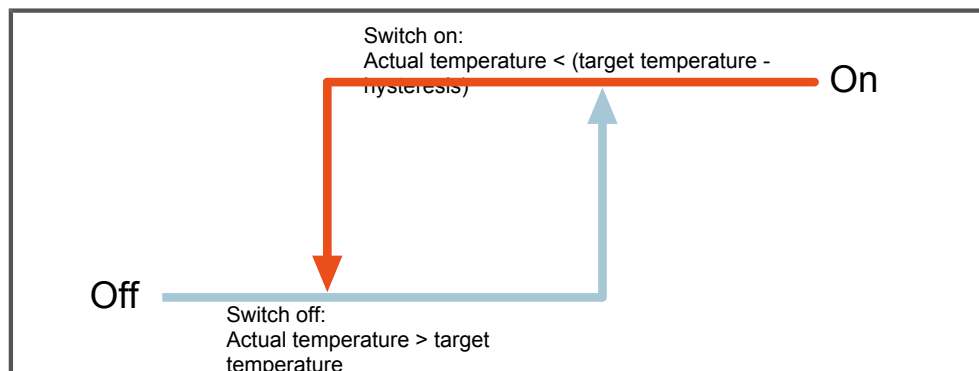


Fig. 24: 2-point control for "Heating"

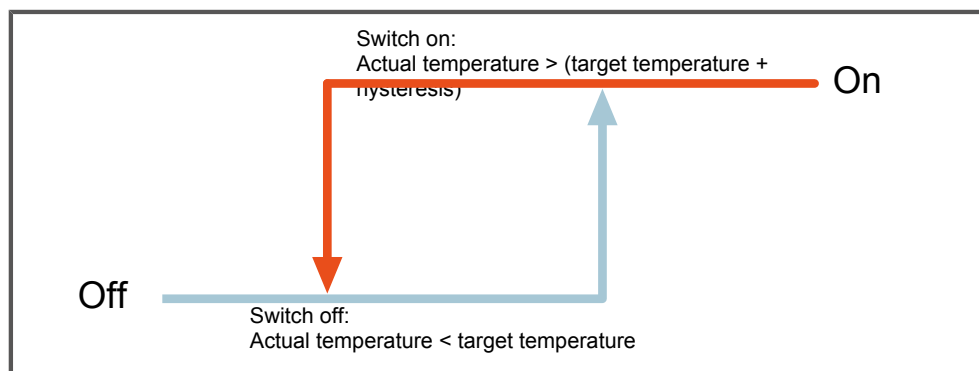


Fig. 25: 2-point control for "Cooling"

The cycle duration of the controller and the hysteresis of the 2-point controller can be configured. The 2-point control can be used in control scenarios in which a small fluctuation of the room temperature is permissible.



### Continuous PI control

The PI control uses the input values actual value and setpoint to calculate a control value. This control value can be transferred as a continuous control value in the range of 0...100 % or as a pulse width modulated On/Off command via the KNX bus (see figure “PI control with continuous control value [→ 169]” and figure “PI control with On/Off command [→ 169]”).

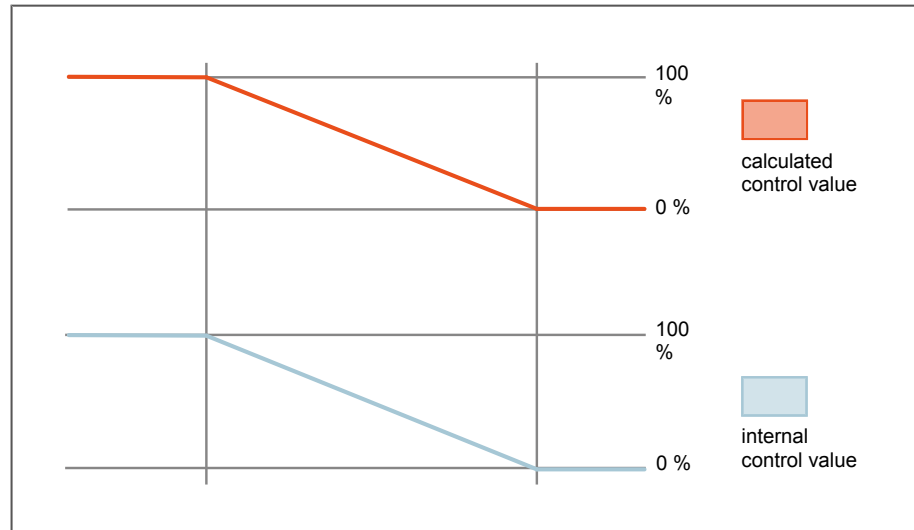


Fig. 26: PI control with continuous control value

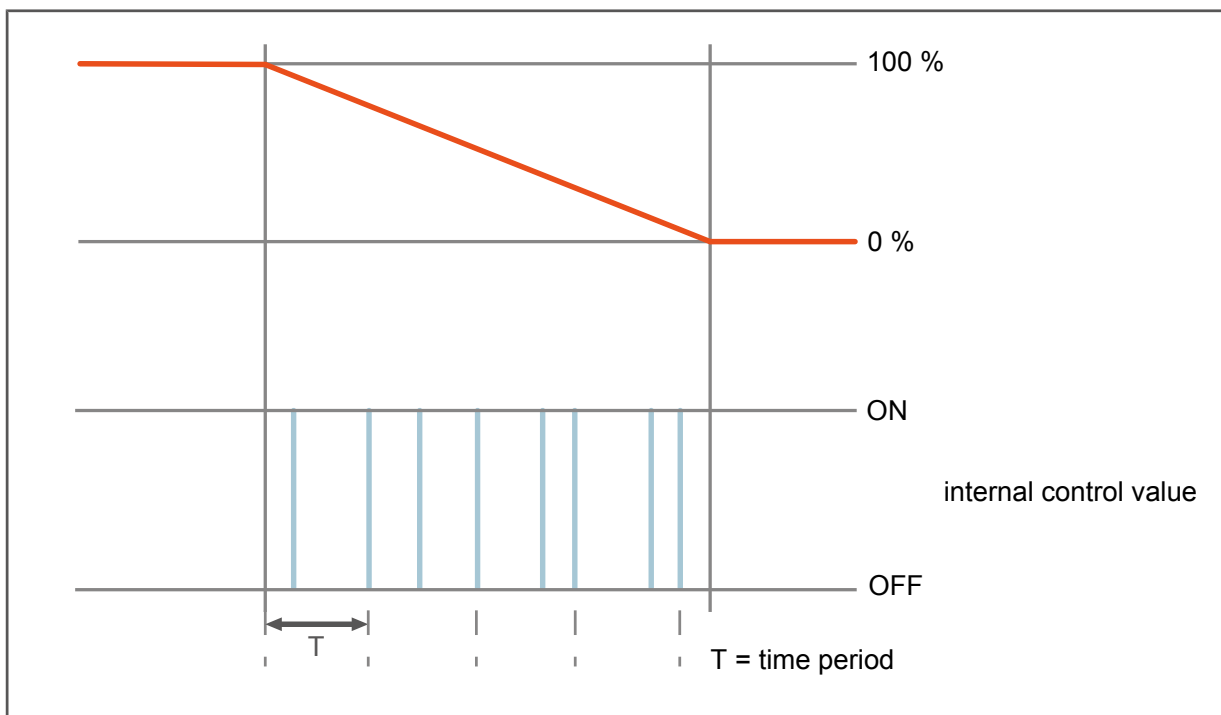


Fig. 27: PI control with On/Off command

The type of control value output, proportional range and delay time can be adjusted.

**More information:**

- Parameters on the “Heating,” “Cooling,” and “Heating/cooling” parameter cards [→ 210]

**Room operating modes**

You can set whether the control is to switch between two room operating modes (Comfort/protection mode), three room operating modes (Comfort/power saving/protection mode) or four room operating modes (Comfort/pre-comfort/power saving/protection mode).

**More information:**

- Parameters on the “Room operating mode” parameter card [→ 184]

**Continuous PI control with sequence control**

If a room can be heated in two different ways, sequential control makes sense. The two sources of heating and cooling are then controlled one after the other (in a sequence) rather than in parallel.

**Example: Heating with underfloor heating and radiator heating in one room**

- If the room temperature is below the setpoint, the valve on the underfloor heating is opened first (sequence 1).
- If the underfloor heating valve is open 100 % but the setpoint is still not reached, the valve on the radiator is opened (sequence 2).
- If, on the other hand, it is too warm in the room, the radiator valve is gradually closed first and the valve of the underfloor heating system is closed only thereafter.

Sequence control converts the internal control value calculated by the PI controller into two values (control value sequence 1, control value sequence 2).

The value of the controller control value at which sequence 2 starts is adjustable. In addition, it can be set separately for each sequence from which change in control value the control value is supposed to be sent to the bus and at which intervals the control value is repeated cyclically. The control values are output as a continuous control value in the range of 0...100 % (1-byte) (see “Control values for sequence control [→ 170]!”).

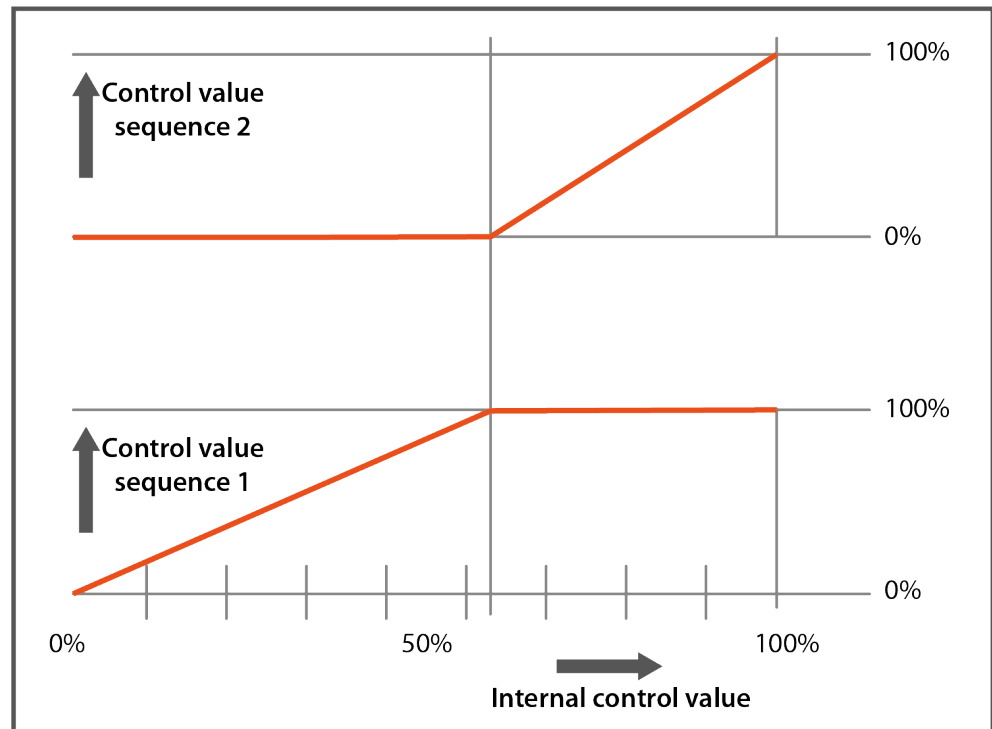


Fig. 28: Control values for sequence control

**More information:**

- Parameters on the “Heating,” “Cooling,” and “Heating/cooling” parameter cards [→ 210]

### Actual value calculation

For processing the actual room temperature value, the values from sensors or room control units can be used directly or several temperature values in the room can be weighted in advance via the internal calculator. This weighted value is then transferred internally to the room temperature controller.

**More information:**

- Parameters on the “Actual temperature value” parameter card [→ 192]

### Setpoint calculation

The current setpoint can be determined using two methods:

- From the current room operating mode and the respective absolute setpoint (method A: Absolute setpoints)
- From a basic setpoint in comfort mode and a respective setpoint shift for the other room operating modes pre-comfort mode, power saving mode, each related to heating and cooling. Protection mode for heating or cooling can be configured with fixed values. (Method B: Basic setpoint + setpoint shift)

The basic setpoint refers to comfort mode. The basic setpoint can either be adjusted via the communication object “Temperature control 1, basic setpoint” or set to a fixed value via a parameter “Basic setpoint (°C).” If a basic setpoint is received, the (entire) setpoint and the setpoint shift are sent.

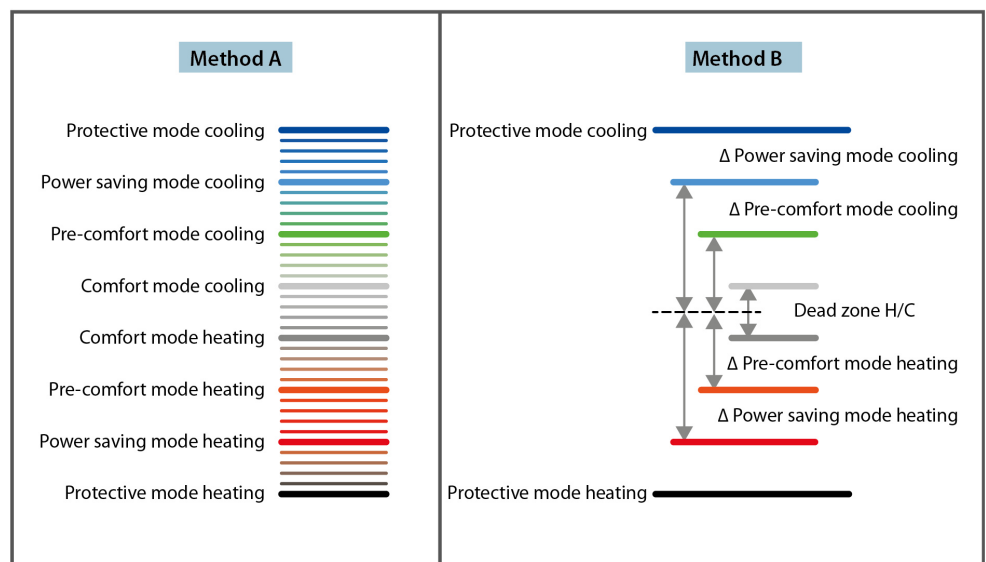


Fig. 29: Methods for setting a setpoint

The setpoints can be set to a fixed value either via communication objects or via parameters.

**More information:**

- Parameters on the “Temperature setpoints” parameter card [→ 198]

### Room operating modes

Depending on the current use of the room, the requirements for the room temperature may vary. To this end, several room operating modes are available, with different setpoints assigned to each one:

- Comfort mode
- Pre-comfort mode
- Power saving mode
- Protection mode

### Operating modes

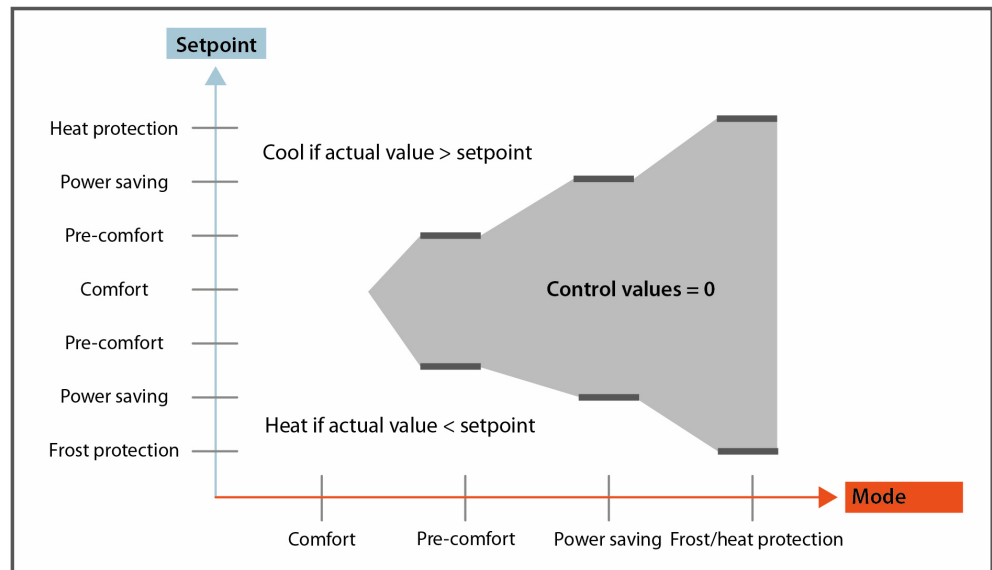
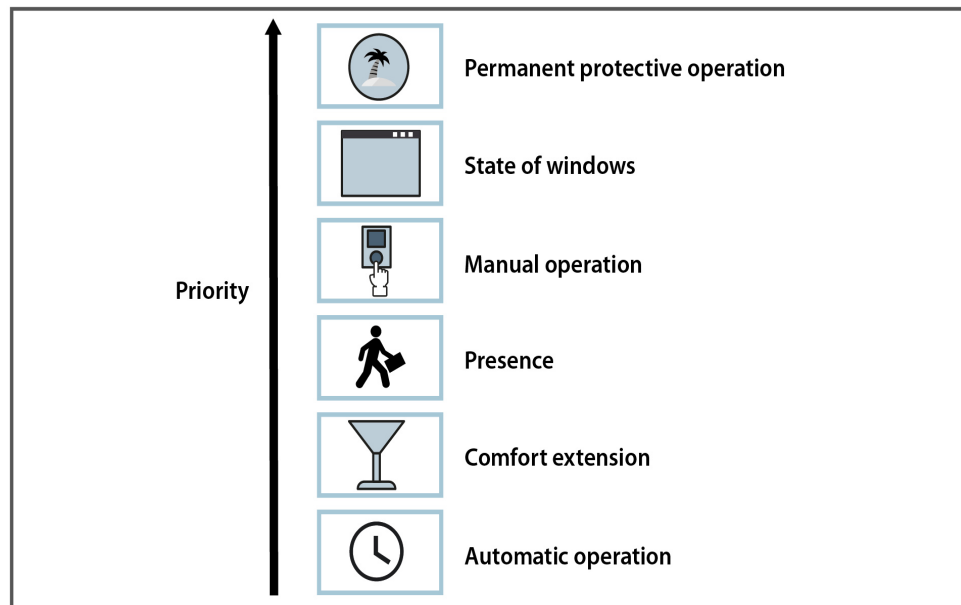


Fig. 30: Setpoint setting via basic setpoint + setpoint shift



### Operating mode: Automatic operation and manual operation

The operating modes can be set in manual operation via local pushbuttons, room control units or a management station. Setting the operating mode via these operator interfaces immediately switches to manual operation. All operating mode settings in automatic mode, e.g. from a timer, are ignored.

Automatic operation must be activated via the local controls to allow automatic mode setting from a timer (see figure "Switching room operating modes [→ 172]").

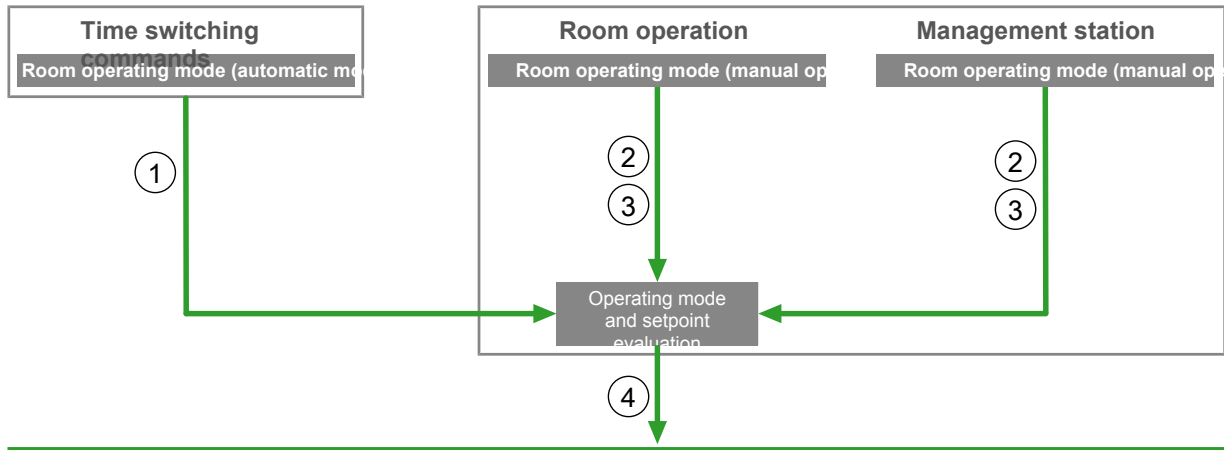


Fig. 31: Switching room operating modes

- 1 For switching the room operating mode to automatic operation.  
8-bit communication object (1...4):  
"Temperature control 1, room mode (automatic operation)"
  - 1 = Comfort
  - 2 = Pre-comfort
  - 3 = Power saving mode
  - 4 = Protection mode
  
- 2 For switching the room operating mode to and activating/deactivating automatic operation.  
8-bit communication object (0...4):  
"Temperature control 1, room mode (manual operation)"
  - 0 = Automatic
  - 1 = Comfort
  - 2 = Pre-comfort
  - 3 = Power saving mode
  - 4 = Protection mode
  
- 3 For switching the room operating mode to and activating/deactivating automatic operation.  
1-bit communication object (0...4):
  - Automatic,  
Object: "Temperature control 1, room operating mode, automatic mode"
  - Comfort,  
Object: "Temperature control 1, room operating mode (manual operation), comfort mode"
  - Pre-comfort,  
Object: "Temperature control 1, room operating mode (manual operation), pre-comfort mode"
  - Power saving mode,  
Object: "Temperature control 1, room operating mode (manual operation), power saving mode"
  - Protection mode,  
Object: "Temperature control 1, room operating mode (manual operation), protection mode"

- 4 For reporting which room operating mode is active.
- 8-bit communication object: "Temperature control 1, status of room mode (manual operation)"
- 1-bit communication object (0...4):
- Automatic,  
Object: "Temperature control 1, status of room operating mode, automatic mode"
  - Comfort,  
Object: "Temperature control 1, status of room operating mode (manual operation), comfort mode"
  - Pre-comfort,  
Object: "Temperature control 1, status of room operating mode (manual operation), pre-comfort mode"
  - Power saving mode,  
Object: "Temperature control 1, status of room operating mode (manual operation), power saving mode"
  - Protection mode,  
Object: "Temperature control 1, status of room operating mode (manual operation), protection mode"

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In case of bus voltage failure/recovery, you can use a parameter to specify which operating mode is to be used when restarting. Whether the controller in automatic or manual operation is stored prior to the bus voltage failure and this state is re-stored after bus voltage recovery.

### Comfort extension

When operating in automatic mode without a motion sensor and with the windows closed, and "pre-comfort mode," "power saving mode" or "protection mode" is switched on, "comfort mode" can be switched on for a limited time via a communication object (the "comfort extension").

A comfort extension works like a classic timer switch: If the controller is not already in comfort mode, it is switched to comfort mode for a limited period of time by the comfort extension. This state is also evaluated as a new (temporary) operating mode and thus sent accordingly.

Switching the operating mode via manual operation terminates the comfort extension. An operating mode switch via automatic mode is saved and executed after the comfort extension has been terminated.

#### Behavior after the current room operating mode "Comfort:"

Existing comfort mode is time-limited.

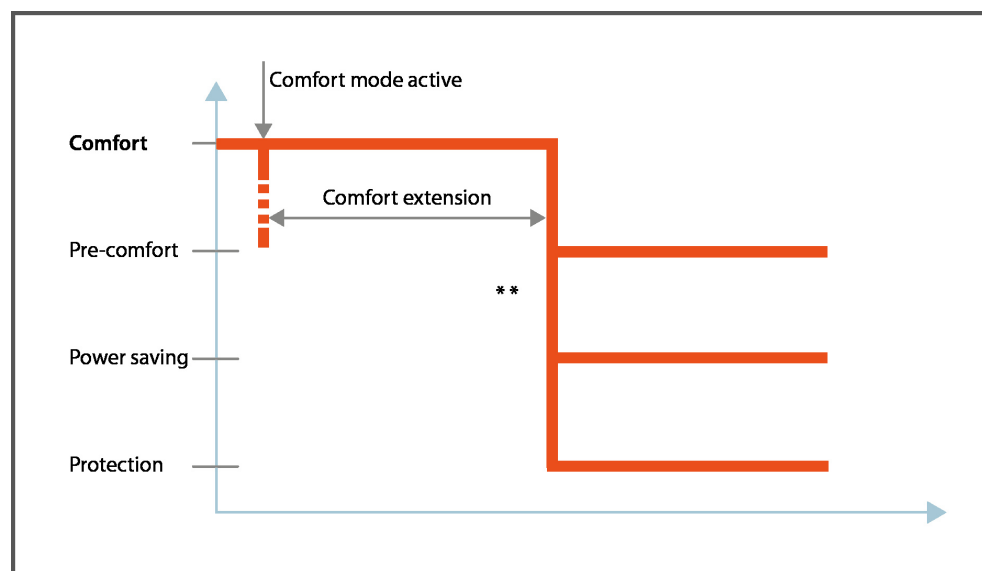


Fig. 32: Behavior in comfort mode

\*\* Either the operating mode that existed before or the operating mode that was set during the comfort extension through newly arrived telegrams is set as the operating mode after the end of the comfort extension.

**Behavior for “Pre-comfort,” “Power saving mode” and “Protection mode”:**

Comfort mode is started for a limited time.

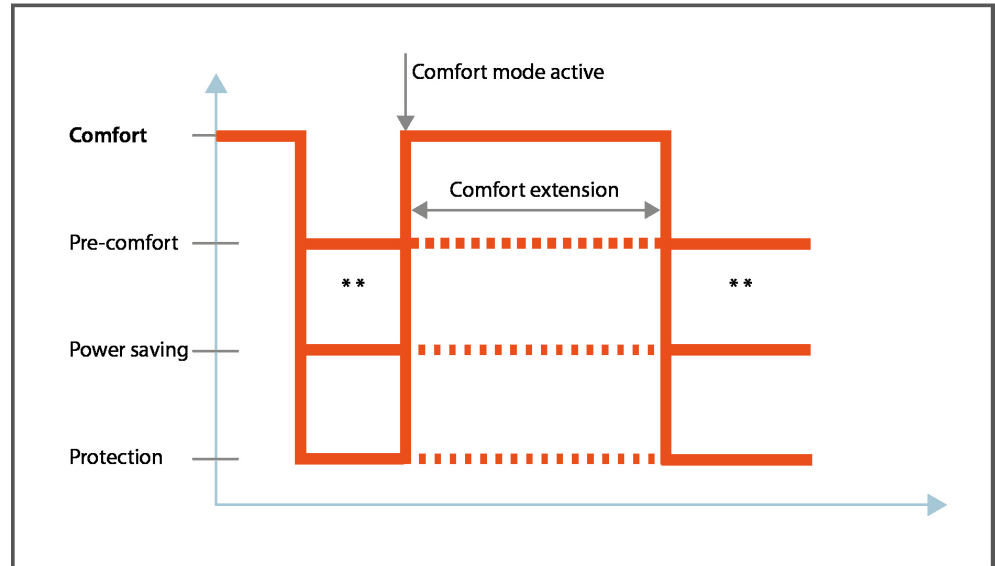


Fig. 33: Behavior if comfort mode is not set.

\*\* Either the operating mode that existed before or the operating mode that was set during the comfort extension through newly arrived telegrams is set as the operating mode after the end of the comfort extension.

**Permanent protection mode**

If you want to switch room temperature control to protective mode permanently (e.g. while you are on vacation), communication object “Permanent protection mode” is available for this purpose. If this object is used to activate the room operating mode “protection mode,” this mode can only be deactivated again via this object. All telegrams or timer commands concerning an operating mode switch that are received are temporarily stored during protection mode.

In case of bus voltage failure/recover, permanent protection mode is deleted. On bus voltage recovery, a query is sent to the sensor or pushbutton regarding the activation of permanent protection mode.

If permanent protection mode is switched off in automatic mode via a telegram and nothing else is active (e.g. presence or comfort extension), the controller switches to the room operating mode that was activated by bus telegram (automatic or manual operation).

If permanent protection mode is switched off in manual mode via a telegram, the controller switches to the room operating mode that was activated by bus telegram (automatic or manual operation), see figure “Activating and deactivating permanent protection mode [→ 176].”

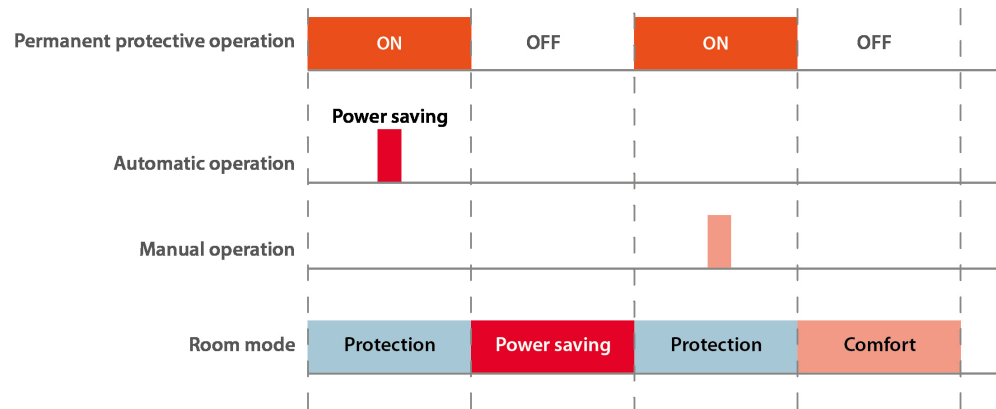


Fig. 34: Activating and deactivating permanent protection mode

## Presence

The controller contains an optional communication object for the "Presence" state for use in rooms with a motion sensor. Messages via this communication object are evaluated for activating the "Comfort mode" room operating mode.

If the controller is in automatic mode and a presence telegram is received, Comfort mode is switched on. In presence mode, if a presence = "OFF" telegram is received, the controller immediately switches to the room operating mode that is activated via bus telegram.

If a window is opened during presence, protection mode is activated. In manual operation, the telegrams from a motion sensor to activate presence are ignored but temporarily stored (see figure "Activating and deactivating the "Presence" state [→ 176]").

If a presence is transmitted by the motion sensor during manual operation, the presence is only temporarily stored. The presence is active immediately upon switching from manual operation to automatic operation.

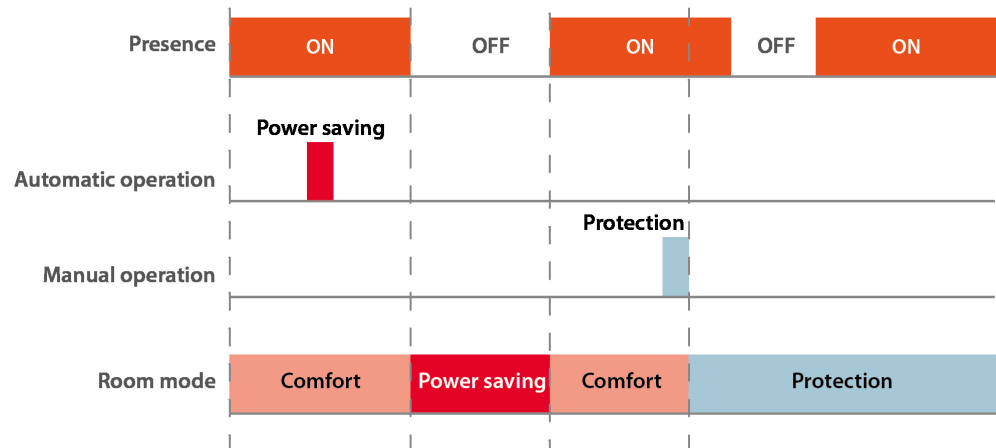


Fig. 35: Activating and deactivating the "Presence" state

## Status of windows

Evaluation of the window statuses allows the controller to react to the opening of windows and doors. To do this, the controller can be assigned up to four window objects that are linked to each other using a logical OR function in the controller. If one or more of the window objects are set to logical 1 (window open), the system switches to protection mode.

If all windows are closed again (that is, all window objects are back on logical 0), a switch is made to the new operating mode received via the bus and buffered while the window or door was open.

A parameter controls if the opening of a window is supposed to lead to protection mode immediately or only after a time delay (e.g. 30 seconds) so that there is no response to briefly opening a window, if appropriate (see figure "Evaluation of the window statuses (example with 30 s) [→ 177]").



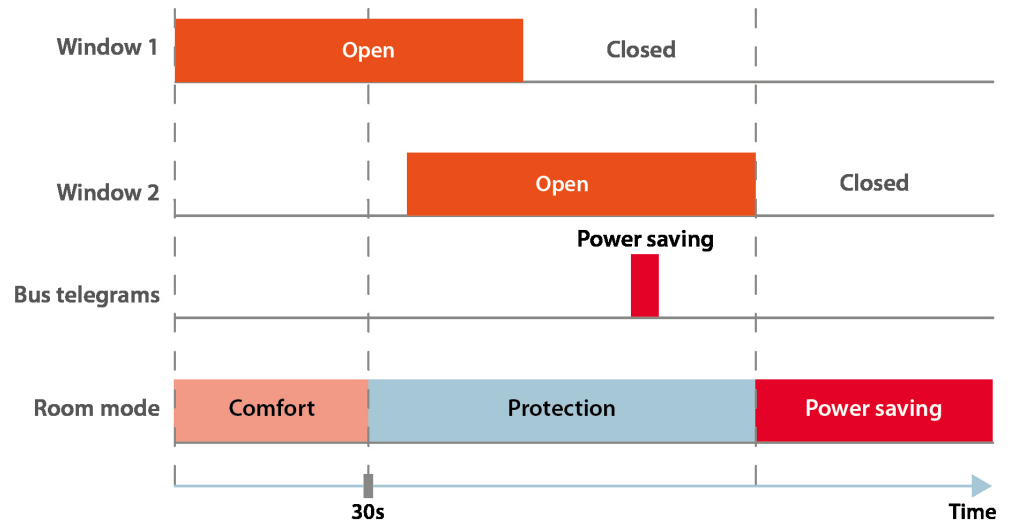


Fig. 36: Evaluation of the window statuses (example with 30 s)

**More information:**

- Parameters on the “Room operating mode” parameter card [→ 184]

**Dew point mode**

If a dew point monitor engages in cooling mode, the controller internally switches to “dew point mode.” In doing so, the control value for cooling is set to 0 % as long as the dew point alarm is present. The “dew point alarm” signal is received by a dew point monitor via a corresponding communication object.

**More information:**

- Parameters on the “Dew point monitoring for cooling” parameter card [→ 227]

**Fan control**

The controller is used to operate and control fan coil actuators or any other corresponding actuator. Up to three fan levels are possible. An 8-bit communication object is used to send the number of rotations in % directly as a continuous value. The table “Converting the fan level to a continuous value [→ 177]” applies to the conversion of the fan level to a continuous value. The threshold values for scaling can be configured.

**NOTICE! Configure the values of the fan levels in ascending order: Speed level 1 < Speed level 2 < Speed level 3.**

Example:

Fan level 2 corresponds to a 67 % rotation speed.

Fan level	Number of configured fan levels		
	1	2	3
OFF	0 %	0 %	0 %
1	1 - 100 %	1 - 50 %	1 - 33 %
2	0	51 - 100 %	34 - 67 %
3	0		68 - 100 %

Table 4: Converting the fan level to a continuous value

In manual operation, it is possible to set a fan level manually via a communication object. When manually switching to fan level 0, the fan is switched off.

**Automatic activation of the fan levels**

The fan switches to automatic operation if this has been configured via the corresponding object.

In the case of automatic control of the fan levels with a continuous controller, the fan levels are set depending on the “Heating” or “Cooling” control value.

Example:

According to the table “Converting the fan level to a continuous value [→ 177],” a control value 50 % corresponds to fan level 2 if there are three fan levels.

When using automatic control of the fan levels with a 2-point controller, the fan levels are set depending on the temperature difference from the current setpoint and can be set for each level.

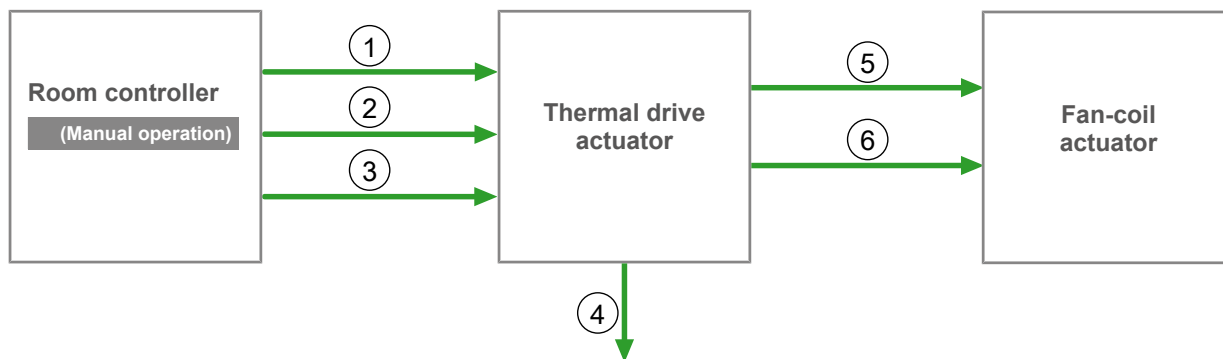


Fig. 37: Automatic activation of the fan levels

- 1 Ventilator mode (Automatic/manual operation)
  - 2 Fan speed (manual operation) (1...100)
  - 3 Fan level (manual operation) in level [1...3] %
  - 4 Status of ventilation mode (automatic/manual operation)
  - 5 Fan, Control value for manual operation
  - 6 Fan, current control value
- KNX

**More information:**

- Parameters on the “Fan control” parameter card [→ 228]

## 8.2.1 Parameters on the “Temperature control” parameter card

The parameters on the “Temperature control” parameter card are displayed if the parameter “Temperature control 1” on the “Device settings” parameter card is set to “enable.”



### System type

The parameters are configured in the same way for all temperature controllers and are therefore just described once for temperature controller 1.

Parameter	Settings
System type	2-pipe system 4-pipe system

**Function:**

This parameter is used to select the system type.

**The following settings are possible:**

- 2-pipe system:  
There is only one cycle for heating/cooling. The change between heating and cooling mode (change-over mode) is executed via the object “Temperature control 1, controller mode.”
- 4-pipe system:

The switch between heating and cooling mode takes place automatically via the room temperature controller, depending on the difference between actual and target temperature.

**Other parameters/parameter cards:**

If the “2-pipe system” parameter is set to “,” the “Controller mode” parameter is displayed and the parameter cards for setting up heating and cooling according to the setting of parameter “Controller mode” are displayed.

If the parameter is set to “4-pipe system,” the “Heating” and “Cooling” parameter cards are displayed. The parameter “Controller mode” is hidden.

**More information:**

- Parameter “Controller operating mode” [→ 179]

**Controller mode**

Parameter	Settings
Controller mode	Heating Cooling Heating and cooling

**Function:**

This parameter is used to set whether the room is heated and/or cooled.

**Other parameters:**

If the “Heating” parameter is set to “,” the additional parameter is displayed:

- “Control value in emergency mode, heating (%)”

If the “Cooling” parameter is set to “,” the additional parameter is displayed:

- “Control value in emergency mode, cooling (%)”

If the parameter is set to “Heating and cooling,” the following additional parameters are displayed:

- “Control value in emergency mode, heating (%)”
- “Control value in emergency mode, cooling (%)”

**Communication object:**

Depending on the setting in parameter “Controller mode” and parameter “Control behavior,” (“Heating,” “Cooling,” or “Heating/cooling” parameter card), the following communication objects are displayed:

Parameter “Controller mode”	Parameter “Control behavior”	
	Setting “2-point control”	Setting “PI control”
Setting “Heating”	“Temperature control 1, heating, control value switching”	“Temperature control 1, heating, control value steady”
Setting “Cooling”	“Temperature control 1, cooling, control value switching”	“Temperature control 1, cooling, control value steady”
Setting “Heating and cooling” (System type “2-pipe system”)	“Temperature control 1, heating/cooling, control value switching”	“Temperature control 1, heating/cooling, control value steady”
Setting “Heating and cooling” (System type “4-pipe system”)	“Temperature control 1, heating, control value switching” “Temperature control 1, cooling, control value switching”	“Temperature control 1, heating, control value steady” “Temperature control 1, cooling, control value steady”

Table 5: Communication objects

**More information:**

- Communication object “Temperature control 1, heating, switching control value” [→ 247]
- Communication object “Temperature control 1, heating, continuous control value” [→ 248]
- Communication object “Temperature control 1, cooling, continuous control value” [→ 247]
- Communication object “Temperature control 1, cooling, switching control value” [→ 245]

- Communication object “Temperature control 1, heating/cooling, switching control value” [→ 246]
- Communication object “Temperature control 1, heating/cooling, continuous control value” [→ 248]
- Parameter “Control value in emergency mode, heating (%)” [→ 180]
- Parameter “Control value in emergency mode, cooling (%)” [→ 180]
- Parameter “Control behavior” (“Heating,” “Cooling,” or “Heating/cooling” parameter card) [→ 210]

#### Control value in emergency mode, heating (%)

Parameter	Settings
Control value in emergency mode, heating (%)	0...100

#### Function:

This parameter is used to set the value of the control value in emergency “heating” mode via a percentage value.

This control value prevents the rooms from cooling down in the absence of the actual temperature value.

#### Availability:

The parameter is displayed if the following configuration has been made:

- Parameter “System type”
  - Setting: “2-pipe system”
- Parameter “Controller mode”
  - Setting: “Heating” or “Heating and cooling”

or

- Parameter “System type”
  - Setting: “4-pipe system”

#### Note:

The control values for emergency mode are used if the temperature control can no longer be executed correctly. This happens, for example, if the actual temperature fails.

#### More information:

- Parameter “System type” [→ 178]
- Parameter “Controller operating mode” [→ 179]
- Parameter “Actual temperature value monitoring” (“Actual temperature value” parameter card) [→ 193]

#### Control value in emergency mode, cooling (%)

Parameter	Settings
Control value in emergency mode, cooling (%)	0...100

#### Function:

This parameter is used to set the value of the control value in emergency “cooling” mode via a percentage value.

This control value prevents the rooms from overheating in the absence of the actual temperature value.

#### Availability:

The parameter is displayed if the following configuration has been made:

- Parameter “System type”
  - Setting: “2-pipe system”
- Parameter “Controller mode”
  - Setting: “Cooling” or “Heating and cooling”

or

- Parameter “System type”
  - Setting: “4-pipe system”

**Note:**

The control values for emergency mode are used if the temperature control can no longer be executed correctly. This happens, for example, if the actual temperature fails.

**More information:**

- Parameter “System type” [→ 178]
- Parameter “Controller operating mode” [→ 179]
- Parameter “Actual temperature value monitoring” (“Actual temperature value” parameter card) [→ 193]

**Ventilation control**

Parameter	Settings
Ventilation control	disable enable

**Function:**

This parameter can be used to enable or block fan control. Communication objects are made available for controlling the fan and for reporting fan status messages.

**Other parameters/parameter cards:**

If the parameter is set to “enable,” the “Fan control” parameter card with additional parameters is displayed.

**Communication objects:**

If the parameter is set to “enable,” the following communication objects are displayed:

- “Temperature control 1, ventilator mode”
- “Temperature control 1, ventilator speed (manual operation)”
- “Temperature control 1, ventilator level (manual operation)”

**More information:**

- Communication object “Temperature control 1, fan operating mode” [→ 249]
- Communication object “Temperature control 1, fan speed (manual operation)” [→ 249]
- Communication object “Temperature control 1, fan level (manual operation)” [→ 249]

**Controller status**

Parameter	Settings
Controller status	disable enable

**Function:**

This parameter is used to set whether communication object “Temperature control 1, controller status” is supposed to be available.

The controller uses this object to share its internal status externally. This can either have the value “On,” i.e. the controller is switched on and temperature control is active, or the value “Off.”

**Other parameters:**

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information”):

- “Send status on request”
- “Send status on change”
- “Send status cyclically”

**Communication object:**

If the parameter is set to “enable,” the following communication object is displayed:

- “Temperature control 1, controller status”

**More information:**

- Communication object “Temperature control 1, controller status” [→ 231]
- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]

#### Controller status (DPT\_HVACContrMode)

Parameter	Settings
Controller status (DPT_HVACContrMode))	locking enable

#### Function:

This parameter is used to set whether the 8-bit communication object “Temperature control 1, controller status (DPT\_HVACContrMode)” (DPT 20.105) is supposed to be available.

This object can be used to report different controller statuses.

#### Other parameters:

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information”):

- “Send status on request”
- “Send status on change”
- “Send status cyclically”

#### Communication object:

If the parameter is set to “enable,” the following communication objects are displayed:

- “Temperature control 1, controller status (DPT\_HVACContrMode)”

#### More information:

- Communication object “Temperature control 1, controller status (DPT\_HVACContrMode)” [→ 252]
- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]

#### Status of current controller mode

Parameter	Settings
Status of current controller mode	locking enable

#### Function:

This parameter is used to set whether communication object “Temperature control 1, controller mode status” is supposed to be available.

This object communicates the current operating mode to the controller. It can either have the value “0” for cooling or the value “1” for heating.

#### Other parameters:

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information”):

- “Send status on request”
- “Send status on change”
- “Send status cyclically”

#### Communication object:

If the parameter is set to “enable,” the following communication object is displayed:

- “Temperature control 1, controller mode status”

#### More information:

- Communication object “Temperature control 1, controller operating mode status” [→ 250]
- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]

#### Collective status (RTSM)

Parameter	Settings
Collective status (RTSM)	locking enable

**Function:**

This parameter is used to set whether the 8-bit communication object “Temperature control 1, collective status (RTSM)” (DPT 21.107) is supposed to be available.

This object can be used to report different controller statuses.

**Other parameters:**

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information”):

- “Send status on request”
- “Send status on change”
- “Send status cyclically”

**Communication object:**

If the parameter is set to “enable,” the following communication object is displayed:

- “Temperature control 1, collective status (RTSM)”

**More information:**

- Communication object “Temperature control 1, combined status (RTSM)” [→ 250]
- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]

**Collective status (RTC)**

Parameter	Settings
Collective status (RTC)	locking enable

**Function:**

This parameter is used to set whether the 16-bit communication object “Temperature control 1, collective status (RTC)” (DPT 22.103) is to be made available.

This object can be used to report different controller statuses.

**Other parameters:**

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information”):

- “Send status on request”
- “Send status on change”
- “Send status cyclically”

**Communication object:**

If the parameter is set to “enable,” the following communication object is displayed:

- “Temperature control 1, collective status (RTC)”

**More information:**

- Communication object “Temperature control 1, combined status (RTC)” [→ 251]
- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]

**Controller status (Eberle)**

Parameter	Settings
Controller status (Eberle)	locking enable

**Function:**

This parameter is used to set whether the 8-bit communication object “Temperature control 1, controller status (Eberle)” is supposed to be available.

This object can be used to report different controller statuses.

**Other parameters:**

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information”):

- “Send status on request”
- “Send status on change”
- “Send status cyclically”

**Communication object:**

If the parameter is set to “enable,” the following communication object is displayed:

- “Temperature control 1, controller status (Eberle)”

**More information:**

- Communication object “Temperature control 1, controller status (Eberle)” [→ 251]
- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]

**Controller status (RHCC)**

Parameter	Settings
Controller status (RHCC)	locking enable

**Function:**

This parameter is used to set whether the 16-bit communication object “Temperature control 1, controller status (RHCC)” (DPT 22.101) is to be made available.

This object can be used to report different controller statuses.

**Other parameters:**

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information”):

- “Send status on request”
- “Send status on change”
- “Send status cyclically”

**Communication object:**

If the parameter is set to “enable,” the following communication object is displayed:

- “Temperature control 1, controller status (RHCC)”

**More information:**

- Communication object: “Temperature control 1, controller status (RHCC)” [→ 252]
- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]

## 8.2.2 Parameters on the “Room operating mode” parameter card

The “Room operating mode” parameter card is displayed if the parameter “Temperature control 1” on the “Device settings” parameter card is set to “enable.”

### Parameters in the “Setting room operating modes” section

**Preselection of room operating modes**

Parameter	Settings
Preselection of room operating modes	Comfort/protection mode Comfort/power saving/protection mode Comfort/pre-comfort/power saving/protection mode

**Function:**

This parameter can be used to select which operating modes are used. Depending on the selection of operating modes, one of these can be used as the initial operating mode after bus voltage recovery.

**Other parameters:**



Depending on the selection of the room operating mode, the selection of the initial operating mode after bus voltage recovery in parameter “Initial value after bus voltage recovery” and the selection of parameters on the “Temperature setpoints” parameter card change.

**More information:**

- Parameters on the “Temperature setpoints” parameter card [→ 198]
- Parameter “Initial value after bus voltage recovery” [→ 185]

**Parameters in the “Behavior after bus voltage recovery” section**

Initial value after bus voltage recovery

Parameter	Settings
Initial value after bus voltage recovery	As before bus voltage failure Comfort mode Pre-comfort mode Power saving mode Building protection mode

**Function:**

This parameter is used to set the initial room operating mode to be used after bus voltage recovery.

Depending on the selection of operating modes in parameter “Preselection of room operating modes,” one of these can be used as the initial operating mode after bus voltage recovery.

**The following settings are possible:**

- As before bus voltage failure:  
The room operating mode that is currently active at the time of bus voltage failure is saved and then restored after bus voltage recovery.
- Comfort mode:  
Comfort mode is used as the initial operating mode.
- Pre-comfort mode:  
Pre-comfort mode is used as the initial operating mode.
- Power saving mode:  
Power saving mode is used as the initial operating mode.
- Building protection mode:  
Building protection mode is used as the initial operating mode.

**Note:**

The following applies to all settings: Whether the controller is in automatic operation or manual operation is stored before bus voltage failure, and this operating mode is restored after bus voltage recovery.

**Parameters in the “Room operating mode (manual operation)” section**

Room operating mode (manual operation) switchover via

Parameter	Settings
Room operating mode (manual operation) switchover via	1-bit objects (DPT_Switch) 8-bit object (DPT_HVACMode)

**Function:**

This parameter is used to set whether the room operating mode is switched over via manual operation via a 1-bit object or an 8-bit object, see also the figure ‘Switching the room operating modes [→ 172].’

**The following settings are possible:**

- 1-bit objects (DPT\_Switch):  
The room operating mode can be switched over to manual operation via the corresponding communication object.
- 8-bit object (DPT\_HVACMode):  
This setting can be used to activate or deactivate automatic operation and the room operating mode can be switched over.

**Communication object:**

If the parameter is set to “1-bit objects (DPT\_Switch),” the following communication objects are displayed:

- “Temperature control 1, room operating mode (manual operation), [operating mode]”

If the parameter is set to “8-bit object (DPT\_HVACMode),” the following communication object is displayed:

- “Temperature control 1, room operating mode (manual operation)”

**Note:**

If the parameter “Room operating mode (manual operation) switchover via” is set to “1-bit objects (DPT\_Switch),” a communication object named “Temperature control 1, room operating mode (manual operation), [operating mode]” is displayed for each room operating mode in manual operation that was selected under “Preselection of room operating modes.”

Example: “Temperature control 1, room operating mode (manual operation), comfort mode”

**More information:**

- Communication object “Temperature control 1, room operating mode (manual operation)” [→ 232]
- Communication object “Temperature control 1, room operating mode (manual operation), comfort mode” [→ 233]
- Communication object “Temperature control 1, room operating mode (manual operation), protection mode” [→ 233]
- Communication object “Temperature control 1, room operating mode (manual operation), pre-comfort mode” [→ 233]
- Communication object “Temperature control 1, room operating mode (manual operation), power saving mode” [→ 233]

**Parameters in the “Comfort extension” section****Comfort extension object**

Parameter	Settings
Comfort extension object	disable enable

**Function:**

This parameter can be used to make available communication object “Temperature control 1, comfort extension.”

This object can be used to extend the time for a comfort mode that is currently active or set a start time for comfort mode from different room operating modes that are currently active.

**Other parameters:**

If the parameter is set to “enable,” the following parameters are displayed:

- “Time period comfort extension”
- “Status of comfort extension”

**Communication object:**

If the parameter is set to “enable,” the following communication object is displayed:

- “Temperature control 1, comfort extension”

**More information:**

- Communication object “Temperature control 1, comfort extension” [→ 235]
- Parameter “Time period comfort extension” [→ 187]
- Parameter “Status of comfort extension” [→ 187]

**Time period comfort extension**

Parameter	Settings
Time period comfort extension (hh:mm)	00:00 ... 23:59

**Function:**

This parameter can be used to configure the length of the comfort extension that can be started via communication object “Temperature control 1, comfort extension.”

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: “Comfort extension object”
  - Setting: “enable”

**More information:**

- Parameter “Comfort extension object” [→ 186]

**Status of comfort extension**

Parameter	Settings
Status of comfort extension	locking enable

**Function:**

This parameter is used to activate or deactivate the communication object for the status of the comfort extension.

This object is used to report whether the comfort extension is enabled or disabled.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: “Comfort extension object”
  - Setting: “enable”

**Other parameters:**

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information”):

- “Send status on request”
- “Send status on change”
- “Block time for sending of status”
- “Send status cyclically”

**Communication object:**

If the parameter is set to “enable,” the following communication object is displayed:

- “Temperature control 1, comfort extension status”

**More information:**

- Communication object “Temperature control 1, comfort extension status” [→ 235]
- Parameter “Comfort extension object” [→ 186]
- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]

**Parameters in the “Permanent protection mode” section**

**Object permanent protective mode**

Parameter	Settings
Object permanent protective mode	locking enable

**Function:**

This parameter can be used to make available communication object “Temperature control 1, permanent protective mode.”

This object can be used to switch the controller permanently to the “Protection mode” room operating mode.

**Communication object:**

If the parameter is set to “enable,” the following communication object is displayed:

- “Temperature control 1, permanent protective mode”

**More information:**

- Communication object “Temperature control 1, permanent protection mode” [→ 236]

### Parameters in the “Presence” section

#### Object presence

Parameter	Settings
Object presence	locking enable

**Function:**

This parameter can be used to make available communication object “Temperature control 1, presence.”

This object is used to receive the status of a presence detector.

Messages from a motion sensor via this communication object are evaluated for activating the “comfort mode” room operating mode.

If a presence telegram is received, comfort mode is switched on.

In presence mode, if a presence = “OFF” telegram is received, the controller immediately switches to the room operating mode that is activated via bus telegram. In manual operation, the motion sensor telegrams are ignored but saved temporarily.

**Note:**

On bus voltage recovery, a request is sent to the motion sensor via the communication object to obtain the current status of the presence.

**Communication object:**

If the parameter is set to “enable,” the following communication object is displayed:

- “Temperature control 1, presence”

**More information:**

- Communication object “Temperature control 1, presence” [→ 238]

### Parameters in the “Window contacts” section

#### Number of window contacts

Parameter	Settings
Number of window contacts	0...4

**Function:**

This parameter is used to set the number of windows or doors equipped with a window contact that are in the room. The corresponding number of communication objects “Temperature control, window [1-4]” is then made available. The status of these windows is logically linked in the controller via an OR function.

A maximum of 4 window contacts can be evaluated.

**Other parameters:**

If the parameter is set to >0, the following additional parameters are displayed:

- “Delay of reaction to open windows”
- “Invert window contacts”
- “Window contact status”

**Communication object:**

If the parameter is set to >0, the following communication object is displayed (example for 1 window):

- “Temperature control 1, window 1”

**More information:**

- Communication object “Temperature control 1, window 1” [→ 239]
- Parameter “Delay of reaction to open windows” [→ 189]
- Parameter “Invert window contacts” [→ 189]
- Parameter “Window contact status” [→ 189]

**Delay of reaction to open windows**

Parameter	Settings
Delay of reaction to open windows (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter is used to set the time for monitoring the window status. The status “window open” has the effect that the room temperature setpoint, depending on the setting, is set either immediately or after a certain delay time. For heating mode, it is set to the value for frost protection and for cooling mode, it is set to the value for heat protection. Protection mode is then activated.

The purpose of setting a delay time is that it avoids that any brief opening of windows immediately leads to a switch to protection mode.

The preset value 00:00:30 means that the setpoint changes are executed after 30 s.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Number of window contacts”
  - Setting > 0

**More information:**

- Parameter “Number of window contacts” [→ 188]

**Invert window contacts**

Parameter	Settings
Invert window contacts	No Yes

**Function:**

This parameter is used to set whether the input value of communication object “Temperature control 1, window 1” should be used directly or in inverted form (example for 1 window contact). This setting applies to all window contacts together.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Number of window contacts”
  - Setting: > 0

**More information:**

- Parameter “Number of window contacts” [→ 188]

**Window contact status**

Parameter	Settings
Window contact status	locking enable

**Function:**

This parameter is used to set whether communication object “Temperature control 1, window contact status” is supposed to be available.

This object is used to report the status of all windows. This status can either have the value “0,” meaning all windows are closed, or, as soon as a window is opened, the value “1,” meaning at least one window is open.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: “Number of window contacts”
  - Setting: > 0

**Other parameters:**

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information”):

- “Send status on request”
- “Send status on change of status”
- “Block time for sending of status”
- “Send status cyclically”

**Communication object:**

If the parameter is set to “enable,” the following communication object is displayed:

- “Temperature control 1, window contact status”

**More information:**

- Communication object “Temperature control 1, window contact status” [→ 237]
- Parameter “Number of window contacts” [→ 188]
- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]

**Parameters in the “Room operating modes status” section**

**Status of room mode  
(manual operation)**

Parameter	Settings
Status of room mode (manual operation)	locking enable

**Function:**

This parameter is used to set, whether the communication objects “Temperature control 1, status of room mode (manual operation)” and “Temperature control 1, status of room operating mode, automatic mode” are to be made available.

The object “Temperature control 1, status of room mode (manual operation)” is used to report the set room operating mode, which was set using the object “Temperature control 1, room operating mode (manual operation).”

The thermal drive actuator uses object “Temperature control 1, status of room operating mode, automatic mode” to report that automatic mode is active.

**Other parameters:**

If the parameter is set to “enable,” the following additional parameter is displayed:

- “Message via”

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information”):

- “Send status on request”
- “Send status on change”
- “Block time for sending of status”
- “Send status cyclically”

**Communication object:**

If the parameter is set to “enable,” the following communication objects are displayed:

- “Temperature control 1, status of room mode (manual operation)”
- “Temperature control 1, status of room operating mode, automatic mode”

**Note:**

If the parameter “Message via” is set to “1-bit objects (DPT\_Switch),” a communication object named “Temperature control 1, room operating mode status (manual operation), [operating mode]” is displayed for each room operating mode

that was selected under “Preselection of room operating modes.”  
Example: “Temperature control 1, status of room operating mode (manual operation), comfort mode”

**More information:**

- Communication object “Temperature control, 1, status of room operating mode (manual operation)” [→ 233]
- Communication object “Temperature control, 1, status of room operating mode, automatic operation” [→ 234]
- Parameter - Temperature control 1 – 6” [→ 41]
- Parameter “Message via“ [→ 191]
- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]

**Message via**

Parameter	Settings
Message via	1-bit objects (DPT_Switch) 8-bit object (DPT_HVACMode)

**Function:**

This parameter is used to define whether the status of the room operating mode in manual operation is sent via 1-bit objects or via an 8-bit object.

**The following settings are possible:**

- 1-bit objects (DPT\_Switch):  
The status for the room operating mode can be reported via the corresponding communication objects in manual operation.
- 8-bit object (DPT\_HVACMode):  
This setting can be used to report the status for the room operating mode and automatic mode "On" via the corresponding communication object in manual operation.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Status of room mode (manual operation)”  
– Setting: “enable”

**Communication objects:**

If the parameter is set to “1-bit objects (DPT\_Switch),” the following communication object is displayed:

- “Temperature control 1, status of room operating mode (manual operation), [operating mode]”

If the parameter is set to “8-bit object (DPT\_HVACMode),” the following communication object is displayed:

- “Temperature control 1, status of room mode (manual operation)”

**Note:**

If the parameter “Message via“ is set to “1-bit objects (DPT\_Switch),” , a communication object named “Temperature control 1, room operating mode status (manual operation), [operating mode]” is displayed for each room operating mode that was selected under “Preselection of room operating modes.”

Example: “Temperature control 1, status of room operating mode (manual operation), comfort mode”

**More information:**

- Communication object “Temperature control, 1, status of room operating mode (manual operation)” [→ 233]
- Parameter “Status of room operating mode (manual operation)” [→ 190]

**Status of current room mode**

Parameter	Settings
Status of current room mode	disable enable

**Function:**

This parameter is used to set whether communication object “Temperature control 1, room mode status” is supposed to be made available.

This object can be used to output or query the current room operating mode (1...4). It also shows whether there are any changes in the default setting of manual or automatic operation that lead to a change in the operating mode (e.g. presence, permanent protection mode, open windows).

**Other parameters:**

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information”):

- “Send status on request”
- “Send status on change”
- “Block time for sending of status”
- “Send status cyclically”

**Communication object:**

If the parameter is set to “Status of current room mode,” the following communication object is displayed:

- “Temperature control 1, room mode status”

**More information:**

- Communication object “Temperature control, 1, status of room operating mode” [→ 235]
- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]

### 8.2.3 Parameters on the “Actual temperature value” parameter card

The parameter card “Actual temperature value” is displayed if the parameter “Temperature control 1” on the “Device settings” parameter card is set “enable.”

#### Parameters in the “Setting the actual temperature value” section

Source of actual temperature value

Parameter	Settings
Source of actual temperature value	External object Calculator evaluation

**Function:**

This parameter is used to select the source for the temperature value.

**The following settings are possible:**

- External object:  
A communication object that receives the actual temperature value via the bus is used as the source.
- Calculator evaluation:  
The result that comes directly from a calculator with the setting "Temperature (°C) DPT 9.001" from the device is used as the source. Another parameter is displayed for the assignment.

**Other parameters:**

- If the parameter is set to “External object,” the following parameter is displayed:
  - “Offset (K)“
- If the parameter is set to “Calculator evaluation,” the following parameter is displayed:
  - “Select calculator“

**More information:**

- Parameter “Offset (K)” [→ 193]
- Parameter “Source of actual temperature value” [→ 193]



Select calculator

Parameter	Settings
Select calculator	Calculator [1 - 13], result (°C)

**Function:**

This parameter is used to select the source for the calculated value, which is linked with an enabled calculator.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: "Source of actual temperature value"
  - Setting: "Calculator evaluation"

**Note:**

A source can only be selected if at least one calculator has been activated and the corresponding data format "Temperature (°C) DPT 9.001" has been selected ("Calculator" parameter card).

**More information:**

- Parameter "Source of actual temperature value" [→ 192]
- Calculator: Parameter "Object result" [→ 278]

Offset (K)

Parameter	Settings
Offset (K)	-671088.6...670760.9

**Function:**

This parameter can be used to set an offset for externally received actual temperature values. It can be used to correct environmental factors.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: "Source of actual temperature value"
  - Setting: "External object"

**More information:**

- Parameter "Source of actual temperature value" [→ 192]

**Parameters in the "Actual temperature value monitoring" section**

Monitoring actual temperature value

Parameter	Settings
Monitoring actual temperature value	locking enable

**Function:**

This parameter is used to enable or disable monitoring of the cyclically received actual temperature value. If the parameter is set to "enable" and the actual temperature value fails, the control value "OFF" is output when using the 2-point control and the configured control value for temperature controller emergency mode is output when using the PI control.

**Note:**

If the controller does not receive the current temperature values from an external temperature sensor, but from the "Calculator" function block, it is only monitored whether the temperature values are received regularly from the calculator.

**Other parameters:**

If the parameter is set to "enable," the following parameters are displayed:

- "Monitoring time"
- "Actual temperature value error status"

**More information:**

- Parameter "Monitoring time" [→ 225]
- Parameter "Actual temperature value error status" [→ 194]

**Monitoring time**

Parameter	Settings
Monitoring time (hh:mm)	00:00 ... 23:59

**Function:**

This parameter is used to specify the monitoring time for the actual temperature value. If no actual temperature is received within this configured time, the object “Temperature control 1, status error actual temperature value” can be used to output an error message.

With a parameter value of 00:00, no monitoring takes place.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: “Monitoring actual temperature value”
  - Setting: “Monitoring actual temperature value”

**More information:**

- Communication object “Temperature control 1, actual temperature value error status” [→ 237]
- Parameter “Monitoring time” [→ 225]
- Parameter “Actual temperature value error status” [→ 194]

**Actual temperature value error status**

Parameter	Settings
Actual temperature value error status	disable enable

**Function:**

This parameter can be used to enable or disable the “Temperature control 1, status error actual temperature value” communication object.

If no actual temperature value is received during the configured monitoring time, there is an error. To this end, an error message can be sent in the form of a logical “1.”

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Monitoring actual temperature value”
  - Setting: “enable”

**Other parameters:**

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information”):

- “Send status on request”
- “Send status on change of status”
- “Block time for sending of status”
- “Send status cyclically”

**Communication object:**

If the parameter is set to “enable,” the following communication object is displayed:

- “Temperature control 1, status error actual temperature value”

**More information:**

- Communication object “Temperature control 1, actual temperature value error status” [→ 237]
- Parameter “Actual temperature value monitoring” [→ 193]
- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]

**Parameters in the “Heat alarm” section**

If the room temperature exceeds a configured heat alarm limit due to external factors, a heat alarm can be output.

Limit (°C)

Parameter	Settings
Limit (°C)	-273...670760

**Function:**

This parameter can be used to specify in °C the temperature at which the heat alarm is triggered.

The heat alarm is activated if the actual temperature value is greater than or equal to the configured threshold.

Hysteresis (K)

Parameter	Settings
Hysteresis (K)	0...670760

**Function:**

This parameter can be used to set the allowed variation of the temperature limit for the heat alarm (= hysteresis) in the range of "0...670760."

The heat alarm remains deactivated if the actual temperature value is less than or equal to the configured threshold value minus the value of the hysteresis.

Object "Temperature control 1, heat alarm"

Parameter	Settings
Object "Temperature control 1, heat alarm"	disable enable

**Function:**

This parameter can be used to enable or disable the "Temperature control 1, heat alarm" communication object.

This object is used to report whether a heat alarm is active.

**Other parameters:**

If the parameter is set to "enable," the following additional parameters are displayed:

- "Send alarm on request"
- "Send alarm on change of value"
- "Send alarm cyclically"
- "Block time for sending the alarm"

**Communication object:**

If the parameter is set to "enable," the following communication object is displayed:

- "Temperature control 1, heat alarm"

**More information:**

- Communication object "Temperature control 1, heat alarm" [→ 236]
- Parameter "Send alarm on request" [→ 195]
- Parameter "Send alarm on change of value" [→ 196]
- Parameter "Send alarm cyclically" [→ 196]
- Parameter "Block time for sending of alarm" [→ 196]

Send alarm on request

Parameter	Settings
Send alarm on request	disable enable

**Function:**

This parameter can be used to set whether the alarm is sent on request or whether requests for the alarm will be rejected.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: "Object "Temperature control 1, heat alarm""
  - Setting: "enable"

**More information:**

- Parameter "Object "Temperature control, heat alarm" [→ 195]

**Send alarm on change of value**

Parameter	Settings
Send alarm on change of value	disable enable

**Function:**

This parameter is used to define whether an alarm should be sent automatically each time the value changes.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: "Object "Temperature control 1, heat alarm""
  - Setting: "enable"

**More information:**

- Parameter "Object "Temperature control, heat alarm" [→ 195]

**Send alarm cyclically**

Parameter	Settings
Send alarm cyclically (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter can be used to set whether and at what intervals the alarm is sent via the bus. If this is set to "00:00:00," then cyclic sending is deactivated.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: "Object "Temperature control 1, heat alarm""
  - Setting: "enable"

**More information:**

- Parameter "Object "Temperature control, heat alarm" [→ 195]

**Block time for sending the alarm**

Parameter	Settings
Block time for sending the alarm (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter is used to set how much time since the last sending of the status has to have passed in order for it to be sent again. Hence, no additional bus load is generated by status telegrams generated in quick succession during bus mode.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: "Object "Temperature control 1, heat alarm""
  - Setting: "enable"

**More information:**

- Parameter "Object "Temperature control, heat alarm" [→ 195]

**Parameters in the "Frost alarm" section**

If the room temperature falls below a configured frost alarm limit due to external factors, a frost alarm can be output (e.g. if windows are open).

**Limit (°C)**

Parameter	Settings
Limit (°C)	-273...670760

**Function:**

This parameter can be used to specify in °C the maximum actual temperature value for the frost alarm.

The frost alarm is activated if the actual temperature value is lower than or equal to the configured threshold.

**Hysteresis (K)**

Parameter	Settings
Hysteresis (K)	0...670760

**Function:**

This parameter can be used to set the allowed variation of the temperature limit for the frost alarm (= hysteresis) in the range of "0...670760."

The triggered frost alarm is deactivated if the actual temperature value is greater than or equal to the configured threshold value plus the value of the hysteresis.

**Object "Temperature control 1, frost alarm"**

Parameter	Settings
Object "Temperature control 1, frost alarm"	disable enable

**Function:**

This parameter can be used to enable or disable the "Temperature control 1, frost alarm" communication object.

This object is used to report whether a frost alarm is active.

**Other parameters:**

If the parameter is set to "enable," the following parameters are displayed:

- "Send alarm on request"
- "Send alarm on change of value"
- "Send alarm cyclically"
- "Block time for sending the alarm"

**Communication object:**

If the parameter is set to "enable," the following communication object is displayed:

- "Temperature control 1, frost alarm"

**More information:**

- Communication object "Temperature control 1, frost alarm" [→ 237]
- Parameter "Send alarm on request" [→ 197]
- Parameter "Send alarm on change of value" [→ 197]
- Parameter "Send alarm cyclically" [→ 198]
- Parameter "Block time for sending of alarm" [→ 237]

**Send alarm on request**

Parameter	Settings
Send alarm on request	disable enable

**Function:**

This parameter can be used to set whether the alarm is sent on request or whether requests for the alarm will be rejected.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: "Object "Temperature control 1, frost alarm""
  - Setting: "enable"

**More information:**

- Parameter "Object "Temperature control, frost alarm"" [→ 197]

**Send alarm on change of value**

Parameter	Settings
Send alarm on change of value	disable enable

**Function:**

This parameter is used to define whether an alarm should be sent automatically each time the value changes.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: "Object "Temperature control 1, frost alarm""
  - Setting: "enable"

**More information:**

- Parameter "Object "Temperature control, frost alarm"" [→ 197]

**Send alarm cyclically**

Parameter	Settings
Send alarm cyclically (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter can be used to set whether and at what intervals the alarm is sent via the bus. If this is set to "00:00:00," then cyclic sending is deactivated.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: "Object "Temperature control 1, frost alarm""
  - Setting: "enable"

**More information:**

- Parameter "Object "Temperature control, frost alarm"" [→ 197]

**Block time for sending the alarm**

Parameter	Settings
Block time for sending the alarm (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter is used to set how much time since the last sending of the frost alarm has to have passed in order for it to be sent again. Hence, no additional bus load is generated by status telegrams generated in quick succession during bus mode.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: "Object "Temperature control 1, frost alarm""
  - Setting: "enable"

**More information:**

- Parameter "Object "Temperature control, frost alarm"" [→ 197]

## 8.2.4 Parameters on the "Temperature setpoints" parameter card

The parameter card "Temperature setpoints" is displayed if the parameter "Temperature control 1" on the "Device settings" parameter card is set "enable."

### Parameters in the "Setting the temperature setpoints" section

**Setpoint setting via**

Parameter	Settings
Setpoint setting via	Absolute setpoints Basic setpoint + setpoint shift

**Function:**

This parameter is used to select whether the setpoints for temperature control are to be set using absolute setpoints (method A) or a basic setpoint and setpoint offsets to be taken into account (method B).

On this subject, refer to the figure “Methods for setting a setpoint [→ 171].”

**Other parameters:**

Depending on the whether method A or B is selected, different parameters are displayed:

- Parameters for use with method A [→ 199]
- Parameters for use with method B [→ 201]

Parameters that can be used for both methods are described under “Parameters for both methods [→ 204].”

**Parameters for use with method A**



To avoid continuous switching between heating and cooling, there should be a sufficiently large temperature difference between the setpoints for heating and cooling.



The following section describes all parameters for the available room operating modes.

The following parameters are shown if the parameter “Setpoint setting via” is set to “absolute setpoints” (method A):

**Comfort mode: Heating setpoint (°C)**

Parameter	Settings
Comfort mode: Heating setpoint (°C)	-273...670760

**Function:**

This parameter is used to set the setpoint for the "Heating" operating mode in comfort mode.

**Pre-comfort mode: Heating setpoint (°C)**

Parameter	Settings
Pre-comfort mode: Heating setpoint (°C)	-273...670760

**Function:**

This parameter is used to set the setpoint for the "Heating" operating mode in pre-comfort mode.

**Power saving mode: Heating setpoint (°C)**

Parameter	Settings
Power saving mode: Heating setpoint (°C)	-273...670760

**Function:**

This parameter is used to set the setpoint for the "Heating" operating mode in power saving mode.

**Protective mode: Heating setpoint (°C)**

Parameter	Settings
Protective mode: Heating setpoint (°C)	-273...670760

**Function:**

This parameter is used to set the setpoint for the "Heating" operating mode in protection mode.

**Comfort mode: Cooling setpoint (°C)**

Parameter	Settings
Comfort mode: Cooling setpoint (°C)	-273...670760

**Function:**

This parameter is used to set the setpoint for the “Cooling” operating mode in comfort mode.

**Pre-comfort mode:  
Cooling setpoint (°C)**

Parameter	Settings
Pre-comfort mode: Cooling setpoint (°C)	-273...670760

**Function:**

This parameter is used to set the setpoint for the "Cooling" operating mode in pre-comfort mode.

**Power saving mode:  
Cooling setpoint (°C)**

Parameter	Settings
Power saving mode: Cooling setpoint (°C)	-273...670760

**Function:**

This parameter is used to set the setpoint for the "Cooling" operating mode in power saving mode.

**Protective mode:  
Cooling setpoint (°C)**

Parameter	Settings
Protective mode: Cooling setpoint (°C)	-273...670760

**Function:**

This parameter is used to set the setpoint for the "Cooling" operating mode in protection mode.

**Object heating setpoints**

Parameter	Settings
Object heating setpoints	disable enable

**Function:**

This parameter is used to set whether the communication objects "Temperature control 1, heating setpoints (°C)" and "Temperature control 1, heating setpoint, [operating mode]" are to be made available.

This 8-byte communication object can be used to change the respective setpoints for the four room operating modes in heating mode at any time via the bus by means of a telegram. The values received via the communication objects immediately overwrite the factory-set parameter values and are stored permanently.

The setpoints for heating are received both individually for each room operating mode as 2-byte communication objects and also as one 8-byte communication object. When an 8-byte communication object is used, the values for all four room operating modes in "Heating" operating mode are transferred in one object.

**Communication objects:**

If the parameter is set to "enable," the following communication objects are displayed:

- "Temperature control 1, heating setpoints (°C)"
- "Temperature control 1, heating setpoint, comfort mode"
- "Temperature control 1, heating setpoint, pre-comfort mode"
- "Temperature control 1, heating setpoint, power saving mode"
- "Temperature control 1, heating setpoint, protection mode"

**More information:**

- Communication object "Temperature control 1, heating setpoints (°C)" [→ 241]
- Communication object "Temperature control 1, heating setpoint, comfort mode" [→ 241]
- Communication object "Temperature control 1, heating setpoint, pre-comfort mode" [→ 241]
- Communication object "Temperature control 1, heating setpoint, power saving mode" [→ 241]
- Communication object "Temperature control 1, heating setpoint, protection mode" [→ 241]



### Object cooling setpoints

Parameter	Settings
Object cooling setpoints	disable enable

#### Function:

This parameter is used to set, whether or not the communication objects "Temperature control 1, cooling setpoint (°C)" and "Temperature control 1, cooling setpoint, [operating mode]" are to be made available.

This 8-byte communication object can be used to change the respective setpoints for the four room operating modes in cooling mode at any time via the bus by means of a telegram. The value received via the communication object immediately overwrites the factory-set parameter values and is stored permanently.

The setpoints for cooling are received both individually for each room operating mode as 2-byte communication objects and also as one 8-byte communication object. When an 8-byte communication object is used, the values for all four room operating modes in "Cooling" operating mode are transferred in one object.

#### Communication object:

If the parameter is set to "enable," the following communication objects are displayed:

- "Temperature control 1, cooling setpoint (°C)"
- "Temperature control 1, cooling setpoint, comfort mode"
- "Temperature control 1, cooling setpoint, pre-comfort mode"
- "Temperature control 1, cooling setpoint, power saving mode"
- "Temperature control 1, cooling setpoint, protection mode"

#### More information:

- Communication object "Temperature control 1, cooling setpoints (°C)" [→ 242]
- Communication object "Temperature control 1, cooling setpoint, comfort mode" [→ 242]
- Communication object "Temperature control 1, cooling setpoint, pre-comfort mode" [→ 242]
- Communication object "Temperature control 1, cooling setpoint, power saving mode" [→ 242]
- Communication object "Temperature control 1, cooling setpoint, protection mode" [→ 242]

### Parameters for use with method B

The following parameters are shown if the parameter "Setpoint setting via" is set to "Basic setpoint + setpoint shift" (method B):

#### Basic setpoint (°C)

Parameter	Settings
Basic setpoint (°C)	-273...670760

#### Function:

This parameter is used to set the setpoint for comfort mode. The setpoints of the other room operating modes (pre-comfort mode and power saving mode) are then calculated using the respective setpoint shifts via this value. The values for protection mode in heating and/or cooling operating mode are set as discrete values.

#### Pre-comfort mode: Heating setpoint shift (K)

Parameter	Settings
Pre-comfort mode: Heating setpoint shift (K)	-670760...0

#### Function:

This parameter is used to set the setpoint shift for the "Heating" operating mode in pre-comfort mode. This is used to set by which value the setpoint is to be increased from the basic setpoint if the operating mode is switched to "pre-comfort mode" while in heating mode.

**Power saving mode:  
Heating setpoint shift (K)**

Parameter	Settings
Power saving mode: Heating setpoint shift (K)	-670760...0

**Function:**

This parameter is used to set the setpoint shift for the "Heating" operating mode in power saving mode. This is used to set by which value the setpoint is to be increased from the basic setpoint if the operating mode is switched to "power saving mode" while in heating mode.

**Protective mode:  
Heating setpoint (°C)**

Parameter	Settings
Protective mode: Heating setpoint (°C)	-273...670760

**Function:**

This parameter is used to set the setpoint for the "Heating" operating mode in protection mode.

**Pre-comfort mode:  
Cooling setpoint shifts (K)**

Parameter	Settings
Pre-comfort mode: Cooling setpoint shifts (K)	0...670760

**Function:**

This parameter is used to set the setpoint shift for the "Cooling" operating mode in pre-comfort mode. This is used to set by which value the setpoint is to be increased from the basic setpoint if the operating mode is switched to "pre-comfort mode" while in cooling mode.

**Power saving mode:  
Cooling setpoint shift (K)**

Parameter	Settings
Power saving mode: Cooling setpoint shift (K)	0...670760

**Function:**

This parameter is used to set the setpoint shift for the "Cooling" operating mode in power saving mode. This is used to set by which value the setpoint is to be increased from the basic setpoint if the operating mode is switched to "power saving mode" while in cooling mode.

**Protective mode:  
Cooling setpoint (°C)**

Parameter	Settings
Protective mode: Cooling setpoint (°C)	-273...670760

**Function:**

This parameter is used to set the setpoint for the "Cooling" operating mode in protection mode.

**Basic setpoint object**

Parameter	Settings
Basic setpoint object	disable enable

**Function:**

This parameter is used to set whether or not communication object "Temperature control 1, basic setpoint" is supposed to be made available.

This object can be used to change the preset basic setpoint via the bus at any time. The basic setpoint refers to comfort mode, see also the figure "Methods for setting a setpoint [→ 171]."

**Communication object:**

If the parameter is set to "enable," the following communication object is displayed:

- Communication object "Temperature control 1, basic setpoint"

**More information:**

- Communication object “Temperature control 1, basic setpoint” [→ 240]
- Figure “Methods for setting a setpoint [→ 171]“

**setpoint offset object**

Parameter	Settings
setpoint offset object	disable enable

**Function:**

This parameter is used to set whether or not communication object “Temperature control 1, setpoint offset” is supposed to be made available.

This object can be used to set a setpoint offset via the bus at any time. This offset is then applied to all setpoints of the four room operating modes, refer also to the figure “Methods for setting a setpoint [→ 171].”

**Communication object:**

If the parameter is set to “enable,” the following communication objects are displayed:

- “Temperature control 1, setpoint offset”

**More information:**

- Communication object “Temperature control 1, setpoint offset” [→ 240]
- Figure “Methods for setting a setpoint [→ 171]“

**Dead zone between heating and cooling (±K)**

Parameter	Settings
Dead zone between heating and cooling (±K)	0...670760

**Function:**

This parameter is used to set the dead zone between heating and cooling. The respective dead zone is above and below the respective setpoints for the basic setpoint (comfort mode), refer also to the figure “Methods for setting a setpoint [→ 171].” The purpose of this is to prevent constant switching between heating and cooling mode when there are slight fluctuations in temperature.

**More information:**

- Figure “Methods for setting a setpoint [→ 171]“

**Status of current basic setpoint**

Parameter	Settings
Status of current basic setpoint	disable enable

**Function:**

This parameter is used to set whether communication object “Temperature control 1, status of current basic setpoint” is supposed to be made available.

This object can be used to output or query the current setpoint.

**Other parameters:**

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information”):

- “Send value on request”
- “Send value on change of value”
- “Value change since last sent (K)”
- “Block time for sending of value”
- “Send value cyclically”

**Communication object:**

If the parameter is set to “enable,” the following communication object is displayed:

- “Temperature control 1, status of current basic setpoint”

**More information:**

- Communication object “Temperature control, 1, status of current basic setpoint” [→ 242]
- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]

### Parameters for both methods

The following parameters apply for both setpoint setting methods:

#### Minimum possible setpoint (°C)

Parameter	Settings
Minimum possible setpoint (°C)	-273...670760

#### Function:

This parameter is used to set the lower limit that is possible when specifying the setpoint via parameters and object.

#### Note:

The limitation or correction takes place in the device and not when the setpoints are configured in the ETS.

#### Maximum possible setpoint (°C)

Parameter	Settings
Maximum possible setpoint (°C)	-273...670760

#### Function:

This parameter is used to set the upper limit that is possible when specifying the setpoint via parameters and object.

#### Note:

The limitation or correction takes place in the device and not when the setpoints are configured in the ETS.

#### Update cooling setpoint dependent on outside temperature

Parameter	Settings
Update cooling setpoint dependent on outside temperature	disable enable

#### Function:

This parameter is used to set whether the setpoint temperature in cooling mode should track the ambient temperature. If “enable” is selected, communication object “Temperature control 1, outside temperature” is created and the target temperature is adjusted according to the ambient temperature, if this exceeds 26 °C and is 6 K above the preselected comfort target temperature. In this case, the new target temperature is always 6 K lower than the ambient temperature.

#### Availability:

The parameter is displayed if the following configuration has been made:

- Parameter “System type” (“Temperature control” parameter card of the corresponding temperature controller)
  - Setting: “4-pipe system”
- or
- Parameter “System type”
  - Setting: “2-pipe system” (“Temperature control” parameter card of the corresponding temperature controller)
- Parameter “Controller mode”
  - Setting: “Heating and cooling” or “Cooling”

#### Communication object:

If the parameter is set to “enable,” the following communication object is displayed:

- “Temperature control 1, outside temperature”

#### More information:

- Communication object “Temperature control, 1, ambient temperature” [→ 239]
- Parameter “System type” [→ 178]
- Parameter “Controller operating mode” [→ 179]

### Ambient temperature offset (K)

Parameter	Settings
Ambient temperature offset (K)	-671088.6...670760.9

**Function:**

This parameter can be used to set an offset for the externally received ambient temperature. It can be used to correct environmental factors.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: "Update cooling setpoint dependent on outside temperature"
  - Setting: "enable"

**More information:**

- Parameter "Update cooling setpoint dependent on ambient temperature" [→ 204]

### Ambient temperature monitoring

Parameter	Settings
Ambient temperature monitoring	disable enable

**Function:**

This parameter is used to enable or disable monitoring of the ambient temperature that is received cyclically.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Update cooling setpoint dependent on outside temperature" ("Temperature setpoints" parameter card)
  - Setting: "enable"

**Other parameters:**

If the parameter is set to "enable," the following parameter is displayed:

- "Monitoring time"

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under "Additional information"):

- "Send status on request"
- "Send status on change of status"
- "Block time for sending of status"
- "Send status cyclically"

**Communication object:**

If the parameter is set to "enable," the following communication object is displayed:

- "Temperature control 1, status error ambient temperature"

**More information:**

- Communication object "Temperature control, 1, status of ambient temperature error" [→ 239]
- Parameter "Update cooling setpoint dependent on ambient temperature" [→ 204]
- Parameters that are visible if the "Status..." parameter is set to "enable" [→ 283]

### Monitoring time

Parameter	Settings
Monitoring time (hh:mm)	00:00 ... 23:59

**Function:**

This parameter is used to specify the monitoring time of the ambient temperature. If no ambient temperature is received within this configured time, the object “Temperature control 1, status error ambient temperature” can be used to output an error message.

With a parameter value of 00:00, no monitoring takes place.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: “Update cooling setpoint dependent on outside temperature”
  - Setting: “enable”

**More information:**

- Communication object “Temperature control, 1, status of ambient temperature error” [→ 239]
- Parameter “Update cooling setpoint dependent on ambient temperature” [→ 204]

**Status of current setpoint**

Parameter	Settings
Status of current setpoint	disable enable

**Function:**

This parameter is used to set whether communication object “Temperature control 1, status of current setpoint” is supposed to be made available.

This object can be used to output and query the real setpoint taking into account the current room operating mode and the current offset.

**Other parameters:**

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information”):

- “Send value on request”
- “Send value on change of value”
- “Value change since last sent (K)”
- “Block time for sending of value”
- “Send value cyclically”

**Communication object:**

If the parameter is set to “enable,” the following communication objects are displayed:

- “Temperature control 1, status of current setpoint”

**More information:**

- Communication object “Temperature control 1, status of current setpoint” [→ 243]
- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]

**Status of setpoint offset**

Parameter	Settings
Status of setpoint offset	disable enable

**Function:**

This parameter is used to set whether communication object “Temperature control 1, setpoint offset status” is supposed to be made available.

This object can be used to output or query the setpoint offset.

**Other parameters:**

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information”):

- “Send value on request”
- “Send value on change of value”

Status of effective cooling setpoint (DPT 9.001)

- “Value change since last sent (K)”
- “Block time for sending of value”
- “Send value cyclically”

**Communication object:**

If the parameter is set to “enable,” the following communication object is displayed:

- “Temperature control 1, setpoint offset status”

**More information:**

- Communication object “Temperature control 1, status of setpoint offset” [→ 243]
- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]

Parameter	Settings
Status of effective cooling setpoint (DPT 9.001)	locking enable

**Function:**

This parameter is used to set whether the communication object “Temperature control 1, status of effective cooling setpoint” is displayed.

This object can be used to output and query the real cooling setpoint taking into account the current room operating mode and the current offset.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: “System type” (“Temperature control” parameter card of the corresponding temperature controller)
  - Setting: “4-pipe system”

or

- Parameter: “System type” (“Temperature control” parameter card of the corresponding temperature controller)
  - Setting: “2-pipe system”
- Parameter: “Controller mode”
  - Setting: “Heating and cooling” or “Cooling”

**Other parameters:**

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information”):

- “Send value on request”
- “Send value on change of value”
- “Value change since last sent (K)”
- “Block time for sending of value”
- “Send value cyclically”

**Communication object:**

If the parameter is set to “enable,” the following communication objects are displayed:

- “Temperature control 1, status of effective cooling setpoint”

**More information:**

- Communication object “Temperature control 1, status of effective cooling setpoint” [→ 243]
- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]
- Parameter “System type” [→ 178]
- Parameter “Controller operating mode” [→ 179]

Status of effective heating setpoint (DPT 9.001)

Parameter	Settings
Status of effective heating setpoint (DPT 9.001)	locking enable

**Function:**

This parameter is used to set whether the communication object “Temperature control 1, status of effective heating setpoint” is to be supplemented.

This object can be used to output and query the real heating setpoint taking into account the current room operating mode and the current offset.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: “System type” (“Temperature control” parameter card of the corresponding temperature controller)
  - Setting: “4-pipe system”

or

- Parameter: “System type”
  - Setting: “2-pipe system” (“Temperature control” parameter card of the corresponding temperature controller)
- Parameter: “Controller mode”
  - Setting: “Heating and cooling” or “Heating”

**Other parameters:**

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information”):

- “Send value on request”
- “Send value on change of value”
- “Value change since last sent (K)”
- “Block time for sending of value”
- “Send value cyclically”

**Communication object:**

If the parameter is set to “enable,” the following communication object is displayed:

- “Temperature control 1, status of effective heating setpoint”

**More information:**

- Communication object “Temperature control 1, status of effective heating setpoint” [→ 243]
- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]
- Parameter “System type” [→ 178]
- Parameter “Controller operating mode” [→ 179]

**Status of effective cooling setpoints (DPT 275.100)**

Parameter	Settings
Status of effective cooling setpoints (DPT 275.100)	locking enable

**Function:**

This parameter is used to set whether the communication object “Temperature control 1, status of effective cooling setpoints” is to be supplemented.

This object can be used to output and query the real cooling setpoints, taking into account the current offset. This object also contains all the setpoint temperatures for the four different operating modes.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: “System type” (“Temperature control” parameter card of the corresponding temperature controller)
  - Setting: “4-pipe system”

or



- Parameter: "System type"
  - Setting: "2-pipe system" ("Temperature control" parameter card of the corresponding temperature controller)
- Parameter: "Controller mode"
  - Setting: "Heating and cooling" or "Cooling"

**Other parameters:**

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under "Additional information"):

- "Send value on request"
- "Send value on change of value"
- "Value change since last sent (K)"
- "Block time for sending of value"
- "Send value cyclically"

**Communication object:**

If the parameter is set to "enable," the following communication object is displayed:

- "Temperature control 1, status of effective cooling setpoints"

**More information:**

- Communication object "Temperature control 1, status of effective cooling setpoints (°C)" [→ 244]
- Parameters that are visible if the "Status..." parameter is set to "enable" [→ 283]
- Parameter "System type" [→ 178]
- Parameter "Controller operating mode" [→ 179]

**Status of effective heating setpoints (DPT 275.100)**

Parameter	Settings
Status of effective heating setpoints (DPT 275.100)	locking enable

**Function:**

This parameter is used to set whether the communication object "Temperature control 1, status of effective heating setpoints" is to be supplemented.

This object can be used to output and query the real heating setpoints, taking into account the current offset. This object also contains all the setpoint temperatures for the four different operating modes.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: "System type" ("Temperature control" parameter card of the corresponding temperature controller)
    - Setting: "4-pipe system"
- or
- Parameter: "System type"
    - Setting: "2-pipe system" ("Temperature control" parameter card of the corresponding temperature controller)
  - Parameter: "Controller mode"
    - Setting: "Heating and cooling" or "Heating"

**Other parameters:**

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under "Additional information"):

- "Send value on request"
- "Send value on change of value"
- "Value change since last sent (K)"
- "Block time for sending of value"
- "Send value cyclically"

**Communication object:**

If the parameter is set to “enable,” the following communication object is displayed:

- “Temperature control 1, status of effective heating setpoints”

**More information:**

- Communication object “Temperature control 1, status of effective heating setpoints” [→ 244]
- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]
- Parameter “System type” [→ 178]
- Parameter “Controller operating mode” [→ 179]

## 8.2.5 Parameters on the “Heating,” “Cooling,” and “Heating/cooling” parameter cards

The “Heating,” “Cooling” or “Heating/cooling” parameter cards are displayed if the parameter “Temperature control 1” on the “Device settings” parameter card is set to “enable.” Depending on the settings of parameters “System type” and “Controller mode” on the “Temperature control” parameter card, the parameter card(s) for “Heating,” “Cooling” or “Heating/cooling” is/are displayed.



The parameters of the "Heating" subparameter card are identical to the parameters of the "Cooling" and "Heating/cooling" subparameter cards and are therefore only described once.

### Control behavior

Parameter	Settings
Control behavior	2-point control PI control

**Function:**

This parameter is used to set the control behavior of the room temperature controller.

**The following settings are possible:**

A distinction is made between a switching 2-point control and a continuous proportional/integral control (PI):

- For switching 2-point control, a simple temperature control algorithm is used. For this control, a setpoint is specified with a hysteresis. The control values are transferred from the controller via switch-on and switch-off commands (1 bit). On this subject, refer to the figures “2-point control for “Heating” [→ 168]” and “2-point control for “Cooling” [→ 168].”
- PI control uses an algorithm consisting of a proportional and an integral part. This combination of these control characteristics achieves fast and accurate control of the room temperature with no or only slight control deviations. On this subject, refer to the figures “PI control with continuous control value [→ 169]” and “PI control with On/Off command [→ 169].”

**Other parameters:**

Depending on the selected setting, additional parameters for the control behavior of the heating or cooling appear:

- Control via switching commands (for 2-point control) [→ 211]
- Control via positioning commands in percent (with continuous control) [→ 212]

**More information:**

- Figure “2-point control for “Heating” [→ 168]”
- Figure “2-point control for “Cooling” [→ 168]”
- Figure “PI control with continuous control value [→ 169]”
- Figure “PI control with On/Off command [→ 169]”

## Control via switching commands (for 2-point control)

The following parameters are shown if the parameter "Control behavior" is set to "2-point control."

### Hysteresis (K)

Parameter	Settings
Hysteresis (K)	0...670760

#### Function:

This parameter is used to set the switching hysteresis of the 2-point controller for heating/cooling mode. The smaller the hysteresis, the more accurately the room temperature setpoint is maintained, but the switching frequency of the controller is also increased.

#### Example for cooling mode:

Setpoint on 23 °C and hysteresis on 0.5 K:

- The actual value increases to 23.4. The switching control value is still "OFF."
- The actual value increases to 23.5. The switching control value is "ON."
- The actual value drops to 23.1. The switching control value is still "ON."
- The actual value drops to 23.0. The switching control value is "OFF."

### Double hysteresis in power saving/protective mode

Parameter	Settings
Double hysteresis in power saving/protective mode	locking enable

#### Function:

This parameter can be used to set that twice as large fluctuations (hysteresis) of the room temperature are permissible in energy saving and protection mode in order to save further heating/cooling energy or to reduce the switching frequency.

### Cycle time

Parameter	Settings
Cycle time (hh:mm)	00:01 ... 23:59

#### Function:

This parameter is used to set the time interval after which the outputs are switched. For example, if the setpoint is reached 2 minutes after switching on the output, although a time of 5 minutes has been configured, the output remains switched on until the 5 minutes have elapsed. This parameter therefore prevents increase thermal valve wear.

### Invert control value

Parameter	Settings
Invert control value	No Yes

#### Function:

This parameter is used to define whether the control value is to be output in inverted form. The setting for this parameter depends on the type of valve used (whether de-energized open or closed) and the actuator.

### Send control value on request

Parameter	Settings
Send control value on request	locking enable

#### Function:

This parameter can be used to set whether the control value is sent on request or whether requests for the control value will be rejected.

The request is triggered via the communication object "Send status values."

**Send control value on change**

Parameter	Settings
Send control value on change	locking enable

**Function:**

This parameter is used to define if the control value is to be sent automatically for every change of value.

When “enable” is selected, additional parameters are displayed that can be used to define which change of value (in %) since the last sending has to be exceeded and how much time must have passed since the last sending for the control value to be sent again.

**Block time for sending of control value**

Parameter	Settings
Block time for sending of control value (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter is used to set how much time since the last sending of the control value has to have passed in order for it to be sent again.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Send control value on change”
  - Setting: “Steady (8-bit)”

**Note:**

The block time does not apply to cyclic sending. If the block time is greater than the cycle time, the value is nonetheless sent at the end of the cycle time.

**Send control value cyclically**

Parameter	Settings
Send control value cyclically (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter determines if and at which intervals the determined control value is sent via the bus.

If this is set to “00:00:00,” then cyclic sending is deactivated.

**Control via positioning commands in percent (with continuous control)**

The parameters described below are displayed if the parameter “Control behavior” is set to “PI control.”

The system types for heating or cooling can be selected. There are already preset heating or cooling modes for this purpose, such as “Fan coil unit heating/cooling (5 K, 30 min).” The setting “User defined” can be used to individually configure the proportional range and delay time.



Even minor adjustments to the proportional range and/or delay time can have a significant influence on the controller behavior.

With the setting “PI control,” a sequence control can also be configured (on this subject, see also “Continuous PI control with sequence control [→ 170].”

Heating/cooling system type

Parameter	Settings
Heating/cooling system type	User defined Fan coil unit heating/cooling (5 K, 30 min) Heating/cooling ceiling (5 K, 60 min) Underfloor heating/cooling (5 K, 120 min) Radiator heating (5 K, 60 min)

**Function:**

This parameter can be used to select the system type for heating and cooling in order to be able to adjust the PI control according to the system type.

**The following settings are possible:**

- User defined:  
With this setting, the proportional range in Kelvin and the delay time in minutes can be configured individually.
- Fan coil unit heating/cooling (5 K, 30 min):  
The preset proportional range is 5 Kelvin and the preset delay time is 30 minutes.
- Heating/cooling ceiling (5 K, 60 min):  
The preset proportional range is 5 Kelvin and the preset delay time is 60 minutes.
- Underfloor heating/cooling (5 K, 120 min):  
The preset proportional range is 5 Kelvin and the preset delay time is 120 minutes.
- Radiator heating (5 K, 60 min):  
The preset proportional range is 5 Kelvin and the preset delay time is 60 minutes.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: "System type" (Temperature control parameter card)
  - Setting: "2-pipe system"
- Parameter: "Controller mode"
  - Setting: "Heating" or "Heating and cooling"

or

- Parameter: "System type" (Temperature control parameter card)
  - Setting: "4-pipe system"

**Other parameters:**

If the parameter is set to "User defined," the following parameters are displayed:

- "Proportional range (K)"
- "Reset time"

**More information:**

- Parameter "System type" [→ 178]
- Parameter "Controller operating mode" [→ 179]
- Parameter "Proportional range (K)" [→ 215]
- Parameter "Delay time" [→ 215]

Heating system type

Parameter	Settings
Heating system type	User defined Fan coil heating (5 K, 30 min) Heating ceiling (5 K, 60 min) Underfloor heating (5 K, 120 min) Radiator heating (5 K, 60 min)

**Function:**

This parameter can be used to select the system type for heating in order to be able to adjust the PI control according to the system type.

**The following settings are possible:**

- User defined:  
With this setting, the proportional range in Kelvin and the delay time in minutes can be configured individually.
- Fan coil heating (5 K, 30 min):  
The preset proportional range is 5 Kelvin and the preset delay time is 30 minutes.
- Heating ceiling (5 K, 60 min):  
The preset proportional range is 5 Kelvin and the preset delay time is 60 minutes.
- Underfloor heating (5 K, 120 min):  
The preset proportional range is 5 Kelvin and the preset delay time is 120 minutes.
- Radiator heating (5 K, 60 min):  
The preset proportional range is 5 Kelvin and the preset delay time is 60 minutes.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: "System type" (Temperature control parameter card)
  - Setting: "2-pipe system"
- Parameter: "Controller mode"
  - Setting: "Heating"

**Other parameters:**

If the parameter is set to "User defined," the following parameters are displayed:

- "Proportional range (K)"
- "Reset time"

**More information:**

- Parameter "System type" [→ 178]
- Parameter "Controller operating mode" [→ 179]
- Parameter "Proportional range (K)" [→ 215]
- Parameter "Delay time" [→ 215]

**Cooling system type**

Parameter	Settings
Cooling system type	User defined Fan coil cooling (5 K, 30 min) Cooling ceiling (5 K, 60 min) Underfloor cooling (5 K, 120 min)

**Function:**

This parameter can be used to select the system type for cooling in order to be able to adjust the PI control according to the system type.

**The following settings are possible:**

- User defined:  
With this setting, the proportional range in Kelvin and the delay time in minutes can be configured individually.
- Fan coil cooling (5 K, 30 min):  
The preset proportional range is 5 Kelvin and the preset delay time is 30 minutes.

- Cooling ceiling (5 K, 60 min):  
The preset proportional range is 5 Kelvin and the preset delay time is 60 minutes.
- Underfloor cooling (5 K, 120 min):  
The preset proportional range is 5 Kelvin and the preset delay time is 60 minutes.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: "System type" (Temperature control parameter card)
  - Setting: "2-pipe system"
- Parameter: "Controller mode"
  - Setting: "Cooling"

**Other parameters:**

If the parameter is set to "User defined," the following parameters are displayed:

- "Proportional range (K)"
- "Reset time"

**More information:**

- Parameter "System type" [→ 178]
- Parameter "Controller operating mode" [→ 179]
- Parameter "Proportional range (K)" [→ 215]
- Parameter "Delay time" [→ 215]

**Proportional range (K)**

Parameter	Settings
Proportional range (K)	1...10

**Function:**

This parameter sets the proportional range of the PI controller for heating/cooling mode.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: "System type [heating/cooling]"
  - Setting: "User defined"

**Example:**

A proportional range of 3 K means that a control deviation between actual value and setpoint of 3 K results in a control value change of 100 %.

**More information:**

- Parameter "System type" [→ 178]

**Reset time**

Parameter	Settings
Reset time (hh:mm)	00:05 ... 02:00

**Function:**

This parameter is used to set the delay time (I component) of the PI controller for heating/cooling mode.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: "System type [heating/cooling]"
  - Setting: "User defined"

**Example:**

A delay time of 30 minutes means that within this time the I component is equal to the P component. Small deviations of the actual temperature from the set temperature are thus magnified over the course of the operating time and lead to readjustment of the valve.

**More information:**

- Parameter "System type" [→ 178]

**Parameters for sequence control**

If a room can be heated in two different ways, sequential control makes sense. The two sources of heating and cooling are then controlled one after the other (in a sequence) rather than in parallel.

**Example: Heating with underfloor heating and radiator heating in one room**

- If the room temperature is below the setpoint, the valve on the underfloor heating is opened first (sequence 1).
- If the underfloor heating valve is open 100 % but the setpoint is still not reached, the valve on the radiator is opened (sequence 2).
- If, on the other hand, it is too warm in the room, the radiator valve is gradually closed first and the valve of the underfloor heating system is closed only thereafter.

Sequence control converts the internal control value calculated by the PI controller into two values (control value sequence 1, control value sequence 2).

The value of the controller control value at which sequence 2 starts is adjustable. In addition, it can be set separately for each sequence from which change in control value the control value is supposed to be sent to the bus and at which intervals the control value is repeated cyclically. The control values are output as a continuous control value in the range of 0...100 % (1-byte) (see "Control values for sequence control [→ 170]").

**Sequence control**

Parameter	Settings
Sequence control	disable enable

**Function:**

This parameter can be used to set whether sequence control (sequence 1 control value and sequence 2 control value) is to take effect.

**Other parameters:**

If the parameter is set to "enable," the following parameter is displayed:

- "Value of control value at which sequence 2 starts (%)"

**More information:**

- Parameter "Value of controller value at which sequence 2 starts (%)" [→ 216]

**Value of control value at which sequence 2 starts (%)**

Parameter	Settings
Value of control value at which sequence 2 starts (%)	0...100

**Function:**

This parameter is used to set from which calculated control value of the "Heating" or "Cooling" controller output sequence 2 is to start.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: "Sequence control"
  - Setting: "enable"

**More information:**

- Parameter "Sequence control" [→ 216]



The parameters of sequence 1 and 2 are identical and are therefore described only once.



Type of control value output

Parameter	Settings
Type of control value output	Switching (1-bit) Steady (8-bit)

**Function:**

This parameter is used to set whether the control value is output via a 1-bit communication object (PWM) or an 8-bit communication object.

**Other parameters:**

If the parameter is set to “Switching (1-bit),” the following parameters are displayed:

- “Invert control value”
- “Valve always closed if control value lower than (%)”
- “Valve always open if control value greater than (%)”
- “Period duration of pulse width modulation”

If the parameter is set to “Steady (8-bit),” the following parameters are displayed:

- “Invert control value”
- “Scaling of control value (%)”
- “Maximum control value (%)”
- “Minimum control value (%)”

**Communication object:**

If the parameter is set to “Switching (1-bit),” the following communication object is displayed:

- “Temperature control 1, [heating/cooling], switching control value”

If the parameter is set to “Steady (8-bit),” the following communication object is displayed:

- Communication object “Temperature control 1, [heating/cooling], continuous control value”

**Note:**

The control value of the room temperature controller can be used as a source for the control value setting at the valve output. The assignment is made in parameter card “Source of control value” of the “Control value configuration” parameter card of the corresponding valve output.

**More information:**

- Communication object “Temperature control 1, [heating/cooling], switching control value” [→ 246]
- Communication object “Temperature control 1, [heating/cooling], continuous control value” [→ 248]
- Parameter “Invert control value” [→ 217]
- Parameter “Valve always closed if control value lower than (%)” [→ 218]
- Parameter “Valve always open if control value greater than (%)” [→ 218]
- Parameter “Period duration of pulse width modulation” [→ 219]
- Parameter “Scaling of control value (%)” [→ 220]
- Parameter “Maximum control value (%)” [→ 221]
- Parameter “Minimum control value (%)” [→ 221]

Invert control value

Parameter	Settings
Invert control value	No Yes

**Function:**

This parameter is used to define whether the control value is to be output in inverted form. The setting for this parameter depends on the type of valve used (whether de-energized open or closed) and the actuator.

### Valve always closed if control value lower than (%)

Parameter	Settings
Limit: Valve always closed if control value lower than (%)	1...100

#### Function:

This parameter is used to set the percentage of the control value up to which the control value output is always 0 % ("OFF"). By reducing the switching frequency in this way, the valve characteristics can be included, therefore making it possible to save energy.

#### Availability:

The parameter is displayed if the following configuration has been made:

- Parameter "Type of control value output"
  - Setting: "Switching (1-bit)"

#### More information:

- Parameter "Type of control value output" [→ 217]

### Valve always open if control value greater than (%)

Parameter	Settings
Valve always open if control value greater than (%)	0...99

#### Function:

This parameter is used to set the percentage of the control value from which the control value output is always 100 % ("ON"). To reduce the switching frequency, this can be adapted to the valve characteristics.

For examples, see figure "Setting the maximum and minimum control value [→ 218]" and figure "Valve completely open above 85 %, closed below 25 % [→ 219]."

#### Availability:

The parameter is displayed if the following configuration has been made:

- Parameter "Type of control value output"
  - Setting: "Switching (1-bit)"

#### Examples:

Example 1:

- Valve completely open above: 100 %
- Valve completely open below: 1 %

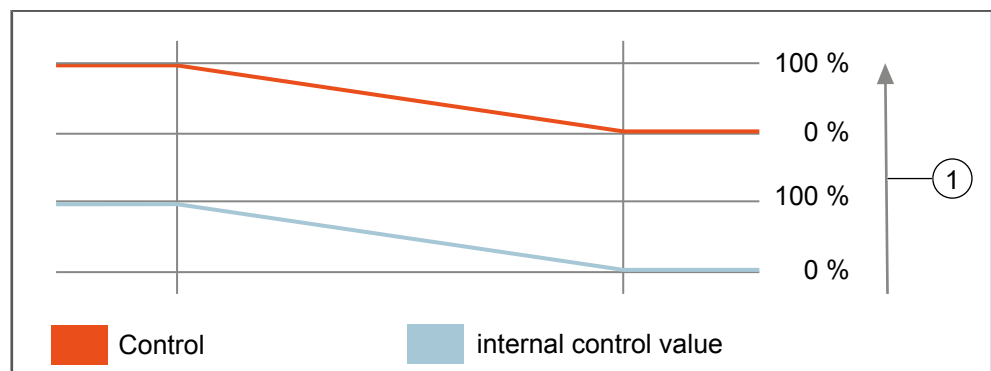


Fig. 38: Valve completely open above 100 %, closed below 1 %

1 Control of control value specification

Example 2:

- Valve completely open above: 85 %
- Valve completely open below: 25 %

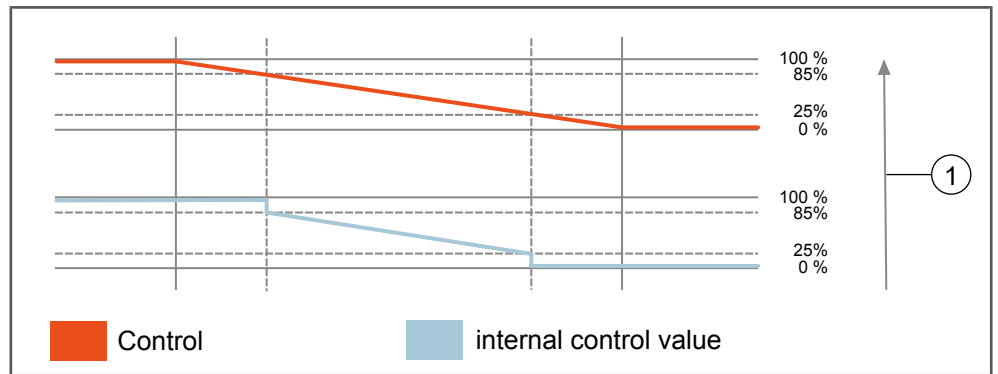


Fig. 39: Valve completely open above 85 %, closed below 25 %

1 Control of control value specification

**More information:**

- Parameter "Type of control value output" [→ 217]

**Period duration of pulse width modulation**

Parameter	Settings
Period duration of pulse width modulation (hh:mm)	00:01 ... 00:30

**Function:**

This parameter is used to set the period duration for the pulse width modulation of the switching control value output. The control value corresponds to the pulse duty ratio (time ratio) between "ON" (1) and "OFF" (0) within one period.

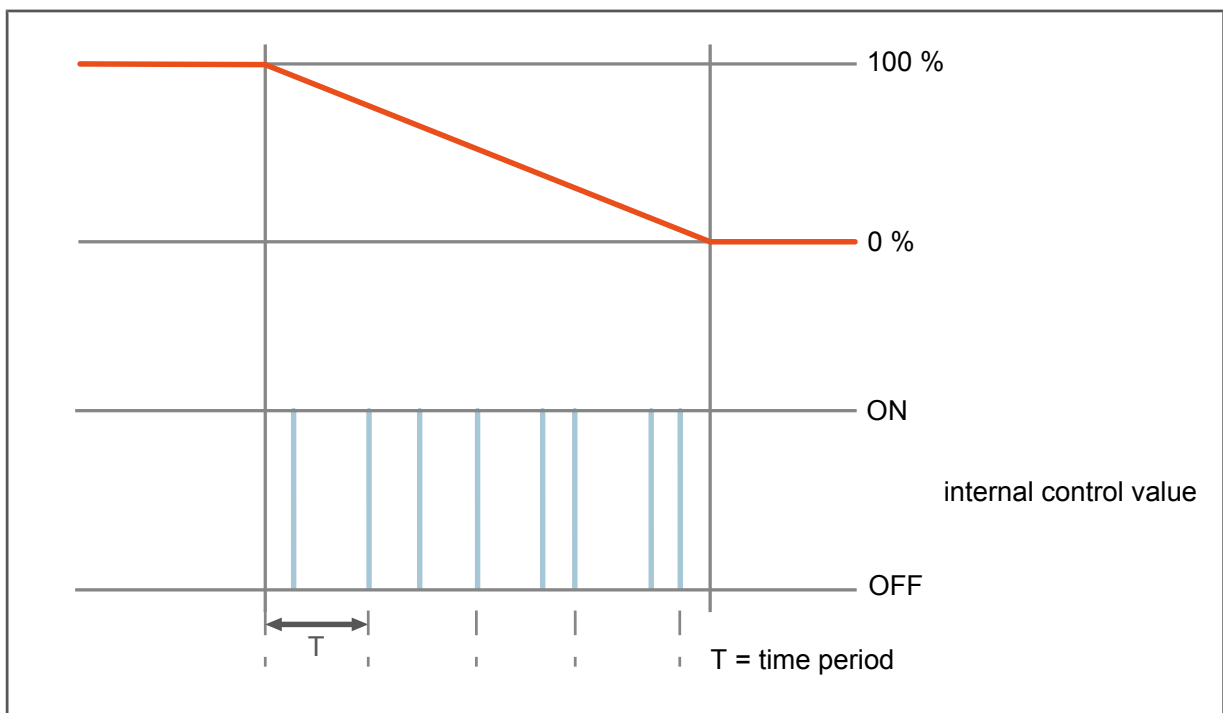


Fig. 40: Switching output of the control value

**Note:**

The selected period duration of pulse width modulation must not be shorter than the sum of the heating and cooling time of the thermal drives.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Type of control value output"
  - Setting: "Switching (1-bit)"

**More information:**

- Parameter "Type of control value output" [→ 217]

**Scaling of control value (%)**

Parameter	Settings
Scaling of control value (%)	1...100

**Function:**

This parameter is used to set in which form the control value is output.

The control value can only be used with continuous control value output (8 bit) (parameter "Type of control value output").

Reducing the percentage achieves a compression (scaling) of the control value.

For an example, see figure "Example 1: Scaling of the control value: 60 % [→ 220]" and figure "Example 2: Scaling of the control value: 100 %, inverted control value [→ 221]."

The setting depends on the valve type and actuator used.

The scaling takes effect prior to a limitation by the parameters "Minimum control value (%)" and "Maximum control value (%)."

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Type of control value output"
  - Setting: "Steady (8-bit)"

**Examples:**

Example 1:

Scaling of the control value: 60 %

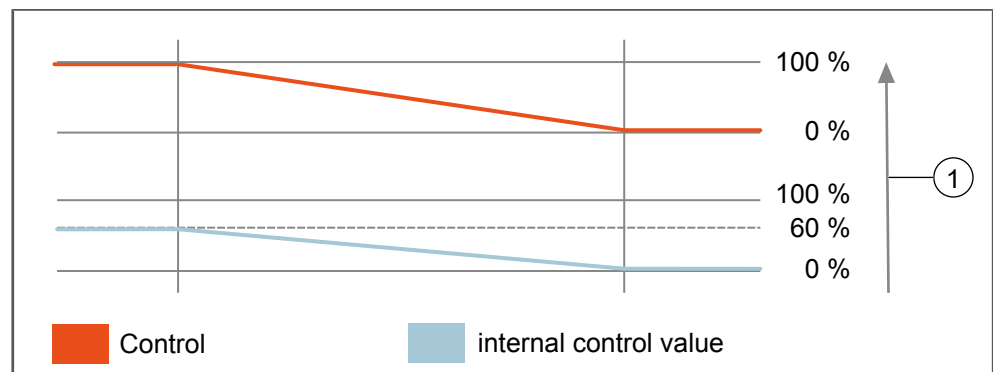


Fig. 41: Example 1: Scaling of the control value: 60 %

1 Control of control value specification

Example 2:

Scaling of the control value: 100 %, inverted control value

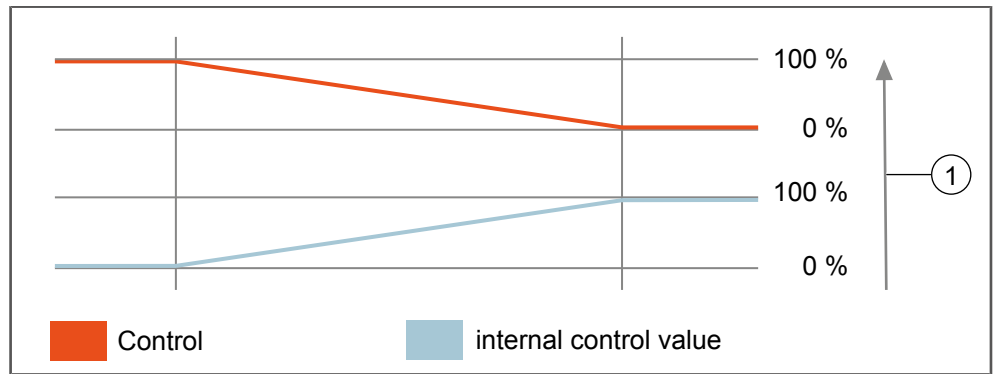


Fig. 42: Example 2: Scaling of the control value: 100 %, inverted control value

1 Control of control value specification

**More information:**

- Parameter “Type of control value output” [→ 217]

**Maximum control value (%)**

Parameter	Settings
Maximum control value (%)	0...100

**Function:**

This parameter can be used to set an upper threshold for the calculated heating or cooling control value. Above this value, the maximum control value is retained.

For an example, see figure “Parameters on the “Heating,” “Cooling,” and “Heating/cooling” parameter cards [→ 221].”

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Type of control value output”
  - Setting: “Steady (8-bit)”

**More information:**

- Parameter “Type of control value output” [→ 217]

**Minimum control value (%)**

Parameter	Settings
Minimum control value (%)	0...100

**Function:**

This parameter can be used to set a lower threshold for the calculated heating or cooling control value. Below this value, the minimum control value is retained.

When the controller is switched off, the control value 0 % is output.

For an example, see figure “Parameters on the “Heating,” “Cooling,” and “Heating/cooling” parameter cards [→ 221].”

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Type of control value output”
  - Setting: “Steady (8-bit)”

**More information:**

- Parameter “Type of control value output” [→ 217]

**Example:**

Example of using a maximum control value of 80 % and a minimum control value of 20 %:

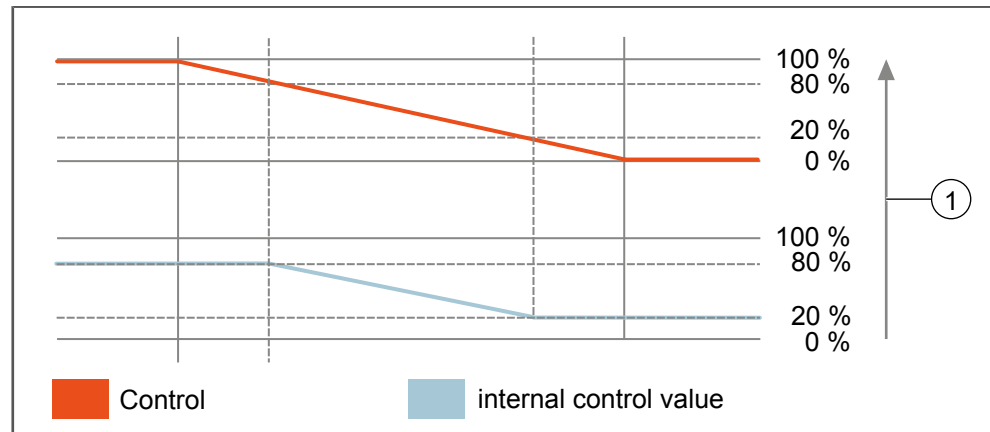


Fig. 43: Setting the maximum and minimum control value

### 1 Control of control value specification

#### Send control value on request

Parameter	Settings
Send control value on request	locking enable

#### Function:

This parameter can be used to set whether the control value is sent on request or whether requests for the control value will be rejected.

The request is triggered via the communication object "Send status values."

#### Availability:

The parameter is displayed if the following configuration has been made:

- Parameter "Type of control value output"
  - Setting: "Steady (8-bit)"

#### More information:

- Parameter "Type of control value output" [→ 217]

#### Send control value on change

Parameter	Settings
Send control value on change	locking enable

#### Function:

This parameter is used to define if the control value is to be sent automatically for every change of value.

When "enable" is selected, additional parameters are displayed that can be used to define which change of value (in %) since the last sending has to be exceeded and how much time must have passed since the last sending for the control value to be sent again.

#### Availability:

The parameter is displayed if the following configuration has been made:

- Parameter "Type of control value output"
  - Setting: "Steady (8-bit)"

#### More information:

- Parameter "Type of control value output" [→ 217]

#### Change of control value since last sent (%)

Parameter	Settings
Change of control value since last sent (%)	0...100

#### Function:

This parameter is used to define at which value change since the last sending the control value is sent again. Sending takes place if the block time for sending of the control value has been exceeded.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Type of control value output”
  - Setting: “Steady (8-bit)”
- Parameter “Send control value on change”
  - Setting: “enable”

**More information:**

- Parameter “Type of control value output” [→ 217]
- Parameter “Send control value on change” [→ 222]

**Block time for sending of control value**

Parameter	Settings
Block time for sending of control value (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter is used to set how much time since the last sending of the control value has to have passed in order for it to be sent again.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Send control value on change”
  - Setting: “Steady (8-bit)”

**Note:**

The block time does not apply to cyclic sending. If the block time is greater than the cycle time, the value is nonetheless sent at the end of the cycle time.

**More information:**

- Parameter “Send control value on change” [→ 222]

**More information:**

- Parameter “Type of control value output” [→ 217]

**Send control value cyclically**

Parameter	Settings
Send control value cyclically (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter determines if and at which intervals the determined control value is sent via the bus.

If this is set to “00:00:00,” then cyclic sending is deactivated.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Type of control value output”
  - Setting: “Steady (8-bit)”

**More information:**

- Parameter “Type of control value output” [→ 217]

### 8.2.5.1 Parameters on the “Temperature limit for heating” parameter card

The “Temperature limit for heating” parameter card is only displayed if, on the “Temperature control” parameter card, the parameter “System type” is set to “2 pipe system” and parameter “Controller mode” is set to “Heating and cooling” or “Heating” or if the parameter “System type” is set to “4-pipe system.”

The following parameters can be used to limit the temperature for underfloor heating to protect the heating system and the surrounding floor screed from excessive temperatures.

### Temperature limitation in heating mode (System type: underfloor heating)

Parameter	Settings
Temperature limitation in heating mode (System type: underfloor heating)	disable enable

#### Function:

This parameter can be used to enable temperature limitation in heating mode. If the parameter is set to “enable,” the floor temperature is monitored continuously. If the actual value of the floor temperature is greater than or equal to a configured limit, the control value for heating is set to 0 %.

If the actual value of the floor temperature is less than or equal to the difference between the limit and the hysteresis, the control value for heating is no longer limited.

#### Other parameters:

If the parameter is set to “enable,” the following parameters and sections are displayed:

- “Limit (°C)”
- “Hysteresis (K)”
- Section “Actual temperature value monitoring:” parameter “Current temperature monitoring floor temperature”
- Section “Status: Parameter “Temperature limitation status in heating mode”

#### Communication object:

If the parameter is set to “enable,” the following communication object is displayed:

- “Temperature control 1, temperature limitation heating mode, actual temperature value”

#### More information:

- Communication object “Temperature control 1, temperature limitation, heating mode, actual temperature value” [→ 244]
- Parameter “Threshold (°C)” [→ 224]
- Parameter “Hysteresis (K)” [→ 224]
- Parameter “Actual temperature value monitoring of floor temperature” [→ 225]
- Parameter “Temperature limitation status in heating mode” [→ 226]

### Limit (°C)

Parameter	Settings
Limit (°C)	20...70

#### Function:

This parameter can be used to set the temperature limit in heating mode (system type: underfloor heating).

#### Availability:

The parameter is displayed if the following configuration has been made:

- Parameter: “Temperature limitation in heating mode (System type: underfloor heating)”
  - Setting: “enable”

#### More information:

- Parameter “Temperature limitation in heating mode (system type: underfloor heating)” [→ 224]

### Hysteresis (K)

Parameter	Settings
Hysteresis (K)	1...10

#### Function:



This parameter can be used to set the allowed variation of the temperature limit for the heating mode (= hysteresis) in the range of 1 to 10.”

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: “Temperature limitation in heating mode (System type: underfloor heating)”
  - Setting: “enable”

**More information:**

- Parameter “Temperature limitation in heating mode (system type: underfloor heating)” [→ 224]

**Parameters in the “Actual temperature value monitoring” section**

**Current temperature monitoring floor temperature**

Parameter	Settings
Current temperature monitoring floor temperature	disable enable

**Function:**

This parameter is used to enable or disable monitoring of the cyclically received actual temperature value. If the parameter is set to "enable" and the actual temperature value fails, the control value "OFF" is output when using 2-point control and the control value for temperature controller emergency mode is output when using PI control.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: “Temperature limitation in heating mode (System type: underfloor heating)”
  - Setting: “enable”

**Other parameters:**

If the parameter is set to “enable,” the following parameters are displayed:

- “Monitoring time”
- “Actual temperature value error status”

**More information:**

- Parameter “Temperature limitation in heating mode (system type: underfloor heating)” [→ 224]
- Parameter “Monitoring time” [→ 225]
- Parameter “Actual temperature value error status” [→ 226]
- Parameter “Control value in emergency mode, heating (%)” [→ 180]
- Parameter “Control value in emergency mode, cooling (%)” [→ 180]

**Monitoring time**

Parameter	Settings
Monitoring time	00:00 ... 23:59

**Function:**

This parameter is used to specify the monitoring time for the actual temperature value of underfloor heating. If no actual temperature is received within this configured time, the object “Temperature control 1, temperature limitation heating mode, status error actual temperature value” can be used to output an error message.

With a parameter value of 00:00, no monitoring takes place.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: “Current temperature monitoring floor temperature”
  - Setting: “enable”

**More information:**

**Actual temperature value error status**

- Communication object “Temperature control 1, temperature limitation, heating mode, actual temperature value error status” [→ 245]
- Parameter “Actual temperature value monitoring of floor temperature” [→ 225]

Parameter	Settings
Actual temperature value error status	disable enable

**Function:**

This parameter can be used to enable or disable the “Temperature control 1, status error actual temperature value” communication object.

If no actual temperature value is received during the configured monitoring time, there is an error. To this end, an error message can be sent in the form of a logical “1.”

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Monitoring actual temperature value”
  - Setting: “enable”

**Other parameters:**

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information”):

- “Send status on request”
- “Send status on change of status”
- “Block time for sending of status”
- “Send status cyclically”

**Communication object:**

If the parameter is set to “enable,” the following communication object is displayed:

- “Temperature control 1, status error actual temperature value”

**More information:**

- Communication object “Temperature control 1, actual temperature value error status” [→ 237]
- Parameter “Temperature limitation in heating mode (system type: underfloor heating)” [→ 224]
- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]

**Parameters in the “Status” section****Temperature limitation status in heating mode**

Parameter	Settings
Temperature limitation status in heating mode	disable enable

**Function:**

This parameter is used to enable or disable position communication object “Temperature control 1, temperature limitation heating mode, status error actual temperature value.”

The corresponding communication object is used to report whether the enabled temperature limitation is active in heating mode and therefore whether the maximum temperature in the floor has been exceeded. If the configured limit is exceeded, the controller reduces the control values for the actuator channel.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: “Temperature limitation in heating mode (System type: underfloor heating)”
  - Setting: “enable”

**Other parameters:**

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information”):

- “Send status on request”
- “Send status on change of status”
- “Block time for sending of status”
- “Send status cyclically”

**Communication object:**

If the parameter is set to “enable,” the following communication objects are displayed:

- “Temperature control 1, temperature limitation heating mode, status error actual temperature value”

**More information:**

- Communication object “Temperature control 1, temperature limitation, heating mode, status” [→ 245]
- Parameter “Temperature limitation in heating mode (system type: underfloor heating)” [→ 224]
- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]

### 8.2.5.2 Parameters on the “Dew point monitoring for cooling” parameter card

If a dew point monitor engages in cooling mode, the controller internally switches to “dew point mode.” In doing so, the control value for cooling is set to 0 % as long as the dew point alarm is present. The “dew point alarm” signal is received by a dew point monitor via a corresponding communication object.

The “Temperature limit for cooling” parameter card is only displayed if, on the “Temperature control” parameter card, the parameter “System type” is set to “2-pipe system” and the parameter “Controller mode” is set to “Heating and cooling” or “Cooling” or if the parameter “System type” is set to “4-pipe system.”

**Object dew point alert**

Parameter	Settings
Object dew point alert	locking enable

**Function:**

This parameter is used to set whether communication object “Temperature control 1, dew point alert” is supposed to be available.

In cooling mode, this object can be used to receive a dew point alarm sent by a dew point monitor.

If a dew point monitor engages in cooling mode, the controller internally switches to “Dew point mode.” Here, the output is completely closed or deactivated as long as the dew point alarm is active. Heating mode is still possible.

If the dew point alarm is active, operating modes can still be switched nonetheless. The newly specified operating mode is temporarily stored and is effective after deactivation of the dew point alarm.

**Note:**

After bus voltage recovery, a request telegram is sent to the sensor to query the current status of the dew point monitor.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Controller mode” (Temperature control parameter card)
  - Setting: “Cooling” or “Heating and cooling”

**Other parameters:**

If the parameter is set to “enable,” the following additional parameter is displayed:

- “Dew point alarm status”

**Communication object:**

If the parameter is set to “enable,” the following communication object is displayed:

- “Temperature control 1, dew point alert”

**More information:**

- Communication object “Temperature control, 1, dew point alarm” [→ 238]
- Parameter “Controller operating mode” (“Temperature control” parameter card) [→ 179]
- Parameter “Dew point alarm status” [→ 228]

**Dew point alarm status**

Parameter	Settings
Dew point alarm status	disable enable

**Function:**

This parameter is used to set whether communication object “Temperature control 1, dew point alarm status” is supposed to be available.

This object can be used to output or query the dew point alarm (0 = no alarm, 1 = alarm).

The dew point alarm is used to prevent cooling by the controller until the dew point alarm (triggered by an external sensor) is cleared.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: “Object dew point alert”
  - Setting: “enable”

**Other parameters:**

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information”):

- “Send status on request”
- “Send status on change of status”
- “Block time for sending of status”
- “Send status cyclically”

**Communication object:**

If the parameter is set to “enable,” the following communication objects are displayed:

- “Temperature control 1, dew point alarm status”

**More information:**

- Communication object “Temperature control 1, dew point alarm status” [→ 238]
- Parameter “Dew point alarm object” [→ 227]
- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]

## 8.2.6 Parameters on the “Fan control” parameter card

The “Fan control” parameter card is displayed, if the parameter “Ventilation control” on the “Temperature control” parameter card of the respective temperature controller is enabled.

**Ventilator mode**

Parameter	Settings
Ventilator mode	Heating Cooling Heating and cooling

**Function:**

This parameter is used to set, whether there is a fan in heating and/or cooling mode.

**Note:**

This parameter depends on the “Controller operating mode” parameter on the “Temperature control” parameter card.

**Number of speed levels**

Parameter	Settings
Number of speed levels	1...3

**Function:**

This parameter is used to set how many fan levels can be configured. A maximum of 3 fan speed levels can be configured.

**Other parameters:**

If the parameter is set to “1...3,” the following parameter is also displayed for each speed level:

- “Fan speed in level [1...3] (%)“

**More information:**

- Parameter “Fan speed in level [1...3] (%)“ [→ 229]

**Fan speed in level [1...3] (%)**

Parameter	Settings
Fan speed in level [1...3] (%)	1...100

**Function:**

This parameter sets the desired relative speed in level 1 [2, 3] as a value between 1 and 100 %, where the value 100 % corresponds to the maximum possible speed. This is also the conversion of the fan level to a continuous value.

**NOTICE! Configure the values of the fan levels in ascending order: Speed level 1 < Speed level 2 < Speed level 3.**

**Difference between temperature setpoint and actual value for level [1...3]**

Parameter	Settings
Difference between temperature setpoint and actual value for level [1...3]	0...670760

**Function:**

This parameter sets the temperature difference between setpoint and actual value for each stage in heating/cooling mode. When using automatic control of the fan levels with a 2-point controller, the fan levels are therefore set depending on the temperature difference from the current setpoint.

**Availability:**

The parameter is displayed if the following additional configuration has been made:

- Parameter “Control behavior“ (“Heating,” “Cooling” or “Heating and cooling” parameter card)
  - Setting: “2-point control”

**More information:**

- Parameter “Control behavior” [→ 210]

**Status of ventilation mode (automatic/manual operation)**

Parameter	Settings
Status of ventilation mode (automatic/manual operation)	disable enable

**Function:**

This parameter is used to set whether communication object “Temperature control 1, ventilator mode status” is supposed to be available.

The controller uses this communication object to communicate the current operating mode of the fan. If a logical “0” is sent, automatic operation is activated, if a logical “1” is sent, manual operation is activated.

**Other parameters:**

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information”):

- “Send status on request”
- “Send status on change”
- “Send status cyclically”

**Communication object:**

If the parameter is set to “enable,” the following communication object is displayed:

- “Temperature control 1, ventilator mode status”

**More information:**

- Communication object “Temperature control 1, fan operating mode status” [→ 250]
- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]

**Control value for manual operation**

Parameter	Settings
Control value for manual operation	disable enable

**Function:**

This parameter is used to set whether the communication object “Temperature control 1, ventilation, control value for manual operation” is to be supplemented. This object is used to output the control value of the fan in manual operation.

**Other parameters:**

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information”):

- “Send value on request”
- “Send value on change of value”
- “Value change since last sent (%)”
- “Block time for sending of value”
- “Send value cyclically”

**Communication object:**

If the parameter is set to “enable,” the following communication objects are displayed:

- “Temperature control 1, ventilation, control value for manual operation”

**More information:**

- Communication object “Temperature control 1, fan, control value for manual operation” [→ 250]
- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]

**Current control value**

Parameter	Settings
Current control value	disable enable

**Function:**

This parameter is used to set whether the communication object “Temperature control 1, ventilation, current control value” is to be supplemented.

This object is used to output the current control value of the fan.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Ventilation control” (“Temperature control” parameter card of the respective channel)
  - Setting: “enable”

**Other parameters:**

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information”):

- “Send value on request”
- “Send value on change of value”
- “Value change since last sent (%)”
- “Block time for sending of value”
- “Send value cyclically”

**Communication object:**

If the parameter is set to “enable,” the following communication object is displayed:

- “Temperature control 1, ventilation, current control value”

**More information:**

- Communication object “Temperature control 1, fan, current control value” [→ 250]
- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]

## 8.2.7 “Temperature control” communication objects

As the communication objects for the 6 temperature control function blocks are the same and only differ in their numbers, the following lists only the communication objects of function block 1. The respective numbers of the communication objects of the other function blocks are shown in the table of all communication objects (Communication objects for temperature control [→ 24]).

**Temperature control 1, controller**

No.	Object name	Function	Datapoint type	Flags
340	Temperature control 1, controller	On/Off	1.001 switch	CW

**Function:**

This object can be used to activate or deactivate temperature control. If the temperature control is set to “Heating and cooling”, both controls are switched on and off together.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter “Temperature control 1” (“Temperature control” parameter card)
  - Setting: “enable”

**Temperature control 1, controller status**

No.	Object name	Function	Datapoint type	Flags
341	Temperature control 1, controller status	On/Off	1.011 state	CRT

**Function:**

The controller uses this object to share its internal status externally. This can either have the value “On,” i.e. the controller is switched on and temperature control is active, or the value “Off.”

After bus voltage recovery, the controller is always switched on. This object must therefore be sent with “On.” This process can be represented by a visualization.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter “Controller status” (“Temperature control” parameter card)
  - Setting: “Controller status”

**Temperature control 1, room mode (automatic operation)**

No.	Object name	Function	Datapoint type	Flags
342	Temperature control 1, room mode (automatic operation)	1 ... 4	20.102 HVAC mode	CW

**Function:**

This object is used to switch the room operating mode in automatic operation depending on the value that is received. If the controller is in manual operation, this object is used to buffer the prescribed operating modes of automatic operation.

The following assignments apply:

- 1 = Comfort mode
- 2 = Pre-comfort mode
- 3 = Power saving mode
- 4 = Protection mode

If a telegram with a value other than 1...4 is received by the controller via this 8-bit object, the telegram is rejected as faulty.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Temperature control 1" ("Temperature control" parameter card)
  - Setting: "enable"

**Temperature control 1, room mode (manual operation)**

No.	Object name	Function	Datapoint type	Flags
343	Temperature control 1, room mode (manual operation)	0 ... 4	20.102 HVAC mode	CW

**Function:**

This object is used to switch the room operating mode in manual operation depending on the value received, and to activate or deactivate automatic operation.

The following assignments apply:

- 0 = Automatic operation
- 1 = Comfort mode
- 2 = Pre-comfort mode
- 3 = Power saving mode
- 4 = Protection mode

If a "0" is received, this activates automatic operation. The operating mode that is preset or temporarily stored for automatic mode is set. For all other values, automatic operation is terminated, manual operation is activated and the operating mode specified is set.

If a telegram with a value other than 0...4 is received by the controller via this 8-bit object, the telegram is rejected as faulty.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Room operating mode (manual operation) switchover via" ("Room operating mode" parameter card)
  - Setting: "8-bit object (DPT\_HVACMode)"

**Temperature control 1, room operating mode, automatic mode**

No.	Object name	Function	Datapoint type	Flags
344	Temperature control 1, room operating mode, automatic mode	On	1.001 switch	CW

**Function:**

This object is used to activate automatic operation via an "ON" telegram. If the controller is in manual operation, this object is used to buffer the prescribed operating modes of automatic operation.



**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter “Temperature control 1“ (“Temperature control” parameter card)
  - Setting: “enable“

Temperature control 1, room operating mode (manual operation), [operating mode]

No.	Object name	Function	Datapoint type	Flags
345	Temperature control 1, room operating mode (manual operation), comfort mode	On	1.001 switch	CW
346	Temperature control 1, room operating mode (manual operation), pre-comfort mode			
347	Temperature control 1, room operating mode (manual operation), power saving mode			
348	Temperature control 1, room operating mode (manual operation), protection mode			

**Function:**

This object is used to activate or deactivate the room operating mode in manual operation.

If the parameter “Room operating mode (manual operation) switchover via“ is set to “1-bit objects (DPT\_Switch), a communication object named “Temperature control 1, room operating mode (manual operation), [operating mode]” is displayed for each room operating mode in manual operation that was selected under “Preselection of room operating modes.”

Example: “Temperature control 1, room operating mode (manual operation), comfort mode“

**Availability:**

The communication objects are displayed if the following configuration has been made:

- Parameter “Room operating mode (manual operation) switchover via“ (“Room operating mode” parameter card)
  - Setting: “1-bit objects (DPT\_Switch)“

Depending on the setting in parameter “Preselection of room operating modes,” a communication object named “Temperature control 1, room operating mode (manual operation), [operating mode]” is displayed for each room operating mode. Example: “345“

Temperature control 1, status of room mode (manual operation)

No.	Object name	Function	Datapoint type	Flags
349	Temperature control 1, status of room mode (manual operation)	0 ... 4	20.102 HVAC mode	CRT

**Function:**

This object is used to report the room operating mode that was set via the object “Temperature control 1, room mode (manual operation).”

The following assignments apply:

- 0 = Automatic operation
- 1 = Comfort mode
- 2 = Pre-comfort mode

- 3 = Power saving mode
- 4 = Protection mode

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Status of room mode (manual operation)" ("Room operating mode" parameter card)
  - Setting: "enable"

**Note:**

If the parameter "Message via" is set to "1-bit objects (DPT\_Switch)," , a communication object named "Temperature control 1, room operating mode status (manual operation), [operating mode]" is displayed for each room operating mode that was selected under "Preselection of room operating modes."

Example: "Temperature control 1, status of room operating mode (manual operation), comfort mode"

**Temperature control 1,  
status of room operating  
mode, automatic mode**

No.	Object name	Function	Datapoint type	Flags
350	Temperature control 1, status of room operating mode, automatic mode	On/Off	1.011 state	CRT

**Function:**

The thermal drive actuator uses this communication object to report that automatic operation is active.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Status of room mode (manual operation)"
  - Setting: "enable"

**Temperature control 1,  
status of room operating  
mode (manual operation),  
[operating mode]**

No.	Object name	Function	Datapoint type	Flags
351	Temperature control 1, status of room operating mode (manual operation), comfort mode	On/Off	1.011 state	CRT
352	Temperature control 1, status of room operating mode (manual operation), pre-comfort mode			
353	Temperature control 1, status of room operating mode (manual operation), power saving mode			
354	Temperature control 1, status of room operating mode (manual operation), protection mode			

**Function:**

These objects are used to report whether the corresponding room operating mode in manual operation is enabled or disabled.

**Availability:**

The communication objects are displayed if the following configuration has been made:

- Parameter "Message via" ("Actual temperature value" parameter card)

- Setting: “1-bit objects (DPT\_Switch)“

Depending on the setting in parameter “Preselection of room operating modes,” a communication object named “Temperature control 1, room operating mode status (manual operation), [operating mode]” is displayed for each room operating mode.  
Example: “345“

**Note:**

If the parameter “Message via“ is set to “1-bit objects (DPT\_Switch), a communication object named “Temperature control 1, room operating mode status (manual operation), [operating mode]” is displayed for each room operating mode that was selected under “Preselection of room operating modes.”

Example: “Temperature control 1, status of room operating mode (manual operation), comfort mode“

**Temperature control 1, room mode status**

No.	Object name	Function	Datapoint type	Flags
355	Temperature control 1, room mode status	1 ... 4	20.102 HVAC mode	CRT

**Function:**

This object is used to report the current room operating mode, regardless of whether the controller is in automatic or manual operation.

The following assignments apply:

- 1 = Comfort mode
- 2 = Pre-comfort mode
- 3 = Power saving mode
- 4 = Protection mode

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter “Status of current room mode“
  - Setting: “enable“

**Temperature control 1, comfort extension**

No.	Object name	Function	Datapoint type	Flags
356	Temperature control 1, comfort extension	0 = Stop/1 = Start	1.010 start/stop	CW

**Function:**

This object can be used to start (value "1") or stop (value "0") the comfort extension in automatic operation. That is, this object can be used to activate/deactivate the time-limited activation of comfort mode.

Switching the operating mode via manual operation terminates the comfort extension. An operating mode switch via automatic operation is saved and executed after the comfort extension has ended.

After bus voltage failure/recovery, the comfort extension is deactivated, but this object is queried via "ValueRead" after bus voltage recovery.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter “Comfort extension object“ (“Room operating mode” parameter card underneath the “Temperature control” parameter card)
  - Setting: “enable”

**Temperature control 1, comfort extension status**

No.	Object name	Function	Datapoint type	Flags
357	Temperature control 1, comfort extension status	On/Off	1.011 state	CRT

**Function:**

This object is used to report whether the comfort extension is enabled or disabled.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter “Comfort extension object“ (“Room operating mode” parameter card underneath the “Temperature control” parameter card)
  - Setting: “enable”
- Parameter “Status of comfort extension“ (“Room operating mode” parameter card underneath the “Temperature control” parameter card)
  - Setting: “enable”

#### Temperature control 1, permanent protective mode

No.	Object name	Function	Datapoint type	Flags
358	Temperature control 1, permanent protective mode	On/Off	1.001 switch	CWTU

#### Function:

This object can be used to switch the controller permanently to the “Protection mode” room operating mode.

The current operating mode remains temporarily stored, so that it can be re-activated after permanent protection mode is no longer active (value "0" via this object). Incoming telegrams for other operating mode switches are stored temporarily and, if applicable, activated after deactivating permanent protection mode.

After bus voltage failure/recovery, permanent protection mode deactivated, but this object is queried via "ValueRead" after bus voltage recovery.

#### Availability:

The communication object is displayed if the following configuration was made:

- Parameter “Object permanent protective mode“ (“Room operating mode” parameter card)
  - Setting: “enable”

#### Temperature control 1, actual temperature value

No.	Object name	Function	Datapoint type	Flags
359	Temperature control 1, actual temperature value	°C value	9.001 temperature (°C)	CWTU

#### Function:

This communication object is used to make available the actual value of the room temperature in °C from an external object.

#### Note:

On bus voltage recovery this object is used to sent a query to the temperature sensor (ValueRead).

#### Availability:

The communication object is displayed if the following configuration was made:

- Parameter “Source of actual temperature value“ (“Actual temperature value” parameter card)
  - Setting: “External object“

#### Temperature control 1, heat alarm

No.	Object name	Function	Datapoint type	Flags
360	Temperature control 1, heat alarm	0 = No alarm/1 = Alarm	1.005 alarm	CRT

#### Function:

This object is used to report whether a heat alarm is active.

If a logical “0” is sent, the heat alarm is deactivated, if a logical “1” is sent, the heat alarm is activated.

#### Availability:

The communication object is displayed if the following configuration was made:

- Parameter "Object "Temperature control 1, heat alarm"" ("Actual temperature value" parameter card)
  - Setting: "enable"

**Temperature control 1, frost alarm**

No.	Object name	Function	Datapoint type	Flags
361	Temperature control 1, frost alarm	0 = No alarm/1 = Alarm	1.005 alarm	CRT

**Function:**

This object is used to report whether a frost alarm is active.

If a logical "0" is sent, the frost alarm is deactivated, if a logical "1" is sent, the frost alarm is activated.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Object "Temperature control 1, frost alarm"" ("Actual temperature value" parameter card)
  - Setting: "enable"

**Temperature control 1, status error actual temperature value**

No.	Object name	Function	Datapoint type	Flags
362	Temperature control 1, status error actual temperature value	1 = Failure	1.002 boolean	CRT

**Function:**

A telegram is sent to the bus via this communication object if no telegram was received from the temperature sensor within the specified monitoring time when monitoring the actual temperature value.

The "1 = Failure" status is reset to "0" the next time a temperature value is received.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Monitoring actual temperature value" ("Actual temperature value" parameter card)
  - Setting: "enable"
- Parameter "Actual temperature value error status" ("Actual temperature value" parameter card)
  - Setting: "enable"

**Temperature control 1, window contact status**

No.	Object name	Function	Datapoint type	Flags
363	Temperature control 1, window contact status	0 = closed/1 = open	1.019 window/door	CRT

**Function:**

This object is used to report the joint status of all windows (OR function). As soon as a window is opened, this object reports a "1" (= open).

This object is used to report the status of all windows. This status can either have the value "0," meaning all windows are closed, or, as soon as a window is opened, the value "1," meaning at least one window is open.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Window contact status" ("Room operating mode" parameter card)
  - Setting: "enable"

**Note:**

A maximum of 4 window contacts can be taken into account.

**Temperature control 1,  
dew point alert**

No.	Object name	Function	Datapoint type	Flags
364	Temperature control 1, dew point alert	0 = No alarm/1 = Alarm	1.005 alarm	CWTU

**Function:**

In cooling mode, this object can be used to receive a dew point alarm sent by a dew point monitor.

A dew point alarm leads to the deactivation of cooling mode. Here, the output is completely closed or deactivated as long as the dew point alarm is active. Heating mode is still possible.

After bus voltage failure/recovery, the dew point alarm is deactivated (hence there is no alarm), but this object is queried via "ValueRead" after bus voltage recovery.

**Note:**

On bus voltage recovery, this object sends a query to the dew point sensor (ValueRead).

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Object dew point alert" ("Dew point monitoring for cooling" parameter card)
  - Setting: "enable"

**Temperature control 1,  
dew point alarm status**

No.	Object name	Function	Datapoint type	Flags
365	Temperature control 1, dew point alarm status	0 = No alarm/1 = Alarm	1.005 alarm	CRT

**Function:**

This object is used to report the dew point alarm. The value "0" means "no alarm" and the value "1" means "alarm."

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Object dew point alert" ("Dew point monitoring for cooling" parameter card)
  - Setting: "enable"
- Parameter "Dew point alarm status" ("Dew point monitoring for cooling" parameter card)
  - Setting: "enable"

**Temperature control 1,  
presence**

No.	Object name	Function	Datapoint type	Flags
366	Temperature control 1, presence	On/Off	1.018 occupancy	CWTU

**Function:**

This object is used to receive the status of a presence detector.

In an "On" is received via this object, the room operating mode is switched to "comfort mode" in automatic operation. If an "Off" is received, the operating mode that is activated via the bus telegram is restored. In manual operation, this object is ignored but saved temporarily.

After bus voltage failure/recovery, the presence deactivated, but this object is queried via "ValueRead" after bus voltage recovery.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Object presence" ("Room operating mode" parameter card)
  - Setting: "enable"

Temperature control 1,  
window 1

No.	Object name	Function	Datapoint type	Flags
367 368 369 370	Temperature control 1, windows 1 – 4	0 = closed/1 = open	1.019 window/door	CWTU

**Function:**

This communication object is used to report a window is open or closed. If a logical "0" is received, the window is closed, if a logical "1" is received, the window is open.

A parameter can be used to invert the object value of the window, i.e. the value "1" means the window is closed and the value "0" means the window is open.

**Note:**

On bus voltage recovery, the current states of the door/window contacts are queried via these communication objects.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Number of window contacts" ("Room operating mode" parameter card)
  - Setting: > 0

Temperature control 1,  
outside temperature

No.	Object name	Function	Datapoint type	Flags
371	Temperature control 1, outside temperature	°C value	9.001 temperature (°C)	CW

**Function:**

This object can be used to receive the current ambient temperature so that setpoint temperature tracking can take place in cooling mode. The target temperature is then adjusted according to the ambient temperature, if this exceeds 26 °C and is 6 K above the preselected comfort target temperature. In this case, the new target temperature is always 6 K lower than the ambient temperature.

**Note:**

On bus voltage recovery, this communication object is used to query the current temperature from the ambient temperature sensor (ValueRead).

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter: "Update cooling setpoint dependent on outside temperature" ("Temperature setpoints" parameter card)
  - Setting: "enable"

Temperature control 1,  
status error ambient  
temperature

No.	Object name	Function	Datapoint type	Flags
372	Temperature control 1, status error ambient temperature	1 = Failure	1.002 boolean	CRT

**Function:**

A telegram is sent to the bus via this communication object if no telegram was received from the temperature sensor within the specified monitoring time when monitoring the ambient temperature.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Update cooling setpoint dependent on outside temperature" ("Temperature setpoints" parameter card)
  - Setting: "enable"
- Parameter "Ambient temperature monitoring" ("Temperature setpoints" parameter card)

- Setting: “enable“

### Temperature control 1, controller mode

No.	Object name	Function	Datapoint type	Flags
373	Temperature control 1, controller mode	0 = cooling/1 = heating	1.100 cooling/heating	CWTU

#### Function:

This object is used to specify the controller operating mode "Heating" or "Cooling" via the bus from a separate heating controller or another room temperature controller.

For a 2-pipe system and the "Heating and cooling" controller operating mode, this object is used to switch between heating and cooling mode.

#### Availability:

The communication object is displayed if the following configuration was made:

- Parameter “Temperature control 1“ (“Temperature control” parameter card)
  - Setting: “enable“

### Temperature control 1, basic setpoint

No.	Object name	Function	Datapoint type	Flags
374	Temperature control 1, basic setpoint	°C value	Temperature control 1, basic setpoint object9.001 temperature (°C)	CW

#### Function:

This object can be used to change the preset basic setpoint via the bus at any time. The basic setpoint refers to comfort mode, see also the figure “Methods for setting a setpoint [→ 171].”

The value is stored permanently.

#### Availability:

The communication object is displayed if the following configuration was made:

- Parameter “Basic setpoint object“ (“Temperature setpoints” parameter card)
  - Setting: “enable“

### Temperature control 1, setpoint offset

No.	Object name	Function	Datapoint type	Flags
375	Temperature control 1, setpoint offset	K value	9.002 temperature difference (K)	CW

#### Function:

This object can be used to set a setpoint offset via the bus at any time. This offset is then applied to all setpoints of the four room operating modes, refer also to the figure “Methods for setting a setpoint [→ 171].”

#### Availability:

The communication object is displayed if the following configuration was made:

- Parameter “setpoint offset object“ (“Temperature setpoints” parameter card)
  - Setting: “enable“



Temperature control 1, heating setpoint, [operating mode]

No.	Object name	Function	Datapoint type	Flags
376	Temperature control 1, heating setpoint, comfort mode	°C value	9.001 temperature (°C)	CW
377	Temperature control 1, heating setpoint, pre-comfort mode			
378	Temperature control 1, heating setpoint, power saving mode			
379	Temperature control 1, heating setpoint, protection mode			

**Function:**

This 2-byte object can be used to change the respective setpoints for the four room operating modes in heating mode at any time via the bus by means of a telegram. The value received via the communication object immediately overwrites the factory-set parameter values and is stored permanently.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Preselection of room operating modes"
  - Setting: "Comfort/protection mode," "Comfort/power saving/protection mode," "Comfort/pre-comfort/power saving/protection mode" ("Room operating mode" parameter card)
- Parameter: "Setpoint setting via"
  - Setting: "Absolute setpoints"

Temperature control 1, heating setpoints (°C)

No.	Object name	Function	Datapoint type	Flags
380	Temperature control 1, heating setpoints (°C)	°C value	275.100 Temperature setpoint setting for 4 HVAC Modes	CRW

**Function:**

This 8-byte communication object can be used to change the respective setpoints for the four room operating modes in heating mode at any time via the bus by means of a telegram. The values received via the communication objects immediately overwrite the factory-set parameter values and are stored permanently.

- Datapoint type: DPT\_TempRoomSetpSetF16[4](275.100)
- Datapoint format: F<sub>16</sub>F<sub>16</sub>F<sub>16</sub>F<sub>16</sub>
- Setpoint comfort mode/setpoint pre-comfort mode/setpoint power saving mode/setpoint protection mode

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Object cooling setpoints" ("Temperature setpoints" parameter card)
  - Setting: "enable"

**Temperature control 1, cooling setpoint, [operating mode]**

No.	Object name	Function	Datapoint type	Flags
382	Temperature control 1, cooling setpoint, comfort mode	°C value	9.001 temperature (°C)	CW
383	Temperature control 1, cooling setpoint, pre-comfort mode			
384	Temperature control 1, cooling setpoint, power saving mode			
385	Temperature control 1, cooling setpoint, protection mode			

**Function:**

This object can be used to change the preset setpoint for cooling for the corresponding operating mode.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter “Setpoint setting via” (“Temperature setpoints” parameter card)
  - Setting: “Absolute setpoints”

**Temperature control 1, cooling setpoint (°C)**

No.	Object name	Function	Datapoint type	Flags
386	Temperature control 1, cooling setpoint (°C)	°C value	275.100 Temperature setpoint setting for 4 HVAC Modes	CRW

**Function:**

This 8-byte communication object can be used to change the respective setpoints for the four room operating modes in cooling mode at any time via the bus by means of a telegram. The value received via the communication object immediately overwrites the factory-set parameter values and is stored permanently.

- Datapoint type: DPT\_TempRoomSetpSetF16[4](275.100)
- Datapoint format: F<sub>16</sub>F<sub>16</sub>F<sub>16</sub>F<sub>16</sub>
- Setpoint comfort mode/setpoint pre-comfort mode/setpoint power saving mode/setpoint protection mode

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter “Object cooling setpoints” (“Temperature setpoints” parameter card)
  - Setting: “enable”

**Temperature control 1, status of current basic setpoint**

No.	Object name	Function	Datapoint type	Flags
388	Temperature control 1, status of current basic setpoint	°C value	9.001 temperature (°C)	CRT

**Function:**

This object is used to report the current setpoint as a temperature value, which results either from the basic setpoint, the setpoint offset and the setpoint shift due to the operating mode (method B) or an absolute setpoint with setpoint offset (method A).

Refer to the figure “Methods for setting a setpoint [→ 171]” for methods A and B.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter: “Status of current basic setpoint“ (“Temperature setpoints” parameter card)
  - Setting: “enable“

**Temperature control 1, setpoint offset status**

No.	Object name	Function	Datapoint type	Flags
389	Temperature control 1, setpoint offset status	K value	9.002 temperature difference (K)	CRT

**Function:**

This object is used to report the current setpoint offset in Kelvin, which can be specified using the object “Temperature control 1, setpoint offset.”

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter “Status of setpoint offset“ (“Temperature setpoints” parameter card)
  - Setting: “enable“

**Temperature control 1, status of current setpoint**

No.	Object name	Function	Datapoint type	Flags
390	Temperature control 1, status of current setpoint	°C value	9.001 temperature (°C)	CRT

**Function:**

This object is used to report the current setpoint as a temperature value, which results either from the basic setpoint, the setpoint offset and the setpoint shift due to the operating mode (method B) or an absolute setpoint with setpoint offset (method A).

Refer to the figure “Methods for setting a setpoint [→ 171]“ for methods A and B.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter: “Status of current setpoint“ (“Temperature setpoints” parameter card)
  - Setting: “enable“

**Temperature control 1, status of effective cooling setpoint**

No.	Object name	Function	Datapoint type	Flags
391	Temperature control 1, status of effective cooling setpoint	°C value	9.001 temperature (°C)	CRT

**Function:**

This object is used to report the status of the effective setpoint in the "Cooling" operating mode as a temperature value.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter “Status of effective cooling setpoint (DPT 9.001)“ (“Temperature setpoints” parameter card)
  - Setting: “enable“

**Temperature control 1, status of effective heating setpoint**

No.	Object name	Function	Datapoint type	Flags
392	Temperature control 1, status of effective heating setpoint	°C value	9.001 temperature (°C)	CRT

**Function:**

This object is used to report the status of the effective setpoint in the “Heating” operating mode as a temperature value.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter “Status of effective heating setpoint (DPT 9.001)” (“Temperature setpoints” parameter card)
  - Setting: “enable”

#### Temperature control 1, status of effective cooling setpoints

No.	Object name	Function	Datapoint type	Flags
393	Temperature control 1, status of effective cooling setpoints	°C value	275.100 Temperature setpoint setting for 4 HVAC Modes	CRT

#### Function:

The effective setpoints in "Cooling" operating mode are sent via this object, which contains all setpoint temperatures for the four different operating modes.

- Datapoint type: DPT\_TempRoomSetpSetF16[4](275.100)
- Datapoint format: F<sub>16</sub>F<sub>16</sub>F<sub>16</sub>F<sub>16</sub>
- Setpoint comfort mode/setpoint pre-comfort mode/setpoint power saving mode/setpoint protection mode

#### Availability:

The communication object is displayed if the following configuration was made:

- Parameter “Status of effective cooling setpoints (DPT 275.100)” (“Temperature setpoints” parameter card)
  - Setting: “enable”

#### Temperature control 1, status of effective heating setpoints

No.	Object name	Function	Datapoint type	Flags
394	Temperature control 1, status of effective heating setpoints	°C value	275.100 Temperature setpoint setting for 4 HVAC Modes	CRT

#### Function:

The effective setpoints in “Heating” operating mode are sent via this object, which contains all setpoint temperatures for the four different operating modes.

- Datapoint type: DPT\_TempRoomSetpSetF16[4](275.100)
- Datapoint format: F<sub>16</sub>F<sub>16</sub>F<sub>16</sub>F<sub>16</sub>
- Setpoint comfort mode/setpoint pre-comfort mode/setpoint power saving mode/setpoint protection mode

#### Availability:

The communication object is displayed if the following configuration was made:

- Parameter: “Status of effective heating setpoints (DPT 275.100)” (“Temperature setpoints” parameter card)
  - Setting: “enable”

#### Temperature control 1, temperature limitation heating mode, actual temperature value

No.	Object name	Function	Datapoint type	Flags
395	Temperature control 1, temperature limitation heating mode, actual temperature value	°C value	9.001 temperature (°C)	CWTU

#### Function:

This communication object is used to receive the actual temperature value for temperature limitation in heating mode.

#### Availability:

The communication object is displayed if the following configuration was made:

- Parameter: “Temperature limitation in heating mode (System type: underfloor heating)” (“Temperature limit for heating” parameter card)
  - Setting: “enable”

**Temperature control 1, temperature limitation heating mode, status error actual temperature value**

No.	Object name	Function	Datapoint type	Flags
396	Temperature control 1, temperature limitation heating mode, status error actual temperature value	1 = Failure	1.002 boolean	CRT

**Function:**

This communication object is used to send a telegram regarding the failure of an actual temperature value of the additional heating limit to the bus. This temperature sensor monitors the actual temperature in the floor screed for the “underfloor heating” system type. If no telegram is received from this floor sensor during the configured monitoring time, the object is triggered with “1 = Failure.” The error is cleared the next time a telegram with a valid temperature value is received.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter “Temperature limitation in heating mode (System type: underfloor heating)” (“Temperature limit for heating” parameter card)
  - Setting: “enable”
- Parameter “Temperature limitation status in heating mode” (“Temperature limit for heating” parameter card)
  - Setting: “enable”
- Parameter “Actual temperature value error status” (“Temperature limit for heating” parameter card)
  - Setting: “enable”

**Temperature control 1, temperature limitation in heating mode, status**

No.	Object name	Function	Datapoint type	Flags
397	Temperature control 1, temperature limitation in heating mode, status	On/Off	1.011 state	CRT

**Function:**

This communication object is used to report whether the temperature limitation in heating mode is active.

When the measured temperature in the floor is exceeded, an “On” is sent. When the temperature in the floor drops again, an “Off” is sent.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter “Temperature limitation in heating mode (System type: underfloor heating)” (“Temperature limit for heating” parameter card)
  - Setting: “enable”
- Parameter “Temperature limitation status in heating mode” (“Temperature limit for heating” parameter card)
  - Setting: “enable”

**Temperature control 1, cooling, control value switching**

No.	Object name	Function	Datapoint type	Flags
398	Temperature control 1, cooling, control value switching	On/Off	1.001 switch	CRT

**Function:**

In cooling mode, the control value is sent as an On/Off switching command via this communication object.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter “Controller mode” (“Temperature control” parameter card)
  - Setting: “Cooling” or “Heating and cooling”

- Parameter “Control behavior“ (“Cooling” or “Heating/cooling” parameter card)
  - Setting: “2-point control“
- Parameter “Type of control value output“ (“Cooling” or “Heating/cooling” parameter card)
  - Setting: “Switching (1-bit)“

### Temperature control 1, cooling, control value switching (sequence 2)

No.	Object name	Function	Datapoint type	Flags
399	Temperature control 1, cooling, control value switching (sequence 2)	On/Off	1.001 switch	CRT

#### Function:

In cooling mode, the control value for sequence 2 of the sequence control is sent as an On/Off switching command via this communication object.

#### Availability:

The communication object is displayed if the following configuration was made:

- Parameter “Controller mode“ (“Temperature control” parameter card)
  - Setting: “Cooling“ or “Heating and cooling“
- Parameter “Control behavior“ (“Cooling” or “Heating/cooling” parameter card)
  - Setting: “PI control“
- Parameter “Sequence control“ (“Cooling” or “Heating/cooling” parameter card)
  - Setting: “enable“
- For sequence 2: Parameter “Type of control value output“ (“Cooling” or “Heating/cooling” parameter card)
  - Setting: “Switching (1-bit)“

### Temperature control 1, heating/cooling, control value switching

No.	Object name	Function	Datapoint type	Flags
400	Temperature control 1, heating/cooling, control value switching	On/Off	1.001 switch	CRT

#### Function:

In heating and cooling mode, the control value is sent as an On/Off switching command via this communication object.

#### Availability:

The communication object is displayed if the following configuration was made:

- Parameter “Controller mode“ (“Temperature control” parameter card)
  - Setting: “Heating and cooling“
- Parameter “Control behavior“ (“Heating/cooling” parameter card)
  - Setting: “2-point control“
- Parameter “Type of control value output“ (“Heating/cooling” parameter card)
  - Setting: “Switching (1-bit)“

### Temperature control 1, heating/cooling, control value switching (sequence 2)

No.	Object name	Function	Datapoint type	Flags
401	Temperature control 1, heating/cooling, control value switching (sequence 2)	On/Off	1.001 switch	CRT

#### Function:

In heating and cooling mode, the control value for sequence 2 of the sequence control is sent as an On/Off switching command via this communication object.

#### Availability:

The communication object is displayed if the following configuration was made:

- Parameter “Controller mode“ (“Temperature control” parameter card)
  - Setting: “Heating and cooling“

Temperature control 1, cooling, control value steady

- Parameter “Control behavior“ (“Heating/cooling” parameter card)
  - Setting: “PI control“
- Parameter “Sequence control“ (“Heating/cooling” parameter card)
  - Setting: “enable“
- For sequence 2: Parameter “Type of control value output“ (“Heating/cooling” parameter card)
  - Setting: “Switching (1-bit)“

No.	Object name	Function	Datapoint type	Flags
402	Temperature control 1, cooling, control value steady	0...100 %	5.001 percentage (0..100%)	CRT

**Function:**

In cooling mode, the control value is sent as a percentage value via this communication object.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter “Controller mode“ (“Temperature control” parameter card)
  - Setting: “Cooling“ or “Heating and cooling“
- Parameter “Control behavior“ (“Heating” or “Heating/cooling” parameter card)
  - Setting: “PI control“
- Parameter “Type of control value output“ (“Cooling” or “Heating/cooling” parameter card)
  - Setting: “Steady (8-bit)“

Temperature control 1, cooling, control value steady (sequence 2)

No.	Object name	Function	Datapoint type	Flags
403	Temperature control 1, cooling, control value steady (sequence 2)	0...100 %	5.001 percentage (0..100%)	CRT

**Function:**

In cooling mode, the control value for sequence 2 of the sequence control is sent percentage value via this communication object.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter “Controller mode“ (“Temperature control” parameter card)
  - Setting: “Cooling“ or “Heating and cooling“
- Parameter “Control behavior“ (“Heating” or “Heating/cooling” parameter card)
  - Setting: “PI control“
- Parameter “Sequence control“ (“Cooling” or “Heating/cooling” parameter card)
  - Setting: “enable“
- For sequence 2: Parameter “Type of control value output“ (“Cooling” or “Heating/cooling” parameter card)
  - Setting: “Steady (8-bit)“

Temperature control 1, heating, control value switching

No.	Object name	Function	Datapoint type	Flags
400	Temperature control 1, heating, control value switching	On/Off	1.001 switch	CRT

**Function:**

In heating mode, the control value is sent as an On/Off switching command via this communication object.

**Availability:**

The communication object is displayed if the following configuration was made:

### Temperature control 1, heating, control value steady

- Parameter "Controller mode" ("Temperature control" parameter card)
  - Setting: "Heating" or "Heating and cooling"
- Parameter "Control behavior" ("Heating" or "Heating/cooling" parameter card)
  - Setting: "2-point control"
- Parameter "Type of control value output" ("Cooling" or "Heating/cooling" parameter card)
  - Setting: "Switching (1-bit)"

No.	Object name	Function	Datapoint type	Flags
404	Temperature control 1, controller mode	0...100 %	5.001 percentage (0..100%)	CRT

**Function:**

In heating mode, the control value is sent as a percentage value via this communication object.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Controller mode" ("Temperature control" parameter card)
  - Setting: "Heating" or "Heating and cooling"
- Parameter "Control behavior" ("Heating" or "Heating/cooling" parameter card)
  - Setting: "PI control"
- Parameter "Type of control value output" ("Heating" or "Heating/cooling" parameter card)
  - Setting: "Steady (8-bit)"

### Temperature control 1, heating/cooling, control value steady

No.	Object name	Function	Datapoint type	Flags
404	Temperature control 1, heating/cooling, control value steady	0...100 %	5.001 percentage (0..100%)	CRT

**Function:**

In heating and cooling mode, the control value is sent as a percentage value via this communication object.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Controller mode" ("Temperature control" parameter card)
  - Setting: "Heating and cooling"
- Parameter "Control behavior" ("Heating/cooling" parameter card)
  - Setting: "PI control"
- Parameter "Type of control value output" ("Heating/cooling" parameter card)
  - Setting: "Steady (8-bit)"

### Temperature control 1, heating/cooling, control value steady (sequence 2)

No.	Object name	Function	Datapoint type	Flags
405	Temperature control 1, heating/cooling, control value steady (sequence 2)	0...100 %	5.001 percentage (0..100%)	CRT

**Function:**

In heating and cooling mode, the control value for sequence 2 of the sequence control is sent percentage value via this communication object.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Controller mode" ("Temperature control" parameter card)
  - Setting: "Heating and cooling"
- Parameter "Control behavior" ("Heating/cooling" parameter card)



- Setting: “PI control“
- Parameter “Sequence control“ (“Heating/cooling” parameter card)
  - Setting: “enable“
- For sequence 2: Parameter “Type of control value output“ (“Heating/cooling” parameter card)
  - Setting: “Steady (8-bit)“

**Temperature control 1, ventilator mode**

No.	Object name	Function	Datapoint type	Flags
406	Temperature control 1, ventilator mode	0 = automatic operation/1 = manual operation	1.003 enable	CW

**Function:**

This object can be used to set the fan operating mode.  
The value “0” means that the fan is in automatic operation.  
The value “1” means that the fan is in manual operation.

**Availability:**

- The communication object is displayed if the following configuration was made:
- Parameter “Ventilation control“ (“Temperature control” parameter card of the respective channel)
    - Setting: “enable“

**Temperature control 1, ventilator speed (manual operation)**

No.	Object name	Function	Datapoint type	Flags
407	Temperature control 1, ventilator speed (manual operation)	0...100 %	5.001 percentage (0..100%)	CW

**Function:**

This object is used to receive the current fan speed in manual operation from an actuator as a status and forward it directly to the output and then output it as a control value. This object can therefore be used to manually control the fan.

**Availability:**

- The communication object is displayed if the following configuration was made:
- Parameter “Ventilation control“ (“Temperature control” parameter card)
    - Setting: “enable“

**Temperature control 1, ventilator level (manual operation)**

No.	Object name	Function	Datapoint type	Flags
408	Temperature control 1, ventilator level (manual operation)	0 ... 3	5.100 fan stage (0..255)	CW

**Function:**

This object can be used to control the fan manually (manual operation) via the current fan speed. When a fan level is received via this object, the control value is output accordingly with the value of the configured speed per fan level.

The following assignments apply:

- 0 = Fan off
- 1 = Activate fan level 1
- 2 = Activate fan level 2
- 3 = Activate fan level 3

**Availability:**

- The communication object is displayed if the following configuration was made:
- Parameter “Ventilation control“ (“Temperature control” parameter card)
    - Setting: “enable“

**Temperature control 1, ventilator mode status**

No.	Object name	Function	Datapoint type	Flags
409	Temperature control 1, ventilator mode status	0 = automatic operation/1 = manual operation	1.003 enable	CRT

**Function:**

The controller uses this communication object to communicate the current operating mode of the fan. If a logical "0" is sent, automatic operation is activated, if a logical "1" is sent, manual operation is activated.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Status of ventilation mode (automatic/manual operation)" ("Fan control" parameter card)
  - Setting: "enable"

**Control value for manual operation**

No.	Object name	Function	Datapoint type	Flags
410	Control value for manual operation	0...100 %	5.001 percentage (0..100%)	CRT

**Function:**

This communication object is used to send the fan control value for manual control (manual operation) as a percentage value.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Control value for manual operation" ("Fan control" parameter card)
  - Setting: "enable"

**Temperature control 1, ventilation, current control value**

No.	Object name	Function	Datapoint type	Flags
411	Temperature control 1, ventilation, current control value	0...100 %	5.001 percentage (0..100%)	CRT

**Function:**

The current fan control value is sent as a percentage value via this communication object, regardless of automatic/manual operation.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Current control value" ("Fan control" parameter card)
  - Setting: "enable"

**Temperature control 1, controller mode status**

No.	Object name	Function	Datapoint type	Flags
412	Temperature control 1, controller mode status	0 = cooling/1 = heating	1.100 cooling/heating	CRT

**Function:**

This object is used to report the current operating mode via the controller. The value "0" means that "Cooling" operating mode is activated. The value "1" means that "Heating" operating mode is activated.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Status of current controller mode" ("Temperature control" parameter card)
  - Setting: "enable"

**Temperature control 1, collective status (RTSM)**

No.	Object name	Function	Datapoint type	Flags
413	Temperature control 1, collective status (RTSM)	8-bit status	21.107 combined status RTSM	CRT

**Function:**

This object is used to report various status information of the controller.

The following bits are supported and have the meanings below:

- Bit 0: Window status, 0 = window closed, 1 = window open
- Bit 1: Presence status; 0 = no presence, 1 = presence
- Bit 3: Comfort extension status; 0 = not active, 1 = active
- Bit 4: Room operating mode status 0 = automatic operation, 1 = manual operation
- Bit 5: reserved
- Bit 6: reserved
- Bit 7: reserved
- Bit 8: reserved

**Note:**

Behavior as per description in the KNX manual, DPT 21.107

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter: "Collective status (RTSM)" ("Temperature control" parameter card)
  - Setting: "enable"

**Temperature control 1, collective status (RTC)**

No.	Object name	Function	Datapoint type	Flags
414	Temperature control 1, collective status (RTC)	16-bit status	22.103 combined status RTC	CRT

**Function:**

This object is used to report various status information of the controller.

The following bits are supported and have the meanings below:

- Bit 0: General error information; 0 =no error, 1 =error
- Bit 1: Controller operating mode status; 0 = cooling, 1 = heating
- Bit 2 Dew point alarm status, 0 = no alarm, 1 = alarm
- Bit 3: Frost alarm status; 0 = no alarm, 1 = alarm
- Bit 4: Heat alarm status; 0 = no alarm / 1 = alarm
- Bit 5: Control inactive; 0 = false, 1 = true
- Bit 6: Sequence 2; 0 = inactive, 1 = active
- Bit 7: Heating mode enabled; 0 = false, 1 = true
- Bit 8: Cooling mode enabled; 0 = false, 1 = true
- Bit 9 – 15: reserved

**Note:**

Behavior as per description in the KNX manual, DPT 22.103

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter: "Collective status (RTC)" ("Temperature control" parameter card)
  - Setting: "enable"

**Temperature control 1, controller status (Eberle)**

No.	Object name	Function	Datapoint type	Flags
415	Temperature control 1, controller status (Eberle)	8-bit status	-	CRT

**Function:**

This object is used to report various status information of the controller.

The following bits are supported and have the meanings below:

- Bit 0: Comfort mode active; 0 = false, 1 = true
- Bit 1: Pre-comfort mode active; 0 = false, 1 = true
- Bit 2: Power saving mode active; 0 = false, 1 = true
- Bit 3: Protection mode active; 0 = false, 1 = true
- Bit 4: Dew point alarm active; 0 = false, 1 = true
- Bit 5: Controller operating mode; 0 = cooling, 1 = heating
- Bit 6: Controller status; 0 = active, 1 = inactive
- Bit 7: Frost alarm status; 0 = no alarm, 1 = alarm

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter: “Controller status (Eberle)” (“Temperature control” parameter card)
  - Setting: “enable”

**Temperature control 1, controller status (RHCC)**

No.	Object name	Function	Datapoint type	Flags
416	Temperature control 1, controller status (RHCC)	16-bit status	22.101 RHCC status	CRT

**Function:**

This object is used to report various status information of the controller.

The following bits are supported and have the meanings below:

- Bit 0: General error information; 0 =no error, 1 =error
- Bit 8: Controller operating mode; 0 = cooling, 1 = heating
- Bit 12: Dew point alarm status, 0 = no alarm, 1 = alarm
- Bit 13: Frost alarm status
- Bit 14: Excess temperature/heat alarm status
- Bit 15: reserved

**Note:**

Behavior as per description in the KNX manual, DPT 22.101

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter: “Controller status (RHCC)” (“Temperature control” parameter card)
  - Setting: “enable”

**Temperature control 1, controller status (DPT\_HVACContrMode)**

No.	Object name	Function	Datapoint type	Flags
417	Temperature control 1, controller status (DPT_HVACContrMode)	8-bit status	20.105 HVAC control mode	CRT

**Function:**

This object can be used to report different controller statuses.

The following bits are supported and have the meanings below:

- Bit 1: Heating
- Bit 3: Cooling
- Bit 6: Controller off

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter “Controller status (RHCC)” (“Temperature control” parameter card)
  - Setting: “enable”

## 8.3 Energy requirement request



The parameters and communication objects are configured in the same way for both energy requirement requests and are therefore just described once for energy requirement request 1.

The energy requirement request function block makes it possible to use power saving functions for a primary system.

For heating and cooling requirement requests, the assigned control values of the valve outputs are evaluated. Based on the result, relevant switching inputs to burner and boiler controls are switched according to demand via a KNX switching actuator.

For cascading, several thermal drive actuators can be connected in series and the external and internal energy requirements can be sent to the primary system via a KNX switching actuator, see figure “Function overview of energy requirement request (cascading of thermal drive actuators) [→ 253].”

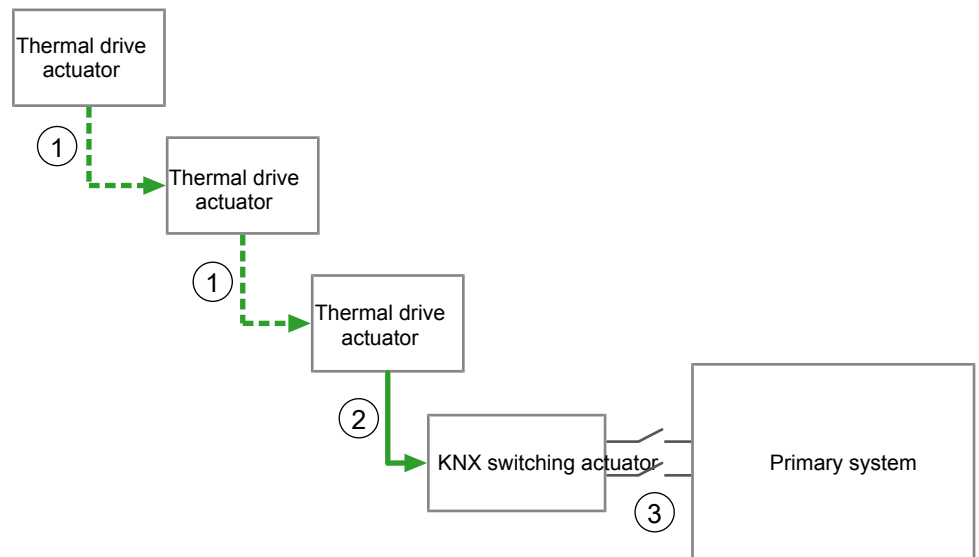


Fig. 44: Function overview of energy requirement request (cascading of thermal drive actuators)

- 1 External energy requirement (1-bit communication object)
- 2 Energy requirement requests (1-bit communication object)
- 3 Switching

### 8.3.1 Parameters on the “Functions, objects” parameter card

Energy requirement request 1

Parameter	Settings
Energy requirement request 1	disable enable

**Function:**

This parameter can be used to enable the energy requirement request function block. For example, a function block can be configured for a heating demand request and the other function block for a cooling demand request.

The heating or cooling demand is transmitted, if at least one assigned control value falls below a threshold with a hysteresis.

**Other parameters/parameter cards:**

If the parameter is set to “enable,” the “Energy requirement request 1” parameter card is displayed.

**Communication object:**

If the parameter is set to “enable,” the following communication object is displayed:

- “Energy requirement request 1, energy requirement“

**More information:**

- Communication object “Energy requirement request 1, energy requirement“  
[→ 259]

### Assigning an energy requirement request to a valve output

1. From the desired valve output, select the “Thermal drive” parameter card and its “Functions, objects” sub-parameter card.
2. In the “Assignments” section, assign the enabled energy requirement request. Refer to “Assignment of energy requirement request and pump control [→ 166].”

## 8.3.2 Parameters on the “Energy requirement request 1” parameter card

The “Energy requirement request 1” parameter card is displayed, if the parameter “Energy requirement request 1” in the “Functions, objects” parameter card of the energy requirement request function is set to “enable.”

### Parameters in the “Internal energy requirement” section

For the internal energy requirement, the own assigned control values of the valve outputs within the thermal drive actuator are evaluated.

#### Limit minimum control value (%)

Parameter	Settings
Limit minimum control value (%)	0...100

**Function:**

This parameter is used to specify in percent how large the minimum control value must be for the energy requirement request of the assigned valve output.

The energy requirement request is activated if the control value is greater than or equal to threshold value.

#### Hysteresis for limit (%)

Parameter	Settings
Hysteresis for limit (%)	0...100

**Function:**

This parameter can be used to specify the value for the hysteresis for the threshold in percent.

The hysteresis is used to avoid frequent heating/cooling demand activation and deactivation when the threshold value changes minimally around the minimum control value limit.

The activated energy requirement request remains deactivated if the control value is smaller than or equal to the configured threshold minus the value for the hysteresis.

#### Delay energy requirement activation (internal)

Parameter	Settings
Delay energy requirement activation (internal) (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter can be used to configure a delay time for the activation of the internal energy requirement request.

The pre-set value 00:05:00 means that switch-on commands are executed after 5 min. A configured switch on delay affects the object “Energy requirement request 1, energy requirement“ and any logic object assigned to the output.

#### Delay energy requirement deactivation (internal)

Parameter	Settings
Delay energy requirement deactivation (internal) (hh:mm:ss)	00:00:00 ... 18:12:15

#### Function:

This parameter can be used to configure the desired switch off delay for the internal energy requirement request.

The pre-set value 00:00:00 means that switch-off commands are executed immediately. A configured switch off delay only affects the object “Energy requirement request 1, energy requirement.”

#### Parameters in the “External energy requirement” section

For the external energy requirement, the determined energy requirement of another bus participant (controller, thermal drive actuator) is taken into account.

#### External energy requirement

Parameter	Settings
External energy requirement	disable enable

#### Function:

This parameter can be used to enable whether the actuator takes into account the determined energy requirement of a further bus participant.

This makes it possible to cascade several devices to include all actuator channels of a building, if necessary.

#### Other parameters:

If the parameter is set to “enable“ the following parameters are displayed:

- “Monitoring of energy requirement request object 1, external energy requirement“
- “Delay energy requirement activation (external)“
- “Delay energy requirement deactivation (external)“
- “Behavior after bus power up“

#### Communication object:

If the parameter is set to “enable,” the following communication object is displayed:

- “Energy requirement request 1, external energy requirement“

#### More information:

- Communication object “External energy requirement request 1, external energy requirement” [→ 260]
- Parameter “Monitoring of object “External energy requirement request 1, external energy requirement”” [→ 255]
- Parameter “Delay energy requirement activation (external)” [→ 257]
- Parameter “Delay energy requirement deactivation (external)” [→ 257]
- Parameter “Behavior after bus voltage recovery” [→ 257]

#### Monitoring of energy requirement request object 1, external energy requirement

Parameter	Settings
Monitoring of energy requirement request object 1, external energy requirement	disable enable

#### Function:

This parameter can be used to set whether the communication object “Energy requirement request 1, external energy requirement” is to be monitored. The monitoring time and the behavior in the absence of an external energy requirement request can also be configured.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: “External energy requirement”
  - Setting: “enable”

**Other parameters:**

If the parameter is set to “enable” the following parameters are displayed:

- “Monitoring time”
- “Behavior at failure of external energy requirement request”

**More information:**

- Parameter “Monitoring time” [→ 256]
- Parameters “Behavior at failure of external energy requirement request” [→ 256]

**Monitoring time**

Parameter	Settings
Monitoring time (hh:mm)	00:00 ... 23:59

**Function:**

This parameter is used to specify the monitoring time of the object for the external energy requirement. If no external energy requirement request is received within this time, the thermal drive actuator behaves as set in parameter “Behavior at failure of external energy requirement request.”

With a parameter value of 00:00, no monitoring takes place.

The telegrams for the externally received energy requirement must thus be sent cyclically by the other device.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: “Monitoring of energy requirement request object 1, external energy requirement”
  - Setting: “enable”

**More information:**

- Communication object “External energy requirement request 1, external energy requirement” [→ 260]
- Parameter “Monitoring of object “External energy requirement request 1, external energy requirement”” [→ 255]
- Parameters “Behavior at failure of external energy requirement request” [→ 256]

**Behavior at failure of external energy requirement request**

Parameter	Settings
Behavior at failure of external energy requirement request	Off On

**Function:**

This parameter can be used to set how the thermal drive actuator behaves if a telegram for an external energy requirement request fails to arrive within the set monitoring time.

**The following settings are possible:**



- Off:  
The thermal drive actuator behaves as if there is no external energy requirement request.
- On:  
The thermal drive actuator behaves as if there is an external energy requirement request.

**Delay energy requirement activation (external)**

Parameter	Settings
Delay energy requirement activation (external) (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter can be used to configure a delay time for activating the external energy requirement requests.

The pre-set value 00:00:00 means that switch-on commands are executed immediately. A configured switch on delay affects the object "Energy requirement request 1, energy requirement" and any logic object assigned to the output.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: "External energy requirement"
  - Setting: "enable"

**More information:**

- Parameter "External energy requirement" [→ 255]

**Delay energy requirement deactivation (external)**

Parameter	Settings
Delay energy requirement deactivation (external) (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter can be used to configure the desired switch off delay for the external energy requirement requests.

The pre-set value 00:00:05 means that switch-off commands are executed after 5 s. A configured switch off delay only affects the object "Energy requirement request 1, external energy requirement."

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: "External energy requirement"
  - Setting: "enable"

**More information:**

- Parameter "External energy requirement" [→ 255]

**Behavior after bus power up**

Parameter	Settings
Behavior after bus power up	Off On Last value Query via bus

**Function:**

This parameter can be used to set the desired behavior of the external energy requirement request on bus voltage recovery.

**The following settings are possible:**

- Off:  
The external energy requirement request is deactivated after a bus voltage recovery.
- On:  
The external energy requirement request is activated after a bus voltage recovery.
- Last value:  
After a bus voltage recovery, the external energy requirement request takes over the last value that was active before the bus voltage failure.
- Query via bus:  
With this setting, the following actions are executed:
  - A query is sent via the bus.
  - If a response is received, this response is stored in the communication object and used further.
  - If no response is received, the last real internal value is used.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: "External energy requirement"
  - Setting: "enable"

**More information:**

- Parameter "External energy requirement" [→ 255]

**Parameters in the "Status" section**

If several thermal drive actuators are cascaded, the communication object "Energy requirement request 1, energy requirement" is sent to the next thermal drive actuator. All subsequent thermal drive actuators in turn monitor the arrival of this communication object. The behavior of sending the communication object can be configured in the "Status" section described below.

**Invert status  
(0 = energy requirement)**

Parameter	Settings
Invert status (0 = energy requirement)	No Yes

**Function:**

This parameter can be used to set whether the status of the communication object "Energy requirement request 1, energy requirement" is sent in inverted form.

**Send status on request**

Parameter	Settings
Send status on request	disable enable

**Function:**

This parameter can be used to set whether the status of the communication object is sent upon request or whether requests for the status value will be rejected.

The request is triggered via the communication object "send status values."

**Availability:**

The parameter "Send status on request" is only displayed if the respective parameter "Status..." is set to "enable."

**Send status on change  
of status**

Parameter	Settings
Send status on change of status	disable enable

**Function:**

This parameter can be used to set whether the value of the status object is automatically sent after each status change.

**Availability:**

**Block time for sending of status**

The parameter “Send status on change of status“ is only displayed if the corresponding “Status...” parameter is set to “enable.”

Parameter	Settings
Block time for sending of status (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter is used to set which time since the last sending of the status has to be exceeded in order for it to be sent again. Hence, no additional bus load is generated by status telegrams generated in quick succession during bus mode.

**Availability:**

The parameter “Block time for sending of status” is displayed if the following configuration has been made:

- Parameter “Send status on change of status“
  - Setting: “enable“

**Note:**

The block time does not apply to cyclic sending. If the block time is greater than the cycle time, the value is nonetheless sent at the end of the cycle time.

**Send status cyclically**

Parameter	Settings
Send status cyclically (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter can be used to set the time interval at which the value of the status object is sent cyclically.

If this is set to “00:00:00,” cyclic sending is deactivated.

**Availability:**

The parameter “Send status cyclically“ is only displayed if the corresponding “Status...” parameter is set to “enable.”

### 8.3.3 Communication objects for “Energy requirement request”



As the communication objects for the two function blocks for energy requirement requests are the same and only differ in their numbers, the following lists only the communication objects of function block 1. The respective numbers of the communication objects of the other function blocks are shown in the table of all communication objects (Communication objects of the individual channels [→ 17]).

**Energy requirement request 1, energy requirement**

No.	Object name	Function	Datapoint type	Flags
12	Energy requirement request 1, energy requirement	On/Off	1.001 switch	CRT

**Function:**

This object can be used to switch a heating or cooling requirement via a relevant switching output.

This object is sent to the respective successor when several thermal drive actuators are cascaded and the receiving of this object is monitored by the successor. The thermal drive actuator that sends to a switching actuator forwards that there is an energy requirement request.

**Availability:**

### Energy requirement request 1, external energy requirement

The communication object is displayed if the following configuration was made:

- Parameter “Energy requirement request 1“
  - Setting: “enable”

No.	Object name	Function	Datapoint type	Flags
13	Energy requirement request 1, external energy requirement	On/Off	1.001 switch	CWTU

#### Function:

This object is used to report whether an external heating or cooling requirement is requested by another bus participant (controller, thermal drive actuator).

#### Availability:

The communication object is displayed if the following configuration was made:

- Parameter “External energy requirement“
  - Setting: “enable”

## 8.4 Pump control

Two controls for circulating pumps are available in the thermal drive actuator. These can be used to separately control a heating circuit and a cooling cycle. In doing so, the assigned control values of the valve outputs are evaluated. Based on the result of the evaluation of the control values, the pumps can be switched based on demand via a KNX switching actuator. In addition, separate fixed position protection prevents the pumps from jamming if they have not been switched on for a longer period of time.



The parameters and communication objects are configured in the same way for both pump controls and are therefore just described once for pump control 1.

The pump control makes it possible to control the circulation pump of the heating or cooling cycle according to demand.

Example:

- Pump control 1 controls the pump for the heating cycle.
- Pump control 2 controls the pump for the cooling cycle.

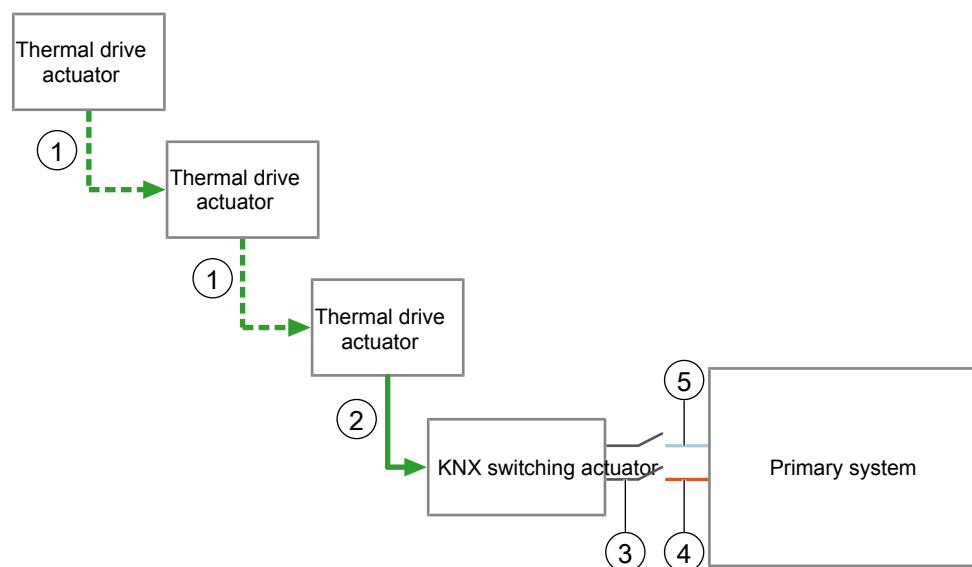


Fig. 45: Function overview of the pump control (cascading of thermal drive actuators)

- 1 External pump demand (1-bit communication object)

- 2 Pump control (1-bit communication object)
- 3 Switching
- 4 Heating cycle
- 5 Cooling cycle

### 8.4.1 Parameters on the “Functions, objects” parameter card

#### Pump control 1

Parameter	Settings
Pump control 1	disable enable

#### Function:

This parameter can be used to enable the pump control function block. For example, a function block can be configured for a pump for the heating cycle and the other function block for a pump for the cooling cycle.

#### Other parameters/parameter cards:

If the parameter is set to “enable,” the “Pump control 1” parameter card is displayed.

#### Communication object:

If the parameter is set to “enable,” the following communication object is displayed:

- “Pump control 1: control pump“

#### Note:

For pump control, the own assigned control values of the channel outputs within the thermal drive actuator are evaluated.

#### More information:

- Communication object “Pump control 1: control pump” [→ 267]

### Assigning a pump control to a valve output

1. From the desired valve output, select the “Thermal drive” parameter card and its “Functions, objects” sub-parameter card.
2. Assign the enabled pump controls in the “Assignments” section. Refer to “Assignment of energy requirement request and pump control [→ 166].”

### 8.4.2 Parameters on the “Pump control 1” parameter card

The “Pump control 1” parameter card is displayed if the “Pump control 1” parameter in the “Functions, objects” parameter card of the Pump control function is set to “enable.”

#### Parameters in the “Internal control value for pump control” section

For pump control, the own assigned control values of the channel outputs within the thermal drive actuator are evaluated.

#### Limit minimum control value (%)

Parameter	Settings
Limit minimum control value (%)	0...100

#### Function:

This parameter is used to specify in percent how large the minimum control value must be for the pump control of the assigned valve output.

The pump is switched on if the control value is greater than or equal to the threshold value.

**Hysteresis for limit (%)**

Parameter	Settings
Hysteresis for limit (%)	0...20

**Function:**

This parameter can be used to specify the value for the hysteresis for the threshold in percent.

The hysteresis is used to avoid frequent switching on and off of the circulating pumps when the threshold value changes minimally around the minimum control value limit.

The pump is switched off when the control value is less than or equal to the configured threshold value minus the hysteresis value.

**Pump activation delay (internal)**

Parameter	Settings
Pump activation delay (internal) (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter can be used to configured a delay time for the activation of the internal pump control.

The pre-set value 00:00:10 means that switch-on commands are executed after 10 s. A configured switch on delay affects the object "Pump control 1: control pump" and any logic object assigned to the output.

**Pump deactivation delay (internal)**

Parameter	Settings
Pump deactivation delay (internal) (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter can be used to configure the desired switch off delay for the internal pump control.

The pre-set value 00:00:10 means that switch-off commands are executed after 10 s. A configured switch off delay only affects the object "Pump control 1: external pump."

**Parameters in the "External pump control request" section**

For external pump control, a telegram from another bus participant (controller, thermal drive actuator) is taken into account for pump control.

**External pump control request**

Parameter	Settings
External pump control request	disable enable

**Function:**

This parameter can be used to enable whether the actuator takes into account a telegram from another bus participant (controller, thermal drive actuator) for pump control.

**Other parameters:**

If the parameter is set to "enable" the following parameters are displayed:

- "Monitoring pump control object 1: external pump"
- "Pump activation delay (external)"
- "Pump deactivation delay (external)"
- "Behavior after bus power up"

**Communication object:**

If the parameter is set to "enable," the following communication object is displayed:

- "Pump control 1: external pump"

**More information:**

- Communication object “Pump control 1: external pump” [→ 267]
- Parameter “Monitoring of object “Pump control 1: external pump”” [→ 263]
- Parameter “Pump activation delay (external)” [→ 264]
- Parameter “Pump deactivation delay (external)” [→ 264]
- Parameter “Behavior after bus voltage recovery” [→ 264]

### Monitoring pump control object 1: external pump

Parameter	Settings
Monitoring pump control object 1: external pump	disable enable

#### Function:

This parameter can be used to set whether the communication object “Pump control 1: external pump” is to be monitored. The monitoring time and the behavior in the absence of a request for external pump control can also be configured.

#### Availability:

The parameter is displayed if the following configuration has been made:

- Parameter: “External pump control request”
  - Setting: “enable”

#### Other parameters:

If the parameter is set to “enable,” the following parameters are displayed:

- “Monitoring time”
- “Behavior in the absence of the external request for pump control”

#### More information:

- Parameter “Monitoring time” [→ 263]
- Parameter “Behavior in the absence of the external request for pump control” [→ 263]
- Parameter “External pump control request” [→ 262]

### Monitoring time

Parameter	Settings
Monitoring time (hh:mm)	00:00 ... 23:59

#### Function:

This parameter is used to set the monitoring time of the object for requesting an external pump control. If no external pump control message is received within this time, the thermal drive actuator behaves as set in the parameter “Behavior in the absence of the external request for pump control.”

With a parameter value of 00:00, no monitoring takes place.

#### Availability:

The parameter is displayed if the following configuration has been made:

- Parameter: “Monitoring pump control object 1: external pump”
  - Setting: “enable”

#### More information:

- Communication object “Pump control 1: external pump” [→ 267]
- Parameter “Monitoring of object “Pump control 1: external pump”” [→ 263]
- Parameter “Behavior in the absence of the external request for pump control” [→ 263]

### Behavior in the absence of the external request for pump control

Parameter	Settings
Behavior in the absence of the external request for pump control	Off On

#### Function:

This parameter can be used to set how the thermal drive actuator is supposed to behave if no external request is received.

**The following settings are possible:**

- Off:  
The thermal drive actuator behaves as if the status is “Off.” Object “Pump control 1: external pump” contains the value “Off.”
- On:  
The thermal drive actuator behaves as if the status is “On.” The object “Pump control 1: external pump” contains the value “On.”

**More information:**

- Communication object “Pump control 1: external pump” [→ 267]

**Pump activation delay (external)**

Parameter	Settings
Pump activation delay (external) (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter can be used to configure a delay time for activating the request for external pump control.

This parameter is used to set the desired ON delay. The pre-set value 00:00:00 means that switch-on commands are executed immediately. A configured switch on delay affects the object delay affects the object “Pump control 1: control pump” and any logic object assigned to the output.

**More information:**

- Communication object “Pump control 1: external pump” [→ 267]

**Pump deactivation delay (external)**

Parameter	Settings
Pump deactivation delay (external) (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter can be used to configure the desired switch off delay for the internal pump control.

The pre-set value 00:00:00 means that switch-off commands are executed immediately. A configured switch off delay only affects the object “Pump control 1: control pump.”

**More information:**

- Communication object “Pump control 1: external pump” [→ 267]

**Behavior after bus power up**

Parameter	Settings
Behavior after bus power up	Off On Last value Query via bus

**Function:**

This parameter can be used to set the desired behavior of the external pump control on bus voltage recovery.

**The following settings are possible:**

- Off:  
After a bus voltage recovery, the external pump control is switched off.
- On:  
After a bus voltage recovery, the external pump control is switched on.
- Last value:  
After a bus voltage recovery, the pump control takes over the last value that was active before the bus voltage failure.
- Query via bus:  
With this setting, the following actions are executed:
  - A query is sent via the bus.



- If a response is received, this response is stored in the communication object and used further.
- If no response is received, the last real internal value is used.

### Parameters in the “Fixed position protection” section

Pumps that have not been switched on for a longer period of time by the manipulated variable evaluation may calcify or become stuck. The “Fixed position protection” function can be enabled to prevent this.

#### Fixed position protection

Parameter	Settings
Fixed position protection	disable enable

#### Function:

This parameter can be used to enable the “fixed position protection” function of the pumps.

If the parameter “Fixed position protection” is enabled and the pump has not been switched on during the set cycle time, the fixed position protection is executed.

#### Other parameters:

If the parameter is set to “enable” the following parameters are displayed:

- “Cycle time (weeks)”
- “Duration”
- “Status”

#### More information:

- Parameter “Cycle time (weeks)” [→ 265]
- Parameter “Duration” [→ 265]
- Parameter “Status” [→ 265]

#### Cycle time (weeks)

Parameter	Settings
Cycle time (weeks)	1...26

#### Function:

This parameter is used to set the time interval of the fixed seat protection (1 to 26 weeks).

#### Availability:

The parameter is displayed if the following configuration has been made:

- Parameter “Fixed position protection”
  - Setting: “enable”

#### More information:

- Parameter “Fixed position protection” [→ 265]

#### Duration

Parameter	Settings
Duration (hh:mm)	00:01 ... 23:59

#### Function:

This parameter is used to set the duration of the “fixed position protection” function. The pump is switched on for half the time of the configured duration and switched off for the other half of the time.

#### Status

Parameter	Settings
Status	disable enable

#### Function:

This parameter is used to activate or deactivate the communication object for the status of the “fixed position protection” function.

This communication object is used to report whether the “fixed position protection” function is active.

**Other parameters:**

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information”):

- “Send status on request“
- “Send status on change of status“
- “Block time for sending of status“
- “Send status cyclically“

**Communication object:**

If the parameter is set to “enable,” the following communication object is displayed:

- “Pump control 1: fixed position protection status“

**More information:**

- Communication object “Pump control 1: fixed position protection status” [→ 268]
- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]

**Parameters in the “Pump control” section**

**Pump control object 1:  
invert pump control (0 =  
On/1 = Off)**

Parameter	Settings
Pump control object 1: invert pump control (0 = On/1 = Off)	No Yes

**Function:**

This parameter can be used to set whether the value of the communication object “Pump control 1: control pump” is to be sent directly or in inverted form.

**The following settings are possible:**

- No:  
1 = On, 0 = Off
- Yes:  
0 = On, 1 = Off

**Send object on request**

Parameter	Settings
Send object on request	disable enable

**Function:**

This parameter can be used to set whether the communication object “Pump control 1: control pump” is sent upon request of whether requests for the object will be rejected. The request is triggered via the communication object “Send status values.”

**Send object on change  
of value**

Parameter	Settings
Send object on change of value	disable enable

**Function:**

This parameter is used to define whether an object should be sent automatically each time the value changes.

**Other parameters:**

If the parameter is set to “enable,” the following parameter is displayed:

- “Block time for sending of object“

**More information:**

- Parameter “Block time for sending of object” [→ 267]

**Block time for sending of object**

Parameter	Settings
Block time for sending of object (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter is used to set which time since the last sending of the object has to be exceeded in order for it to be sent again. Hence, no additional bus load is generated by status telegrams generated in quick succession during bus mode.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter: “Send object on change of value”
  - Setting: “enable”

**More information:**

- Parameter “Send object on change of value” [→ 266]

**Send object cyclically**

Parameter	Settings
Send object cyclically (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter can be used to set whether and at what intervals the object is sent via the bus. If this is set to “00:00:00,” cyclic sending is deactivated.

### 8.4.3 Communication objects for “pump control”



As the communication objects for the two function blocks for pump control are the same and only differ in their numbers, the following lists only the communication objects of function block 1. The respective numbers of the communication objects of the other function blocks are shown in the table of all communication objects (Communication objects of the individual channels [→ 17]).

**Pump control 1: control pump**

No.	Object name	Function	Datapoint type	Flags
16	Pump control 1: control pump	On/Off	1.001 switch	CRT

**Function:**

This object can be used to switch a pump for the heating/cooling cycle via a relevant switching output.

This object is sent to the respective successor when several thermal drive actuators are cascaded and the receiving of this object is monitored by the successor. The thermal drive actuator, which sends to a switching actuator, passes on the value for switching the pumps.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter: “Pump control 1”
  - Setting: “enable”

**Pump control 1: external pump**

No.	Object name	Function	Datapoint type	Flags
17	Pump control 1: external pump	On/Off	1.001 switch	CWTU

**Function:**

**Pump control 1: fixed position protection status**

This object is used to report whether switching on the pump for a heating/cooling cycle is requested by another bus participant (controller, thermal drive actuator).

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Pump control 1: external pump"
  - Setting: "enable"

No.	Object name	Function	Datapoint type	Flags
18	Pump control 1: fixed position protection status	Active/inactive	1.011 state	CRT

**Function:**

This communication object is used to report whether the "fixed position protection" function is active.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Status"
  - Setting: "enable"

## 8.5 Calculator

The "Calculator" function module can be used to evaluate the control values for heating and/or cooling with regard to their maximum value, minimum value or weighted value, or to weight different measured temperature values in the room.

There are 13 independently operating calculators, each with up to 12 Inputs available.

There are 13 independently operating calculators, each with up to 12 Inputs available.

Percentage values for the evaluation of control values or temperature values for the evaluation of room temperature actual values can be selected as inputs.

The calculators can be integrated as follows:

- Each calculator can be used independently. It is then supplied with input values via KNX communication objects and sends the result via a KNX communication object.
- Each calculator can be connected either with its result directly to a room temperature controller (RTC) or with its input values to a valve actuator block. No connection via group addresses is required for this. This also reduces the bus load because the values are already forwarded and processed within the device.



### Cascading of several devices for calculating the largest or weighted control value

The output object of the calculator from the first device is linked to an input communication object of the calculator from the second device via the group address. This makes it possible to cascade the calculated control values of several devices.

### Evaluation of the largest control value

For the evaluation of the largest control value for heating or cooling, the percentage value (%) DPT 5.001 is selected. Here, "Maximal value" is preset in the calculation type of the calculator.

As a result, the largest control value of the assigned channels is determined and subsequently made available as the energy requirement of a primary system with KNX interface.

The following figure “Evaluation of the greatest control value (example) [→ 269]” illustrates this

### Evaluation of the weighted control value

For the evaluation of individually weighted control value for heating or cooling, the percentage value (%) DPT 5.001 is selected. Here, “Weighted value“ must be set in the calculation type of the calculator.

As a result, the weighted control value of the assigned channels is determined and subsequently made available as the energy requirement of a primary system with KNX interface.

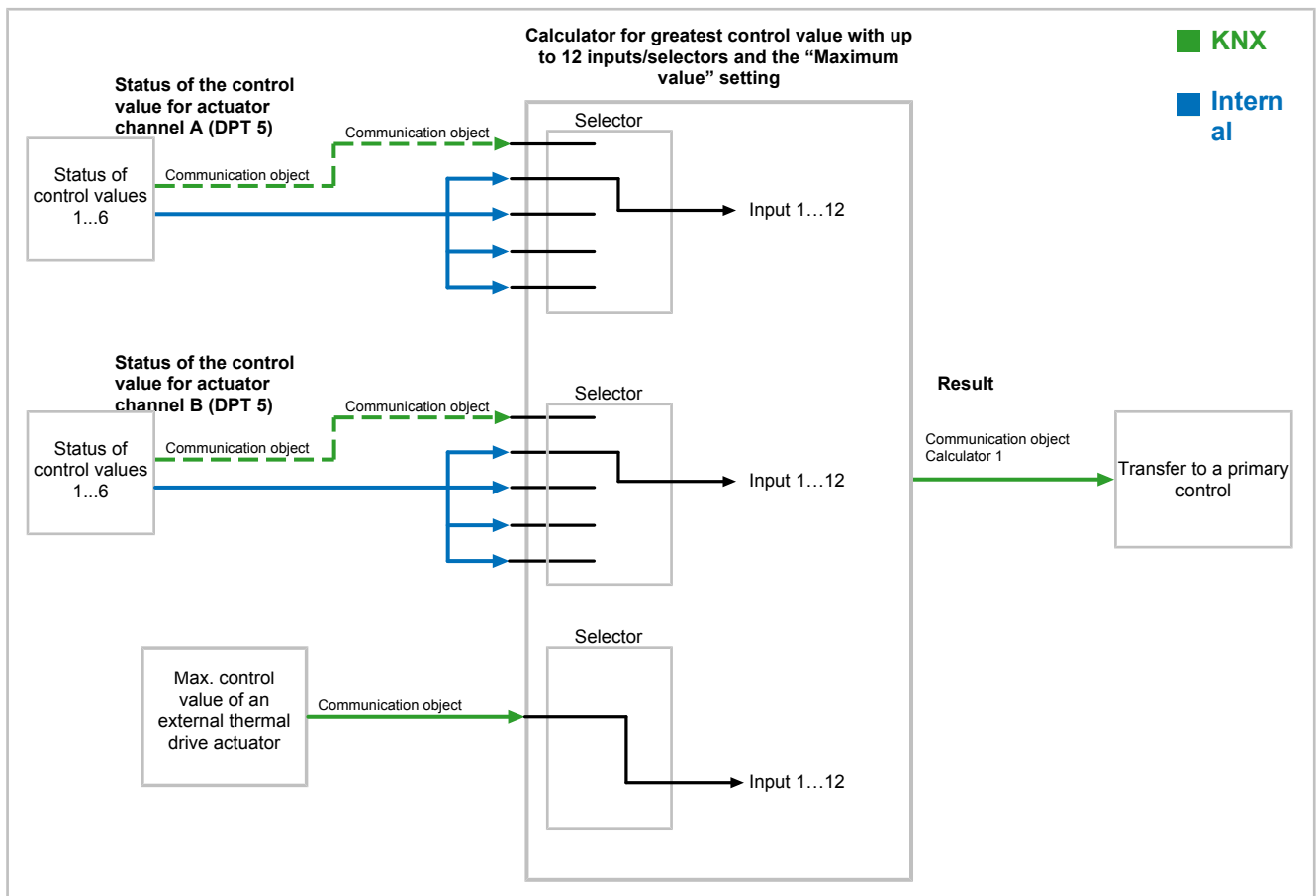


Fig. 46: Evaluation of the greatest control value (example)

#### More information:

- Energy requirement request [→ 253]

### Weighting of several measured temperature values

For weighting different measured temperature values in the room, the temperature (°C) DPT 9.001 is selected. Here, “Weighted value“ is preset in the calculation type of the calculator. An offset in Kelvin and the degree of weighting can be set individually for each temperature source.

Depending on the room layout or placement of the various temperature sensors, a proportional weighting in the configuration is possible so that temperature sensors in exposed positions (e.g. entrance doors) can be included in the calculation in a more neutral way.

As the result, the weighted temperature of the different temperature sources is calculated. Internally, this calculated temperature can be made available directly to a room temperature controller. No connection via group addresses is required for this. This reduces the bus load because the values are already forwarded and processed within the device.

The following figure “Evaluation of the weighted value (example) [→ 270]“ illustrates this:

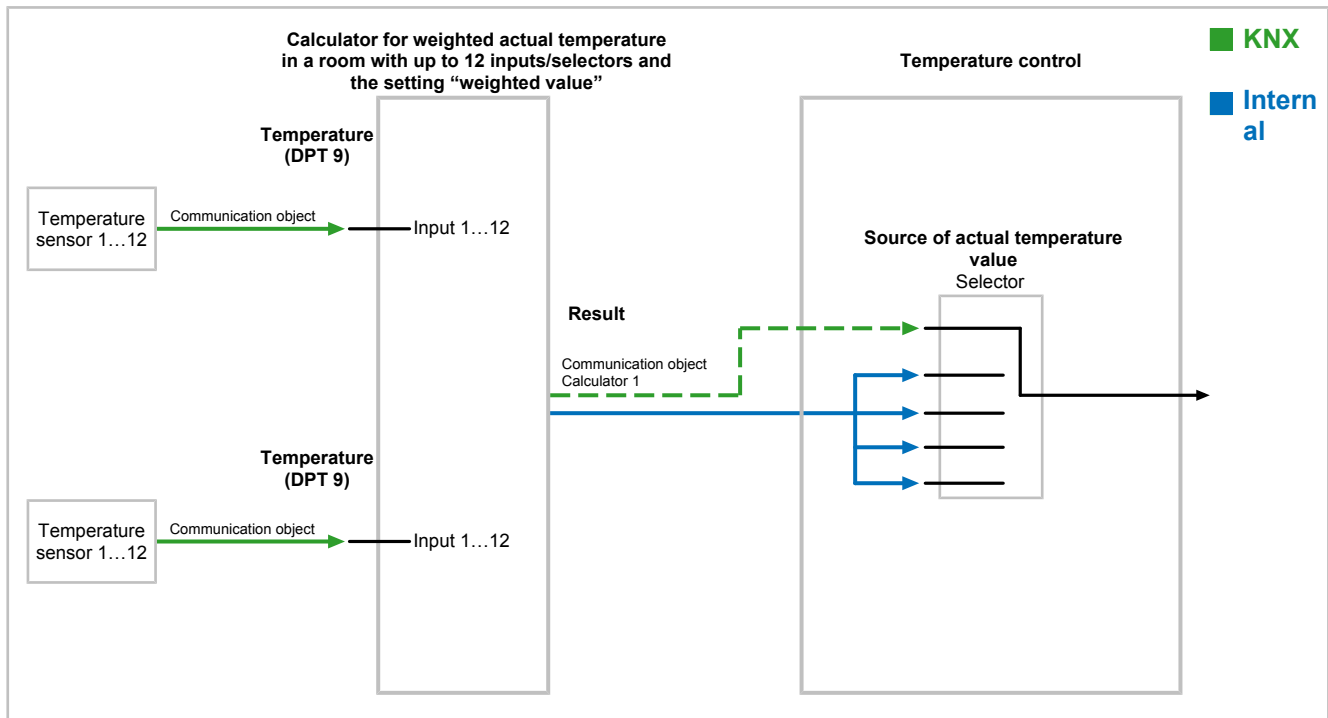


Fig. 47: Evaluation of the weighted value (example)

A detailed use case for the evaluation of a weighted value is described under "Use case: Weighted room temperature in an open-plan office [→ 281]."

#### More information:

- Temperature control: Actual temperature values [→ 192]

#### Using the calculator as a stand-alone unit

If the "Calculator" function module is used as a stand-alone unit, the input values can be linked to the KNX communication objects as required. For example, two input values of type temperature can be used and the result of the calculation for the maximum, minimum or weighted value can then be sent to a receiver via a communication object.

The following figure “Using the calculator as a stand-alone unit (example) [→ 270]“ illustrates this:

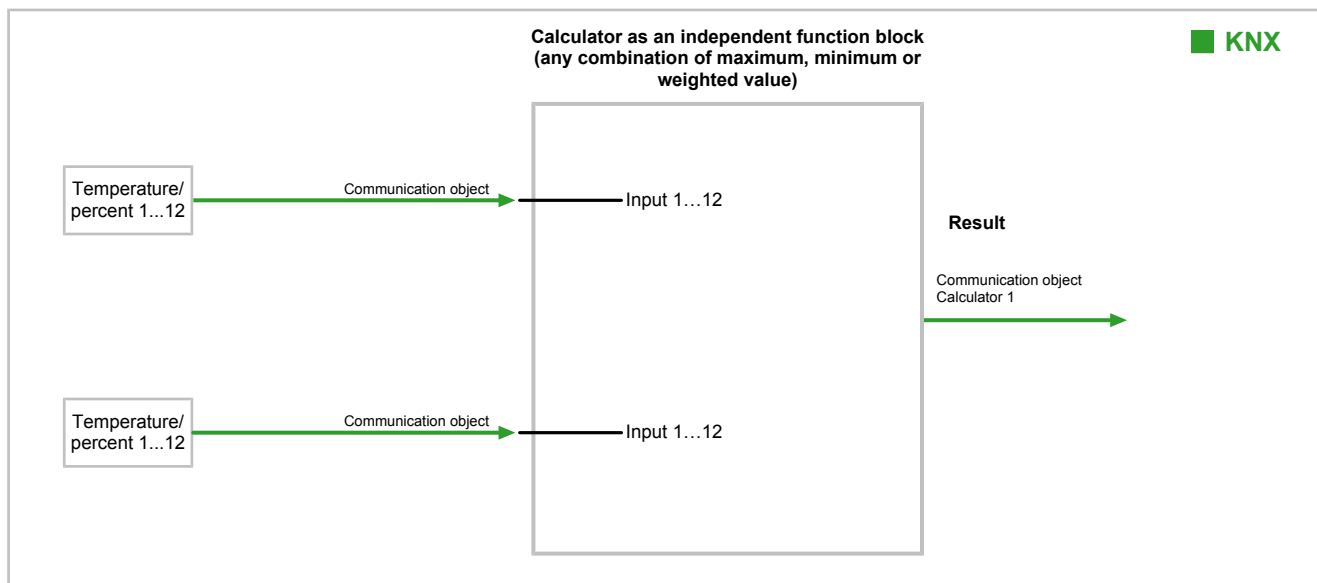


Fig. 48: Using the calculator as a stand-alone unit (example)

## 8.5.1 Parameters on the “Calculator” parameter card



The parameters are configured in the same way for all calculators and are therefore just described once for calculator 1.

### Calculator 1

Parameter	Settings
Calculator 1	Deactivated Percentage (%) DPT 5.001 Temperature (°C) DPT 9.001

#### Function:

These parameters can be used to enable up to 13 calculators with up to 12 inputs each, which can be used to determine the largest or the weighted control value or to weight several measured temperature values.

#### Other parameters/parameter cards:

- If the parameter “Calculator 1” is set to “Percentage (%) DPT 5.001” the “Calculator 1, percent” parameter card is displayed.
- If the parameter “Calculator 1” is set to “Temperature (°C) DPT 9.001” the “Calculator 1, temperature” parameter card is displayed.

## 8.5.2 Parameter card “Calculator 1, percent”

The “Calculator 1, percent” parameter card is displayed, if the parameter “Calculator 1” on the “Calculator” parameter card of the “Calculator” function is set to “Percentage (%) DPT 5.001.”

For evaluating the largest control value for heating or cooling, “Maximal value” is preset in the calculation type of the calculator. The setting “Weighted value” can be selected here to calculate an individual, weighted control value, if necessary. The calculation result is then made available as the energy requirement of a primary system with KNX interface.

## Parameters in the “Calculator configuration” section

### Calculation type

Parameter	Settings
Calculation type	Maximal value Minimal value Weighted value

#### Function:

This parameter can be used to set the calculation method.

#### The following settings are possible:

- Maximal value:  
With this method, up to 12 percentage values are used to determine the maximum value.  
This setting is preconfigured and is required to determine the largest control value for a heating or cooling requirement in a primary system.
- Minimal value:  
With this method, up to 12 percentage values are used to determine the minimum value.
- Weighted value:  
With this method, up to 12 percentage values are used to determine the weighted value. The weighting can be set via a parameter.  
This individually weighted control value is required for a heating or cooling demand request at a primary system.  
This allows, for example, less frequently used rooms to be weighted lower in the calculation of the total energy demand of the primary system.

## Parameters in the “Inputs” section

### Value count

Parameter	Settings
Value count	2...12

#### Function:

This parameter is used to set the number of control value status values (maximum 12).

#### Other parameters:

If the parameter “Value count“ is set to larger than “0,” the parameter “Source for input value” is displayed.

#### More information:

- Parameter “Source for input value” [→ 272]
- Parameter “Calculation type” [→ 272]

### Source for input value

Parameter	Settings
Source for input value	External object Channel: status control value

#### Function:

This parameter is preset to use an external object for transmitting the temperature as the source for the input value.

#### The following settings are possible:

- External object:  
An external object (= communication object) is used as the source of the input value.
- Channel: status control value:  
The internally available value of the status control value of a channel is used as the source of the input value (parameter “Channel selection: control value (%) status“).

#### Availability:



The parameter is displayed if the following configuration has been made:

- Parameter "Value count"
  - Setting greater than "0"

**Communication object:**

If the parameter "Source for input value" is set to "External object," the following communication object is displayed:

- "Calculator 1, % value 1"

**Other parameters:**

If the parameter "Source for input value" is set to "Channel: status control value," the parameter "Channel selection: control value (%) status" is displayed.

**More information:**

- Communication object "Calculator 1, percentage value 1" [→ 281]
- Parameter "Number of values" [→ 272]
- Parameter "Selection "Channel: Status control value (%)"" [→ 273]

**Channel selection:  
control value (%) status**

Parameter	Settings
Channel selection: control value (%) status	Channel A: Status control value (%) Channel B: Status control value (%) Channel C: Status control value (%) Channel D: Status control value (%) Channel E: Status control value (%) Channel F: Status control value (%)

**Function:**

This parameter is used to select the channel whose control value status is to be used as the input value.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Calculation type"
  - Setting: "Maximal value," "Minimal value" or "Weighted value"
- Parameter "Value count"
  - Setting: greater than "0"
- Parameter "Source for input value"
  - Setting: "Channel: status control value"

**Note:**

The status control value of the channel can only be used if the relevant channel is enabled via the "Function channel A - F" parameter on the "Device settings" parameter card.

**More information:**

- Parameter "Calculation type" [→ 272]
- Parameter "Source for input value" [→ 272]
- Parameter "Function of channel A - F" ("Device settings" parameter card) [→ 41]

**More information:**

- Parameter "Calculation type" [→ 272]
- Parameter "Number of values" [→ 272]

**Parameters in the "Results calculator"**

**Object result**

Parameter	Settings
Object result	disable enable

**Function:**

This parameter is used to set whether the object “Calculator 1, %, result“ is enabled or disabled.

This object is used to send the result of the calculation. The current result of the calculation can be queried using a read request via the bus at any time.

**Other parameters:**

If the parameter is set to “enable“ the following parameters are displayed:

- “Send value on request“
- “Send value on change of value“
- “Value change since last sent (%)“
- “Block time for sending of value“
- “Send value cyclically“

**Communication object:**

If the parameter is set to “enable,“ the following communication object is displayed:

- “Calculator 1, %, result“

**More information:**

- Communication object “Calculator 1, %, result“ [→ 281]

**Send value on request**

Parameter	Settings
Send value on request	disable enable

**Function:**

This parameter can be used to set whether the value is sent on request or whether requests for the value will be rejected. The request is triggered via the communication object “Send status values.”

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Object result“ (“Calculator x, percent“ parameter card)
  - Setting: “enable“

**More information:**

- Parameter “Result object“ [→ 273]
- Communication object “A Send status values“ [→ 42]

**Send value on change of value**

Parameter	Settings
Send value on change of value	disable enable

**Function:**

This parameter is used to define if the value is to be sent automatically for every change of value.

When “enable“ is selected, additional parameters are displayed that can be used to define which change of value since the last sending has to be exceeded and how much time must have passed since the last sending for the value to be sent again.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Object result“ (Parameter card “Calculator 1, percent“)
  - Setting: “enable“

**Other parameters:**

If the parameter is set to “enable,“ the following additional parameters are displayed:

- “Value change since last sent (%)“
- “Block time for sending of value“

**More information:**

- Parameter “Result object” [→ 273]
- Parameter “Value change since last sent (%)” [→ 275]
- Parameter “Block time for sending of value” [→ 275]

#### Value change since last sent (%)

Parameter	Settings
Value change since last sent (%)	0...100

#### Function:

This parameter is used to define at which change of value in percent compared to the last value sent the value of the corresponding communication object is sent again. Sending occurs when both the block time for sending the value and the value change since the last sending have been exceeded at the same time.

#### Availability:

The parameter is displayed if the following configuration has been made:

- Parameter “Object result” (“Calculator x, percent” parameter card)
  - Setting: “enable“
- Parameter “Send value on change of value” (“Calculator x, percent” parameter card)
  - Setting: “enable“

#### More information:

- Parameter “Result object” [→ 273]
- Parameter “Send value on change of value” [→ 274]

#### Block time for sending of status

Parameter	Settings
Block time for sending of status (hh:mm:ss)	00:00:00 ... 18:12:15

#### Function:

This parameter is used to set how much time since the last sending of the status has to have passed in order for it to be sent again. Hence, no additional bus load is generated by status telegrams generated in quick succession during bus mode.

#### Availability:

The parameter is displayed if the following configuration has been made:

- Parameter “Object result” (“Calculator x, percent” parameter card)
  - Setting: “enable“
- Parameter “Send value on change of value” (“Calculator x, percent” parameter card)
  - Setting: “enable“

#### Note:

The block time does not apply to cyclic sending. If the block time is greater than the cycle time, the value is nonetheless sent at the end of the cycle time.

#### More information:

- Parameter “Result object” [→ 273]
- Parameter “Send value on change of value” [→ 274]

#### Send value cyclically

Parameter	Settings
Send value cyclically (hh:mm:ss)	00:00:00 ... 18:12:15

#### Function:

This parameter can be used to set whether and at what intervals the object “Calculator 1, %, result” is sent via the bus. If this is set to “00:00:00,” cyclic sending is deactivated.

#### Availability:

The parameter is displayed if the following configuration has been made:

- Parameter “Object result” (Parameter card “Calculator 1, percent”)

- Setting: “enable“

**More information:**

- Parameter “Result object” [→ 273]

### 8.5.3 Parameter card “Calculator 1, temperature”

The “Calculator 1, temperature” parameter card is displayed, if the parameter “Calculator 1“ on the “Calculator” parameter card of the “Calculator” function is set to “Temperature (°C) DPT 9.001.”

#### Parameters in the “Calculator configuration” section

##### Calculation type

Parameter	Settings
Calculation type	Maximal value Minimal value Weighted value

**Function:**

This parameter can be used to set the calculation method.

**The following settings are possible:**

- Maximal value:  
With this method, up to 12 external measured values are used to determine the maximum value.
- Minimal value:  
With this method, up to 12 external measured values are used to determine the minimum value.
- Weighted value:  
With this method, up to 12 external measured values are used to determine the weighted value that can be specified via a parameter.  
This setting is preconfigured and is required to determine the weighted actual temperature in the room.

#### Parameters in the “Inputs” section

##### Value count

Parameter	Settings
Value count	2...12

**Function:**

This parameter is used to set the number of measured values (maximum 12).

**Other parameters:**

- If the parameter “Value count,” is set to greater than “0,” the parameters “Source for input value” and “Offset of external value 1” are displayed.
- If the parameter “Calculation type“ is set to “Weighted value” and parameter “Value count,” is set to greater than “0,” the parameters “Source for input value,” “Offset of external value 1” and “Weight” are displayed.

**Communication object:**

If the parameter “Value count“ is set to greater than “0,” the following communication object is displayed:

- “Calculator 1, temperature value 1“

**More information:**

- Communication object “Calculator 1, temperature value 1” [→ 281]
- Parameter “Source for input value” [→ 277]
- Parameter “Offset of external value 1 (K)“ [→ 277]
- Parameter “Weighting” [→ 277]
- Use case: Weighted room temperature in an open-plan office [→ 281]

**Source for input value**

Parameter	Settings
Source for input value	External object

**Function:**

This parameter is preset to use an external object for transmitting the temperature as the source for the input value.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Value count"
  - Setting greater than "0"

**More information:**

- Parameter "Number of values" [→ 276]

**Offset of external value 1 (K)**

Parameter	Settings
Offset of external value 1 (K)	-10...10

**Function:**

This parameter can be used to set an offset for externally received temperature values. It can be used to correct environmental factors.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Value count"
  - Setting greater than "0"

**More information:**

- Parameter "Number of values" [→ 276]

**Weight**

Parameter	Settings
Weight	1...255

**Function:**

This parameter is used to weight different temperature readings with respect to their percentage influence.

Example for calculating the weighting:

- Temperature 1: Weighting = 4, temperature 2: Weighting = 2, temperature 3: Weighting = 4
- Total of weightings: 10
- Influence per temperature: Own weighting factor divided by 10

For more information on the calculating scheme for weighting, see "Calculation scheme for specified weightings [→ 282]."

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Calculation type"
  - Setting: "Weighted value"
- Parameter "Value count"
  - Setting greater than "0"

**More information:**

- Parameter "Calculation type" [→ 276]
- Parameter "Number of values" [→ 276]
- Use case: Weighted room temperature in an open-plan office [→ 281]

**Parameters in the “Results calculator”****Object result**

Parameter	Settings
Object result	disable enable

**Function:**

This parameter is used to set whether the object “Calculator 1, %, result“ is enabled or disabled.

This object is used to send the result of the calculation. The current result of the calculation can be queried using a read request via the bus at any time.

**Other parameters:**

If the parameter “Object result“ is set to “enable,“ the following parameters are displayed:

- “Send value on request“
- “Send value on change of value“
- “Value change since last sent (K)“
- “Value change since last sent (%)“
- “Block time for sending of value“
- “Send value cyclically“

**Communication object:**

If the parameter “Object result“ is set to “enable,“ the following communication object is displayed:

- “Calculator 1, temperature, result“

**Notes:**

- By making special settings for both the parameters “Value change since last sent (K)“ and “Value change since last sent (%),“ small or large value changes can be sent preferentially. Both parameter settings work as an AND link.
- The result can be linked internally to the actual temperature of a temperature controller. This link can be configured on the respective temperature controller.

**More information:**

- Communication object “Calculator 1, temperature, result“ [→ 281]
- Parameter “Source of actual temperature value“ (temperature control) [→ 193]
- Parameter “Value change since last sent (K)“ [→ 279]
- Parameter “Value change since last sent (%)“ [→ 279]
- Temperature control [→ 168]
- Use case: Weighted room temperature in an open-plan office [→ 281]

**Send value on request**

Parameter	Settings
Send value on request	disable enable

**Function:**

This parameter can be used to set whether the value is sent on request or whether requests for the value will be rejected. The request is triggered via the communication object “Send status values.”

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Object result“ (“Calculator x, temperature“ parameter card)
  - Setting: “enable“

**More information:**

- Communication object “A Send status values“ [→ 42]
- Parameter “Result object“ [→ 278]

**Send value on change of value**

Parameter	Settings
Send value on change of value	disable enable

**Function:**

This parameter is used to define if the value is to be sent automatically for every change of value.

When “enable” is selected, additional parameters are displayed that can be used to define which change of value since the last sending has to be exceeded and how much time must have passed since the last sending for the value to be sent again.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Object result” (“Calculator 1, temperature” parameter card)
  - Setting: “enable”

**Other parameters:**

If the parameter is set to “enable,” the following additional parameters are displayed:

- “Value change since last sent (K)”
- “Value change since last sent (%)”
- “Block time for sending of value”

**More information:**

- Parameter “Result object” [→ 278]
- Parameter “Value change since last sent (K)” [→ 279]
- Parameter “Value change since last sent (%)” [→ 279]
- Parameter “Block time for sending of value” [→ 280]

**Value change since last sent (K)**

Parameter	Settings
Value change since last sent (K)	0...670760

**Function:**

This parameter is used to define at which change of value in Kelvin compared to the last value sent the value of the corresponding communication object is sent again. Sending occurs when both the block time for sending the value and the value change since the last sending have been exceeded at the same time.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Object result” (“Calculator x, temperature” parameter card)
  - Setting: “enable”
- Parameter “Send value on change of value” (“Calculator x, temperature” parameter card)
  - Setting: “enable”

**More information:**

- Parameter “Result object” [→ 278]
- Parameter “Send value on change of value” [→ 279]

**Value change since last sent (%)**

Parameter	Settings
Value change since last sent (%)	0...100

**Function:**

This parameter is used to define at which change of value in percent compared to the last value sent the value of the corresponding communication object is sent again. Sending occurs when both the block time for sending the value and the value change since the last sending have been exceeded at the same time.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Object result“ (“Calculator x, temperature” parameter card)
  - Setting: “enable“
- Parameter “Send value on change of value“ (“Calculator x, temperature” parameter card)
  - Setting: “enable“

**More information:**

- Parameter “Result object” [→ 278]
- Parameter “Send value on change of value” [→ 279]

**Block time for sending of status**

Parameter	Settings
Block time for sending of status (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter is used to set how much time since the last sending of the status has to have passed in order for it to be sent again. Hence, no additional bus load is generated by status telegrams generated in quick succession during bus mode.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Object result“ (“Calculator x, temperature” parameter card)
  - Setting: “enable“
- Parameter “Send value on change of value“ (“Calculator x, temperature” parameter card)
  - Setting: “enable“

**Note:**

The block time does not apply to cyclic sending. If the block time is greater than the cycle time, the value is nonetheless sent at the end of the cycle time.

**More information:**

- Parameter “Result object” [→ 278]
- Parameter “Send value on change of value” [→ 274]

**Send value cyclically**

Parameter	Settings
Send value cyclically (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter can be used to set whether and at what intervals the object “Calculator 1, %, result“ is sent via the bus. If this is set to “00:00:00,” cyclic sending is deactivated.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Object result“ (“Calculator 1, temperature” parameter card)
  - Setting: “enable“

**More information:**

- Parameter “Result object” [→ 278]

### 8.5.4 Communication object “Calculator”



As the communication objects for the 13 function blocks are the same and only differ in their numbers, the following describes only the communication objects of function block 1. The respective numbers of the communication objects of the other function blocks are shown in the table of all communication objects (Communication objects for the calculator [→ 29]).



## Calculator 1, %, result

No.	Object name	Function	Datapoint type	Flags
820	Calculator 1, %, result	% value	5.001 percentage (0..100%)	CRT

**Function:**

This object is used to send the result of the calculation. The current result of the calculation can be queried using a read request via the bus at any time.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Object result"
  - Setting: "enable"

## Calculator 1, % value 1

No.	Object name	Function	Datapoint type	Flags
808	Calculator 1, % value 1	% value	5.001 percentage (0..100%)	CW

**Function:**

This object is used to receive the external measured value 1 (control value), with which the calculation is carried out.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Value count"
  - Setting greater than "0"
- Parameter "Source for input value"
  - Setting: "External object"

## Calculator 1, temperature, result

No.	Object name	Function	Datapoint type	Flags
820	Calculator 1, %, result	°C value	9.001 temperature (°C)	CRT

**Function:**

This object is used to send the result of the calculation. The current result of the calculation can be queried using a read request via the bus at any time.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Object result"
  - Setting: "enable"

## Calculator 1, temperature value 1

No.	Object name	Function	Datapoint type	Flags
808	Calculator 1, temperature value 1	°C value	9.001 temperature (°C)	CW

**Function:**

This object is used to receive the external measured value 1 (temperature value), with which the calculation is carried out.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Value count"
  - Setting greater than "0"

## 8.5.5 Use case: Weighted room temperature in an open-plan office

The following scenario describes an example of the optimal calculation of a weighted room temperature in an open-plan office.

The open-plan office has the following characteristics:

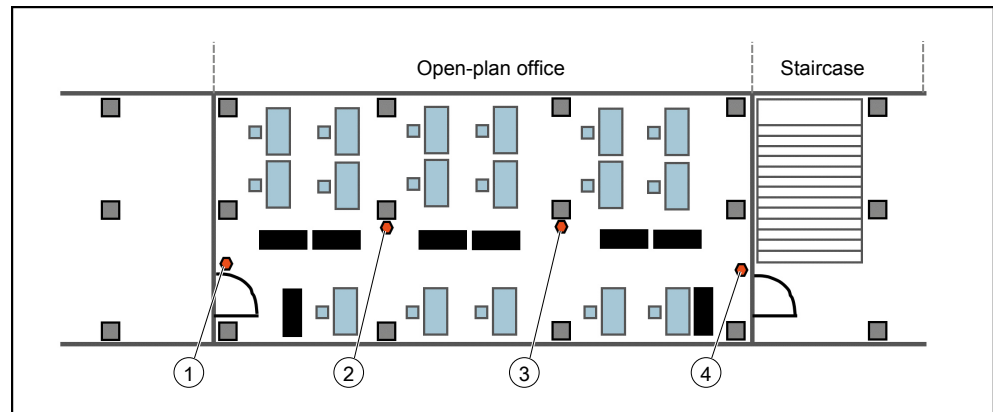


Fig. 49: Open-plan office (example)

1 – 4 Control panels incl. temperature sensor

1 Access from office next door,

Characteristics:

- People pass through frequently
- Low temperature variation

2, 3 Sensors measure the current central temperature No drafts thanks to shielding cabinets.

4 Access from the staircase

Characteristics:

- Larger temperature variations and temperature drops
- Drafts possible

The following table represents a recommendation for determining a room temperature that reflects the conditions in the room as realistically as possible:

Temperature sensor	Weighting	Percentage influence	Example 1	Example 2	Example 3
1	3	25 %	22 °C	20 °C	19 °C
2	4	33 %	23 °C	22 °C	23 °C
3	4	33 %	23 °C	22 °C	23 °C
4	1	10 %	21 °C	19 °C	18 °C
<b>Total:</b>	<b>12</b>	<b>100 %</b>	<b>22.6 °C</b>	<b>21.3 °C</b>	<b>21.6 °C</b>

Due to the weighting, the sensors that are exposed to a higher temperature disturbance have a lower influence (e.g. (4) in the figure “Open-plan office (example) [→ 281]“). The room temperature can thus be kept relatively even.

### Calculation scheme for specified weightings

- For each sensor or imported temperature value, a weighting must be specified.
- The higher the weighting number, the more the read temperature value dominates over the other read temperature values.
- Regardless of the magnitude of the weighting specifications, they are always normalized to each other. That is, it does not matter whether "1" or "100" is assigned to each of three temperature values. The averaged result of three temperature values with the ratio of 1 : 1 : 1 is identical to the result of 100 : 100 : 100.
- All specified weightings are added for normalization. This results in the normalization sum.

- Each individual weighting is divided by this normalization sum. This results in the individual share.
- The individual share multiplied by "100" produces the proportional percentage value of this temperature value compared to the averaged temperature value.

**Calculation formula:**

$$\text{Individual share [\%]} = \frac{\text{Individual weighting}}{\text{Total [individual shares]}} \times 100$$

### Examples with two temperature sensors

Example	Weighting of sensor 1	Weighting of sensor 2	Shares of sensor 1 / sensor 2
1	1	1	50 % / 50 %
2	2	1	66.6 % / 33.3 %
3	1	9	10 % / 90 %
4	4	10	28.6 % / 71.4 %
5	100	1	99.1 % / 0.9 %

Table 6: Examples with two temperature sensors

### Examples with four temperature sensors

Example	Weighting of sensor 1	Weighting of sensor 2	Weighting of sensor 3	Weighting of sensor 4	Shares of sensor 1/2/3/4
1	1	1	1	1	25 % / 25 % / 25 % / 25 %
2	2	2	4	2	20 % / 20 % / 40 % / 20 %
3	5	15	3	7	16.67 % / 50 % / 10 % / 23.33 %

Table 7: Examples with four temperature sensors

## 8.6 Status

### 8.6.1 Parameters that are visible if the "Status..." parameter is set to "enable"

#### Send status on request

Parameter	Settings
Send status on request	disable enable

**Function:**

This parameter can be used to set whether the status of the communication object is sent upon request or whether requests for the status value will be rejected.

The request is triggered via the communication object "send status values."

**Availability:**

The parameter "Send status on request" is only displayed if the respective parameter "Status..." is set to "enable."

#### Send status on change of status

Parameter	Settings
Send status on change of status	disable enable

**Function:**

This parameter can be used to set whether the value of the status object is automatically sent after each status change.

**Availability:**

The parameter “Send status on change of status” is only displayed if the corresponding “Status...” parameter is set to “enable.”

**Block time for sending of status**

Parameter	Settings
Block time for sending of status (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter is used to set how much time since the last sending of the status has to have passed in order for it to be sent again. Hence, no additional bus load is generated by status telegrams generated in quick succession during bus mode.

**Availability:**

The parameter “Block time for sending of status” is only displayed if the respective parameter “Status...” is set to “enable.”

**Note:**

The block time does not apply to cyclic sending. If the block time is greater than the cycle time, the value is nonetheless sent at the end of the cycle time.

**Send status cyclically**

Parameter	Settings
Send status cyclically (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter can be used to set the time interval at which the value of the status object is sent cyclically.

If this is set to “00:00:00,” cyclic sending is deactivated.

**Availability:**

The parameter “Send status cyclically” is only displayed if the corresponding “Status...” parameter is set to “enable.”

**Send value on request**

Parameter	Settings
Send value on request	disable enable

**Function:**

This parameter can be used to set whether the value is sent on request or whether requests for the value will be rejected. The request is triggered via the communication object “Send status values.”

**Availability:**

The parameter “Send value on request” is only displayed if the respective parameter “Status...” is set to “enable.”

**Send value on change of value**

Parameter	Settings
Send value on change of value	disable enable

**Function:**

This parameter is used to define if the value is to be sent automatically for every change of value.

When “enable” is selected, additional parameters are displayed that can be used to define which change of value since the last sending has to be exceeded and how much time must have passed since the last sending for the value to be sent again.

**Availability:**

The parameter “Send value on change of value” is only displayed if the respective parameter “Status...” is set to “enable.”

#### Block time for sending of value

Parameter	Settings
Block time for sending of value (hh:mm:ss)	00:00:00 ... 18:12:15

#### Function:

This parameter determines when the next change of the value (e.g. counter reading, operating hours (in seconds)) is sent at the earliest. If the value changes than sending is possible, the current value at the time of sending is sent.

This setting prevents the bus load from becoming too high because of frequent value changes (e.g. meter reading, operating hours (in seconds)). If the bus load gets too high, telegrams might be lost.

#### Availability:

The parameter “Block time for sending of value” is only displayed if the respective parameter “Status...” is set to “enable.”

#### Send value cyclically

Parameter	Settings
Send value cyclically (hh:mm:ss)	00:00:00 ... 18:12:15

#### Function:

This parameter can be used to set whether and at what intervals the content of the communication object of a value (e.g. “result”) is sent via the bus. If this is set to “00:00:00,” cyclic sending is deactivated.

#### Availability:

The parameter “Send value cyclically” is only displayed if the respective parameter “Status...” is set to “enable.”

## 8.6.2 Parameters on the “Functions, objects” parameter card

#### Overrides status

Parameter	Settings
Overrides status	enable disable

#### Function:

This parameter is used to activate or deactivate the communication object for the status of the overrides. This corresponding communication object is used to report whether at least one override is active.

#### Availability:

The parameter “Overrides status” is displayed as soon as at least one override is activated.

#### Other parameters:

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information”):

- “Send status on request“
- “Send status on change of status“
- “Send status cyclically“

#### Communication object:

If the parameter “Overrides status“ is set to “enable“ the communication object “A Overrides status” is displayed.

#### More information:

- Communication object “Overrides status”
- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]

### Status direct operation

Parameter	Settings
Status direct operation	disable enable

#### Function:

This parameter is used to activate or deactivate the communication object for the status of direct operation. This corresponding communication object is used to report whether direct operation is active.

#### Other parameters:

If the parameter is enabled, additional parameters for configuring the status are displayed (for an explanation of the parameters, see the reference under “Additional information”):

- “Send status on request“
- “Send status on change of status“
- “Send status cyclically“

#### Communication object:

If the parameter “Status direct operation” is set to “enable,” the following communication object is displayed:

- “A Status direct operation“

#### More information:

- Communication object “Status direct operation” [→ 289]
- Parameters that are visible if the “Status...” parameter is set to “enable” [→ 283]

## 8.6.3 Communication objects

### A Status switching

No.	Object name	Function	Datapoint type	Flags
25	A Status switching	On/Off	1.001 switch	CRT

#### Function:

The thermal drive uses this status object to send a telegram regarding the current switching status of the corresponding output.

This status object contains the information whether voltage is present at the valve due to pulse width modulation at the output.

- If the parameter “Valve in de-energized state” is set to “Closed:”  
If a logical “1” is sent, the output is opened (“ON”). If a logical “0” is sent, the output is closed (“OFF”).
- If the parameter “Valve in de-energized state” is set to “Open:”  
If a logical “1” is sent, the output is closed (“OFF”). If a logical “0” is sent, the output is opened (“ON”).

#### Availability:

The communication object is displayed if the following configuration was made:

- Parameter “Status switching“
  - Setting: “enable“

### A Status control value (1 bit)

No.	Object name	Function	Datapoint type	Flags
26	A Status control value (1 bit)	On/Off	1.001 switch	CRT

#### Function:

Via this 1-bit status object, the actuator sends a telegram whether the control value is greater than 0 % (“ON”) or equal to 0 % (“OFF”).

This status object provides the information whether this channel is in operation (heating or cooling), independent of the current switching state at the channel output.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Status control value (1 bit)"
  - Setting: "enable"

**A Status control value (8 bit)**

No.	Object name	Function	Datapoint type	Flags
28	A Status control value (8 bit)	0...100 %	5.001 percentage (0..100%)	CRT

**Function:**

If pulse width modulation is active, the thermal drive uses this 8-bit status object to send a telegram with the current value of the control value in percent (0...100).

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Status control value (8 bit)"
  - Setting: "enable"

**A Status control value limitation**

No.	Object name	Function	Datapoint type	Flags
31	A Status control value limitation	On/Off	1.011 state	CRT

**Function:**

This object is used to output the status of the current state of the control value limitation ("On" or "Off"). This can be queried, for example, by a pushbutton or a visualization in order to check and, if necessary, adjust the control value limitation.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Control value limitation"
  - Setting: "enable"
- Parameter "Object "Status control value limitation""
  - Setting: "enable"

**A Status decalcification**

No.	Object name	Function	Datapoint type	Flags
35	A Status decalcification	Active/inactive	1.011 state	CRT

**Function:**

This communication object is used to report whether valve flushing is currently active.

The "Active" status is valid for the valve both in the heating phase (100 %) and during the cooling phase (0 %) when valve flushing is triggered.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Decalcification" ("Functions, objects" parameter card of the respective thermal drive)
  - Setting: "enable"
- Parameter "Status" ("Valve flushing" parameter card underneath the "Functions, objects" parameter card of the respective thermal drive)
  - Setting: "enable"

**A Override 1, [type of override], status**

No.	Object name	Function	Datapoint type	Flags
32	A Override 1, [type of override], status	On/Off	1.002 boolean	CRT

**Function:**

This status object is used to report whether override 1 is active:

If a logical “0” is sent, the override is not active; if a logical “1” is sent, the override is active.

**Availability:**

The communication object “override 1, [type of override], status” is only displayed, if the following configuration has been made:

- Parameter “Status Override” on the “Override 1, [type of override]” parameter card
  - Setting: “enable”

**A Override 2, [type of override], status**

No.	Object name	Function	Datapoint type	Flags
36	A Override 2, [type of override], status	On/Off	1.002 boolean	CRT

**Function:**

This status object is used to report whether override 2 is active:

If a logical “0” is sent, the override is not active; if a logical “1” is sent, the override is active.

**Availability:**

The communication object “override 2, [type of override], status” is only displayed, if the following configuration has been made:

- Parameter “Status Override” on the “Override 2, [type of override]” parameter card
  - Setting: “enable”

**A Override 3, [type of override], status**

No.	Object name	Function	Datapoint type	Flags
40	A Override 3, [type of override], status	On/Off	1.002 boolean	CRT

**Function:**

This status object is used to report whether override 3 is active.

If a logical “0” is sent, the override is not active; if a logical “1” is sent, the override is active.

**Availability:**

The communication object “override 3, [type of override], status” is only displayed, if the following configuration has been made:

- Parameter “Status Override” on the “Override 3, [type of override]” parameter card
  - “enable”

**A Override 4, [type of override], status**

No.	Object name	Function	Datapoint type	Flags
44	A Override 4, [type of override], status	On/Off	1.002 boolean	CRT

**Function:**

This status object is used to report whether override 4 is active.

If a logical “0” is sent, the override is not active; if a logical “1” is sent, the override is active.

**Availability:**

The communication object “override 4, [type of override], status” is displayed, if the following configuration has been made:

- Parameter “Status Override” on the “Override 4, [type of override]” parameter card
  - Setting: “Status Override”



**A Override 5, [type of override], status**

No.	Object name	Function	Datapoint type	Flags
48	A Override 5, [type of override], status	On/Off	1.002 boolean	CRT

**Function:**

This status object is used to report whether override 5 is active:

If a logical “0” is sent, the override is not active; if a logical “1” is sent, the override is active.

**Availability:**

The communication object “override 5, [type of override], status” is displayed, if the following configuration has been made:

- Parameter “Status Override” on the “Override 5, [type of override]” parameter card
  - Setting: “enable“

**A Override 6, [type of override], status**

No.	Object name	Function	Datapoint type	Flags
52	A Override 6, [type of override], status	enable	1.002 boolean	CRT

**Function:**

This status object is used to report whether override 6 is active:

If a logical “0” is sent, the override is not active; if a logical “1” is sent, the override is active.

**Availability:**

The communication object “override 6, [type of override], status” is only displayed, if the following configuration has been made:

- Parameter “CRT” on the “Override 6, [type of override]” parameter card
  - Setting: “enable“

**A Overrides status**

No.	Object name	Function	Datapoint type	Flags
62	A Overrides status	1 = Active	1.002 boolean	CRT

**Function:**

This status object is used to report that at least one override is active. If a logical “0” is received, no override is active; if a logical “1” is received, at least one override is active.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter “Overrides status” (“Functions, objects” parameter card)
  - Setting: “enable“

**More information:**

- Overrides [[→ 94](#)]

**A Status direct operation**

No.	Object name	Function	Datapoint type	Flags
72	A Status direct operation	On/Off	1.002 boolean	CRT

**Function:**

This communication object is used to report whether direct operation is active or not.

If a logical “0” is sent, direct operation is deactivated, if a logical “1” is sent, direct operation is activated.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter “Direct operation” (“Functions, objects” parameter card)
  - Setting: “enable”
- Parameter “Status direct operation” (“Functions, objects” parameter card)
  - Setting: “enable”

#### A Status failure short circuit/overload

No.	Object name	Function	Datapoint type	Flags
74*	A Status failure short circuit/overload	1 = Failure	1.002 boolean	CRT

#### Function:

The communication object “A Status failure short circuit/overload” can be used to report a short circuit of the affected channel.

\* The corresponding numbers of the communication objects of the other override channels are shown in the table of all communication objects (Communication objects of the individual channels [→ 17]).

#### Availability:

The communication object is displayed if the following configuration was made:

- Parameter “Status failure short circuit/overload”
  - Setting: “enable”

#### Temperature control 1, controller status

No.	Object name	Function	Datapoint type	Flags
341	Temperature control 1, controller status	On/Off	1.011 state	CRT

#### Function:

The controller uses this object to share its internal status externally. This can either have the value “On,” i.e. the controller is switched on and temperature control is active, or the value “Off.”

After bus voltage recovery, the controller is always switched on. This object must therefore be sent with “On.” This process can be represented by a visualization.

#### Availability:

The communication object is displayed if the following configuration was made:

- Parameter “Controller status” (“Temperature control” parameter card)
  - Setting: “Controller status”

#### Temperature control 1, status of room mode (manual operation)

No.	Object name	Function	Datapoint type	Flags
349	Temperature control 1, status of room mode (manual operation)	0 ... 4	20.102 HVAC mode	CRT

#### Function:

This object is used to report the room operating mode that was set via the object “Temperature control 1, room mode (manual operation).”

The following assignments apply:

- 0 = Automatic operation
- 1 = Comfort mode
- 2 = Pre-comfort mode
- 3 = Power saving mode
- 4 = Protection mode

#### Availability:

The communication object is displayed if the following configuration was made:

- Parameter “Status of room mode (manual operation)” (“Room operating mode” parameter card)
  - Setting: “enable”

#### Note:

If the parameter “Message via“ is set to “1-bit objects (DPT\_Switch),” , a communication object named “Temperature control 1, room operating mode status (manual operation), [operating mode]” is displayed for each room operating mode that was selected under “Preselection of room operating modes.”

Example: “Temperature control 1, status of room operating mode (manual operation), comfort mode”

#### Temperature control 1, status of room operating mode, automatic mode

No.	Object name	Function	Datapoint type	Flags
350	Temperature control 1, status of room operating mode, automatic mode	On/Off	1.011 state	CRT

#### Function:

The thermal drive actuator uses this communication object to report that automatic operation is active.

#### Availability:

The communication object is displayed if the following configuration was made:

- Parameter “Status of room mode (manual operation)“
  - Setting: “enable”

#### Temperature control 1, room mode status

No.	Object name	Function	Datapoint type	Flags
355	Temperature control 1, room mode status	1 ... 4	20.102 HVAC mode	CRT

#### Function:

This object is used to report the current room operating mode, regardless of whether the controller is in automatic or manual operation.

The following assignments apply:

- 1 = Comfort mode
- 2 = Pre-comfort mode
- 3 = Power saving mode
- 4 = Protection mode

#### Availability:

The communication object is displayed if the following configuration was made:

- Parameter “Status of current room mode“
  - Setting: “enable”

#### Temperature control 1, comfort extension

No.	Object name	Function	Datapoint type	Flags
356	Temperature control 1, comfort extension	0 = Stop/1 = Start	1.010 start/stop	CW

#### Function:

This object can be used to start (value "1") or stop (value "0") the comfort extension in automatic operation. That is, this object can be used to activate/deactivate the time-limited activation of comfort mode.

Switching the operating mode via manual operation terminates the comfort extension. An operating mode switch via automatic operation is saved and executed after the comfort extension has ended.

After bus voltage failure/recovery, the comfort extension is deactivated, but this object is queried via "ValueRead" after bus voltage recovery.

#### Availability:

The communication object is displayed if the following configuration was made:

- Parameter “Comfort extension object“ (“Room operating mode” parameter card underneath the “Temperature control” parameter card)
  - Setting: “enable”

**Temperature control 1,  
status error actual  
temperature value**

No.	Object name	Function	Datapoint type	Flags
362	Temperature control 1, status error actual temperature value	1 = Failure	1.002 boolean	CRT

**Function:**

A telegram is sent to the bus via this communication object if no telegram was received from the temperature sensor within the specified monitoring time when monitoring the actual temperature value.

The "1 = Failure" status is reset to "0" the next time a temperature value is received.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Monitoring actual temperature value" ("Actual temperature value" parameter card)
  - Setting: "enable"
- Parameter "Actual temperature value error status" ("Actual temperature value" parameter card)
  - Setting: "enable"

**Temperature control 1,  
window contact status**

No.	Object name	Function	Datapoint type	Flags
363	Temperature control 1, window contact status	0 = closed/1 = open	1.019 window/door	CRT

**Function:**

This object is used to report the joint status of all windows (OR function). As soon as a window is opened, this object reports a "1" (= open).

This object is used to report the status of all windows. This status can either have the value "0," meaning all windows are closed, or, as soon as a window is opened, the value "1," meaning at least one window is open.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Window contact status" ("Room operating mode" parameter card)
  - Setting: "enable"

**Note:**

A maximum of 4 window contacts can be taken into account.

**Temperature control 1,  
dew point alarm status**

No.	Object name	Function	Datapoint type	Flags
365	Temperature control 1, dew point alarm status	0 = No alarm/1 = Alarm	1.005 alarm	CRT

**Function:**

This object is used to report the dew point alarm. The value "0" means "no alarm" and the value "1" means "alarm."

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Object dew point alert" ("Dew point monitoring for cooling" parameter card)
  - Setting: "enable"
- Parameter "Dew point alarm status" ("Dew point monitoring for cooling" parameter card)
  - Setting: "enable"

**Temperature control 1, status error ambient temperature**

No.	Object name	Function	Datapoint type	Flags
372	Temperature control 1, status error ambient temperature	1 = Failure	1.002 boolean	CRT

**Function:**

A telegram is sent to the bus via this communication object if no telegram was received from the temperature sensor within the specified monitoring time when monitoring the ambient temperature.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Update cooling setpoint dependent on outside temperature" ("Temperature setpoints" parameter card)
  - Setting: "enable"
- Parameter "Ambient temperature monitoring" ("Temperature setpoints" parameter card)
  - Setting: "enable"

**Temperature control 1, status of current setpoint**

No.	Object name	Function	Datapoint type	Flags
390	Temperature control 1, status of current setpoint	°C value	9.001 temperature (°C)	CRT

**Function:**

This object is used to report the current setpoint as a temperature value, which results either from the basic setpoint, the setpoint offset and the setpoint shift due to the operating mode (method B) or an absolute setpoint with setpoint offset (method A).

Refer to the figure "Methods for setting a setpoint [→ 171]" for methods A and B.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter: "Status of current setpoint" ("Temperature setpoints" parameter card)
  - Setting: "enable"

**Temperature control 1, status of effective cooling setpoint**

No.	Object name	Function	Datapoint type	Flags
391	Temperature control 1, status of effective cooling setpoint	°C value	9.001 temperature (°C)	CRT

**Function:**

This object is used to report the status of the effective setpoint in the "Cooling" operating mode as a temperature value.

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter "Status of effective cooling setpoint (DPT 9.001)" ("Temperature setpoints" parameter card)
  - Setting: "enable"

**Temperature control 1, status of effective heating setpoint**

No.	Object name	Function	Datapoint type	Flags
392	Temperature control 1, status of effective heating setpoint	°C value	9.001 temperature (°C)	CRT

**Function:**

This object is used to report the status of the effective setpoint in the "Heating" operating mode as a temperature value.

### Temperature control 1, status of effective cooling setpoints

#### Availability:

The communication object is displayed if the following configuration was made:

- Parameter "Status of effective heating setpoint (DPT 9.001)" ("Temperature setpoints" parameter card)
  - Setting: "enable"

No.	Object name	Function	Datapoint type	Flags
393	Temperature control 1, status of effective cooling setpoints	°C value	275.100 Temperature setpoint setting for 4 HVAC Modes	CRT

#### Function:

The effective setpoints in "Cooling" operating mode are sent via this object, which contains all setpoint temperatures for the four different operating modes.

- Datapoint type: DPT\_TempRoomSetpSetF16[4](275.100)
- Datapoint format: F<sub>16</sub>F<sub>16</sub>F<sub>16</sub>F<sub>16</sub>
- Setpoint comfort mode/setpoint pre-comfort mode/setpoint power saving mode/setpoint protection mode

#### Availability:

The communication object is displayed if the following configuration was made:

- Parameter "Status of effective cooling setpoints (DPT 275.100)" ("Temperature setpoints" parameter card)
  - Setting: "enable"

### Temperature control 1, status of effective heating setpoints

No.	Object name	Function	Datapoint type	Flags
394	Temperature control 1, status of effective heating setpoints	°C value	275.100 Temperature setpoint setting for 4 HVAC Modes	CRT

#### Function:

The effective setpoints in "Heating" operating mode are sent via this object, which contains all setpoint temperatures for the four different operating modes.

- Datapoint type: DPT\_TempRoomSetpSetF16[4](275.100)
- Datapoint format: F<sub>16</sub>F<sub>16</sub>F<sub>16</sub>F<sub>16</sub>
- Setpoint comfort mode/setpoint pre-comfort mode/setpoint power saving mode/setpoint protection mode

#### Availability:

The communication object is displayed if the following configuration was made:

- Parameter: "Status of effective heating setpoints (DPT 275.100)" ("Temperature setpoints" parameter card)
  - Setting: "enable"

### Temperature control 1, temperature limitation heating mode, status error actual temperature value

No.	Object name	Function	Datapoint type	Flags
396	Temperature control 1, temperature limitation heating mode, status error actual temperature value	1 = Failure	1.002 boolean	CRT

#### Function:

This communication object is used to send a telegram regarding the failure of an actual temperature value of the additional heating limit to the bus. This temperature sensor monitors the actual temperature in the floor screed for the "underfloor heating" system type. If no telegram is received from this floor sensor during the configured monitoring time, the object is triggered with "1 = Failure." The error is cleared the next time a telegram with a valid temperature value is received.

#### Availability:

The communication object is displayed if the following configuration was made:

- Parameter “Temperature limitation in heating mode (System type: underfloor heating)” (“Temperature limit for heating” parameter card)
  - Setting: “enable”
- Parameter “Temperature limitation status in heating mode” (“Temperature limit for heating” parameter card)
  - Setting: “enable”
- Parameter “Actual temperature value error status” (“Temperature limit for heating” parameter card)
  - Setting: “enable”

#### Temperature control 1, temperature limitation in heating mode, status

No.	Object name	Function	Datapoint type	Flags
397	Temperature control 1, temperature limitation in heating mode, status	On/Off	1.011 state	CRT

#### Function:

This communication object is used to report whether the temperature limitation in heating mode is active.

When the measured temperature in the floor is exceeded, an “On” is sent. When the temperature in the floor drops again, an “Off” is sent.

#### Availability:

The communication object is displayed if the following configuration was made:

- Parameter “Temperature limitation in heating mode (System type: underfloor heating)” (“Temperature limit for heating” parameter card)
  - Setting: “enable”
- Parameter “Temperature limitation status in heating mode” (“Temperature limit for heating” parameter card)
  - Setting: “enable”

#### Temperature control 1, ventilator mode status

No.	Object name	Function	Datapoint type	Flags
409	Temperature control 1, ventilator mode status	0 = automatic operation/1 = manual operation	1.003 enable	CRT

#### Function:

The controller uses this communication object to communicate the current operating mode of the fan. If a logical “0” is sent, automatic operation is activated, if a logical “1” is sent, manual operation is activated.

#### Availability:

The communication object is displayed if the following configuration was made:

- Parameter “Status of ventilation mode (automatic/manual operation)” (“Fan control” parameter card)
  - Setting: “enable”

#### Temperature control 1, controller mode status

No.	Object name	Function	Datapoint type	Flags
412	Temperature control 1, controller mode status	0 = cooling/1 = heating	1.100 cooling/heating	CRT

#### Function:

This object is used to report the current operating mode via the controller. The value “0” means that “Cooling” operating mode is activated. The value “1” means that “Heating” operating mode is activated.

#### Availability:

The communication object is displayed if the following configuration was made:

- Parameter “Status of current controller mode” (“Temperature control” parameter card)

- Setting: “enable”

### Temperature control 1, collective status (RTSM)

No.	Object name	Function	Datapoint type	Flags
413	Temperature control 1, collective status (RTSM)	8-bit status	21.107 combined status RTSM	CRT

#### Function:

This object is used to report various status information of the controller.

The following bits are supported and have the meanings below:

- Bit 0: Window status, 0 = window closed, 1 = window open
- Bit 1: Presence status; 0 = no presence, 1 = presence
- Bit 3: Comfort extension status; 0 = not active, 1 = active
- Bit 4: Room operating mode status 0 = automatic operation, 1 = manual operation
- Bit 5: reserved
- Bit 6: reserved
- Bit 7: reserved
- Bit 8: reserved

#### Note:

Behavior as per description in the KNX manual, DPT 21.107

#### Availability:

The communication object is displayed if the following configuration was made:

- Parameter: “Collective status (RTSM)” (“Temperature control” parameter card)
  - Setting: “enable”

### Temperature control 1, collective status (RTC)

No.	Object name	Function	Datapoint type	Flags
414	Temperature control 1, collective status (RTC)	16-bit status	22.103 combined status RTC	CRT

#### Function:

This object is used to report various status information of the controller.

The following bits are supported and have the meanings below:

- Bit 0: General error information; 0 =no error, 1 =error
- Bit 1: Controller operating mode status; 0 = cooling, 1 = heating
- Bit 2 Dew point alarm status, 0 = no alarm, 1 = alarm
- Bit 3: Frost alarm status; 0 = no alarm, 1 = alarm
- Bit 4: Heat alarm status; 0 = no alarm / 1 = alarm
- Bit 5: Control inactive; 0 = false, 1 = true
- Bit 6: Sequence 2; 0 = inactive, 1 = active
- Bit 7: Heating mode enabled; 0 = false, 1 = true
- Bit 8: Cooling mode enabled; 0 = false, 1 = true
- Bit 9 – 15: reserved

#### Note:

Behavior as per description in the KNX manual, DPT 22.103

#### Availability:

The communication object is displayed if the following configuration was made:

- Parameter: “Collective status (RTC)” (“Temperature control” parameter card)
  - Setting: “enable”



**Temperature control 1,  
controller status (Eberle)**

No.	Object name	Function	Datapoint type	Flags
415	Temperature control 1, controller status (Eberle)	8-bit status	-	CRT

**Function:**

This object is used to report various status information of the controller.

The following bits are supported and have the meanings below:

- Bit 0: Comfort mode active; 0 = false, 1 = true
- Bit 1: Pre-comfort mode active; 0 = false, 1 = true
- Bit 2: Power saving mode active; 0 = false, 1 = true
- Bit 3: Protection mode active; 0 = false, 1 = true
- Bit 4: Dew point alarm active; 0 = false, 1 = true
- Bit 5: Controller operating mode; 0 = cooling, 1 = heating
- Bit 6: Controller status; 0 = active, 1 = inactive
- Bit 7: Frost alarm status; 0 = no alarm, 1 = alarm

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter: "Controller status (Eberle)" ("Temperature control" parameter card)
  - Setting: "enable"

**Temperature control 1,  
controller status (RHCC)**

No.	Object name	Function	Datapoint type	Flags
416	Temperature control 1, controller status (RHCC)	16-bit status	22.101 RHCC status	CRT

**Function:**

This object is used to report various status information of the controller.

The following bits are supported and have the meanings below:

- Bit 0: General error information; 0 = no error, 1 = error
- Bit 8: Controller operating mode; 0 = cooling, 1 = heating
- Bit 12: Dew point alarm status, 0 = no alarm, 1 = alarm
- Bit 13: Frost alarm status
- Bit 14: Excess temperature/heat alarm status
- Bit 15: reserved

**Note:**

Behavior as per description in the KNX manual, DPT 22.101

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter: "Controller status (RHCC)" ("Temperature control" parameter card)
  - Setting: "enable"

**Temperature control 1,  
controller status  
(DPT\_HVACContrMode)**

No.	Object name	Function	Datapoint type	Flags
417	Temperature control 1, controller status (DPT_HVACContrMode )	8-bit status	20.105 HVAC control mode	CRT

**Function:**

This object can be used to report different controller statuses.

The following bits are supported and have the meanings below:

- Bit 1: Heating
- Bit 3: Cooling
- Bit 6: Controller off

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter “Controller status (RHCC)” (“Temperature control” parameter card)
  - Setting: “enable”

## 8.7 Logic operations

The thermal drive actuator has 6 independent logic blocks with which different mathematical operations are possible: AND, OR, XOR, TRIGGER, LOCK. The inputs can be linked internally in the device with the status output of the valve control values of a channel or with any KNX communication objects, including external devices. The logic result is sent via a KNX communication object. The data types of the logic inputs and outputs can be selected freely.

A threshold value is defined for the inputs, which converts the analog values to "0" or "1."

### See also

- 📖 Parameters on the "Functions, objects" parameter card [→ 299]
- 📖 Parameters on the "Logic operation 1, [AND, OR, XOR, TRIGGER]" parameter card [→ 300]
- 📖 Parameters on the "Logic operation 1, BLOCK" parameter card [→ 314]
- 📖 Communication objects [→ 330]
- 📖 XR and BLOCK: Result on a logical output [→ 333]

### 8.7.1 Parameters on the "Functions, objects" parameter card



#### Logic operation 1

The parameters are configured in the same way for all logic operations and are therefore only described once for logic operation 1.

Parameter	Settings
Logic operation 1	Deactivated AND OR XOR TRIGGER LOCK

#### Function:

This parameter is used to select the logic operation. The result is set to the bus via the logical output.

The sequence of logic operations is shown in the "Process diagram for [AND, OR, XOR, TRIGGER] [→ 301]."

The process flow of the logic operation LOCK is depicted in the "Process diagram for LOCK [→ 314]."

The following operations are possible:

- AND, OR, XOR:
  - If physical quantities in different data point types are linked at the logical inputs, these physical quantities can be converted into the value "0" and "1" via threshold evaluations.
  - Specific physical quantities of different data point types can be assigned to these binary values at the logical output.
  - A filter function at the logical output can be used to send all value contents "0" or "1" or only the value contents "1" or only the value contents "0."
  - For more information on XOR:  
XOR: Result on a logical output [→ 334]
- TRIGGER:

Irrespective of the value content of the logical inputs ("0" or "1"), the value "1" is always transmitted to the logical output. This value "1" on the logical output can be inverted into the value "0."

If physical quantities in different data point types are linked at the logical inputs, these physical quantities can be converted into the value "0" and "1" via threshold evaluations.

Specific physical quantities of different data point types can be assigned to these binary values at the logical output.

A filter function at the logical output can be used to send all value contents "0" or "1" or only the value contents "1" or only the value contents "0."

- LOCK:

If physical quantities in different data point types are linked at the logical inputs, these physical quantities can be converted into the value "0" and "1" via threshold evaluations.

If the value of the block input is "1," the value of the other logical input is passed on to the logical output.

If the value of the block input is "0," the value is not forwarded from the logical input.

If the communication object of the block input is not linked, no values of the logical input are forwarded to the logical output.

Specific physical quantities of different data point types can be assigned to these binary values at the logical output.

A filter function at the logical output can be used to send all value contents "0" or "1" or only the value contents "1" or only the value contents "0."

For regular normal operation of the channel without an effective filter, after mains voltage recovery, this input must be set to "1."

For more information on LOCK:

LOCK: Result on a logical output [→ 335]

**Other parameter cards:**

If one of the logic operations is enabled, the corresponding parameter card is displayed.

**Communication objects:**

If the parameter is set to "AND," "OR," "XOR" or "TRIGGER" was selected, the following communication objects are displayed:

- "Logic operation 1 input value 1"
- "Logic operation 1 input value [2...6]"
- "Logic operation 1 output value"

If the parameter is set to "LOCK," the following communication object is displayed:

- "Logic operation 1 lock input"
- "Logic operation 1 input value"
- "Logic operation 1 output value"

**More information:**

For "AND," "OR," "XOR" or "TRIGGER:"

- Communication object "Logic operation 1 input value 1" [→ 331]
- Communication object "Logic operation 1 output value" [→ 332]

For "LOCK:"

- Communication object "Logic operation 1 input value" [→ 331]
- Communication object "Logic operation 1 block input" [→ 333]

Process diagrams:

- Process diagram for [AND, OR, XOR, TRIGGER] [→ 301]
- Process diagram for LOCK [→ 314]

## 8.7.2 Parameters on the "Logic operation 1, [AND, OR, XOR, TRIGGER]" parameter card

The “Logic operation 1” parameter card is displayed if the “Logic operation 1” parameter on the “Logic operations” parameter card, “Functions, objects” is set to “AND,” “OR,” “XOR” or “TRIGGER.”

### Process diagram for [AND, OR, XOR, TRIGGER]

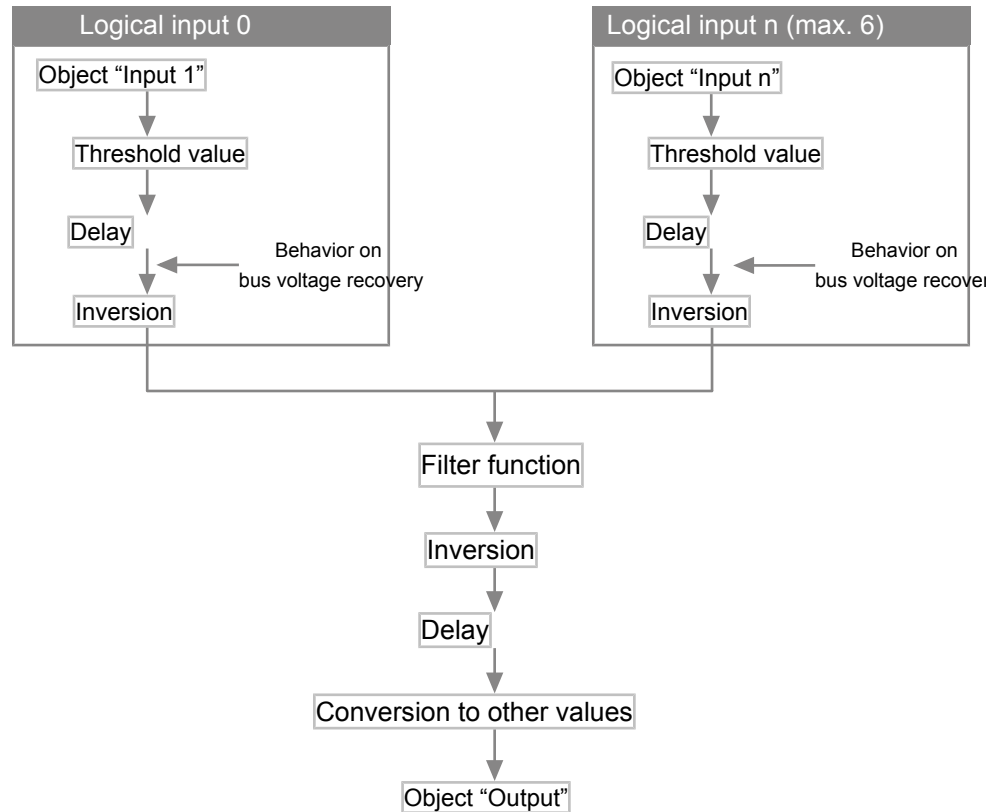


Fig. 50: Process diagram for [AND, OR, XOR, TRIGGER]

#### See also

- 📖 Parameters in the “Logical inputs” section [→ 301]
- 📖 Parameters in the “Logical outputs” section [→ 306]

## 8.7.2.1 Parameters in the “Logical inputs” section

### Logical input count

Parameter	Settings
Logical input count	2...6

#### Function:

This parameter can be used to define how many logical inputs are configured for the logic operation (minimum 2, maximum 6).

#### Communication object:

For each logical input, a communication object "Logic operation 1 input value [number of logical input]" is displayed.

#### More information:

- Communication object “Logic operation 1 input value 1” [→ 331]

### Link input source

Parameter	Settings
Link input source	External object Channel: status control value

#### Function:

This parameter can be used to link the logical inputs either internally with a channel status or link them freely via a communication object.

**The following settings are possible:**

- External object:  
The logical input is freely linked via a communication object.
- Channel: status control value:  
The logical input is internally linked to the channel status (DPT 5/percentage value).

**Other parameters:**

If “External object” is selected, the following parameters are displayed:

- “Data type“  
Depending on how parameter “Data type“ is configured, additional sub-parameters are displayed.
  - “Invert logical input“
  - “Threshold for Off (<=)“
  - “Threshold for On (>=)“
- “ON delay“
- “OFF delay“
- “Initial value of logic input object after bus voltage recovery“

**More information:**

- Parameter “Data type” [→ 303]
- Parameter “Invert logical input” [→ 304]
- Parameter “Threshold for Off ” [→ 305]
- Parameter “Threshold for On” [→ 306]
- Parameter “ON delay” [→ 305]
- Parameter “OFF delay” [→ 305]
- Parameters “Initial value of logic input object after bus voltage recovery” [→ 306]

## Data type

Parameter	Settings
Data type	Switching DPT 1.001 Percentage (%) DPT 5.001 Value (8-bit) DPT 5.010 Signed value (8-bit) DPT 6.010 2-byte unsigned value DPT 7.x Value (16-bit) DPT 7.001 Current (mA) DPT 7.012 Color temperature (K) DPT 7.600 2-byte signed value DPT 8.x Signed value (16-bit) DPT 8.001 2-byte floating point number DPT 9.x Temperature (°C) DPT 9.001 Illuminance (lx) DPT 9.004 Wind speed (m/s) DPT 9.005 Humidity (% r.H.) DPT 9.007 CO2 concentration (ppm) DPT 9.008 Current (mA) DPT 9.021 Power (kW) DPT 9.024 Rain amount (l/m <sup>2</sup> ) DPT 9.026 Temperature (°F) DPT 9.027 Wind speed (km/h) DPT 9.028 4-byte unsigned value DPT 12.x Value (32-bit) DPT 12.001 4-byte signed value DPT 13.x Signed value (32-bit) DPT 13.001 4-byte floating point number DPT 14.x Current (A) DPT 14.019 Energy (J) DPT 14.031 Power (W) DPT 14.056 Speed (m/s) DPT 14.065 Temperature (°C) DPT 14.068

**Function:**

This parameter is used to set the datapoint type for the logical inputs (for the setting “External object”).

**The following settings are possible:**

- Switching DPT 1.001:  
Corresponds to datapoint type “1.001 switch.”
- Percentage (%) DPT 5.001:  
Corresponds to datapoint type “5.001 percentage (0..100%).”
- Value (8-bit) DPT 5.010:  
Corresponds to datapoint type “5.010 counter pulses (0..255).”
- Signed value (8-bit) DPT 6.010:  
Corresponds to datapoint type “7.\* 2-byte unsigned value.”
- 2-byte unsigned value DPT 7.x:  
Corresponds to datapoint type “7.600 absolute colour temperature (K).”
- Value (16-bit) DPT 7.001:  
Corresponds to datapoint type “7.001 pulses.”
- 7.012 current (mA):  
Corresponds to datapoint type “7.012 current (mA).”

- Color temperature (K) DPT 7.600:  
Corresponds to datapoint type “7.600 absolute colour temperature (K).”
- 2-byte signed value DPT 8.x:  
Corresponds to datapoint type “8.\* 2-byte signed value.”
- Signed value (16-bit) DPT 8.001:  
Corresponds to datapoint type “8.001 pulses difference.”
- 2-byte floating point number DPT 9.x:  
Corresponds to datapoint type “9.\* 2-byte float value.”
- Temperature (°C) DPT 9.001:  
Corresponds to datapoint type “9.001 temperature (°C).”
- Illuminance (lx) DPT 9.004:  
Corresponds to datapoint type “9.004 lux (Lux).”
- Wind speed (m/s) DPT 9.005:  
Corresponds to datapoint type “9.005 speed (m/s).”
- Humidity (% r.H.) DPT 9.007:  
Corresponds to datapoint type “9.007 humidity (%).”
- CO2 concentration (ppm) DPT 9.008:  
Corresponds to datapoint type “9.008 parts/million (ppm).”
- Current (mA) DPT 9.021:  
Corresponds to datapoint type “9.021 current (mA).”
- Power (kW) DPT 9.024:  
Corresponds to datapoint type “9.024 power (kW).”
- Rain amount (l/m<sup>2</sup>) DPT 9.026:  
Corresponds to datapoint type “9.026 rain amount (l/m<sup>2</sup>).”
- Temperature (°F) DPT 9.027:  
Corresponds to datapoint type “9.027 temperature (°F).”
- Wind speed (km/h) DPT 9.028:  
Corresponds to datapoint type “9.028 wind speed (km/h).”
- 4-byte unsigned value DPT 12.x:  
Corresponds to datapoint type “12.\* 4-byte unsigned value.”
- Value (32-bit) DPT 12.001:  
Corresponds to datapoint type “12.001 counter pulses (unsigned).”
- 4-byte signed value DPT 13.x:  
Corresponds to datapoint type “13.\* 4-byte signed value.”
- Signed value (32-bit) DPT 13.001:  
Corresponds to datapoint type “13.001 counter pulses (signed).”
- 4-byte floating point number DPT 14.x:  
Corresponds to datapoint type “14.\* 4-byte float value.”
- Current (A) DPT 14.019:  
Corresponds to datapoint type “14.019 electric current (A).”
- Energy (J) DPT 14.031:  
Corresponds to datapoint type “14.031 energy (J).”
- Power (W) DPT 14.056:  
Corresponds to datapoint type “14.056 power (W).”
- Speed (m/s) DPT 14.065:  
Corresponds to datapoint type “14.065 speed (m/s).”
- Temperature (°C) DPT 14.068:  
Corresponds to datapoint type “14.068 temperature (°C).”

### Invert logical input

Parameter	Settings
Invert logical input	No Yes

#### Function:

This parameter is used to define whether the logical input value (communication object “Logic operation 1 input value 1”) is supposed to be inverted in the event of a switching value (DPT 1.001).



**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Data type“
  - Setting: “Switching DPT 1.001“

**More information:**

- Parameter “Data type” [→ 303]
- Communication object “Logic operation 1 input value 1” [→ 331]

**ON delay**

Parameter	Settings
ON delay (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter is used to set the desired ON delay. A configured switch on delay affects the object “Logic operation 1 input value 1” and any logic object assigned to the output and the status control value of the channel (parameter “Link input source”).

If the parameter value is 00:00:00, no delay takes place.

**More information:**

- Parameters “Input source link” [→ 301]

**OFF delay**

Parameter	Settings
OFF delay (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter is used to set the desired OFF delay. A configured switch off delay affects the object “Logic operation 1 input value 1” and any logic object assigned to the output and the status control value of the channel (parameter “LogicalOperation.0.Input.0.SourceETS.Preselection.SE\_TDA\_InternalAssignment\_Preselection-Text-L01”).Link input source“).

If the parameter value is 00:00:00, no delay takes place.

**More information:**

- Parameters “Input source link” [→ 301]

**Link input source**

Parameter	Settings
Link input source	Channel A: Status control value (%) Channel B: Status control value (%) Channel C: Status control value (%) Channel D: Status control value (%) Channel E: Status control value (%) Channel F: Status control value (%)

**Function:**

This parameter can be used to link the logical input internally with a channel status of an actuator channel.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Link input source“
  - Setting: “Channel: status control value“

**More information:**

- Parameters “Input source link” [→ 301]

**Threshold for Off (<=)**

Parameter	Settings
Threshold for Off (<=)	0...100

**Function:**

This parameter determines the threshold for “Off.”

If the value of this communication object is equal to or smaller than the configured threshold for “Off,” then the determined switching value is equal to “Off” (0).

The permitted values for the threshold depend on the selected data type.

**Note:**

If both entered threshold values for “Off” and “On” are equal, then when exactly this value is received this is interpreted as the “threshold for ON.”

If the “threshold for OFF” is configured such that it is greater than the “threshold for ON,” then the higher value is automatically used as the “threshold for ON.”

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Data type“
  - Setting: for all analog datapoint types, except for “Switching DPT 1.001“

**More information:**

- Parameter “Data type” [→ 303]

**Threshold for On (>=)**

Parameter	Settings
Threshold for On (>=)	0...100

**Function:**

This parameter determines the threshold for “On.”

If the value of this communication object is equal to or greater than the configured threshold for “On,” then the determined switching value is equal to “On” (1).

The permitted values for the threshold depend on the selected data type.

**Note:**

If both entered threshold values for “Off” and “On” are equal, then when exactly this value is received this is interpreted as the “threshold for ON.”

If the “threshold for OFF” is configured such that it is greater than the “threshold for ON,” then the higher value is automatically used as the “threshold for ON.”

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Data type“
  - Setting: for all analog datapoint types, except for “Switching DPT 1.001“

**More information:**

- Parameter “Data type” [→ 303]

**Initial value of logic input object after bus voltage recovery**

Parameter	Settings
Initial value of logic input object after bus voltage recovery	Off On As before bus voltage failure

**Function:**

This parameter can be used to set the desired starting value of logic input when bus voltage is recovered.

If the parameter is set to “as before bus voltage failure,” the logical input is set to the value stored when the bus voltage failure took place.

**8.7.2.2 Parameters in the “Logical outputs” section**

## Data type

Parameter	Settings
Data type	Switching DPT 1.001 Percentage (%) DPT 5.001 Value (8-bit) DPT 5.010 Signed value (8-bit) DPT 6.010 2-byte unsigned value DPT 7.x Value (16-bit) DPT 7.001 Current (mA) DPT 7.012 Color temperature (K) DPT 7.600 2-byte signed value DPT 8.x Signed value (16-bit) DPT 8.001 2-byte floating point number DPT 9.x Temperature (°C) DPT 9.001 Illuminance (lx) DPT 9.004 Wind speed (m/s) DPT 9.005 Humidity (% r.H.) DPT 9.007 CO2 concentration (ppm) DPT 9.008 Current (mA) DPT 9.021 Power (kW) DPT 9.024 Rain amount (l/m <sup>2</sup> ) DPT 9.026 Temperature (°F) DPT 9.027 Wind speed (km/h) DPT 9.028 Time of day (d:hh:mm:ss) DPT 10.001 4-byte unsigned value DPT 12.x Value (32-bit) DPT 12.001 4-byte signed value DPT 13.x Signed value (32-bit) DPT 13.001 4-byte floating point number DPT 14.x Current (A) DPT 14.019 Energy (J) DPT 14.031 Power (W) DPT 14.056 Speed (m/s) DPT 14.065 Temperature (°C) DPT 14.068 Text (14 characters ASCII) DPT 16.000 Color (RGB) DPT 232.300 Color (xyY) DPT 242.600

**Function:**

This parameter is used to set the datapoint type for the logical output.

**The following settings are possible:**

- Switching DPT 1.001:  
Corresponds to datapoint type “1.001 switch.”
- Percentage (%) DPT 5.001:  
Corresponds to datapoint type “5.001 percentage (0..100%).”
- Value (8-bit) DPT 5.010:  
Corresponds to datapoint type “5.010 counter pulses (0..255).”
- Signed value (8-bit) DPT 6.010:  
Corresponds to datapoint type “7.\* 2-byte unsigned value.”
- 2-byte unsigned value DPT 7.x:  
Corresponds to datapoint type “7.600 absolute colour temperature (K).”
- Value (16-bit) DPT 7.001:  
Corresponds to datapoint type “7.001 pulses.”

- 7.012 current (mA):  
Corresponds to datapoint type "7.012 current (mA)."
- Color temperature (K) DPT 7.600:  
Corresponds to datapoint type "7.600 absolute colour temperature (K)."
- 2-byte signed value DPT 8.x:  
Corresponds to datapoint type "8.\* 2-byte signed value."
- Signed value (16-bit) DPT 8.001:  
Corresponds to datapoint type "8.001 pulses difference."
- 2-byte floating point number DPT 9.x:  
Corresponds to datapoint type "9.\* 2-byte float value."
- Temperature (°C) DPT 9.001:  
Corresponds to datapoint type "9.001 temperature (°C)."
- Illuminance (lx) DPT 9.004:  
Corresponds to datapoint type "9.004 lux (Lux)."
- Wind speed (m/s) DPT 9.005:  
Corresponds to datapoint type "9.005 speed (m/s)."
- Time of day (d:hh:mm:ss) DPT 10.001  
Corresponds to the datapoint type "10.001 time of day."
- Humidity (% r.H.) DPT 9.007:  
Corresponds to datapoint type "9.007 humidity (%)."
- CO2 concentration (ppm) DPT 9.008:  
Corresponds to datapoint type "9.008 parts/million (ppm)."
- Current (mA) DPT 9.021:  
Corresponds to datapoint type "9.021 current (mA)."
- Power (kW) DPT 9.024:  
Corresponds to datapoint type "9.024 power (kW)."
- Rain amount (l/m<sup>2</sup>) DPT 9.026:  
Corresponds to datapoint type "9.026 rain amount (l/m<sup>2</sup>)."
- Temperature (°F) DPT 9.027:  
Corresponds to datapoint type "9.027 temperature (°F)."
- Wind speed (km/h) DPT 9.028:  
Corresponds to datapoint type "9.028 wind speed (km/h)."
- 4-byte unsigned value DPT 12.x:  
Corresponds to datapoint type "12.\* 4-byte unsigned value."
- Value (32-bit) DPT 12.001:  
Corresponds to datapoint type "12.001 counter pulses (unsigned)."
- 4-byte signed value DPT 13.x:  
Corresponds to datapoint type "13.\* 4-byte signed value."
- Signed value (32-bit) DPT 13.001:  
Corresponds to datapoint type "13.001 counter pulses (signed)."
- 4-byte floating point number DPT 14.x:  
Corresponds to datapoint type "14.\* 4-byte float value."
- Current (A) DPT 14.019:  
Corresponds to datapoint type "14.019 electric current (A)."
- Energy (J) DPT 14.031:  
Corresponds to datapoint type "14.031 energy (J)."
- Power (W) DPT 14.056:  
Corresponds to datapoint type "14.056 power (W)."
- Speed (m/s) DPT 14.065:  
Corresponds to datapoint type "14.065 speed (m/s)."
- Temperature (°C) DPT 14.068:  
Corresponds to datapoint type "14.068 temperature (°C)."
- Text (14 characters ASCII) DPT 16.000  
Corresponds to the datapoint type "16.000 characters (ASCII)."

- Color (RGB) DPT 232.300  
Corresponds to the datapoint type “232.300 RGB value 3x(0..255).”
- Color (xyY) DPT 242.600:  
Corresponds to the datapoint type “242.600 color xyY.”

**Other parameters:**

Depending on the selected parameter setting, different additional parameters matching the setting are also displayed.

**#### Invert output value**

Parameter	Settings
#### Invert output value	No Yes

**Function:**

This parameter can be used to set whether the value of the "Logic operation 1 output value" communication object is to be inverted.

**More information:**

- Communication object “Logic operation 1 output value” [→ 332]

**Delay of output value**

Parameter	Settings
Delay of output value (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter can be used to configure a delay time for sending the "Logical operation 1 output value" communication object.

The pre-set value 00:00:00 means that the communication object is sent immediately.

**More information:**

- Communication object “Logic operation 1 output value” [→ 332]

**Send value at logical output value "0"**

Parameter	Settings
Send value at logical output value "0"	disable enable

**Function:**

This parameter enables the "Logical operation 1 output value" communication object. Additional parameters are used to assign the physical sizes for value content “0” or “1.”

**Other parameters:**

If the parameter is set to “enable” and the parameter “Data type” is not set to “Color (xyY) DPT 242.600,” the following parameter is displayed:

- Value at logical output value "0"

If the parameter is set to “enable” and the parameter “Data type” is set to “Color (xyY) DPT 242.600,” the following parameter is displayed:

- x value at logical output value "0"
- y value at logical output value "0"
- Brightness value at logical output value "0" (%)

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Data type” (in the “Logical output” section)
  - Setting: for all analog datapoint types, except for “Switching DPT 1.001”

**More information:**

- Communication object “Logic operation 1 output value” [→ 332]
- Parameter “Data type” [→ 307]
- Parameter “end value at logical output value “0”” [→ 310]

- Parameter "x value at logical output value "0"" [→ 310]
- Parameter "y value at logical output value "0"" [→ 310]
- Parameter "Brightness value at logical output value "0" (%)" [→ 311]

#### Value at logical output value "0"

Parameter	Settings
Value at logical output value "0"	Additional values depending on the selected data type and its value range

#### Function:

This parameter is used to define which physical value is assigned to the logical "0."

#### Availability:

The parameter is displayed if the following configuration has been made:

- Parameter "Send value at logical output value "0""
  - Setting: "enable"

#### More information:

- Parameter "Data type" [→ 307]
- Parameter "Send value at logical output value "0"" [→ 309]

#### x value at logical output value "0"

#### y value at logical output value "0"

Parameter	Settings
x value at logical output value "0"	0...1
y value at logical output value "0"	

#### Function:

The parameter pair "x value at logical output value "0"" and "y value at logical output value "0"" is used to specify the color value that is sent. The color value is defined using an x and a y value of the CIE standard color space.

The brightness value of the color value is determined using parameter "Brightness value at logical output value "0" (%)."

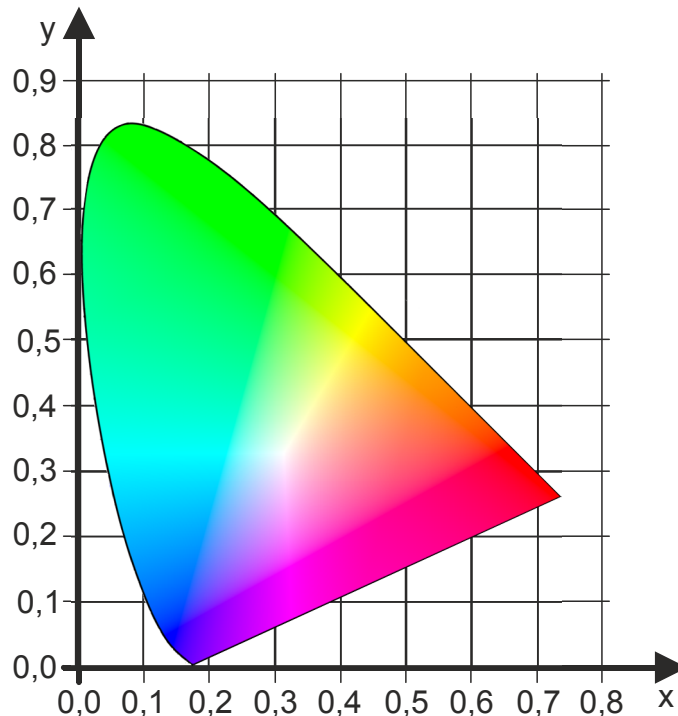


Fig. 51: Coordinate system of the CIE standard color space

#### Availability:

The parameter is displayed if the following configuration has been made:

- Parameter "Data type" (in the "Logical output" section)
  - Setting: "Color (xyY) DPT 242.600"
- Parameter "Send value at logical output value "0""

- Setting: “enable“

**More information:**

- Parameter “Data type” [→ 307]
- Parameter “Send value at logical output value “0”” [→ 309]
- Parameter “Brightness value at logical output value 0” (%)” [→ 311]

**Brightness value at logical output value “0” (%)**

Parameter	Settings
Brightness value at logical output value “0” (%)	0...100

**Function:**

The parameter “Brightness value at logical output value “0” (%)” is used to specify the brightness value of the color value that is sent if the logical output has the value “0.”

The color value is defined using parameters “x value at logical output value “0”” and “y value at logical output value “0”.”

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Data type” (in the “Logical output” section)
  - Setting: “Color (xyY) DPT 242.600“
- Parameter “Send value at logical output value “0””
  - Setting: “enable“

**More information:**

- Parameter “Data type” [→ 307]
- Parameter “Send value at logical output value “0”” [→ 309]
- Parameter “x value at logical output value “0”” [→ 310]
- Parameter “y value at logical output value “0”” [→ 310]

**Send value at logical output value “1”**

Parameter	Settings
Send value at logical output value “1”	disable enable

**Function:**

This parameter is used to define whether the output value is sent if the logical output value is “1.”

**Other parameters:**

If the parameter is set to “enable“ and the parameter “Data type“ is not set to “Color (xyY) DPT 242.600,” the following parameter is displayed:

- x value at logical output value “1”

If the parameter is set to “enable“ and the parameter “Data type“ is set to “Color (xyY) DPT 242.600,” the following parameter is displayed:

- x value at logical output value “1”
- y value at logical output value “1”
- Brightness value at logical output value “1” (%)

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Data type” (in the “Logical output” section)
  - Setting: for all analog datapoint types, except for “Switching DPT 1.001“

**More information:**

- Communication object “Logic operation 1 output value” [→ 332]
- Parameter “Data type” [→ 307]
- Parameter “end value at logical output value “1”” [→ 312]
- Parameter “x value at logical output value “1”” [→ 312]

**Value at logical output value "1"**

- Parameter "y value at logical output value "1"" [→ 312]
- Parameter "Brightness value at logical output value "1" (%)" [→ 313]

Parameter	Settings
Value at logical output value "1"	Additional values depending on the selected data type and its value range

**Function:**

This parameter is used to define which physical value is assigned to the logical "1."

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Send value at logical output value "1"" (in the "Logical output" section)
  - Setting: "enable"

**More information:**

- Parameter "Data type" [→ 307]
- Parameter "Send value at logical output value "1"" [→ 311]

**x value at logical output value "1"****y value at logical output value "1"**

Parameter	Settings
x value at logical output value "1"	0...1
y value at logical output value "1"	

**Function:**

The parameter pair "x value at logical output value "1"" and "y value at logical output value "1"" is used to specify the color value that is sent. The color value is defined using an x and a y value of the CIE standard color space.

The brightness value of the color value is specified using parameter "Brightness value at logical output value "1" (%)."

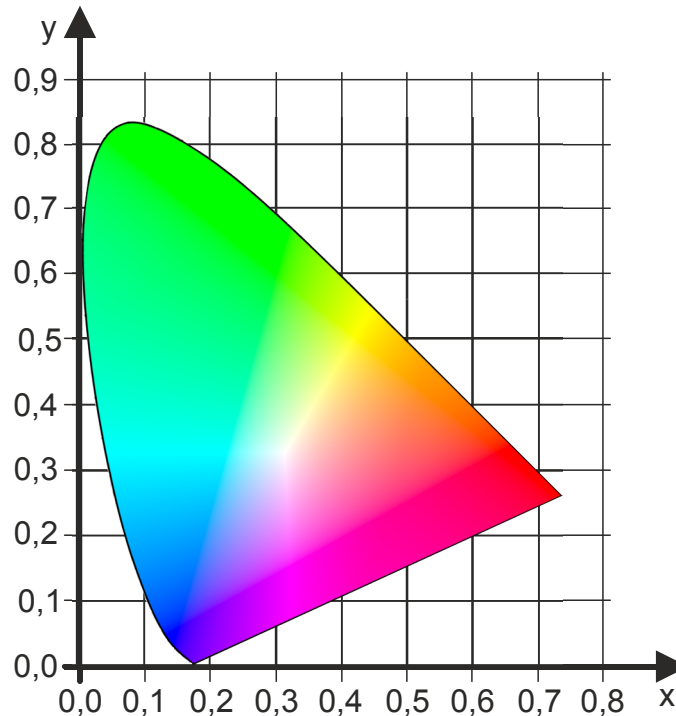


Fig. 52: Coordinate system of the CIE standard color space

**Availability:**

The parameter is displayed if the following configuration has been made:



- Parameter “Data type” (in the “Logical output” section)
  - Setting: “Color (xyY) DPT 242.600”
- Parameter “Send value at logical output value “1”” (in the “Logical output” section)
  - Setting: “enable”

**More information:**

- Parameter “Data type” [→ 307]
- Parameter “Send value at logical output value “1”” [→ 311]
- Parameter “Brightness value at logical output value “1” (%)” [→ 313]

**Brightness value at logical output value “1” (%)**

Parameter	Settings
Brightness value at logical output value “1” (%)	0...100

**Function:**

The parameter “Brightness value at logical output value “1” (%)” is used to specify the brightness value of the color value that is sent if the logical output has the value “1.”

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Data type” (in the “Logical output” section)
  - Setting: “Color (xyY) DPT 242.600”
- Parameter “Send value at logical output value “1”” (in the “Logical output” section)
  - Setting: “enable”

**More information:**

- Parameter “Data type” [→ 307]
- Parameter “Send value at logical output value “1”” [→ 311]
- Parameter “x value at logical output value “1”” [→ 312]
- Parameter “y value at logical output value “1”” [→ 312]

**Filter options**

Parameter	Settings
Filter options	Send On and Off Send only On Send only Off

**Function:**

This parameter is used to define whether both switching values or only the switching value “ON” or “OFF” are sent when the datapoint type “Switching DPT 1.001” is used.

**The following settings are possible:**

- Send On and Off:  
Both switching values “ON” and “OFF” are sent.
- Send only On:  
Only the switching value “ON” is sent.
- Send only Off:  
Only the switching value “OFF” is sent.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Data type” (in the “Logical output” section)
  - Setting: “Switching DPT 1.001”

**More information:**

- Parameter “Data type” [→ 307]

### 8.7.3 Parameters on the “Logic operation 1, BLOCK“ parameter card

The “Logic operation 1” parameter card is displayed if the “Logic operation 1” parameter on the “Logic operations” parameter card, “Functions, objects” is set to “LOCK.”

#### Process diagram for LOCK

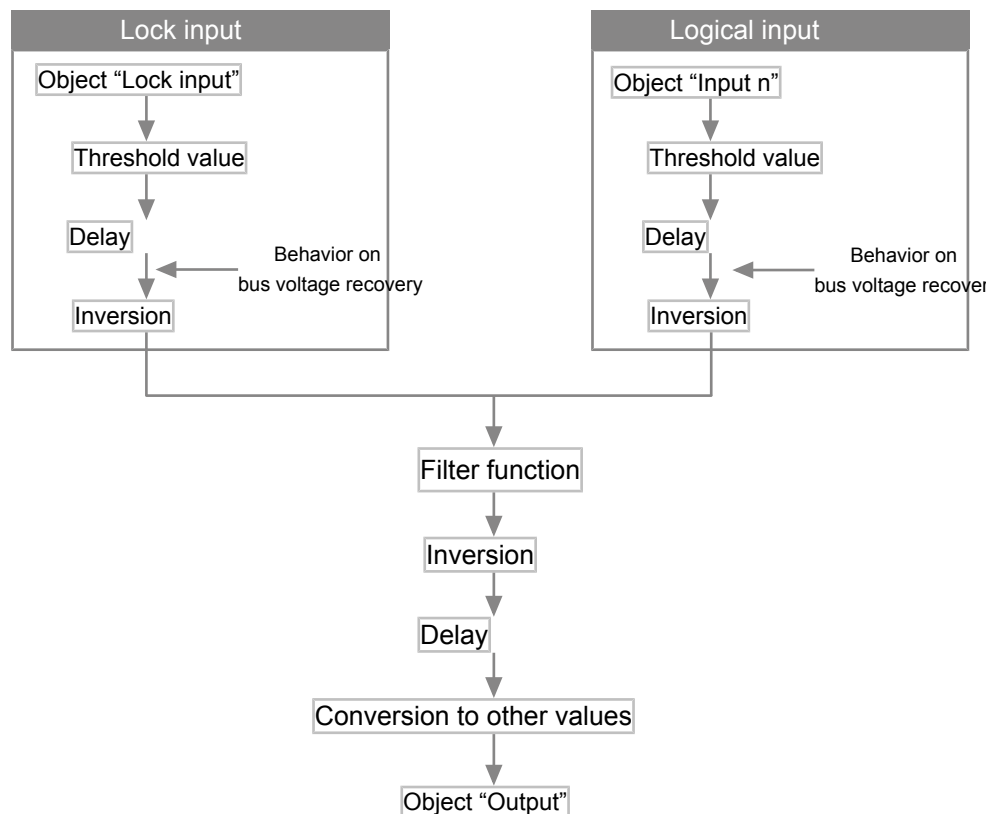


Fig. 53: Process diagram for LOCK

#### See also

- 📖 Parameters in the “Logical inputs” section [→ 314]
- 📖 Parameters in the “Logical output” section [→ 324]

#### 8.7.3.1 Parameters in the “Logical inputs” section

##### Parameter for block input

Link input source

Parameter	Settings
Link input source	External object

##### Function:

This parameter value is fixed to an external communication object for the disable function. The lock can only be switched on and off by a telegram to this object.

##### More information:

- Communication object “Logic operation 1 block input” [→ 333]

## Data type

Parameter	Settings
Data type	Switching DPT 1.001 Percentage (%) DPT 5.001 Value (8-bit) DPT 5.010 Signed value (8-bit) DPT 6.010 2-byte unsigned value DPT 7.x Value (16-bit) DPT 7.001 Current (mA) DPT 7.012 Color temperature (K) DPT 7.600 2-byte signed value DPT 8.x Signed value (16-bit) DPT 8.001 2-byte floating point number DPT 9.x Temperature (°C) DPT 9.001 Illuminance (lx) DPT 9.004 Wind speed (m/s) DPT 9.005 Humidity (% r.H.) DPT 9.007 CO2 concentration (ppm) DPT 9.008 Current (mA) DPT 9.021 Power (kW) DPT 9.024 Rain amount (l/m <sup>2</sup> ) DPT 9.026 Temperature (°F) DPT 9.027 Wind speed (km/h) DPT 9.028 4-byte unsigned value DPT 12.x Value (32-bit) DPT 12.001 4-byte signed value DPT 13.x Signed value (32-bit) DPT 13.001 4-byte floating point number DPT 14.x Current (A) DPT 14.019 Energy (J) DPT 14.031 Power (W) DPT 14.056 Speed (m/s) DPT 14.065 Temperature (°C) DPT 14.068

**Function:**

This parameter is used to set the datapoint type for the block input.

**The following settings are possible:**

- Switching DPT 1.001:  
Corresponds to datapoint type "1.001 switch."
- Percentage (%) DPT 5.001:  
Corresponds to datapoint type "5.001 percentage (0..100%)."
- Value (8-bit) DPT 5.010:  
Corresponds to datapoint type "5.010 counter pulses (0..255)."
- Signed value (8-bit) DPT 6.010:  
Corresponds to datapoint type "7.\* 2-byte unsigned value."
- 2-byte unsigned value DPT 7.x:  
Corresponds to datapoint type "7.600 absolute colour temperature (K)."
- Value (16-bit) DPT 7.001:  
Corresponds to datapoint type "7.001 pulses."
- 7.012 current (mA):  
Corresponds to datapoint type "7.012 current (mA)."
- Color temperature (K) DPT 7.600:  
Corresponds to datapoint type "7.600 absolute colour temperature (K)."

- 2-byte signed value DPT 8.x:  
Corresponds to datapoint type "8.\* 2-byte signed value."
- Signed value (16-bit) DPT 8.001:  
Corresponds to datapoint type "8.001 pulses difference."
- 2-byte floating point number DPT 9.x:  
Corresponds to datapoint type "9.\* 2-byte float value."
- Temperature (°C) DPT 9.001:  
Corresponds to datapoint type "9.001 temperature (°C)."
- Illuminance (lx) DPT 9.004:  
Corresponds to datapoint type "9.004 lux (Lux)."
- Wind speed (m/s) DPT 9.005:  
Corresponds to datapoint type "9.005 speed (m/s)."
- Humidity (% r.H.) DPT 9.007:  
Corresponds to datapoint type "9.007 humidity (%)."
- CO2 concentration (ppm) DPT 9.008:  
Corresponds to datapoint type "9.008 parts/million (ppm)."
- Current (mA) DPT 9.021:  
Corresponds to datapoint type "9.021 current (mA)."
- Power (kW) DPT 9.024:  
Corresponds to datapoint type "9.024 power (kW)."
- Rain amount (l/m<sup>2</sup>) DPT 9.026:  
Corresponds to datapoint type "9.026 rain amount (l/m<sup>2</sup>)."
- Temperature (°F) DPT 9.027:  
Corresponds to datapoint type "9.027 temperature (°F)."
- Wind speed (km/h) DPT 9.028:  
Corresponds to datapoint type "9.028 wind speed (km/h)."
- 4-byte unsigned value DPT 12.x:  
Corresponds to datapoint type "12.\* 4-byte unsigned value."
- Value (32-bit) DPT 12.001:  
Corresponds to datapoint type "12.001 counter pulses (unsigned)."
- 4-byte signed value DPT 13.x:  
Corresponds to datapoint type "13.\* 4-byte signed value."
- Signed value (32-bit) DPT 13.001:  
Corresponds to datapoint type "13.001 counter pulses (signed)."
- 4-byte floating point number DPT 14.x:  
Corresponds to datapoint type "14.\* 4-byte float value."
- Current (A) DPT 14.019:  
Corresponds to datapoint type "14.019 electric current (A)."
- Energy (J) DPT 14.031:  
Corresponds to datapoint type "14.031 energy (J)."
- Power (W) DPT 14.056:  
Corresponds to datapoint type "14.056 power (W)."
- Speed (m/s) DPT 14.065:  
Corresponds to datapoint type "14.065 speed (m/s)."
- Temperature (°C) DPT 14.068:  
Corresponds to datapoint type "14.068 temperature (°C)."

### Invert logical input

Parameter	Settings
Invert logical input	No Yes

#### Function:

This parameter is used to define whether the logical input value of the block input (communication object "Logic operation 1 lock input") is supposed to be inverted in the event of a switching value (DPT 1.001).

#### Availability:

The parameter is displayed if the following configuration has been made:

- Parameter “Data type”
  - Setting: “Switching DPT 1.001“

**More information:**

- Parameter “Data type” [→ 315]
- Communication object “Logic operation 1 block input 1” [→ 333]

**Threshold for Off (<=)**

Parameter	Settings
Threshold for Off (<=)	0...100

**Function:**

This parameter determines the threshold for “Off.”

If the value of this communication object is equal to or smaller than the configured threshold for “Off,” then the determined switching value is equal to “Off” (0).

The permitted values for the threshold depend on the selected data type.

**Note:**

If both entered threshold values for “Off” and “On” are equal, then when exactly this value is received this is interpreted as the “threshold for ON.”

If the “threshold for OFF” is configured such that it is greater than the “threshold for ON,” then the higher value is automatically used as the “threshold for ON.”

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Data type”
  - Setting: for all analog datapoint types, except for “Switching DPT 1.001“

**More information:**

- Parameter “Data type” [→ 315]

**Threshold for On (>=)**

Parameter	Settings
Threshold for On (>=)	0...100

**Function:**

This parameter determines the threshold for “On.”

If the value of this communication object is equal to or greater than the configured threshold for “On,” then the determined switching value is equal to “On” (1).

The permitted values for the threshold depend on the selected data type.

**Note:**

If both entered threshold values for “Off” and “On” are equal, then when exactly this value is received this is interpreted as the “threshold for ON.”

If the “threshold for OFF” is configured such that it is greater than the “threshold for ON,” then the higher value is automatically used as the “threshold for ON.”

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Data type”
  - Setting: for all analog datapoint types, except for “Switching DPT 1.001“

**More information:**

- Parameter “Data type” [→ 315]

**Lock activation delay**

Parameter	Settings
Lock activation delay (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter can be used to configure a delay time for the activation of the block.

The pre-set value 00:00:00 means that switch-on commands are executed immediately.

#### Lock deactivation delay

Parameter	Settings
Lock deactivation delay (hh:mm:ss)	00:00:00 ... 18:12:15

#### Function:

This parameter can be used to configure a delay time for the deactivation of the block.

The pre-set value 00:00:00 means that switch-off commands are executed immediately.

#### Initial value of logic input object after bus voltage recovery

Parameter	Settings
Initial value of logic input object after bus voltage recovery	Off On As before bus voltage failure

#### Function:

This parameter can be used to set the desired starting value of logic input when bus voltage is recovered.

If the parameter is set to "as before bus voltage failure," the block input is set to the value stored when the bus voltage failure took place.

### Parameters for the logical input

#### Link input source

Parameter	Settings
Link input source	External object Channel: status control value

#### Function:

This parameter can be used to link the logical inputs either internally with a channel status or link them freely via a communication object.

#### The following settings are possible:

- External object:  
The logical input is freely linked via a communication object.
- Channel: status control value:  
The logical input is internally linked to the channel status (DPT 5/percentage value).

#### Other parameters:

If "External object" is selected, the following parameters are displayed:

- "Data type"  
Depending on how parameter "Data type" is configured, additional sub-parameters are displayed.
  - "Invert logical input"
  - "Threshold for Off (<=)"
  - "Threshold for On (>=)"
- "ON delay"
- "OFF delay"
- "Initial value of logic input object after bus voltage recovery"

#### More information:

- Parameter "Data type" [→ 320]
- Parameter "Invert logical input" [→ 304]
- Parameter "Threshold for Off" [→ 322]
- Parameter "Threshold for On" [→ 323]
- Parameter "ON delay" [→ 305]

- Parameter “OFF delay” [→ 305]
- Parameters “Initial value of logic input object after bus voltage recovery” [→ 323]

### Link input source

Parameter	Settings
Link input source	Channel A: Status control value (%) Channel B: Status control value (%) Channel C: Status control value (%) Channel D: Status control value (%) Channel E: Status control value (%) Channel F: Status control value (%)

#### Function:

This parameter can be used to link the logical input internally with a channel status of an actuator channel.

#### Availability:

The parameter is displayed if the following configuration has been made:

- Parameter “Link input source”
  - Setting: “Channel: status control value”

#### More information:

- Parameters “Input source link” [→ 318]

## Data type

Parameter	Settings
Data type	Switching DPT 1.001 Percentage (%) DPT 5.001 Value (8-bit) DPT 5.010 Signed value (8-bit) DPT 6.010 2-byte unsigned value DPT 7.x Value (16-bit) DPT 7.001 Current (mA) DPT 7.012 Color temperature (K) DPT 7.600 2-byte signed value DPT 8.x Signed value (16-bit) DPT 8.001 2-byte floating point number DPT 9.x Temperature (°C) DPT 9.001 Illuminance (lx) DPT 9.004 Wind speed (m/s) DPT 9.005 Humidity (% r.H.) DPT 9.007 CO2 concentration (ppm) DPT 9.008 Current (mA) DPT 9.021 Power (kW) DPT 9.024 Rain amount (l/m <sup>2</sup> ) DPT 9.026 Temperature (°F) DPT 9.027 Wind speed (km/h) DPT 9.028 4-byte unsigned value DPT 12.x Value (32-bit) DPT 12.001 4-byte signed value DPT 13.x Signed value (32-bit) DPT 13.001 4-byte floating point number DPT 14.x Current (A) DPT 14.019 Energy (J) DPT 14.031 Power (W) DPT 14.056 Speed (m/s) DPT 14.065 Temperature (°C) DPT 14.068

**Function:**

This parameter is used to set the datapoint type for the logical input (for the setting “External object”).

**The following settings are possible:**

- Switching DPT 1.001:  
Corresponds to datapoint type “1.001 switch.”
- Percentage (%) DPT 5.001:  
Corresponds to datapoint type “5.001 percentage (0..100%).”
- Value (8-bit) DPT 5.010:  
Corresponds to datapoint type “5.010 counter pulses (0..255).”
- Signed value (8-bit) DPT 6.010:  
Corresponds to datapoint type “7.\* 2-byte unsigned value.”
- 2-byte unsigned value DPT 7.x:  
Corresponds to datapoint type “7.600 absolute colour temperature (K).”
- Value (16-bit) DPT 7.001:  
Corresponds to datapoint type “7.001 pulses.”
- 7.012 current (mA):  
Corresponds to datapoint type “7.012 current (mA).”



- Color temperature (K) DPT 7.600:  
Corresponds to datapoint type “7.600 absolute colour temperature (K).”
- 2-byte signed value DPT 8.x:  
Corresponds to datapoint type “8.\* 2-byte signed value.”
- Signed value (16-bit) DPT 8.001:  
Corresponds to datapoint type “8.001 pulses difference.”
- 2-byte floating point number DPT 9.x:  
Corresponds to datapoint type “9.\* 2-byte float value.”
- Temperature (°C) DPT 9.001:  
Corresponds to datapoint type “9.001 temperature (°C).”
- Illuminance (lx) DPT 9.004:  
Corresponds to datapoint type “9.004 lux (Lux).”
- Wind speed (m/s) DPT 9.005:  
Corresponds to datapoint type “9.005 speed (m/s).”
- Humidity (% r.H.) DPT 9.007:  
Corresponds to datapoint type “9.007 humidity (%).”
- CO2 concentration (ppm) DPT 9.008:  
Corresponds to datapoint type “9.008 parts/million (ppm).”
- Current (mA) DPT 9.021:  
Corresponds to datapoint type “9.021 current (mA).”
- Power (kW) DPT 9.024:  
Corresponds to datapoint type “9.024 power (kW).”
- Rain amount (l/m<sup>2</sup>) DPT 9.026:  
Corresponds to datapoint type “9.026 rain amount (l/m<sup>2</sup>).”
- Temperature (°F) DPT 9.027:  
Corresponds to datapoint type “9.027 temperature (°F).”
- Wind speed (km/h) DPT 9.028:  
Corresponds to datapoint type “9.028 wind speed (km/h).”
- 4-byte unsigned value DPT 12.x:  
Corresponds to datapoint type “12.\* 4-byte unsigned value.”
- Value (32-bit) DPT 12.001:  
Corresponds to datapoint type “12.001 counter pulses (unsigned).”
- 4-byte signed value DPT 13.x:  
Corresponds to datapoint type “13.\* 4-byte signed value.”
- Signed value (32-bit) DPT 13.001:  
Corresponds to datapoint type “13.001 counter pulses (signed).”
- 4-byte floating point number DPT 14.x:  
Corresponds to datapoint type “14.\* 4-byte float value.”
- Current (A) DPT 14.019:  
Corresponds to datapoint type “14.019 electric current (A).”
- Energy (J) DPT 14.031:  
Corresponds to datapoint type “14.031 energy (J).”
- Power (W) DPT 14.056:  
Corresponds to datapoint type “14.056 power (W).”
- Speed (m/s) DPT 14.065:  
Corresponds to datapoint type “14.065 speed (m/s).”
- Temperature (°C) DPT 14.068:  
Corresponds to datapoint type “14.068 temperature (°C).”

**Other parameters:**

Depending on the selected parameter setting, different additional parameters matching the setting are also displayed.

**Invert logical input**

Parameter	Settings
Invert logical input	No Yes

**Function:**

This parameter is used to define whether the logical input value (communication object "Logic operation 1 input value") is supposed to be inverted in the event of a switching value (DPT 1.001).

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Data type"
  - Setting: "Switching DPT 1.001"

**More information:**

- Communication object "Logic operation 1 input value" [→ 331]
- Parameter "Data type" [→ 320]

**ON delay**

Parameter	Settings
ON delay (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter is used to set the desired ON delay. A configured switch on delay affects the object "Logic operation 1 input value" and any logic object assigned to the output and the status control value of the channel (parameter "Link input source").

If the parameter value is 00:00:00, no delay takes place.

**More information:**

- Communication object "Logic operation 1 input value" [→ 331]
- Parameters "Input source link" [→ 318]

**OFF delay**

Parameter	Settings
OFF delay (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter is used to set the desired OFF delay. A configured switch off delay affects the object "Logic operation 1 input value" and any logic object assigned to the output and the status control value of the channel (parameter "Link input source").

If the parameter value is 00:00:00, no delay takes place.

**More information:**

- Communication object "Logic operation 1 input value" [→ 331]
- Parameters "Input source link" [→ 318]

**Threshold for Off (<=)**

Parameter	Settings
Threshold for Off (<=)	0...100

**Function:**

This parameter determines the threshold for "Off."

If the value of this communication object is equal to or smaller than the configured threshold for "Off," then the determined switching value is equal to "Off" (0).

The permitted values for the threshold depend on the selected data type.

**Note:**

If both entered threshold values for "Off" and "On" are equal, then when exactly this value is received this is interpreted as the "threshold for ON."

If the "threshold for OFF" is configured such that it is greater than the "threshold for ON," then the higher value is automatically used as the "threshold for ON."

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Data type"
  - Setting: for all analog datapoint types, except for "Switching DPT 1.001"

**More information:**

- Parameter “Data type” [→ 320]

**Threshold for On (>=)**

Parameter	Settings
Threshold for On (>=)	0...100

**Function:**

This parameter determines the threshold for “On.”

If the value of this communication object is equal to or greater than the configured threshold for “On,” then the determined switching value is equal to “On” (1).

The permitted values for the threshold depend on the selected data type.

**Note:**

If both entered threshold values for “Off” and “On” are equal, then when exactly this value is received this is interpreted as the “threshold for ON.”

If the “threshold for OFF” is configured such that it is greater than the “threshold for ON,” then the higher value is automatically used as the “threshold for ON.”

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter “Data type“
  - Setting: for all analog datapoint types, except for “Switching DPT 1.001“

**More information:**

- Parameter “Data type” [→ 320]

**Initial value of logic input object after bus voltage recovery**

Parameter	Settings
Initial value of logic input object after bus voltage recovery	Off On As before bus voltage failure

**Function:**

This parameter can be used to set the desired starting value of logic input when bus voltage is recovered.

If the parameter is set to “as before bus voltage failure,” the logical input is set to the value stored when the bus voltage failure took place.

### 8.7.3.2 Parameters in the “Logical output” section

#### Data type

Parameter	Settings
Data type	Switching DPT 1.001 Percentage (%) DPT 5.001 Value (8-bit) DPT 5.010 Signed value (8-bit) DPT 6.010 2-byte unsigned value DPT 7.x Value (16-bit) DPT 7.001 Current (mA) DPT 7.012 Color temperature (K) DPT 7.600 2-byte signed value DPT 8.x Signed value (16-bit) DPT 8.001 2-byte floating point number DPT 9.x Temperature (°C) DPT 9.001 Illuminance (lx) DPT 9.004 Wind speed (m/s) DPT 9.005 Humidity (% r.H.) DPT 9.007 CO2 concentration (ppm) DPT 9.008 Current (mA) DPT 9.021 Power (kW) DPT 9.024 Rain amount (l/m <sup>2</sup> ) DPT 9.026 Temperature (°F) DPT 9.027 Wind speed (km/h) DPT 9.028 Time of day (d:hh:mm:ss) DPT 10.001 4-byte unsigned value DPT 12.x Value (32-bit) DPT 12.001 4-byte signed value DPT 13.x Signed value (32-bit) DPT 13.001 4-byte floating point number DPT 14.x Current (A) DPT 14.019 Energy (J) DPT 14.031 Power (W) DPT 14.056 Speed (m/s) DPT 14.065 Temperature (°C) DPT 14.068 Text (14 characters ASCII) DPT 16.000 Color (RGB) DPT 232.300 Color (xyY) DPT 242.600

#### Function:

This parameter is used to set the datapoint type for the logical output.

#### The following settings are possible:

- Switching DPT 1.001:  
Corresponds to datapoint type “1.001 switch.”
- Percentage (%) DPT 5.001:  
Corresponds to datapoint type “5.001 percentage (0..100%).”
- Value (8-bit) DPT 5.010:  
Corresponds to datapoint type “5.010 counter pulses (0..255).”
- Signed value (8-bit) DPT 6.010:  
Corresponds to datapoint type “7.\* 2-byte unsigned value.”
- 2-byte unsigned value DPT 7.x:  
Corresponds to datapoint type “7.600 absolute colour temperature (K).”

- Value (16-bit) DPT 7.001:  
Corresponds to datapoint type "7.001 pulses."
- 7.012 current (mA):  
Corresponds to datapoint type "7.012 current (mA)."
- Color temperature (K) DPT 7.600:  
Corresponds to datapoint type "7.600 absolute colour temperature (K)."
- 2-byte signed value DPT 8.x:  
Corresponds to datapoint type "8.\* 2-byte signed value."
- Signed value (16-bit) DPT 8.001:  
Corresponds to datapoint type "8.001 pulses difference."
- 2-byte floating point number DPT 9.x:  
Corresponds to datapoint type "9.\* 2-byte float value."
- Temperature (°C) DPT 9.001:  
Corresponds to datapoint type "9.001 temperature (°C)."
- Illuminance (lx) DPT 9.004:  
Corresponds to datapoint type "9.004 lux (Lux)."
- Wind speed (m/s) DPT 9.005:  
Corresponds to datapoint type "9.005 speed (m/s)."
- Time of day (d:hh:mm:ss) DPT 10.001  
Corresponds to the datapoint type "10.001 time of day."
- Humidity (% r.H.) DPT 9.007:  
Corresponds to datapoint type "9.007 humidity (%)."
- CO2 concentration (ppm) DPT 9.008:  
Corresponds to datapoint type "9.008 parts/million (ppm)."
- Current (mA) DPT 9.021:  
Corresponds to datapoint type "9.021 current (mA)."
- Power (kW) DPT 9.024:  
Corresponds to datapoint type "9.024 power (kW)."
- Rain amount (l/m<sup>2</sup>) DPT 9.026:  
Corresponds to datapoint type "9.026 rain amount (l/m<sup>2</sup>)."
- Temperature (°F) DPT 9.027:  
Corresponds to datapoint type "9.027 temperature (°F)."
- Wind speed (km/h) DPT 9.028:  
Corresponds to datapoint type "9.028 wind speed (km/h)."
- 4-byte unsigned value DPT 12.x:  
Corresponds to datapoint type "12.\* 4-byte unsigned value."
- Value (32-bit) DPT 12.001:  
Corresponds to datapoint type "12.001 counter pulses (unsigned)."
- 4-byte signed value DPT 13.x:  
Corresponds to datapoint type "13.\* 4-byte signed value."
- Signed value (32-bit) DPT 13.001:  
Corresponds to datapoint type "13.001 counter pulses (signed)."
- 4-byte floating point number DPT 14.x:  
Corresponds to datapoint type "14.\* 4-byte float value."
- Current (A) DPT 14.019:  
Corresponds to datapoint type "14.019 electric current (A)."
- Energy (J) DPT 14.031:  
Corresponds to datapoint type "14.031 energy (J)."
- Power (W) DPT 14.056:  
Corresponds to datapoint type "14.056 power (W)."
- Speed (m/s) DPT 14.065:  
Corresponds to datapoint type "14.065 speed (m/s)."
- Temperature (°C) DPT 14.068:  
Corresponds to datapoint type "14.068 temperature (°C)."
- Text (14 characters ASCII) DPT 16.000  
Corresponds to the datapoint type "16.000 characters (ASCII)."

- Color (RGB) DPT 232.300  
Corresponds to the datapoint type "232.300 RGB value 3x(0..255)."
- Color (xyY) DPT 242.600:  
Corresponds to the datapoint type "242.600 color xyY."

**Other parameters:**

Depending on the selected parameter setting, different additional parameters matching the setting are also displayed.

**#### Invert output value**

Parameter	Settings
#### Invert output value	No Yes

**Function:**

This parameter can be used to set whether the value of the "Logic operation 1 output value" communication object is to be inverted.

**More information:**

- Communication object "Logic operation 1 output value" [→ 332]

**Delay of output value**

Parameter	Settings
Delay of output value (hh:mm:ss)	00:00:00 ... 18:12:15

**Function:**

This parameter can be used to configure a delay time for sending the "Logical operation 1 output value" communication object.

The pre-set value 00:00:00 means that the communication object is sent immediately.

**More information:**

- Communication object "Logic operation 1 output value" [→ 332]

**Send value at logical output value "0"**

Parameter	Settings
Send value at logical output value "0"	disable enable

**Function:**

This parameter enables the "Logical operation 1 output value" communication object. Additional parameters are used to assign the physical sizes for value content "0" or "1."

**Other parameters:**

If the parameter is set to "enable" and the parameter "Data type" is not set to "Color (xyY) DPT 242.600," the following parameter is displayed:

- Value at logical output value "0"

If the parameter is set to "enable" and the parameter "Data type" is set to "Color (xyY) DPT 242.600," the following parameter is displayed:

- x value at logical output value "0"
- y value at logical output value "0"
- Brightness value at logical output value "0" (%)

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Data type" (in the "Logical output" section)
  - Setting: for all analog datapoint types, except for "Switching DPT 1.001"

**More information:**

- Communication object "Logic operation 1 output value" [→ 332]
- Parameter "Data type" [→ 324]
- Parameter "end value at logical output value "0"" [→ 327]

- Parameter “x value at logical output value “0”” [→ 327]
- Parameter “y value at logical output value “0””
- Parameter “Brightness value at logical output value 0” (%)” [→ 328]

#### Value at logical output value “0”

Parameter	Settings
Value at logical output value “0”	Additional values depending on the selected data type and its value range

#### Function:

This parameter is used to define which physical value is assigned to the logical “0.”

#### Availability:

The parameter is displayed if the following configuration has been made:

- Parameter “Send value at logical output value “0””
  - Setting: “enable“

#### More information:

- Parameter “Send value at logical output value “0”” [→ 326]

#### x value at logical output value “0”

#### y value at logical output value “0”

Parameter	Settings
x value at logical output value “0”	0...1
y value at logical output value “0”	

#### Function:

The parameter pair “x value at logical output value “0”” and “y value at logical output value “0”” is used to specify the color value that is sent. The color value is defined using an x and a y value of the CIE standard color space.

The brightness value of the color value is determined using parameter “Brightness value at logical output value “0” (%)”.

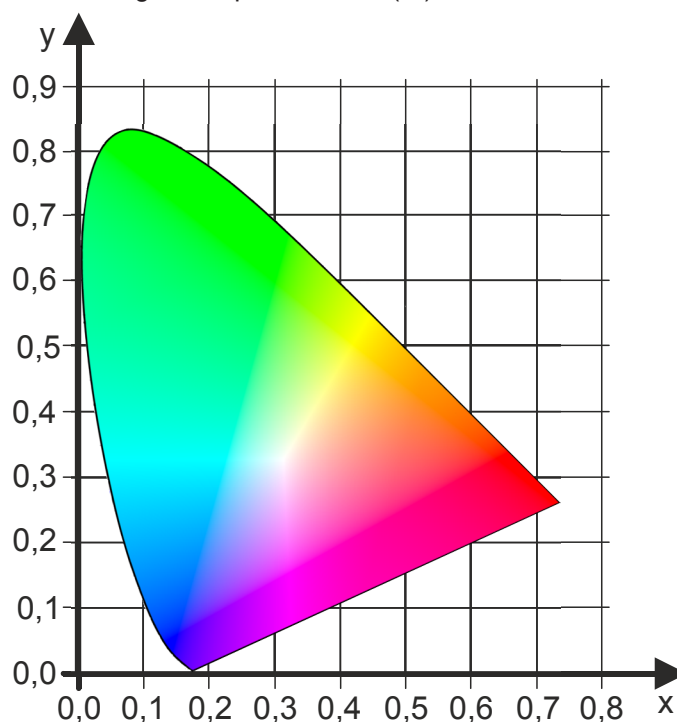


Fig. 54: Coordinate system of the CIE standard color space

#### Availability:

The parameter is displayed if the following configuration has been made:

- Parameter “Data type“ (in the “Logical output” section)
  - Setting: “Color (xyY) DPT 242.600“
- Parameter “Send value at logical output value “0””
  - Setting: “enable“

**Brightness value at logical output value "0" (%)****More information:**

- Parameter "Data type" [→ 324]
- Parameter "Send value at logical output value "0"" [→ 326]

Parameter	Settings
Brightness value at logical output value "0" (%)	0...100

**Function:**

The parameter "Brightness value at logical output value "0" (%)" is used to specify the brightness value of the color value that is sent if the logical output has the value "0."

The color value is defined using parameters "x value at logical output value "0"" and "y value at logical output value "0"."

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Data type" (in the "Logical output" section)
  - Setting: "Color (xyY) DPT 242.600"
- Parameter "Send value at logical output value "0""
  - Setting: "enable"

**More information:**

- Parameter "Data type" [→ 324]
- Parameter "Send value at logical output value "0"" [→ 326]

**Send value at logical output value "1"**

Parameter	Settings
Send value at logical output value "1"	disable enable

**Function:**

This parameter is used to define whether the output value is sent if the logical output value is "1."

**Other parameters:**

If the parameter is set to "enable" and the parameter "Data type" is not set to "Color (xyY) DPT 242.600," the following parameter is displayed:

- x value at logical output value "1"

If the parameter is set to "enable" and the parameter "Data type" is set to "Color (xyY) DPT 242.600," the following parameter is displayed:

- x value at logical output value "1"
- y value at logical output value "1"
- Brightness value at logical output value "1" (%)

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Data type" (in the "Logical output" section)
  - Setting: for all analog datapoint types, except for "Switching DPT 1.001"

**More information:**

- Parameter "Data type" [→ 324]

**Value at logical output value "1"**

Parameter	Settings
Value at logical output value "1"	Additional values depending on the selected data type and its value range

**Function:**

This parameter is used to define which physical value is assigned to the logical "1."

**Availability:**



The parameter is displayed if the following configuration has been made:

- Parameter "Send value at logical output value "1"" (in the "Logical output" section)
  - Setting: "enable"

**More information:**

- Parameter "Data type" [→ 324]
- Parameter "Send value at logical output value "1"" [→ 328]

x value at logical output value "1"  
y value at logical output value "1"

Parameter	Settings
x value at logical output value "1" y value at logical output value "1"	0...1

**Function:**

The parameter pair "x value at logical output value "1"" and "y value at logical output value "1"" is used to specify the color value that is sent. The color value is defined using an x and a y value of the CIE standard color space.

The brightness value of the color value is specified using parameter "Brightness value at logical output value "1" (%)."

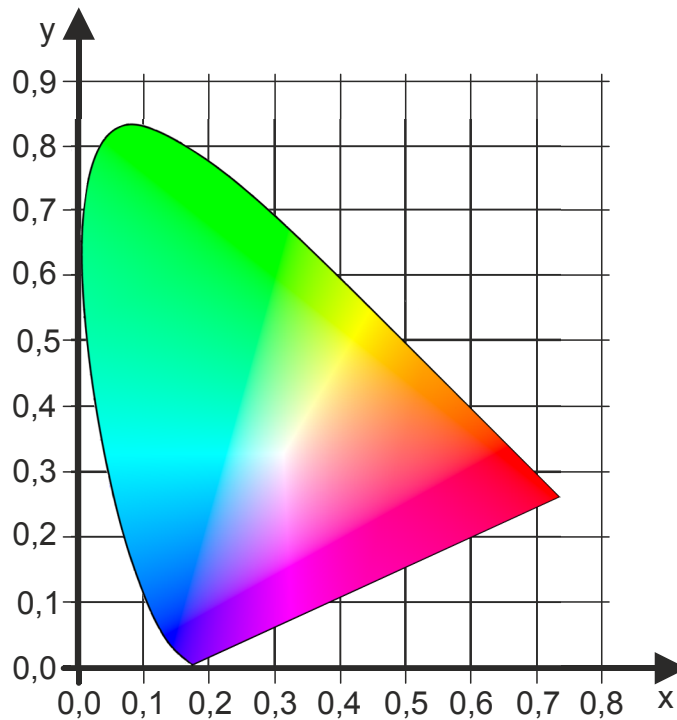


Fig. 55: Coordinate system of the CIE standard color space

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Data type" (in the "Logical output" section)
  - Setting: "Color (xyY) DPT 242.600"
- Parameter "Send value at logical output value "1"" (in the "Logical output" section)
  - Setting: "enable"

**More information:**

- Parameter "Data type" [→ 324]
- Parameter "Send value at logical output value "1"" [→ 328]

Brightness value at logical output value "1" (%)

Parameter	Settings
Brightness value at logical output value "1" (%)	0...100

**Function:**

The parameter "Brightness value at logical output value "1" (%)" is used to specify the brightness value of the color value that is sent if the logical output has the value "1."

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Data type" (in the "Logical output" section)
  - Setting: "Color (xyY) DPT 242.600"
- Parameter "Send value at logical output value "1"" (in the "Logical output" section)
  - Setting: "enable"

**More information:**

- Parameter "Data type" [→ 324]
- Parameter "Send value at logical output value "1"" [→ 328]

**Filter options**

Parameter	Settings
Filter options	Send On and Off Send only On Send only Off

**Function:**

This parameter is used to define whether both switching values or only the switching value "ON" or "OFF" are sent when the datapoint type "Switching DPT 1.001" is used.

**The following settings are possible:**

- Send On and Off:  
Both switching values "ON" and "OFF" are sent.
- Send only On:  
Only the switching value "ON" is sent.
- Send only Off:  
Only the switching value "OFF" is sent.

**Availability:**

The parameter is displayed if the following configuration has been made:

- Parameter "Data type" (in the "Logical output" section)
  - Setting: "Switching DPT 1.001"

**More information:**

- Parameter "Data type" [→ 324]

## 8.7.4 Communication objects



As the communication objects for the 6 override function blocks of the logic operations are the same and only differ in their numbers, the following lists only the communication objects of function block 1. The respective numbers of the communication objects of the other function blocks are shown in the table of all communication objects (Communication objects for logic operations [→ 31]).

Logic operation 1 input value 1

Logic operation 1 input value

No.	Object name	Function	Datapoint type	Flags
977	Logic operation 1 input value 1 (for AND, OR, XOR, TRIGGER)	Value	1.001 switch	CW
977	Logic operation 1 input value (for LOCK)			

**Function:**

This object is used to receive the value content for the input of the logic operation. If the parameter is set to “deactivated,” this object has no function and is therefore not displayed.

**Note:**

After downloading the values from the software to the thermal drive actuator, the logical input has the value that was in the input before the download. After reset and start-up, the logical input has the configured value or the value “0.”

**Availability:**

Communication object “Logic operation 1 input value 1:”

The communication object is displayed if the following configuration was made:

- Parameter “Logic operation 1“
  - Setting: “AND,” “OR,” “XOR“

Communication object “Logic operation 1 input value:”

The communication object is displayed if the following configuration was made:

- Parameter “Logic operation 1“
  - Setting: “LOCK“

## Logic operation 1 output value

No.	Object name	Function	Datapoint type	Flags
983	Logic operation 1 output value	Value	1.001 switch 5.001 percentage (0..100%) 5.010 counter pulses (0..255) 6.010 counter pulses (-128..127) 7.001 pulses 7.012 current (mA) 7.600 absolute colour temperature (K) 7.* 2-byte unsigned value 8.001 pulses difference 8.* 2-byte signed value 9.001 temperature (°C) 9.004 lux (Lux) 9.005 speed (m/s) 9.007 humidity (%) 9.008 parts/million (ppm) 9.021 current (mA) 9.024 power (kW) 9.026 rain amount (l/m <sup>2</sup> ) 9.027 temperature (°F) 9.028 wind speed (km/h) 9.* 2-byte float value 12.001 counter pulses (unsigned) 12.* 4-byte unsigned value 13.001 counter pulses (signed) 13.* 4-byte signed value 14.019 electric current (A) 14.031 energy (J) 14.056 power (W) 14.065 speed (m/s) 14.068 temperature (°C) 14.* 4-byte float value	CRT

**Function:**

This communication object is used to send the result of logic operation 1.

The sequence of logic operations is shown in the "Process diagram for [AND, OR, XOR, TRIGGER] [→ 301]."

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter: "Logic operation 1"
  - Setting not "Deactivated" or "TRIGGER"

## Logic operation 1 lock input

No.	Object name	Function	Datapoint type	Flags
977	Logic operation 1 lock input	Value	1.001 switch 5.001 percentage (0..100%) 5.010 counter pulses (0..255) 6.010 counter pulses (-128..127) 7.001 pulses 7.012 current (mA) 7.600 absolute colour temperature (K) 7.* 2-byte unsigned value 8.001 pulses difference 8.* 2-byte signed value 9.001 temperature (°C) 9.004 lux (Lux) 9.005 speed (m/s) 9.007 humidity (%) 9.008 parts/million (ppm) 9.021 current (mA) 9.024 power (kW) 9.026 rain amount (l/m <sup>2</sup> ) 9.027 temperature (°F) 9.028 wind speed (km/h) 9.* 2-byte float value 12.001 counter pulses (unsigned) 12.* 4-byte unsigned value 13.001 counter pulses (signed) 13.* 4-byte signed value 14.019 electric current (A) 14.031 energy (J) 14.056 power (W) 14.065 speed (m/s) 14.068 temperature (°C) 14.* 4-byte float value	CW

**Function:**

This communication object is used to receive the value of the block input of logic operation 1.

The process flow of the logic operation LOCK is depicted in the “Process diagram for LOCK [→ 314].”

**Availability:**

The communication object is displayed if the following configuration was made:

- Parameter: “Logic operation 1“
  - Setting: “LOCK“

### 8.7.5 XR and BLOCK: Result on a logical output

Result of XOR:

An uneven number of inputs with "1" leads to a "1" at the output.

Input 1	Input 2	Input 3	Input 4	Input 5	Input 6	XOR
0	0	0	0	0	0	FALSE
0	0	0	0	0	1	TRUE
0	0	0	0	1	0	TRUE
0	0	0	0	1	1	FALSE
0	0	0	1	0	0	TRUE
0	0	0	1	0	1	FALSE
0	0	0	1	1	0	FALSE
0	0	0	1	1	1	TRUE
0	0	1	0	0	0	TRUE
0	0	1	0	0	1	FALSE
0	0	1	0	1	0	FALSE
0	0	1	0	1	1	TRUE
0	0	1	1	0	0	FALSE
0	0	1	1	0	1	TRUE
0	0	1	1	1	0	TRUE
0	0	1	1	1	1	FALSE
0	1	0	0	0	0	TRUE
0	1	0	0	0	1	FALSE
0	1	0	0	1	0	FALSE
0	1	0	0	1	1	TRUE
0	1	0	1	0	0	FALSE
0	1	0	1	0	1	TRUE
0	1	0	1	1	0	TRUE
0	1	0	1	1	1	FALSE
0	1	1	0	0	0	FALSE
0	1	1	0	0	1	TRUE
0	1	1	0	1	0	TRUE
0	1	1	0	1	1	FALSE
0	1	1	1	0	0	TRUE
0	1	1	1	0	1	FALSE
0	1	1	1	1	0	FALSE
0	1	1	1	1	1	TRUE
1	0	0	0	0	0	TRUE
1	0	0	0	0	1	FALSE
1	0	0	0	1	0	FALSE
1	0	0	0	1	1	TRUE
1	0	0	1	0	0	FALSE
1	0	0	1	0	1	TRUE
1	0	0	1	1	0	TRUE
1	0	0	1	1	1	FALSE
1	0	1	0	0	0	FALSE

Input 1	Input 2	Input 3	Input 4	Input 5	Input 6	XOR
1	0	1	0	0	1	TRUE
1	0	1	0	1	0	TRUE
1	0	1	0	1	1	FALSE
1	0	1	1	0	0	TRUE
1	0	1	1	0	1	FALSE
1	0	1	1	1	0	FALSE
1	0	1	1	1	1	TRUE
1	1	0	0	0	0	FALSE
1	1	0	0	0	1	TRUE
1	1	0	0	1	0	TRUE
1	1	0	0	1	1	FALSE
1	1	0	1	0	0	TRUE
1	1	0	1	0	1	FALSE
1	1	0	1	1	0	FALSE
1	1	0	1	1	1	TRUE
1	1	1	0	0	0	TRUE
1	1	1	0	0	1	FALSE
1	1	1	0	1	0	FALSE
1	1	1	0	1	1	TRUE
1	1	1	1	0	0	FALSE
1	1	1	1	0	1	TRUE
1	1	1	1	1	0	TRUE
1	1	1	1	1	1	FALSE

Table 8: XOR: Result on a logical output

Result of LOCK:

Block input	Logical input	Result
0	0	Output blocked (no change)
0	1	Output blocked (no change)
1	0	0
1	1	1

Table 9: LOCK: Result on a logical output

## 9 Help in case of errors and problems

### 9.1 Frequently asked questions

#### Frequently asked questions

For frequently asked questions about the product and their solutions, see:

<https://support.industry.siemens.com/cs/products?dtp=faq&mf=ps&lc=en-VW>



### 9.2 Troubleshooting using ETS

The ETS offers the following error analysis options, among others:

#### **'Diagnostics' section**

In this area, the physical addresses, the group monitor and the bus monitor can be checked, among others.

#### **'Reports' area:**

In this area, details on the various areas of the project can be exported as a file or printed directly.



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For more information on ETS, see the online help of the ETS software.

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Issued by  
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Smart Infrastructure  
Global Headquarters  
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+41 58 724 2424  
[www.siemens.com/buildingtechnologies](http://www.siemens.com/buildingtechnologies)