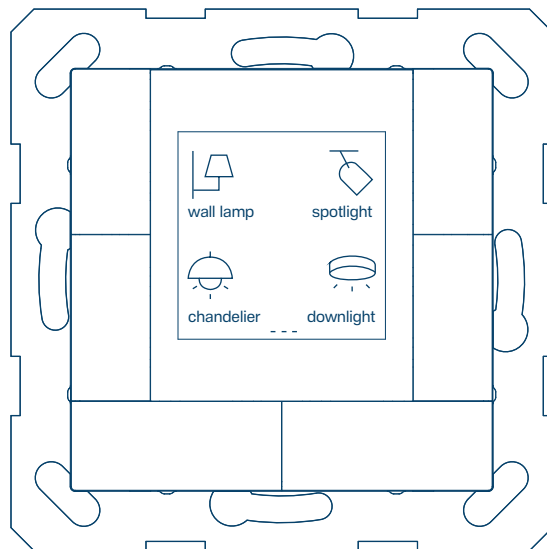


# KNX building automation system Room controller



Room controller KNX Secure, TFT, with integrated bus coupling unit

**WAK5010xx**



Product overview

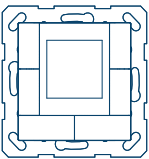
	Order number	Product designation	Application programme	TP product Radio product
	WAK5010WM	Room controller with integrated bus coupler, KNX Secure, matt white	SWAK5010	TP product
	WAK5010BM	Room controller with integrated bus coupler, KNX Secure, matt black	SWAK5010	TP product

Table 1: Product overview

We reserve the right to make changes of a technical nature.

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## Document Contents

This document describes the configuration and commissioning of the KNX push-buttons listed in the product overview (Tab. 1), as well as tips for using the KNX application software. It does not contain information or instructions on the mounting and installation of the devices or on the general principles of KNX programming.



### **Information**

For mounting and installation of the described devices, refer to the relevant manual enclosed with the product or available for download online.

The illustrations and descriptions in this document are for clarification purposes only and may differ from the actual state of the software due to regular product optimisations.

- ▶ For general information on KNX building system technology, see [hager.com](https://www.hager.com)

# 1 Information about programming software

## 1.1 ETS compatibility

The application programmes are compatible with ETS5 or higher and are always available in their latest version on our Internet website.

ETS version	File extension of compatible products	File extension of compatible projects
ETS5	*.knxprod	*.knxproj
ETS6	*.knxprod	*.knxproj

Table 2: ETS compatibility

## 1.2 Application designation

Application	Order number	Product designation
SWAK5010	WAK5010WM	Room controller with integrated bus coupler, KNX Secure, matt white
SWAK5010	WAK5010BM	Room controller with integrated bus coupler, KNX Secure, matt black

Table 3: Application designations

## 2 Function and device description

### 2.1 Device overview

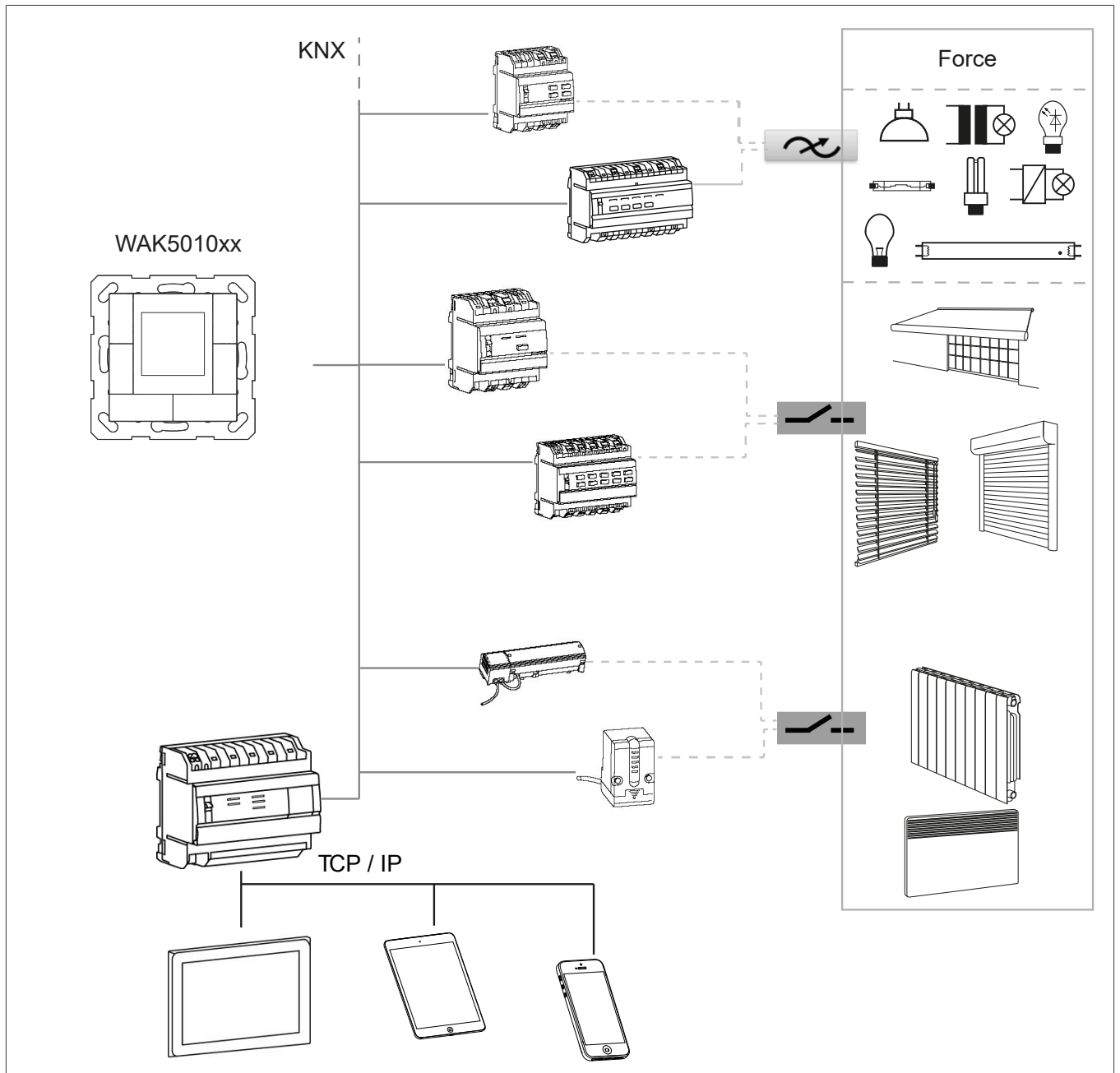


Fig. 1: Device overview

## 2.2 Functional description

The device is a monoblock device with an integrated bus coupling unit and can be used for the following applications.

- Push button with fixed-configured buttons
- Multifunction thermostat
- Audio control

### **Push button with fixed-configured buttons**

If the fixed-configured buttons function is selected, up to a maximum of 12 buttons can be individually configured in the ETS software. A variety of functions can be assigned to the individual buttons.

Configurable functions, including

- Switching
- Dimming
- Blind
- RGB/RGBW switching/dimming

### **Multifunction thermostat**

When the multifunction thermostat function is selected, several different heating, cooling and ventilation systems can be controlled in parallel, such as

- Floor heating
- Electric heating
- Radiator heating
- Ventilation
- Fan coil units (FCU)
- Variable refrigerant flow (VRF) heating systems
- Valve drives

### **Audio control**

When the audio control function is selected, an audio device can be controlled. The buttons are already defined in the ETS software and do not require any further configuration.

This function is used to control background music playback, e.g. on/off, play/pause, previous/next track, increase/decrease volume, mute, playback modes, track name, artist name, album name etc.

### **Logic functions**

The device supports up to eight logic channels, with each channel supporting up to eight inputs and one logic output.

The following logic functions are available

- AND
- OR
- XOR
- Gate forwarding
- Threshold comparator
- Format conversion
- Delay function
- Stair lighting.

**Scene group function**

The device supports up to eight scene groups. Each group supports up to eight configurable outputs. The following object types are supported:

Data types

- 1 bit
- 1 byte
- 2 byte
- RGB
- RGBW

**Connection options**

The device has a connection terminal on the rear to which binary inputs, dry contacts or an external temperature sensor can be connected.

**2.3 Operation**

The buttons (1..6) on the device can be used as single buttons or rockers (pair of buttons). The device supports up to 12 buttons. For each button, a symbol, text, status indicator etc. can be defined in the ETS software and shown on the display.

**Operating guide**

Triggering of functions and operation of electrical loads takes place via the button and can be set individually for each device.

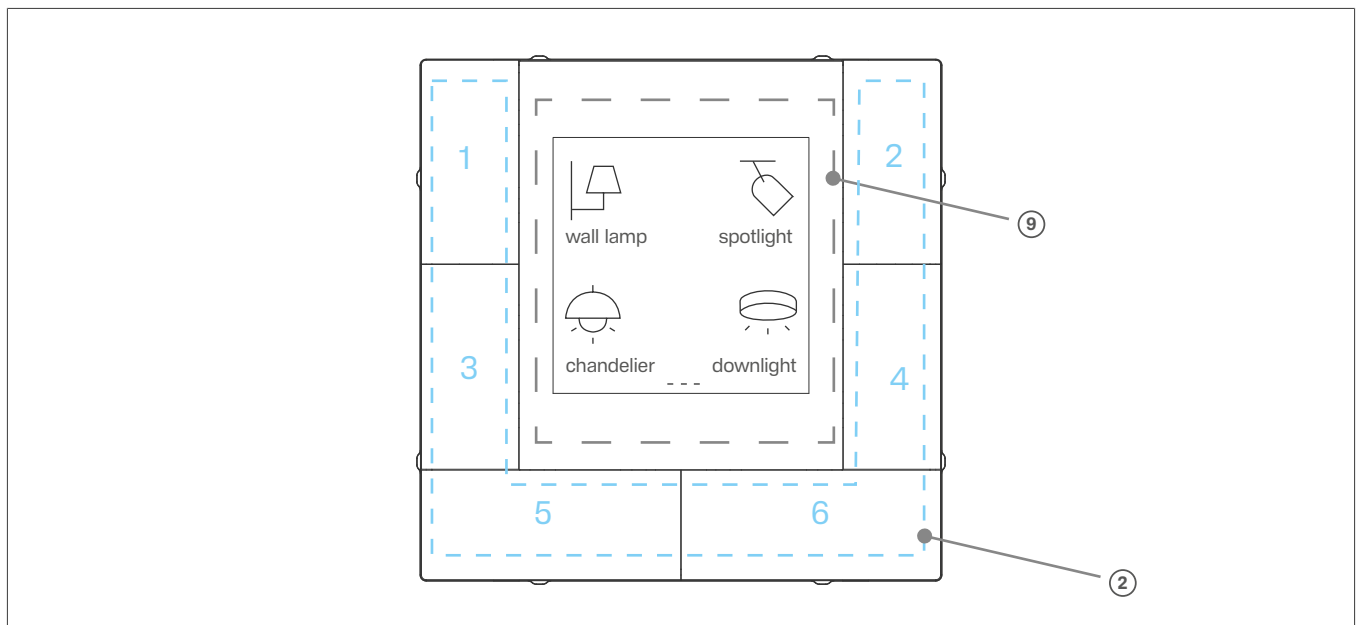


Fig. 2: Push button operation areas

- ② Button(s)
- ⑨ Display area

Operation of the individual button:

- Switching lighting on/off or dimming brighter/darker is carried out alternately by repeated pressing of the same button.



By default, the button(s) are configured in the ETS software to operate individually. This setting can be changed by the system integrator/erection engineer and adapted to the conditions.

Operation as rocker:

- Two opposite buttons form a rocker. For example, touching the left-hand area switches the lighting on/makes it brighter; touching the right-hand area switches it off/makes it darker.

The device differentiates between short and long touches.

Short press operation

- Switching the lighting
- Roller shutter/blind: The device sends the Stop or Slat step command to the bus via the corresponding communication object (slat step).
- Timer: The ON command is transmitted through the Timer object for the time set at the output.

Long press operation

- Dimming the lighting
- Roller shutter/blind: The device sends an Up/Down move command via the bus through the corresponding communication object (move).
- Timer: The OFF command interrupts active timer operation through the Timer object and switches the output off directly.
- Scene: Keep the scene button pressed. The outputs in question flash briefly to confirm that the configurations have been saved.



#### Note

The detection time for a long button press is set at 500 ms by default.

### 2.3.1 Physical addressing

The physical address, group address and setting of the parameters is assigned by the ETS. The device has an integrated bus coupler and a programming button for assigning the physical address. The red programming LED lights up by pressing the programming button. After assignment of the physical address by the ETS, the programming LED goes out.

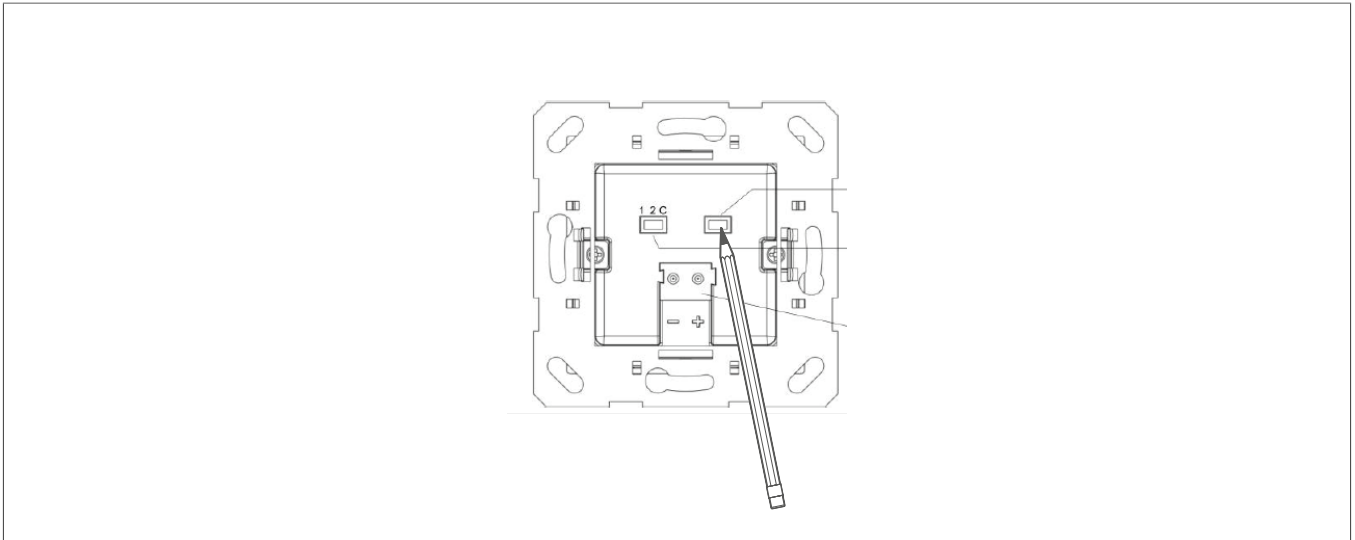


Fig. 3: Rear view of room controller



#### Note

If a device in an existing system is to be programmed, only one device can be in programming mode.

### 3 Parameter settings

#### 3.1 Setting the pages

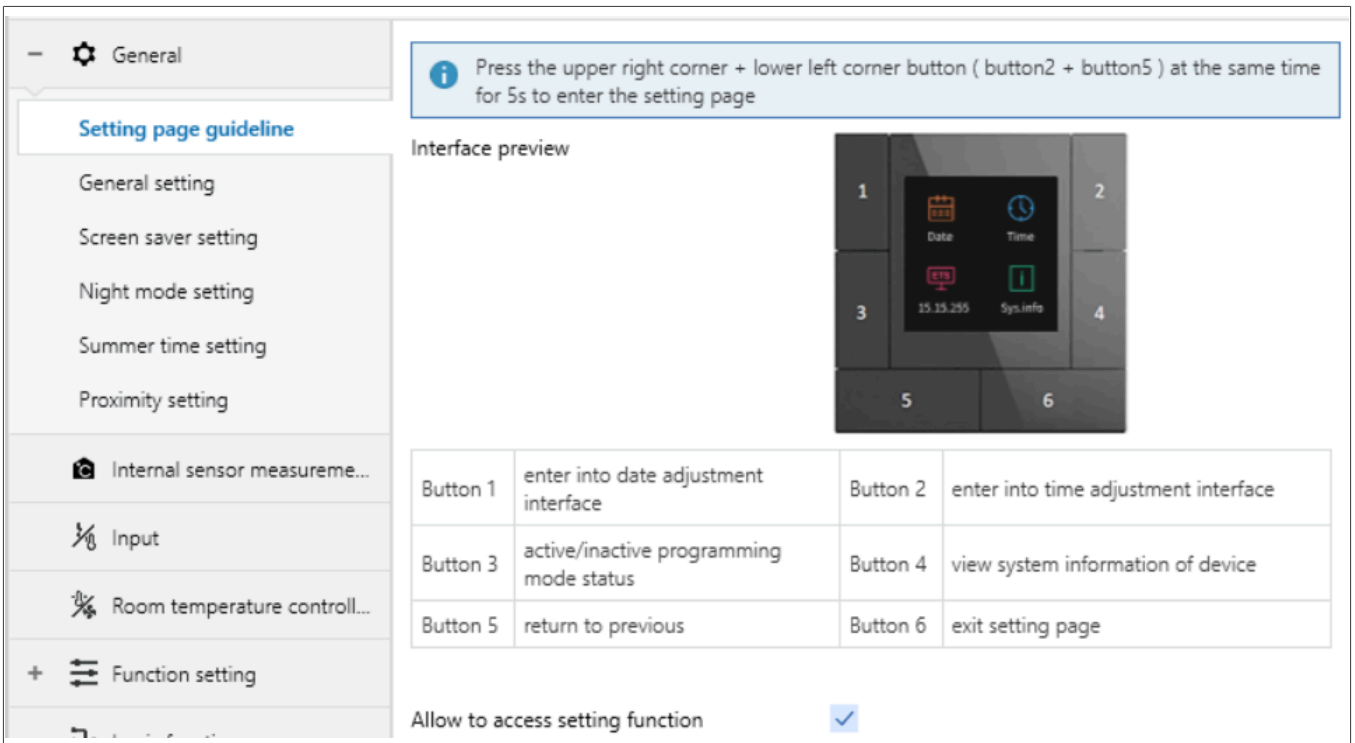


Fig. 4: Settings of the page

This window displays the buttons on the settings page. A detailed description of the user interface can be found from [Chapter 4, Description of the user interface](#) .

#### Allow to call up the function page

Use this parameter to manage access to the **Device Settings** page.

When this option is enabled (checked), the device settings can be accessed by simultaneously pressing buttons 2 + 5.

### 3.1.1 General settings

Fig. 5: General settings

Parameter	Description	Value
Transmission delay after voltage recovery [0..15]	This parameter is used to set the delay time for transmission to the bus after the bus voltage returns.	0 ... <b>5</b> ... 15 s.

Table 4: General settings

Parameter	Description	Value
	The setting does not contain the initialization time of the device. Bus telegrams received during the delay time are recorded.	
In operation, send telegram cyclically [1.. 240, 0=inactive]	This parameter is used to set the time interval during which telegrams are sent cyclically over the bus to indicate that this device is in normal operation. If set to '0', the 'In operation' object does not send a telegram. With a setting other than '0', the 'In operation' object sends a telegram with the logic '1' to the bus according to the set time.  To reduce the bus load as much as possible, the maximum time interval should be selected according to the actual application requirements.	0 ... 240 s; 0 = inactive
The date and time can be changed via the bus	This parameter is used to specify whether the date/time display can be changed via the bus. When this option is enabled, the Date and Time objects are displayed, and the date and time can be changed from the two objects.  The accuracy of the real-time clock in the device is $\pm 10$ ppm.	On <b>Off</b>
Read the status objects after a restart	This parameter is used to set whether a status read message frame is to be sent when the device is started. The transmission interval is set to 100 ms.	On <b>Off</b>
Long key press after [5.. 250]	This parameter is used to set the time from which a long key press is detected.	5 ... 250 * 0,1s

Table 4: General settings

### Display Settings screen

Parameter	Description	Value
Language of the user interface	This parameter defines the language of the display surface, the language displayed on the display.	<b>English</b> German French Portuguese Italian Polish Turkish Greek Swedish
UI topic is	This parameter determines the display of the screen background.  The dark style is similar to dark gray, the light style is similar to white. The exact effect is explained in the Description chapter of the user interface.	<b>Dark view</b> Bright view

Table 5: Display Settings screen

Parameter	Description	Value
Font size (only for the touch sensor function)	This parameter is used to set the font size displayed on the screen to describe the symbol function. The setting applies only to the push-button sensor functions.	<b>Big</b> Small in size

Table 5: Display Settings screen

The following setting for the UTF-8 code page must be set in the ETS.

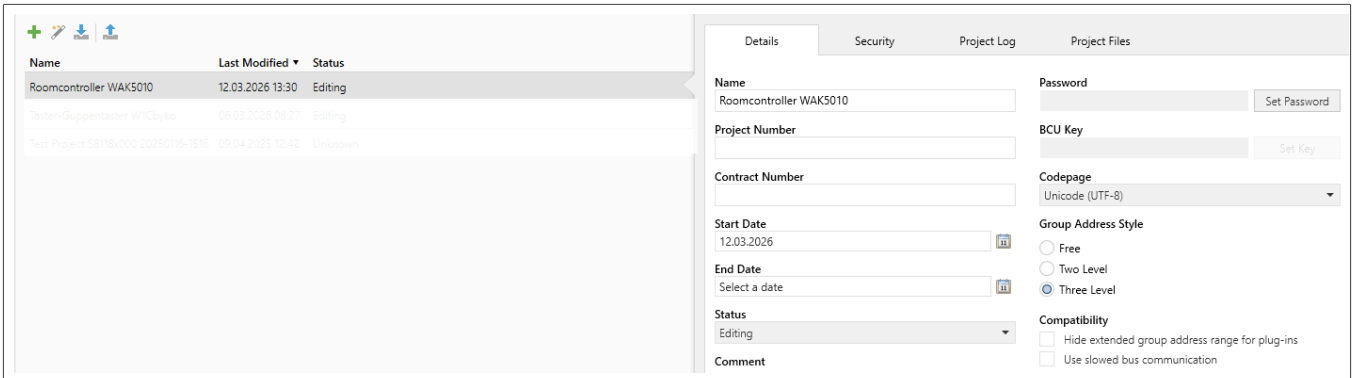


Fig. 6: Setting code page UTF-8

### Enhanced functions

Parameter	Description	Value
Screen saver	If the parameter is activated, the function is activated on the device. The menu and the corresponding items for the screen saver become visible and can be adjusted.	On <b>Off</b>
Night mode	If the parameter is activated, the function is activated on the device. The menu and the corresponding objects for the night mode are visible and can be adjusted.	On <b>Off</b>
Proximity sensor	If the parameter is activated, the function is activated on the device. The menu and corresponding objects for the proximity sensor are visible and can be adjusted.	On <b>Off</b>
Alarm function	If the parameter is activated, the function is activated on the device. The menu and the corresponding objects for the alarm are visible and can be adjusted.	On <b>Off</b>
Lock the touchpad function	This parameter is used to lock the operation on the device and the display, or to unlock the same function.	<b>Lock</b> Unlock=1/Lock=0 Unlock=1/Lock=0
Wake-up using the control or proximity sensor when the screen is off and locked <sup>[1]</sup>	This parameter is used to determine whether the device can be activated by pressing a button or proximity sensor when the screen is off and locked.	On <b>Off</b>
Send additional scene value when locked during the day <sup>[1]</sup>	This parameter is used to set whether the command to send the extended scene should be activated when locked. If it is enabled, you can set the scene number and scene object.	On <b>Off</b>
Send additional scene value when locked at night <sup>[1]</sup>	When night mode is enabled, the scene numbers for day and night can be configured independently.	
Scene No. <sup>[2]</sup>	The additional broadcast scene must be set here	<b>Scene No. 1</b> . . . Scene No. 63

Table 6: Enhanced functions

[1] This parameter becomes visible when the value Unlock=1/Lock=0 or Unlock=1/Lock=0 is selected under Lock Touch Pad Function.

[2] This parameter becomes visible when the Send additional scene value parameter is activated.

### Brightness setting

Parameter	Description	Value
Brightness screen in normal mode	This parameter is used to adjust the screen brightness in normal or day mode. When enabled, the user can change the brightness using the <b>Screen Brightness</b> object. In the event of a power failure or when exiting day mode, the new brightness value is saved.	20 ... <b>80</b> ... 100%
Brightness of the screen in night mode	This parameter is visible when night mode is enabled. Here you can set the screen brightness for night mode. The brightness can be changed using the <b>Screen Brightness</b> object. In the event of a power failure or when leaving night mode, the new brightness value is saved. If 'unchanged' is selected, the brightness remains at the brightness of the day mode, the user can only temporarily change the brightness via the object. In the event of a power failure or leaving night mode, the new brightness value is not saved.	20 ... <b>30</b> ... 100%
Display brightness can be changed via bus	This parameter is used to set whether the screen brightness can be changed via the bus. If this option is enabled, the Screen Brightness object is displayed. It is only used to change the brightness of the current status. For example, if Day Mode is currently active, only the brightness settings in Day Mode are updated. The brightness of the screen saver cannot be changed using this object.	On <b>Off</b>
Off delay for screen at day [0.. 255]	This parameter is used to set the delay time after which the screen turns off when inactive.	0 ... <b>30</b> ... 255 s. <small>If the value is 0, there is a 'Screen On/Off' object to control the on/off of the screen via the bus.</small>
Screen off delay at night [0.. 200]	This parameter is used to set the delay time after which the screen is switched off when inactive or the screen saver is activated.	0 ... <b>30</b> ... 200 s. <small>If the value is 0, there is a 'Screen On/Off' object to control the on/off of the screen via the bus.</small>
Run button command when screen is off	This parameter is used to determine whether the button command is executed when the screen is off. If this function is deactivated, the first press of a button causes the device to 'wake up' and a new press of a button will execute the desired function.	<b>On</b> Off
Orientation LED active when screen off	This parameter is used to set the orientation LED when the screen is off, which is used to indicate the position of the device.	Lock Active only in night mode <small>If night mode is disabled, 'Enable in night mode only' is not displayed.</small> Always active
LED brightness	Here, the brightness LED when the screen is off is set as the orientation LED	10 ... 100%

Table 7: Brightness setting

### 3.1.2 Settings screen saver



These settings are not visible until the corresponding check mark is set in General Settings.

The screenshot shows the 'Screen saver setting' configuration page. The left sidebar contains a menu with the following items: General, Setting page guideline, General setting, **Screen saver setting** (highlighted), Night mode setting, Summer time setting, Proximity setting, Internal sensor measureme..., Input, Room temperature controll..., Function setting, Logic function, and Scene Group function. The main content area displays the following settings:

- Screen brightness in screen saver: 50 %
- Delay time for normal to screen saver [5..255]: 10 s
- Date display format in screen saver:  yyyy/mm/dd  dd/mm/yyyy
- Button command execute in screen saver:
- Items 1 display function: CO2
- Function icon: CO2
- Colour for icon: Foreground
- Items 2 display function: CO2
- Function icon: CO2
- Colour for icon: Foreground
- Time period for request external sensor [0..255]: 0 min
- Object datatype of display CO2:  Value in ppm(DPT\_7.001)  Float value in ppm(DPT\_9.008)
- Object datatype of display VOC:  Value in ug/m3(DPT\_7.001)  Float value in ug/m3(DPT\_9.030)
- Object datatype of display brightness:  Brightness in lux(DPT\_7.013)  Float value in lux(DPT\_9.004)
- Object datatype of display wind speed:  Value in m/s(DPT\_9.005)  Float value in km/h(DPT\_9.028)

Fig. 7: Settings screen saver

Parameter	Description	Value
Screen saver bright-ness	This parameter is used to adjust the screen brightness in the screen saver.	20 ... <b>50</b> ... 100%
Screen saver delay time [5.. 255]	This parameter is used to set the delay time for the normal mode to the screen saver.	5 ... <b>10</b> ... 255 s.
Date format in the screen saver	This parameter is used to set the date display format in the screen saver.	yyyy/mm/dd <b>dd/mm/yyyy</b>
Execute key command when screen saver is active	This parameter is used to determine whether the button command is executed in the screen saver.	On <b>Off</b>

Parameter	Description	Value
	If this function is deactivated, the first press of a button causes the device to 'wake up' and a new press of a button will execute the desired function.	
Elements display function 1 & 2	This parameter is used to set the information that can be displayed in the screen saver. A maximum of 2 items can be selected.	None <b>Int.. Temperature</b> <b>Int.. Moisture</b> Ext. Temperature Ext. Humidity VOC CO2 Brightness Wind speed
The following parameters are not visible when None is selected.		
Function 1 & 2 symbol	This icon is visible on the screen when selected. The standard symbols for the functions and the symbols for the options are described in the appendix, see Chapter 8.1.	
Symbol color 1 & 2	This parameter determines the color of the icon.	<b>Foreground</b> Red . . Individual color 1 ... 5
Cycle time when reading the external sensor [0.. 255]	This parameter is used to set the time period during which the device sends a request to the external sensor to read the value. A value of 0 does not send a cyclic request.	0 ... 255 min
Object data type of value display CO2	This parameter is used to set the object data type of the CO2 display.	Value in ppm (DPT_7,001) <b>Floating point value in ppm (DPT_9,008)</b>
Object data type of value display VOC	This parameter is used to set the object data type of the VOC display.	<b>Value in µg/m3 (DPT_7,001)</b> Floating point value in µg/m3 (DPT_9030)
Object Data type of value display brightness	This parameter is used to set the object data type for display brightness.	Brightness in Lux (DPT_7,013) <b>Flow value in Lux (DPT_9,004)</b>
Object data type on value display wind speed	This parameter is used to set the object data type for displaying the wind speed.	<b>Value in m/s (DPT_9,005)</b> Flow value in km/h (DPT_9,028)

### 3.1.3 Settings night mode



These settings are not visible until the corresponding check mark is set in General Settings.

General

Setting page guideline

General setting

Screen saver setting

**Night mode setting**

Polarity of normal/night mode  Normal=1/Night=0  Normal=0/Night=1

Switchover normal/night mode Via object

Note: Default to normal mode if no response when request after startup

Fig. 8: Setting night mode **above object**

General

Setting page guideline

General setting

Screen saver setting

**Night mode setting**

Polarity of normal/night mode  Normal=1/Night=0  Normal=0/Night=1

Switchover normal/night mode Depend to certain time

Note: Default to normal mode if no response when request after startup


Time for switch to night at 18:00 hh:mm

Time for switch to normal(day) at 06:00 hh:mm

Fig. 9: Setting night mode **at a specific time**

Fig. 10: Setting night mode at sunrise/sunset

Parameter	Description	Value
Polarity for Normal/Night mode	This parameter is used to set the object value for Normal/Night mode.	Normal=1/night=0 <b>Normal=0/night=1</b>
Switch to Normal/Night mode	This parameter is used to set the mode of switching between normal/day and night mode. When a status change occurs, status telegrams are sent via the 'Night mode' object.	About object <b>At a certain time</b> At sunrise/sunset
About object	Switch status only via object.	
<b>At a certain time</b>	Toggle between normal and night status based on a specific time. For example, switch to night status at 18:30 and to normal status at 6:30:00.	
At sunrise/sunset	Switch between normal and night mode based on sunrise and sunset. The coordinate position of the sunrise and sunset reference point, e.g. Berlin, Germany, must be defined, with the position of Berlin at 52°31' north latitude and 13°24' east longitude.	

 By default, normal mode is enabled if there is no response after startup. This means that the brightness of the screen and the LED status indicator correspond to the normal (day) mode.

Parameter	Description	Value
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When **at a specific time** is selected, the following 2 parameters are displayed that can be used to set the time for entering night mode or normal mode.

Parameter	Description	Value
Time for night mode	This parameter is used to set the time for switching to night mode, with an accuracy of minutes.	00:00 ... <b>18:00</b> ... 23:59 hh:mm
Normal mode time (day)	This parameter is used to set the time for switching to the normal state, to the minute.	00:00 ... <b>6:00</b> ... 23:59 hh:mm

### Setting coordinates

When **Sunrise and Sunset** is selected, the following parameters are displayed to adjust the coordinate position of the sunrise and sunset reference point.

Parameter	Description	Value
Latitude, Longitude, Location setting	Text field for the reference point at sunrise and sunset, e.g. Berlin, Germany	Berlin, Germany
Latitude	Specify whether the sunrise and sunset reference point is at the southern or northern latitude.	<b>North</b> South
Latitude in degrees [0.. 90]	These two parameters for setting the latitude, such as Berlin, which is located at 52°31' north latitude.	0 ... <b>52</b> ... 90°
Latitude in minutes [0.. 59]		0 ... <b>31</b> ... 59'
Longitude	Specify whether the sunrise and sunset base point is on the east or west longitude.	<b>East</b> West
Longitude in degrees [0.. 180]	These two parameters for adjusting the longitude, such as Berlin, which is located at 13°24' east longitude.	0 ... <b>13</b> ... 90°
Longitude in minutes [0.. 59]		0 ... <b>24</b> ... 59'
Time difference to universal time (UTC + ...)	This parameter is used to set the time difference compared to world time.	<b>(UTC +01:00) Amsterdam, Berlin, Bern, Rome, Vienna</b> ....

### Time correction

Switching time for night [-128.. 127]	This parameter is used to set the delay time for switching to night mode after the sunset time has been reached.	-128 ... <b>0</b> ... 127 min
Switching time for day [-128.. 127]	This parameter is used to set the delay time for changing to the day status after the sunrise time has been reached.	-128 ... <b>0</b> ... 127 min
Example:	When <b>night switching time</b> is set to <b>-10 minutes</b> , the unit switches to day mode 10 minutes before sunrise. When <b>Day Switching Time</b> is set to <b>-10 minutes</b> , the unit enters <b>Day Mode</b> 10 minutes after sunrise.	



When daylight saving time is set, sunrise and sunset times are automatically adjusted according to the time interval of daylight saving time. See Section 5.2.5 for details.

Parameter	Description	Value
Parameter	Description	Value

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### 3.1.4 Daylight saving time settings

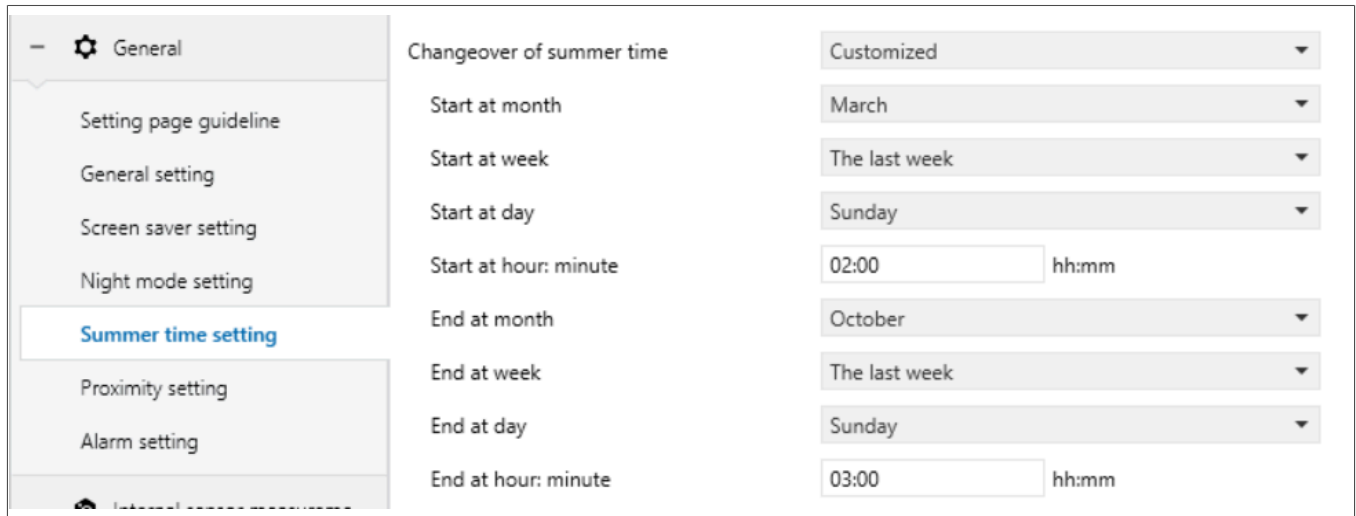


Fig. 11: Daylight saving time settings

Parameter	Description	Value
Change to daylight saving time correction	This parameter is used to set daylight saving time.	<p><b>Not Active - Daylight Saving Time disabled</b></p> <p>Always - Daylight saving time always active</p> <p>Individual - Daylight Saving Time start/end time can be set individually</p>

**If the value Individual is set in the Change to Daylight Saving Time Correction parameter, the following parameters are visible.**

Start in the month	These 4 parameters determine the start time of daylight saving time	January ... <b>March</b> ... December
Start in week		The first week
		...
		<b>The last week</b>
Start the day	<ul style="list-style-type: none"> <li>Day</li> </ul>	Monday ... <b>Sunday</b>
Start at hour:minute	<ul style="list-style-type: none"> <li>Hour:minute</li> </ul>	<b>02:00 hh:mm</b>
End of the month	These 4 parameters determine the end time of daylight saving time	January ... <b>October</b> ... December
End in week		The first week
		...
		<b>The last week</b>
End the day	<ul style="list-style-type: none"> <li>Day</li> </ul>	Monday ... <b>Sunday</b>
Ends at hour:minute	<ul style="list-style-type: none"> <li>Hour:minute</li> </ul>	<b>03:00 hh:mm</b>

Parameter	Description	Value
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If the start and end parameters are set to the same month, week, and day, the configuration is ignored and reset to the default settings. If only the month and week are set to the same value, the configuration is also ignored.

Example: Time change according to EU uniform rule

- Switch to daylight saving time (present 1 h): On the last Sunday of March, the watches will be presented at 02:00 CET to 03:00 CEST.
- Switch to winter time/normal time (reset to 1 h): On the last Sunday of October, the clocks are reset to 02:00 CET at 03:00 CEST.

### 3.1.5 Proximity sensor

 These settings are not visible until the corresponding check mark is set in General Settings.

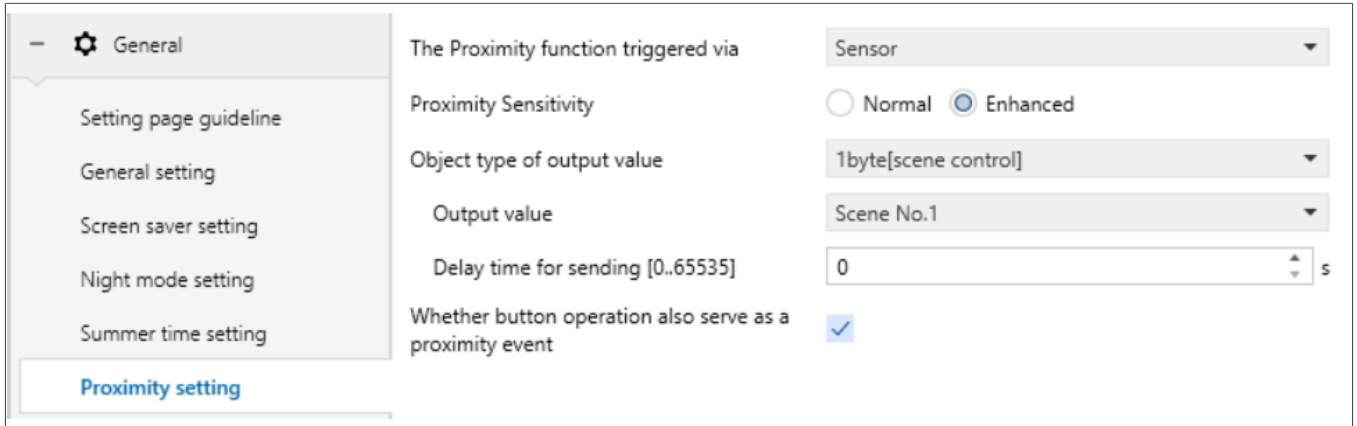


Fig. 12: Proximity sensor

Parameter	Description	Value
Approximation is triggered by	This parameter is used to set how the proximity function is triggered.	<b>Sensor</b> Proximity object Sensor or Proximity Object
If 'Sensor or Proximity Object' is selected, no baseline value is sent when the approximation is triggered via an object.		
The following parameters are visible when 'Sensor' or 'Sensor or Proximity Object' is selected.		
Sensitivity proximity sensor	This parameter is used to set the sensor sensitivity. <b>Normal</b> is about 15 cm, <b>extended</b> is about 30 cm, where an approximation is detected.	<b>Normal</b> Advanced
Object type from the value output	This parameter is used to set the object type of the output value that is sent to the bus when the approximation is triggered.	No reaction <b>1bit[on/off]</b> 1byte[Scene Control] 1byte[0..255] 1byte[0..100%] 2byte[0..65535]
Output value <sup>[1]</sup>	This parameter is used to set the output value that is sent to the bus when approaching/removing. The value range is determined by the data type.	Off <b>On</b>
Send delay [0..65535] <sup>[1]</sup>	This parameter is used to set the delay time for sending telegrams.	<b>0 ... 65535 s</b>
Actuation also serves as an approximation event	This parameter is used to determine whether the key press is also an approximation event. If this option is deactivated, pressing the key is only used to activate the screen or to execute the key function, but not to send an approximation telegram. This is only sent when the proximity sensor is triggered. If this option is activated, the proximity telegram is sent	On <b>Off</b>

Parameter	Description	Value
	by triggering the proximity sensor, but also by pressing the button.	

---

[1] This parameter is not visible if the value **No reaction** is selected for the **object type from the Value output**.

### 3.1.6 Alarm settings

These settings are not visible until the corresponding check mark is set in General Settings.

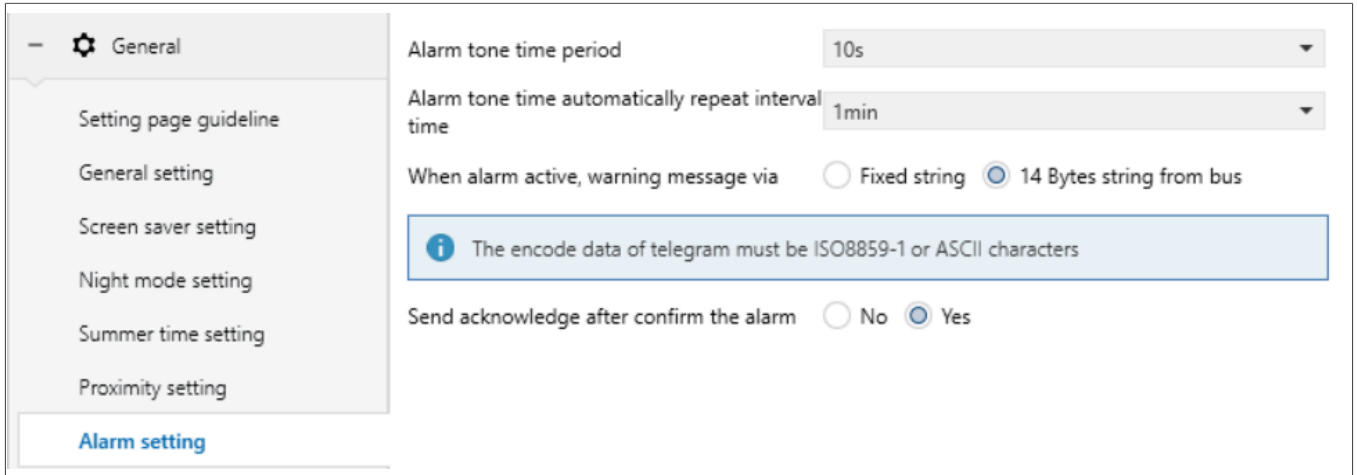


Fig. 13: Alarm settings

Parameter	Description	Value
Alarm tone time period	This parameter is used to set the duration of the alarm tone. When the alarm telegram is received, the alarm tone is played immediately, even if an alarm tone is currently active. This is not interrupted or relocked. If the alarm termination telegram is received during playback, this is immediately interrupted.	Lock - Disables the sound of the alarm. <b>10 s ... 30 min</b> - The selected time indicates the duration of the alarm tone.
Automatic repeat time alarm tone	This parameter is visible when the previous parameter is enabled. Sets the interval at which the alarm tone repeats automatically. The time depends only on when the last playback was stopped.	Lock - Disables the sound of the alarm. <b>10 s ... 1 min ... 30 min</b> - After the playback time has expired, playback is automatically resumed after a delay of the set repeat time.
Warning text in the event of an alarm	When alarm is enabled, this parameter is used to set the input type of the warning message, either by displaying a fixed string entered by ETS on the screen or by receiving a 14-byte string from the bus.	<b>Fixed string</b> 14 bytes string from the bus

The text coding of the telegrams must be ISO8859-1 or ASCII characters.

Warning text (max. 18 characters)	This parameter is visible when the previous Fixed String parameter is selected. Set the text displayed when the alarm is active.	
Send telegram after alarm confirmation	This parameter is used to set whether a 1-bit acknowledgment message frame is to be sent, an action that only needs	<b>Yes</b> No

Parameter	Description	Value
	to be performed when the user presses a key to acknowledge the warning message.	

---

### 3.2 Internal temperature measurement

The configuration and parameterization of the internal temperature measurement is described and displayed in the following parameter window.

Fig. 14: Internal temperature measurement

The following parameters are used for setting the calibration value, sending conditions, and the internal sensor error message. If other functions require the use of the internal sensor, observe the settings listed here.

Parameter	Description	Value
<b>Setting the temperature sensor</b>		
Temperature calibration	This parameter is used to set the temperature calibration value of the internal sensor, i.e., to calibrate the measurement value of the internal sensor in order to adjust it more closely to the current ambient temperature.	-5.0 ... <b>0.0</b> ... +5.0K
<div style="border: 1px solid black; padding: 5px;">  After turning on the appliance, it takes approximately 30 minutes for the internal sensor to stabilize. Therefore, the measured temperature value may be inaccurate at the start of operation.                 </div>		
Temperature emission by variation of	This parameter is used to set whether the current temperature value is to be sent to the bus when a certain temperature value is reached. If deactivated, no transmission occurs.	Lock 0.5K ... <b>1.0K</b> ... 10.0K

Parameter	Description	Value
Send temperature value cyclically [0.. 255, 0=Inactive]	Sets the time for the cyclic transfer of the temperature measured value to the bus. This period is independent and starts counting time after programming is complete or after a reset. A change in the transfer does not affect this period.	0 ... <b>10</b> ... 255 min
Low/high temperature alarm telegram	This parameter is used to set the conditions for sending a telegram in the event of an alarm due to too low or too high temperature.	<b>No answer</b> Answer only after read request Response after change
	<p><b>Answer only after read request:</b> Only when the device receives a read alarm from another bus device or bus, the <b>Low Temperature Alarm/High Temperature Alarm Threshold</b> object sends the alarm status to the bus.</p> <p><b>Responses after change:</b> The <b>Low Temperature Threshold Alarm/High Temperature Threshold</b> object immediately sends a telegram to the bus to report the alarm value when the alarm status has changed.</p>	

The following two parameters are only visible if the value **Response only after read request** or **Response after change** is selected under **Alarm telegram at low/high temperature**.

Threshold for low temperature alarm [0.. 15]	This parameter is used to set the low temperature alarm threshold. If the temperature drops below the lower threshold, the low temperature alarm object sends a telegram.	0...15 °C
High temperature alarm threshold [30.. 45]	This parameter is used to set the threshold value for the high temperature alarm. If the temperature exceeds the high threshold, the high temperature alarm object sends a telegram.	30...45 °C

#### Adjust the humidity sensor

Moisture calibration	This parameter is used to set the value Moisture Calibration of the internal sensor, i.e. to calibrate the measurement value of the internal sensor to adjust it more closely to the current ambient humidity.	-20 ... <b>0</b> ... +20%
Send moisture when changed by [0.. 20]	This parameter is used to set whether the current humidity value should be sent to the bus when a certain humidity value is reached. If the value is 0, nothing is sent.	0 ... <b>5</b> ... 20%
Send humidity cyclically [0.. 255, 0=Inactive]	Sets the time for the cyclical transmission of the moisture reading to the bus. This period is independent and starts measuring time after programming is completed or after a reset. A change in the transfer does not affect this period.	0 ... <b>10</b> ... 255 min
Low/high humidity alarm telegram	This parameter is used to set the conditions for sending a telegram in the event of a low/high humidity alarm.	<b>No answer</b> Answer only after read request Response after change

Parameter	Description	Value
	<p><b>Answer only after read request</b> : Only when the device receives a read alarm from another bus device or bus, the <b>Low Moisture Threshold Alarm/High Moisture Threshold</b> object sends the alarm status to the bus.</p> <p><b>Response after change</b>: The <b>Low Moisture Threshold Alarm/High Moisture Threshold</b> object immediately sends a telegram to the bus to report the alarm value when the alarm status has changed.</p>	

The following two parameters are only visible if the value **Response only after read request** or **Response after change** is selected under **Alarm telegram** for **low/high humidity**.

Threshold value for deep humidity alarm [5.. 20]	This parameter is used to set the threshold value for the low humidity alarm. When the humidity drops below the low threshold, the low humidity alarm object sends a telegram.	5 ... 20 %
High humidity threshold alarm [70.. 85]	This parameter is used to set the high humidity alarm threshold. If the humidity exceeds the high threshold, the object sends a telegram for the high humidity alarm.	70 ... 85%

### 3.3 Input

The device has a plug-in terminal on the back to which the supplied connection cable can be connected. Additional devices such as

- Temperature sensor (recommendation: EK090)
- Potential-free contacts,
- Binary inputs can be connected.



Fig. 15: Input

Parameter	Description	Value
Function of input 1	This parameter is used to set the function of the external input interface. Supports temperature detection and potential-free contacts (BI). The settings page is displayed when the appropriate option is selected. This channel function can also be disabled.	<b>Lock</b>
Function of input 1		Temperature probe (NTC 10K) BI: Shift sensor BI: Scene control BI: Send string (14 bytes)

When the temperature sensor (NTC 10K) is selected, the outside temperature can be detected, for which the B value of the temperature sensor must be set.

When the floating contact (BI) is selected, only the basic functions are supported, including switches, scene send strings (push/release, short/long, send after voltage recovery, deactivation function). The functions of the external input interface are explained separately in the following chapters.

The device has two input contacts. The procedure for parameterizing the function is identical for each input. Therefore, in the following sections, only **input** is spoken of.

### Input - temperature probe

+  General	Description (max 30char.)	<input type="text"/>
+  Internal sensor measureme...	B value of temperature sensor (must refer to the characteristic of component)	3950
-  Input	Temperature calibration	0.0 K
<b>Input 1 - Temperature probe</b>	Send temperature when the result change by	1.0K
+  Room temperature controll...	Cyclically send temperature [0...255]	0 min
+  Function setting	Reply error of sensor measurement	Respond after change
+  Logic function	Object value of error	<input checked="" type="radio"/> 0=no error/1=error <input type="radio"/> 1=no error/0=error
+  Scene Group function	Lower threshold value for error report	0 °C
	Upper threshold value for error report	60 °C

Fig. 16: Input - temperature probe

Parameter	Description	Value
Label (Mach 30 characters)	The temperature sensor can be given any name here. Used for identification on the display Example: Living room floor)	
B Value of the temperature sensor (refers to the characteristic of the sensor)	This parameter is used to adjust the temperature sensor B value.	3275 ... <b>3950</b> ... 4200
<div style="border: 1px solid #0070c0; padding: 5px;"> <p>This value must refer to the feature of the component specified in the user manual. If the selected B value differs from the sensor used, the detection result will be directly affected.</p> </div>		
Temperature calibration	This parameter is used to set the temperature calibration value of the temperature sensor, i.e., to calibrate the measured value of the sensor in order to adjust it more closely to the current ambient temperature.	-5.0K ... <b>0.0K</b> ... +5.0K
Transmit temperature when changed	This parameter is used to set whether the current temperature value is to be sent to the bus when a certain temperature value is reached. If deactivated, no transmission occurs.	Lockdown 0.5K ... <b>1.0K</b> ... 10.0K
Send temperature cyclically [0.. 255]	Sets the time for the cyclic transfer of the temperature measured value to the bus. A value of 0 does not send.	<b>0</b> ... 255 min
Sensor measuring error reports	This parameter is used to set the condition for sending an error status report when the temperature exceeds the valid detection range.	<b>No answer</b> Answer only after read request Response after change
<p><b>Answer only after read request:</b> Only if the device receives a read error from another bus device or bus, the <b>Sensor Measurement Error</b> object sends the error status to the bus.</p>		

Parameter	Description	Value
	<p><b>Responses after change:</b> The <b>sensor measuring error message</b> object immediately sends a telegram to the bus to report the error value if the error status has changed.</p>	
<p>The following parameters are only visible when the value <b>Response only after read request</b> or <b>Response after change</b> is selected under <b>Sensor reporting measurement error</b>.</p>		
Object value error	This parameter is used to define the object value of an error.	<b>0=No error/1=Error</b> 1=No error/0=Error
	<p>0=No error/1=Error: The object value at which no sensor error occurs is 0, and the object value at which a sensor error occurs is 1.</p> <p>1=No error/0=Error: The object value at which no sensor error occurs is 1, and the object value at which a sensor error occurs is 0.</p>	
Lower threshold for error message	This parameter is used to set the upper threshold for the temperature error. If the temperature exceeds the threshold, the temperature error object sends a telegram.	+10 ... 0 ... -20°C
High threshold for error message	This parameter is used to set the low temperature error threshold. If the temperature drops below the threshold, the temperature error object sends a telegram.	+40 ... <b>+60</b> ... 70°C

Send input - shift sensor/scene control/string

+  General	Description (max 30char.)	<input type="text"/>
Internal sensor measureme...	Distinction between short and long operation	<input type="radio"/> No <input checked="" type="radio"/> Yes
-  Input	Long operation after [3..25]	5 <input type="text"/> *0.1s
<b>Input 1 - Switch sensor</b>	Connected contact type	<input checked="" type="radio"/> Normally open <input type="radio"/> Normally closed
Room temperature controll...	Reaction on short operation	ON <input type="text"/>
+  Function setting	Reaction on long operation	OFF <input type="text"/>
Logic function	Number of objects	<input type="radio"/> 1 <input checked="" type="radio"/> 2
	Disable function	Disable=1/Enable=0 <input type="text"/>

Fig. 17: Input - switch sensor

+  General	Description (max 30char.)	<input type="text"/>
Internal sensor measureme...	Distinction between short and long operation	<input checked="" type="radio"/> No <input type="radio"/> Yes
-  Input	Reaction on close the contact	Recall scene <input type="text"/>
<b>Input 1 - Scene control</b>	8 bit scene number	Scene No.2 <input type="text"/>
Room temperature controll...	Reaction on open the contact	Recall scene <input type="text"/>
+  Function setting	8 bit scene number	Scene No.3 <input type="text"/>
Logic function	Number of objects	<input type="radio"/> 1 <input checked="" type="radio"/> 2
	Disable function	Disable=1/Enable=0 <input type="text"/>

Fig. 18: Input - scene control

+  General	Description (max 30char.)	<input type="text"/>
Internal sensor measureme...	Distinction between short and long operation	<input type="radio"/> No <input checked="" type="radio"/> Yes
-  Input	Long operation after [3..25]	5 <input type="text"/> *0.1s
<b>Input 1 - Send String</b>	Connected contact type	<input checked="" type="radio"/> Normally open <input type="radio"/> Normally closed
Room temperature controll...	Reaction on short operation	<input type="radio"/> No reaction <input checked="" type="radio"/> Send Value
+  Function setting	String (14byte) value	Hello, world ! <input type="text"/>
Logic function	Reaction on long operation	<input type="radio"/> No reaction <input checked="" type="radio"/> Send Value
	String (14byte) value	Hello, world ! <input type="text"/>
+  Scene Group function	Number of objects	<input type="radio"/> 1 <input checked="" type="radio"/> 2
	Disable function	Disable=1/Enable=0 <input type="text"/>

Fig. 19: Input - Send string

Parameter	Description	Value
Label (Mach 30 characters)	The temperature sensor can be given any name here. Used for identification on the display	
Distinguishing between short and long actuation	This parameter is used to set whether a distinction should be made between short and long operations.	<b>No</b> Yes
The following parameters are not visible until the value <b>Yes</b> is selected, <b>distinguishing between short and long actuation</b> .		
Long key press after [3.. 25]	This parameter is visible when a distinction is made between short and long operation. Set the effective time for long operation. If the button is pressed outside the set time, it is a long operation, otherwise it is a short operation.	3 ... <b>5</b> ... 25 *0.1 s.
Contact type	This parameter is visible when a distinction is made between short and long operation. Set the connected contact type.	<b>Normally open (NO)</b> Normally Closed (NC)
Reaction at a short press of a button	This parameter is visible when a distinction is made between short and long operation, with the action being performed according to the short and long operation settings.	<b>No reaction</b> ON OFF
Response to long key presses	Set the value to be sent when the button is pressed.	<b>TOGGLE</b>
No response - no action ON - A command is sent OFF - Sending off command TOGGLE - Each change of the switching function sends either an ON or OFF command		
Reaction when closing the contact	This parameter is visible when <b>there is no</b> distinction between short and long operation, with the action being performed according to the short and long operation settings.	No reaction <b>ON</b>
Reaction when opening the contact	Set the value to be sent when the button is pressed.	<b>OFF</b> TOGGLE
No response - no action ON - A command is sent OFF - Sending off command TOGGLE - Each switch of the switching function sends either an ON or OFF command		
Send object value after voltage recovery (only valid if not toggling)	This parameter is visible when there is no difference between short and long operation. Determines whether the object value should be sent after power recovery.	<b>No</b> Yes
Number of objects	This parameter is visible if the <b>Long Momentary Response</b> or <b>Open Contact Response</b> parameter is not set to No Response. This determines whether a common object or two separate objects should be used for a <b>long keystroke response</b> or a <b>contact open response</b> .	<b>1</b> 2
Lock the button	This parameter is visible when binary input functions are selected. Set the trigger value to disable/enable contacts.	<b>Lock</b> Lock=1/Release=0

---

Parameter	Description	Value
		Lock=0/Release=1

---

### 3.4 Room thermostat

The following parameter window describes and displays the configuration and parameterization of the room temperature controller.

The following view is not visible until the **Room Temperature Controller parameter** is activated in the **Room Temperature Controller menu**.

Fig. 20: Room thermostat

Parameter	Description	Value
Room temperature reference of		<b>Internal probe</b> External sensor Internal probe combined with external sensor

These parameters are visible when at **room temperature reference of** has the value **Internal sensor**.

Table 8: Functional parameters of room temperature controller

Parameter	Description	Value
Control value after temperature error [0.. 100] (for 2-point control, value '0'=0, value '>0'=1)	This parameter is used to set the control value when a temperature error occurs. For 2-point control, the parameter value is 0, as is the control value; if the parameter value is greater than 0, the control value is 1.	0 ... 100 %
Cycle time for reading out the room temperature sensor [0.. 255]	Only visible when External Sensor and Internal Sensor combined with External Sensor is selected.	0 ... <b>10</b> ... 255 min
Combination ratio	These parameters are visible when at <b>room temperature reference of</b> has the value <b>Internal sensor combined with external sensor</b> . This parameter is used to set the ratio between the internal and external sensor and how it is authorized and managed in the background.	10% internal, 90% external 50% internal, 50% external 90% internal, 10% external
	Example: When the option '40% internal to 60% external' is selected, the internal sensor is 40% and the external sensor is 60%, and the control temperature = (internal sensor temperature × 40%) + (external sensor temperature × 60%). The RTC function of the device controls and displays the temperature according to the calculated temperature.	
	If two sensors are combined for detection and one sensor has an error, the temperature value determined by the other sensor is used .	
Transmit temperature when changed (These parameters are visible when at <b>room temperature reference of</b> has the value <b>Internal sensor combined with external sensor</b> ).	This parameter is used to set whether the current temperature value is to be sent to the bus when a certain temperature value is reached. If deactivated, no transmission occurs.	Lock 0.5K ... <b>1.0K</b> ... 10.0K
Send temperature cyclically [0.. 255] (These parameters are visible when at <b>room temperature reference of</b> has the value <b>Internal sensor combined with external sensor</b> .)	Sets the time for the cyclic transfer of the temperature measured value to the bus. A value of 0 does not send.	0 ... 255 min
Room temperature control mode	This parameter is used to set the room temperature control mode.	<b>Heating</b> Cooling Heating and cooling
Heating/cooling switching	This parameter is used to set the heating/cooling switching mode.	<b>About object</b>

Table 8: Functional parameters of room temperature controller

Parameter	Description	Value
		Automatic transfer switch
Download the heating/cooling status after	This parameter is used to set the heating/cooling control mode of the appliance after reprogramming.	Heating Cooling
Heating/cooling status after power recovery	This parameter is used to set the device's heating/cooling control mode after power recovery.	Heating Cooling As before power failure
	As before the power failure: If the device is reset after power-on, the control mode is restored as before the power failure. If the device is being used for the first time or a new feature page has been activated, the control mode is in an indefinite state after the device is started and must be selected manually at this time.	
Room temperature control system	This parameter is used to set the system to be controlled, i.e. which pipe system is used.	2-pipe system 4-pipe system
	2-pipe system means there is only one circuit consisting of two pipes. This means that the system can either only heat or cool. It is therefore not possible to heat one room and cool another. A classic radiator heater is also a 2-pipe system 4 pipe system have two separate pipe systems, one with hot water, one with cold. This means that it can be heated or cooled by room or mixing in a room is also possible.	

#### Operating mode

This parameter is used to set whether the operating modes are to be activated. When enabled, 4 modes are supported: Comfort, standby, economy mode and frost/heat protection.

Download the controller status after	This parameter is used to set the operating mode after reprogramming.	<b>Comfort mode</b> Standby mode Night mode
Regulator status after power recovery	This parameter is used to set the operating mode after power recovery.	Comfort mode Standby mode Night mode Frost/heat protection <b>As before power failure</b>
Comfort extension [0..255, 0=Inactive]	This parameter is only visible when the value Master or Single is selected. Set the comfort extension. If the value is >0, enables the comfort extension and the 1-bit 'Extended comfort mode' object is visible.	0 ... 255 min
	When comfort extension is enabled, comfort mode is activated and remains active until the time has expired or is re-triggered. Mode changes during renewal are not performed but saved. After the delay has expired, the system switches to the previous mode or to the mode set during the delay. Heating/cooling has nothing to do with this mode.	
1-bit object function for operating mode	This parameter is used to set whether additional 1-bit objects should be available to activate the operating mode.	

Table 8: Functional parameters of room temperature controller

Parameter	Description	Value
1 bit object function for standby mode	This parameter is visible when the previous parameter is enabled. Specify whether the 1-bit object of standby mode should be visible.	
Initial setpoint temperature	This parameter is visible when the <b>Operating mode</b> parameter is <b>not activated</b> and is used to set the initial value of the setpoint temperature. If the initial set point temperature is below the minimum set point temperature, the following is displayed	10.0 ... <b>20.0</b> ... 35.0°C

### Automatically switch H/K with dead zone

These two parameters are visible when 'Heating and Cooling' is selected as the control mode and 'Automatic switchover' is selected as the switchover mode. Setting of the dead zone for automatic switching between heating and cooling and operating mode is activated.

Upper dead zone	For heater control: If the actual temperature (T) is greater than or equal to the set temperature + upper dead zone, the mode changes from heating to cooling. For cooling control: If the actual temperature (T) is less than or equal to the set temperature + of the upper dead zone, the mode changes from cooling to heating.	0.5K ... <b>2.0K</b> ... 10.0K
Lower dead zone		0.5K ... <b>2.0K</b> ... 10.0K

Fan speed automatic function	This parameter is used to specify whether the automatic fan control interface should be visible.	
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### Window contact input function

This parameter is visible when the operating mode is activated. Specify whether to link to the window contact status.

Delay for window contact [0.. 65535]	This parameter is visible when the operating mode and window contact input feature are enabled. Sets the window contact detection delay time. The device does not execute the window open function until the delay time has expired and the window open signal is still active. If the window has been closed in the meantime, nothing happens.	0 ... <b>15</b> ... 65535 s.
Operating mode when the window is open	When the window status is open, the slider performs the appropriate operation according to the configuration. (The reception of other control telegrams is recorded during the open window and executed after the 'Close window' telegram has been received. If no telegram is received when the win-	Night mode <b>Frost/heat protection</b>

Table 8: Functional parameters of room temperature controller

Parameter	Description	Value
	dow is open, the controller returns to the mode before opening the window).	
Bus presence detection function	This parameter is visible when the operating mode is activated. Specifies whether to link to the status of the bus presence sensor. When a presence is detected, the comfort mode is activated and returned to the original mode after leaving the room. If during this period a telegram/manual operation is carried out to adjust the mode, the telegram is stored in the background, the comfort mode is terminated and reset to this mode after leaving the room. If no telegram is received during the time period, the controller returns to the original mode. (If the presence status is received cyclically, the comfort mode cannot be re-triggered, but only after exiting.)	
Min. Setpoint temperature [5.. 37]	These parameters are visible when the operating mode is disabled. Adjust to limit the adjustable range of the setpoint temperature. If the set point temperature exceeds the limited range, the device outputs the limited temperature. If the Operating Mode function is active, the parameters for the various operating modes can be set under <b>Setpoint</b> . The setpoint temperature must be below the maximum value, otherwise it cannot be changed in ETS.	5 ... <b>10</b> ... 37°C
Max. Setpoint temperature [5.. 37]		5 ... <b>32</b> ... 37°C

Table 8: Functional parameters of room temperature controller

### 3.4.1 Setpoint

#### Setpoint temperature display relative

This parameter window is visible when the operating mode is activated and the corresponding value is selected **relative**

The screenshot shows the 'Setpoint' parameter window. On the left is a navigation menu with options: General, Internal sensor measurement, Input, Room temperature control, Setpoint (selected), Heating control, Cooling control, Fan auto. control, Function setting, Logic function, and Scene Group function. The main area contains the following settings:


- Setpoint method for operating mode:  Relative  Absolute
- Base setpoint temperature: 20.0 °C
- Additional setpoint offset for setpoint adjustment:  Disable  Enable
- Step of setpoint offset:  0.5K  1K
- Min. setpoint offset [-10..0]: -5 K
- Max. setpoint offset [0..10]: 5 K
- Heating**
  - Reduced heating in standby mode [0..10]: 2 K
  - Reduced heating in economy mode [0..10]: 4 K
  - Setpoint temperature in frost protection mode [5..10]: 7 °C
- Cooling**
  - Increased cooling in standby mode [0..10]: 2 K
  - Increased cooling in economy mode [0..10]: 4 K
  - Setpoint temperature in heat protection mode [30..37]: 35 °C
- Min. setpoint temperature [5..37]: 10 °C
- Max. setpoint temperature [5..37]: 32 °C

Fig. 21: Setpoint temperature display **relative**

Parameter	Description	Value
Setpoint temperature display	This parameter is used to set the setpoint method for the operating mode.	Absolute <b>Relative</b>
	<p><b>Relative:</b> Relative setting, the base set temperature of night mode, standby mode and frost protection refers to the defined temperature set point.</p> <p><b>Absolute:</b> Absolute setting, each mode has its own temperature setpoint.</p>	
Base setpoint temperature	This parameter is used to set the basic set temperature from which the temperature values for night, standby and frost protection are derived.	10.0 ... <b>20.0</b> ... 35.0°C
	The setpoint is changed via the Basic setpoint, correction object (object B360), then the new value is saved after the device has been switched off.	

Additional setpoint offset for setpoint adjustment	This parameter is used to set whether an additional setpoint offset function is to be activated for setpoint adjustment.	Lock activate
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### Activate additional setpoint offset for setpoint adjustment

Step of setpoint offset	This parameter is used to set the step value for increasing/decreasing the setpoint offset when receiving telegrams. Telegram 1 – increase, telegram 0 – decrease. The accumulated offset can be saved when the power is turned off.	0.5 K 1 K
<p>Current mode setpoint temperature = base temperature + mode fixed offset + accumulated additional offset</p> <div style="border: 1px solid black; padding: 5px;">  <p>The offset of the mode is the offset of the standby and power save modes compared to the comfort mode, which is determined by the following heating/cooling parameters. The accumulated additional offset is adjusted by the 1-bit 'Setpoint Offset' object or changed directly by the 2-byte 'Float Offset Value' object.</p> </div>		
Min. Setpoint offset [-10.. 0]	This parameter is used to set the maximum allowable offset for negative offset (setpoint temperature is reduced).	-10 ... -5 ... 0K
Max. Setpoint offset [0.. 10]	This parameter is used to set the maximum permissible offset for forward offset (increase of the set temperature).	0 ... 5 ... 10K

For the offset, the min. value and the max. value must not be equal to 0 at the same time, otherwise it cannot be changed in ETS.

### Automatic H/K switching with deadband (for comfort mode only)

Upper dead zone	These two parameters are visible when the 'Heating and Cooling' control mode is selected and 'Automatic switching' is selected. Sets the dead zone for automatic switching between heating and cooling.  In the heater control mode, the mode changes from heating to cooling when the actual temperature (T) is greater than or equal to the set temperature + of the upper dead zone. For cooling control, the mode changes from cooling to heating when the actual temperature (T) is less than or equal to the set temperature + of the upper dead zone.	0.5 ... <b>2.0</b> ... 10.0K
Lower dead zone		0.5 ... <b>2.0</b> ... 10.0K

### Heating

Reduction of heating in standby mode [0.. 10]	Parameter Sets the deviation from the basic setpoint for standby mode. The setpoint of the standby mode is the temperature setpoint minus the reference value.	0 ... <b>2</b> ... 10K
Reducing heating in night mode [0.. 10]	Parameter Sets the deviation from the base setpoint for night mode. The setpoint of the night mode is the temperature setpoint minus the reference value.	0 ... <b>4</b> ... 10K

Setpoint temperature in frost protection mode [5.. 10]	This parameter sets the set point for the antifreeze mode.	5 ... <b>7</b> ... 10°C
<b>Cooling</b>		
Increase cooling in standby mode [0.. 10]	Parameter Sets the deviation from the basic setpoint for standby mode. The setpoint of the standby mode is the temperature setpoint plus the reference value.	0 ... <b>2</b> ... 10K
Increase Cooling in Night Mode [0.. 10]	Parameter Sets the deviation from the base setpoint for night mode. The setpoint of the night mode is the temperature setpoint plus the reference value.	0 ... <b>4</b> ... 10K
Temperature setpoint in heat protection mode [30.. 37]	This parameter sets the setpoint for the heat protection mode.	30 ... <b>35</b> ... 37°C
Min. Setpoint temperature [5.. 37]	This parameter is used to set the minimum set point temperature that can be changed manually via the display.	5 ... <b>10</b> ... 37°C
Max. Setpoint temperature [5.. 37]	This parameter is used to define the maximum set point temperature that can be manually changed via the display.	5 ... <b>32</b> ... 37°C

**Setpoint temperature display absolute**

These parameter windows are visible when the operating mode is activated and the corresponding value is selected in **absolute** mode

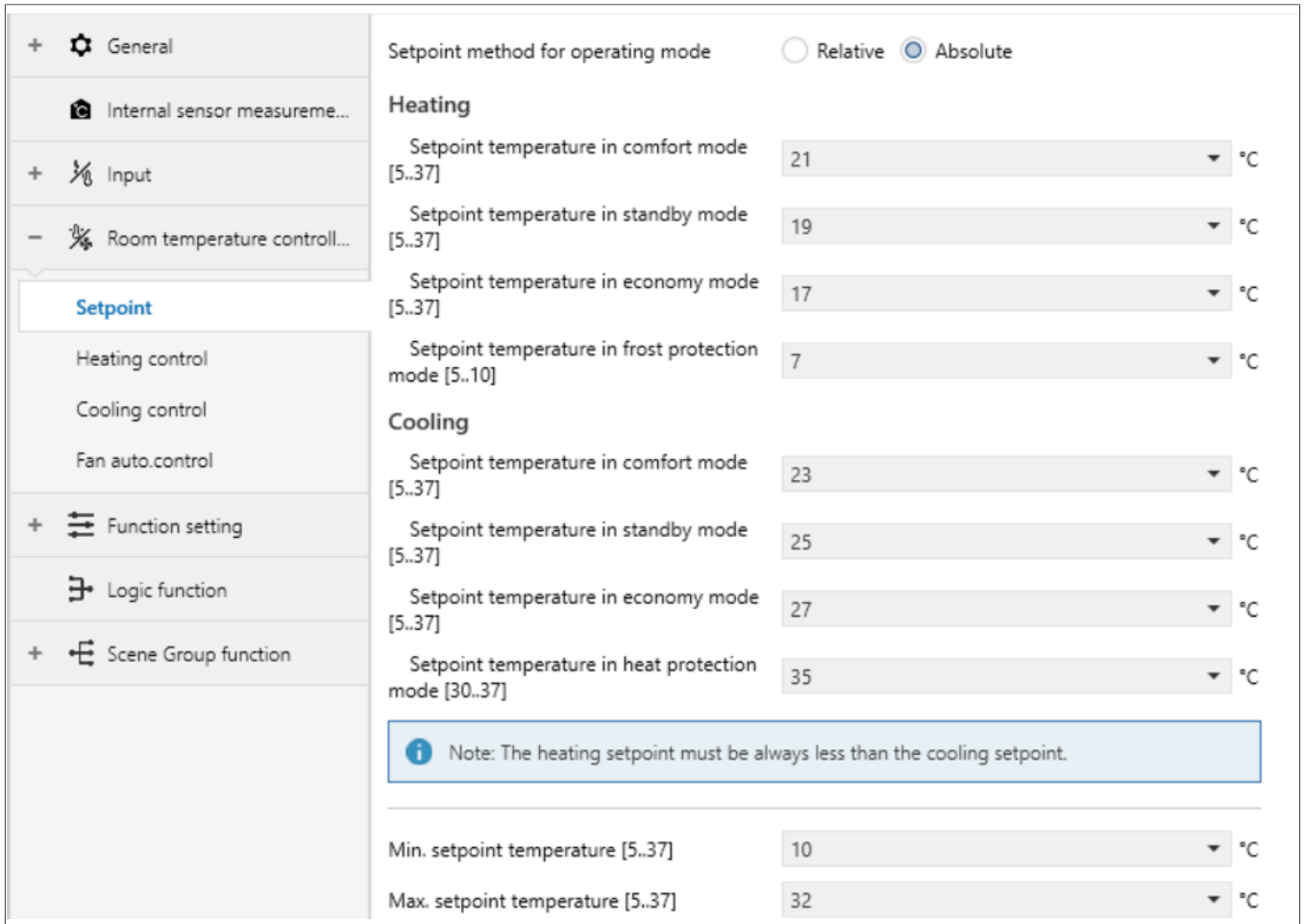


Fig. 22: Setpoint temperature display **absolute**

Parameter	Description	Value
<b>Heating</b>		
Setpoint temperature in comfort mode [5..37]	This parameter is used to set the temperature for the comfort mode for heating set.	5 ... <b>21</b> ... 37°C
Setpoint temperature in standby mode [5..37]	This parameter is used to set the temperature for the standby mode for heating set.	5 ... <b>19</b> ... 37°C
Setpoint temperature at night mode [5..37]	This parameter is used to set the temperature for the night mode set for heating.	5 ... <b>17</b> ... 37°C
Setpoint temperature in frost protection mode [5..10]	This parameter is used to set the temperature for the frost protection mode for heating set.	5 ... <b>7</b> ... 10°C

**Cooling**

Parameter	Description	Value
Setpoint temperature in comfort mode [5.. 37]	This parameter is used to set the temperature for the comfort mode set for cooling.	5 ... <b>23</b> ... 37°C
Setpoint temperature in standby mode [5.. 37]	This parameter is used to set the temperature for the standby mode for cooling set.	5 ... <b>25</b> ... 37°C
Setpoint temperature at night mode [5.. 37]	This parameter is used to set the temperature for the night mode set for cooling.	5 ... <b>27</b> ... 37°C
Temperature setpoint in heat protection mode [30.. 37]	This parameter is used to set the temperature for the frost protection mode set for cooling.	5 ... <b>35</b> ... 37°C
Min. Setpoint temperature [5.. 37]	This parameter is used to set the minimum set point temperature that can be changed manually via the display.	5 ... <b>10</b> ... 37°C
Max. Setpoint temperature [5.. 37]	This parameter is used to define the maximum set point temperature that can be manually changed via the display.	5 ... <b>32</b> ... 37°C



The set point for heating must always be less than the set point for cooling.

In absolute setting mode, if you select 'Heating and Cooling', regardless of whether it is manual, bus or automatic switching, the heating setpoint must be less than or equal to the cooling setpoint of the same operating mode. At the same time, these set temperatures must not leave the configured range of maximum and minimum values. Otherwise, it cannot be changed in ETS. Please take into account the limitations of several conditions when configuring.

- 1. If the ambient temperature is higher than the set temperature of the current mode, the system switches to cooling mode. If the ambient temperature is lower than the set temperature of the current mode, the system switches to heating mode.
- 2. In the same operating mode, the setpoint temperature difference between cooling and heating remains constant, regardless of whether it is written via the bus or set on the control panel. This means that when the set temperature is set, the cooling and heating set temperature of the current operating mode are simultaneously updated.
- 3. When the bus receives the set temperature, the value must still be limited according to the upper and lower thresholds, i.e. the heating and cooling temperature must not be below the minimum value or above the maximum value.



In the relative/absolute setting, the set temperature is configured in protection mode only via ETS and is not limited by the min/max value. If the setpoint received from the bus differs from the ETS configuration, the value will not be updated and reset to the current setpoint temperature to ensure a synchronous update with other devices on the bus.

### 3.4.2 Heating / cooling control

+  General	Type of heating/cooling control	Switching on/off(use 2-point control)
+  Internal sensor measureme...	Invert control value	<input type="radio"/> No <input checked="" type="radio"/> Yes
+  Input	<b>Heating</b>	
-  Room temperature controll...	Lower Hysteresis [0..200]	10 *0.1K
Setpoint	Upper Hysteresis [0..200]	10 *0.1K
<b>Heating/Cooling control</b>	<b>Cooling</b>	
Fan auto.control	Lower Hysteresis [0..200]	10 *0.1K
+  Fan auto.control	Upper Hysteresis [0..200]	10 *0.1K
+  Fan auto.control	Cyclically send control value [0..255]	10 min

Fig. 23: Switching on/off

+  General	Type of heating/cooling control	Switching PWM(use PI control)
+  Internal sensor measureme...	Invert control value	<input type="radio"/> No <input checked="" type="radio"/> Yes
+  Input	PWM cycle time [1..255]	15 min
-  Room temperature controll...	Heating speed	Hot water heating(5K/150min)
Setpoint	Cooling speed	User defined
<b>Heating/Cooling control</b>	Proportional range [10..100]	40 *0.1K
Fan auto.control	Reset time [0..255]	150 min
+  Fan auto.control	Cyclically send control value [0..255]	10 min

Fig. 24: Switching PWM

+  General	Type of heating/cooling control	Continuous control(use PI control)
+  Internal sensor measureme...	Invert control value	<input type="radio"/> No <input checked="" type="radio"/> Yes
+  Input	Heating speed	Hot water heating(5K/150min)
-  Room temperature controll...	Cooling speed	User defined
Setpoint	Proportional range [10..100]	40 *0.1K
<b>Heating/Cooling control</b>	Reset time [0..255]	150 min
Fan auto.control	Send control value on change by [0..100,0=inactive]	4 %
+  Fan auto.control	Cyclically send control value [0..255]	10 min

Fig. 25: Continuous control

Parameter	Description	Value
Heating/cooling control type	This parameter is used to set the type of heating/cooling control. Different control types are suitable for controlling different temperature controllers.	<b>Continuous control (uses PI control)</b> Switching PWM (uses PI control) Switching ON/OFF (2-point control)
Control value inverted	This parameter is used to set whether the control value should be inverted or sent normally so that the control value is suitable for the valve type.	Yes - Send the control value to the bus via objects after inversion of the control value. <b>No</b>

### Switching ON/OFF (2-point control)

#### Heating

Lower hysteresis [0..200]	These two parameters are used to set the lower/upper hysteresis temperature value for heating.	0 ... <b>10</b> ... 200 *0.1K
Upper hysteresis [0..200]		0 ... <b>10</b> ... 200 *0.1K

If the actual temperature (T) is **greater than** the set temperature + the upper hysteresis value, the heating mode is stopped. If the actual temperature (T) is **less** than the set temperature - the value lower hysteresis, then the heating mode is started.

**Example:** The value for lower hysteresis is 1 K, the value for upper hysteresis is 2 K, the target temperature T is 22 °C. If T is higher than 24°C, the heater is switched off; if T is lower than 21°C, the heater is switched on; if T is between 21 and 24°C, the previous status is retained.

#### Cooling

Lower hysteresis [0..200]	These two parameters are used to set the lower/upper hysteresis temperature value for cooling.	0 ... <b>10</b> ... 200 *0.1K
Upper hysteresis [0..200]		0 ... <b>10</b> ... 200 *0.1K

If the actual temperature (T) is **less** than the set temperature - the value of lower hysteresis, the cooling mode is stopped. If the actual temperature (T) is **greater than** the set temperature + the value of the upper hysteresis, the cooling mode is started.

**Example:** The value for lower hysteresis is 1 K, the value for upper hysteresis is 2 K, the target temperature T is 26 °C. If T is below 25°C, the cooling mode is stopped. If T is above 28°C, the cooling mode is started. If T is between 28 and 25°C, the previous status is retained.

The 2-point control is a very simple control mode. When using this control, the upper hysteresis temperature and the lower hysteresis temperature must be set via parameters. The following effects must be taken into account when setting the hysteresis temperature.

- ① At a small hysteresis interval, the temperature range is small, but this leads to frequent transmission of control values and these lead to a high bus load.
- ② At a large hysteresis interval, the temperature range is higher, which results in lower transmission of control values and these result in a lower bus load.

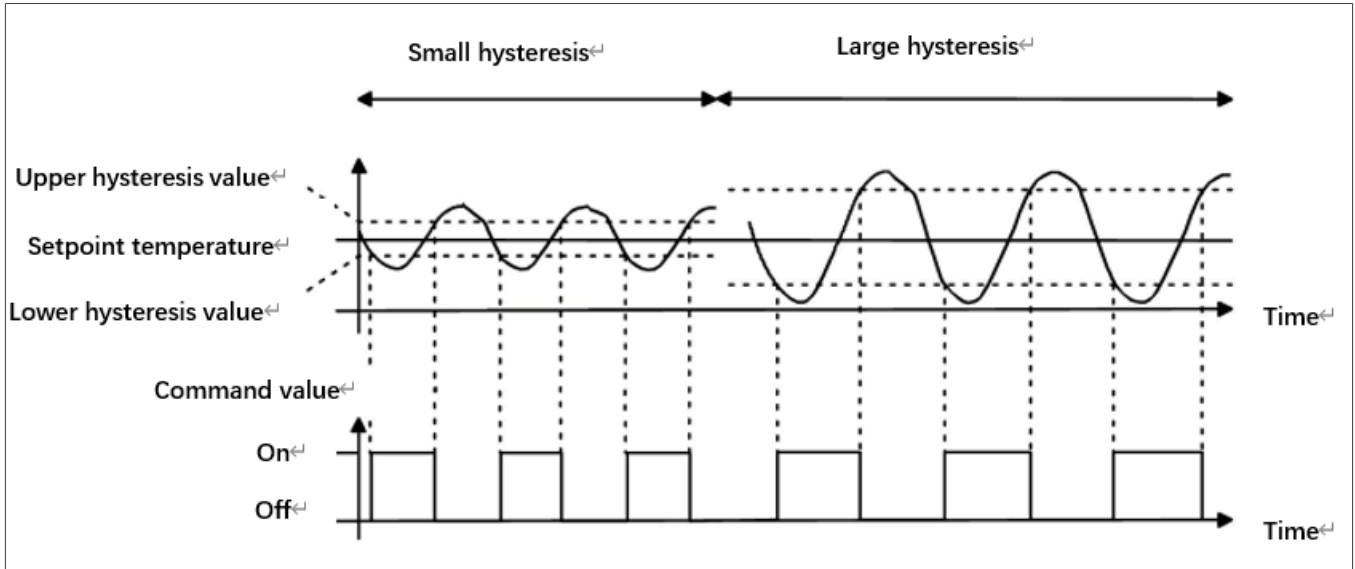


Fig. 26: Effects of hysteresis on the switching function of the control value (heater) in 2-point control mode

Parameter	Description	Value
<b>Continuous control (uses PI control)</b>		
Heating speed	This parameter is used to select the heating system used in the building.	<b>Hot water system (5K/150min)</b> Underfloor heating (5K/240min) Electric heating (4K/100min) Split Unit (4K/90min) Fan Coil Unit (4K/90min) Custom
Cooling speed	This parameter is used to select the cooling system used in the building.	<b>Refrigerated ceiling (5K/240min)</b> Split Unit (4K/90min) Fan Coil Unit (4K/90min) Custom
Proportional range [10..100] (P-value)	These two parameters are visible when Custom is selected. Set the P-value (proportional value) and the I-value (integral value) of the PI controller.	10 ... <b>40</b> ... 100 *0.1K
Integration time (I-value) [0..255]		0 ... <b>150</b> ... 255 min

<b>Switching PWM (uses PI control)</b>		
PWM cycle time [1..255]		1 ... <b>15</b> ... 255 min

This parameter is only visible if the **switching PWM (PI control)** control type is to be **used**. Sets the period of the control object cycle to send the switching value. The object sends the switching value according to the duty cycle of the control value. For example, if the set period is 10 minutes and the control value is 80%, the object sends an open telegram for 8 minutes. If the control value is changed, the time-duty ratio of the on/off telegram of the object also changes, but the period still corresponds to the time of the parameter setting.

The PI values of **switching PWM (uses PI control)** and **continuous control (uses PI control)** are identical, but differ in the control objects. The **continuous control control control** object outputs the PI value (1 bytes) directly, while the **switching control object** outputs **PWM** according to the duty ratio of the control value **ON/OFF telegram**.

Parameter	Description	Value
Send control value when changing [0..100, 0=Inactive]	This parameter is visible when the control type is Continuous Control (uses PI control ) to specify the changing value of the control value to be sent to the bus.	0 ... <b>4</b> ... 100% 0 = Inactive

Parameter	Description	Value
Send control value cyclically [0..255]	This parameter is used to set the time period for the cyclic transmission of the control value to the bus.	0 ... <b>10</b> ... 255 min

### Continuous control

Parameter	Description	Value
Proportional range [10..100]	Sets the proportional value for the heating and/or cooling system when the value at heating/cooling speed is selected <b>User-defined.</b>	10 ... <b>40</b> ... 100 *0.1K <sup>[1]</sup>
Integration time [0..255]	Sets the integration time for the heating and/or cooling system when the value at heating/cooling speed is selected. <b>Custom</b>	0 ... <b>150</b> ... 255 min <sup>[1]</sup>

[1] Default value depends on the selected heating and/or cooling system

In PI control mode, the predefined control parameters of each PI controller in the heating or cooling system are recommended as follows.

Heating speed	P value	I value (integration time)	Recommended PI control type	Recommended PWM period
Hot water system	5 K	150 min	Continuous PI/PWM	15 min
Floor heating	5 K	240 min	PWM	15 - 20 min
Electric heating	4 K	100 min	PWM	10 - 15 min
Split Unit	4 K	90 min	PWM	10 - 15 min
Fan coil unit	4 K	90 min	Continuous PI	-

Table 9: Predefined control parameters **Heating**

Cooling speed	P value	I value (integration time)	Recommended PI control type	Recommended PWM period
Cooling ceiling	5 K	240 min	PWM	15 - 20 min
Split Unit	4 K	90 min	PWM	10 - 15 min
Fan coil unit	4 K	90 min	Continuous PI	-

Table 10: Predefined control parameters **Cooling**

### Predefined rule parameters User-defined

If the **Heating and/or Cooling Speed** parameter is set to **Custom**, the parameter values of P (proportional range) and I (integration time) can be set using the parameter. When setting the parameters, observe the fixed PI value specified in the table above. Even if the control parameters are adjusted only slightly, the control behavior changes significantly. In addition, the integration time should be set correctly.

If the integration time is too long, the adjustment is slow and the vibration is not clearly visible.

If the integration time is too short, the adjustment is fast, but oscillations occur.

0 means that the integral term is not used.

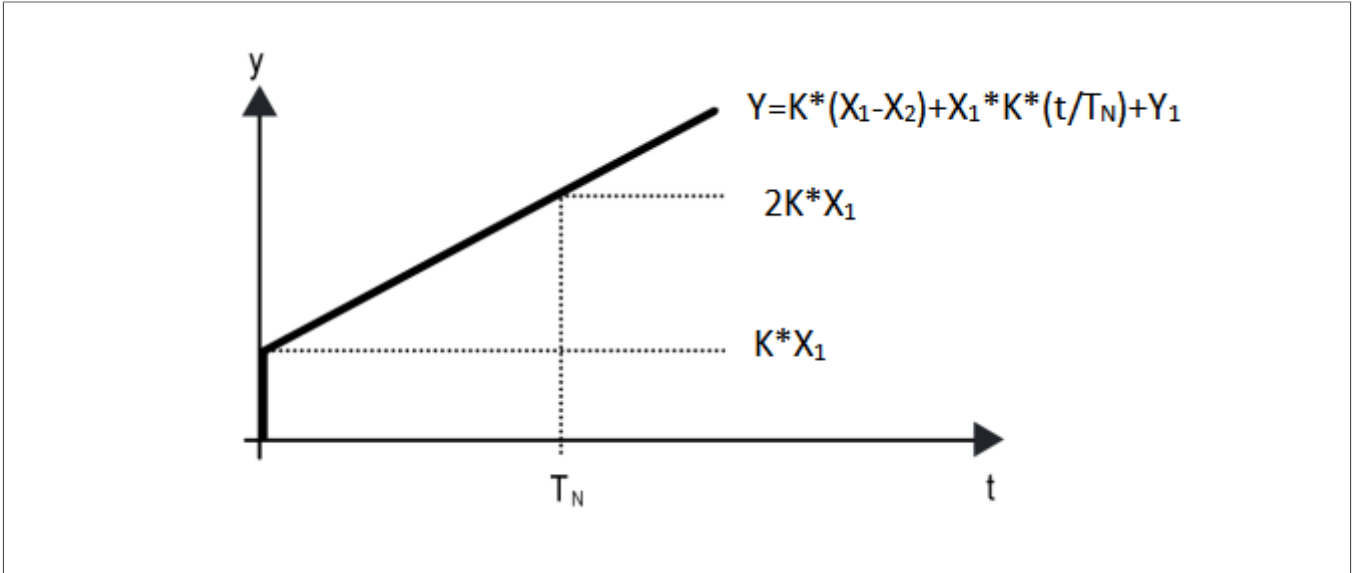


Fig. 27: Control value of the PI control mode

Y	Control value
Y1	Last rule value
X1	Temperature deviation = set temperature - actual temperature
X2	Last Temperature Deviation = Setpoint Temperature - Actual Temperature
T <sub>N</sub>	Integration time
K	Scaling factor (the scaling factor is not zero)
PI control algorithm	$Y = K * (X1-X2) + X1 * K * T / T_N + Y1$

If the integration time is set to zero, the PI control algorithm is:  $Y = K (X1-X2) + Y2$

Parameter setting	Impact
K If the scale range is too small	Fast adjustment, there are overshoots
K If the scale range is too small	Slow adjustment, but no overshoot
T <sub>N</sub> : If the integration time is too short	Fast adjustment, but there are vibrations
T <sub>N</sub> : If the integration time is too long	Slow adjustment, no obvious vibration

Table 11: Setting and Influence of Custom Parameters:

### 3.4.3 Automatic control fan

**Auto. operation on object value**  Auto=1/Man.=0  Auto=0/Man.=1

---

**Fan speed output setting**

Object datatype of 1byte fan speed  Fan stage (DPT\_5.100)  Percentage (DPT\_5.001)

Output value for fan speed low

Output value for fan speed medium

Output value for fan speed high

1 bit object function for fan speed

1 bit object for fan speed off

---

**Fan speed control setting**

Condition setting for using PI control

Threshold value speed OFF<-->low  [1..255] Standardwert: 80

Threshold value speed low  [1..255] Inkrement: 1

Threshold value speed medium<-->high  [1..255]

Hysteresis threshold value in +/-[0..50]

Condition setting for using 2-point control

Temperature difference speed OFF<-->low  [1..200] \*0.1K

Temperature difference speed low<-->medium [1..200]  \*0.1K

Temperature difference speed medium<-->high [1..200]  \*0.1K

Hysteresis temperature difference in [0..50]  \*0.1K


---

Minimum time in fan speed [0..65535]  s

Fig. 28: Automatic control fan

Parameter	Description	Value
Automatic mode object value	This parameter is used to set the telegram value for activating automatic mode.	<b>AUTO=1 / MAN.=0</b> AUTO=0 / MAN.=1
<p>AUTO=1/MAN.=0: If the object <b>value Automatic mode</b> receives the value <b>0</b>, automatic <b>mode</b> is activated, and automatic mode is terminated when <b>1</b> is received.</p>		
<p>AUTO=0/MAN.=1: If the object <b>value Automatic mode</b> receives the value <b>1</b>, automatic <b>mode</b> is activated, and automatic mode is terminated when <b>0</b> is received.</p>		

Parameter	Description	Value
-----------	-------------	-------




Automatic operation is not enabled by default after power-on.

**Adjusts the fan speed**

Object Data type of 1 bytes fan speed	This parameter is used to set the object data type to be used for the fan speed of 1 bytes.	Fan stage (DPT_5,100) <b>Percent (DPT_5,001)</b>
Fan speed value is low	These three parameters are used to set the value that is sent each time the fan speed is changed. If the value is 0, the fan is off.	1 ... <b>33</b> ... 100% <sup>[1]</sup> <b>1</b> ... 255 <sup>[2]</sup>
Average fan speed value		1 ... <b>67</b> ... 100% <sup>[1]</sup> 1 ... <b>2</b> ... 255 <sup>[2]</sup>
Fan speed value high		1 ... 100% <sup>[1]</sup> 1 ... <b>3</b> ... 255 <sup>[2]</sup>

- [1] These values can be set if the value Percent (DPT\_5,001) is selected for the object Data type of 1byte Fan speed.
- [2] These values can be set if the value Fan level (DPT\_5,100) is selected for the object Data type of 1byte Fan speed.



The output value and status value must meet the **low < medium < high** condition. If not, they cannot be changed in ETS and a red warning message is displayed, as shown in the following example:

Output value for fan speed low	33	↑ ↓	%
Output value for fan speed medium	32	↑ ↓	%
Output value for fan speed high	100	↑ ↓	%

Fig. 29: Warning message - condition not met

### Adjusts the fan speed

Under PI control, the control value is PI-controlled within the program. The controller turns the fan on/off or changes the fan speed according to the threshold range of the control values.

Parameter	Description	Value
<b>Condition for PI control</b>		
Threshold from <---> low [1..255]	Defines the threshold value from <---> LOW. If the control value is greater than or equal to this set threshold, the fan starts at low speed; if the control value is less than this set threshold, the fan turns off.	1 .... <b>80</b> ... 255
Threshold low <--> mean [1..255]	Defines the low <--> mean speed threshold. If the control value is greater than or equal to this threshold, the fan starts at medium speed.	1 .... <b>150</b> ... 255
Threshold medium <--> high [1..255]	Defines the threshold for medium <--> high speed. If the control value is greater than or equal to this setting threshold, operation starts at high fan speed.	1 .... <b>200</b> ... 255

The slider evaluates the threshold in ascending order. First check →OFF <-->low fan speed threshold →low fan speed <-->medium fan speed →medium fan speed <-->high fan speed. If the condition is not met, they cannot be changed in ETS and a warning is displayed in a red box as shown below:

Threshold value speed OFF<-->low [1..255] 150

Threshold value speed low<-->medium [1..255] 149

Threshold value speed medium<-->high [1..255] 200

Fig. 30: Warning message - condition not met

Correct operation is only guaranteed in this case: The threshold of OFF <--> Low Fan Speed is lower than the threshold of Low Fan Speed <--> Medium Fan Speed, and the threshold of Low Fan Speed <--> Medium Fan Speed is lower than the threshold of Medium Fan Speed <--> High Fan Speed.

Hysteresis threshold value in +/-[0..50]	This parameter is used to set the hysteresis value of the threshold value, which can prevent unnecessary fan action if the control value fluctuates near the threshold value. If the value is 0, there is no hysteresis. The fan switches to speed when the control value exceeds the threshold. If the hysteresis value is 10 and the threshold value is 50, then the upper threshold value is 60 (threshold + hysteresis value) and the lower threshold value is 40 (threshold - hysteresis value). If the control value is between 40 and 60, the fan will not activate and the previous status will be retained. Only values less	0 .... <b>10</b> ... 50
--	---	-------------------------


Parameter	Description	Value
	than 40 or greater than or equal to 60 change the operating status of the fan.	

In 2-point control, the controller decides whether the fan is switched on and off or the fan speed based on the temperature difference between the actual temperature and the set temperature. A distinction is made between heating and cooling

Cooling: Temperature difference = actual temperature - set temperature

Heating: Temperature difference = target temperature - actual temperature.

Parameter	Description	Value
<b>Conditions for the 2-point control</b>		
Temperature difference from <---> low [1..200]	This parameter is used to set the temperature difference for the speed OFF<-->LOW. If the temperature difference is greater than or equal to this set temperature difference, the fan starts running at low speed; if it is smaller than this set temperature difference, the fan is switched off.	1 ... <b>20</b> ... 200 *0.1K
Temperature difference low <---> medium [1..200]	Define the temperature difference for low<-->mean speed. If the control value is greater than or equal to this set temperature difference, start the fan at medium speed.	1 ... <b>30</b> ... 200 *0.1K
Temperature difference medium <---> high [1..200]	Define the temperature difference for medium<-->high speed. If the control value is greater than or equal to this set temperature difference, start operation at high fan speed.	1 ... <b>40</b> ... 200 *0.1K



The controller evaluates the temperature difference in ascending order. Initial check →FROM <-->Temperature difference at low fan speed →Low fan speed <-->Mean fan speed →Mean fan speed <-->High fan speed. If the condition is not met, they cannot be changed in ETS and a warning is displayed in a red box, as shown below:

Temperature difference speed OFF<-->low [1..200] 30 \*0.1K

Temperature difference speed low<-->medium [1..200] 29 \*0.1K

Temperature difference speed medium<-->high [1..200] 40 \*0.1K

Fig. 31: Warning message - condition not met

Hysteresis temperature difference in [0..50]	This parameter is used to set the hysteresis value of the temperature difference, which can prevent unnecessary fan activity if the control value fluctuates near the temperature difference. If the value is 0, there is no hysteresis. The fan switches to speed as soon as the control value is greater than the temperature difference. If the hysteresis value is	0 .... <b>10</b> ... 50
--	--	-------------------------

Parameter	Description	Value
	0.5 °C and the temperature difference is 1 °C, then the upper limit of the temperature difference is 1.5 °C (temperature difference + hysteresis value) and the lower limit of the temperature difference is 0.5 °C (temperature difference - hysteresis value). If the control value is between 0.5°C and 1.5°C, the fan will not be activated and the previous status will be retained. Only values below 0.5°C or greater or equal to 1.5°C change the operating status of the fan.	
Minimum operating time at fan speed [0..65535]	Sets the fan dwell time from the current fan speed to a higher or lower fan speed, which is the minimum time for fan speed operation. If you want to switch to a different fan speed, you must wait for this period of time before you can change the fan speed. If the current fan speed has been running long enough, the fan speed can be changed quickly. 0: There is no minimum runtime, but the delay time when changing the fan speed must still be taken into account.	0 ... 60 ... 65535 s.



The dwell time for this parameter setting is enabled only in Auto mode.

### 3.5 Setting functions

This chapter allows you to assign one of these functions to the device.

- Push-button
- Multifunction thermostat
- Audio control

By selecting one of the functions, the device is given the general operation of the buttons.



Fig. 32: Parameter window setting functions

Parameter	Description	Value
Function	This parameter is used to set the function type of the device.	<b>FIX parameterized keys</b> Multifunction thermostat Audio control

The following chapters explain the above functions individually.

### 3.5.1 Tracing sensor function

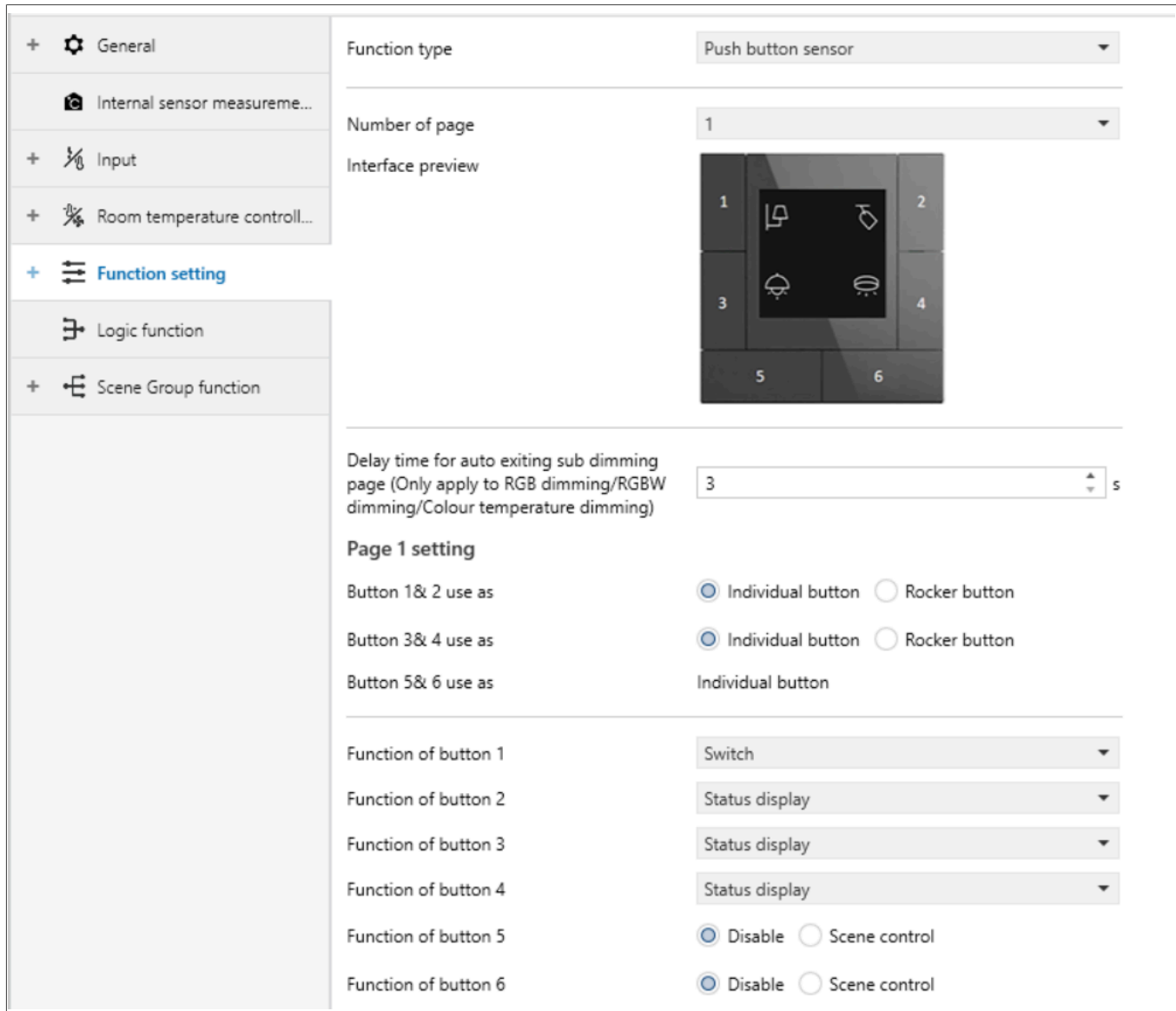


Fig. 33: Function setting parameter window – Tracing sensor

Parameters	Description	Value
Number of pages	This parameter is used to set the number of pages available.	1 2 3

Depending on the number of pages set, a corresponding number of buttons are displayed.

1 page = 4 keys + keys 5 and 6 which can only be used for the scene function ( Fig. 34, 01).

2 pages: 8 keys + keys 5 and 6, which can only be used to switch between the function pages ( Fig. 34, 02).

3 pages: 12 keys + keys 5 and 6, which can only be used to switch between the function pages ( Fig. 34, 03).

Below the parameter, the user interface is displayed according to the options.

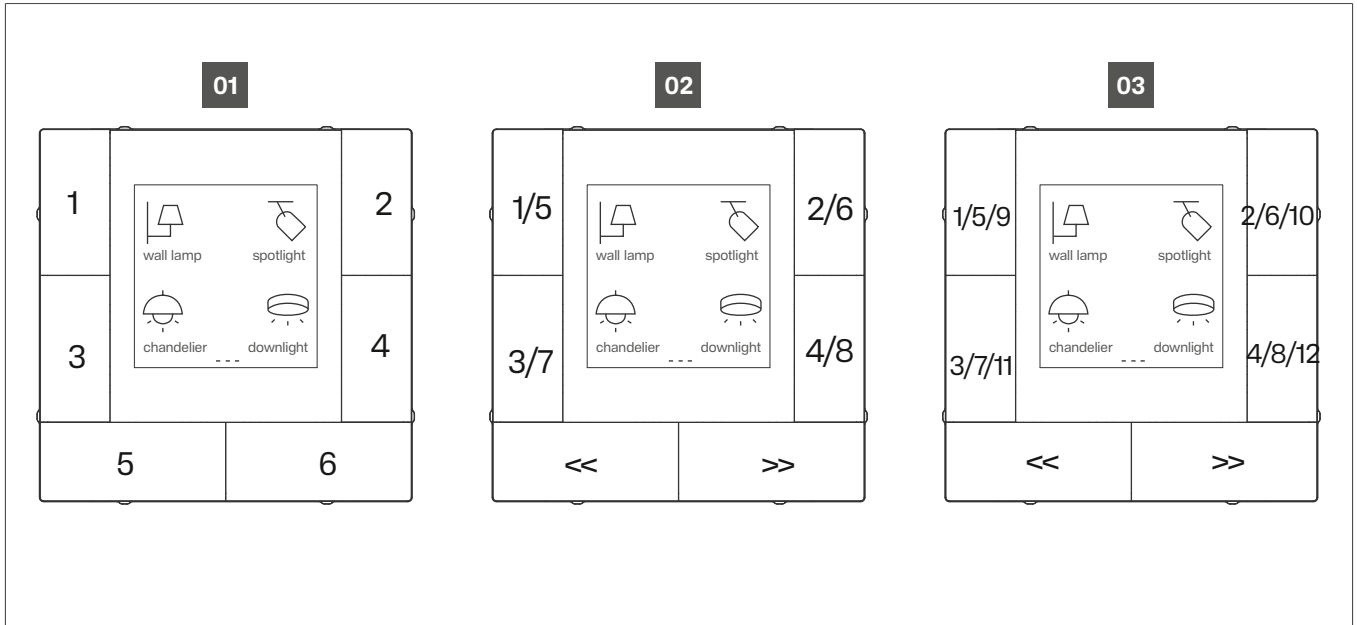


Fig. 34: Display preview - 1 / 2 / 3 page(s)

### Setting the page(s)

The following settings determine how the buttons work.

The buttons can be configured as a stand-alone button or as a contiguous rocker.

Parameter	Description	Value
Push-button 1-12	Here, the function is assigned to the key or the key pair.	<b>Individual keys</b> Rocker

### Functionality of the individual button

When this function is selected, each key is assigned an individual key function.

#### Rocker function

When this function is selected, two opposite keys are combined as a pair of buttons/rocker and assigned a common function.

#### Example of rocker: Blinds/roller shutter functions:

Button 1 Roller shutter up

Button 2 Roller shutter down

### Select the function of key x.

Parameter	Description	Value
Function of key x.	This parameter is visible when <b>Individual key</b> is selected. A function is assigned to the individual keys here. Lock means no function when the button is pressed.	<b>Lock</b> Switching Dimming RGB switch/send value RGBW switch/send value Switch color temperature/send value Send value Scene control Blind Shift register Multifunction Delay mode Operating mode RTR String (14 bytes) Value display RGB dimming RGBW dimming Colour temperature dimming
Function keys 5 & 6 <sup>[1]</sup>	Only one of the two functions can be assigned to these two buttons if the <b>number of pages</b> is set to <b>1</b> . Lock means no function when the button is pressed	<b>Lock</b> Scene control

Table 12: Select the function of key x.

Parameter	Description	Value
Function as rocker x.	<p>These functions are visible and selectable when the <b>x Use key</b> is selected <b>as</b> the Rocker value.</p> <p>Lock means no function when the button is pressed</p>	<p><b>Lock</b></p> <p>Switching</p> <p>Dimming</p> <p>Scene control</p> <p>Blind</p> <p>Setpoint specification</p>

Table 12: Select the function of key x.

[1] Configurable only if number of pages = 1.

A detailed definition of **individual button** or **rocker** functions is described in the following chapters.

### 3.5.1.1 Individual keys

The following chapters describe the functions that are available in the button settings as a **custom button**.

#### 3.5.1.1.1 Switch function

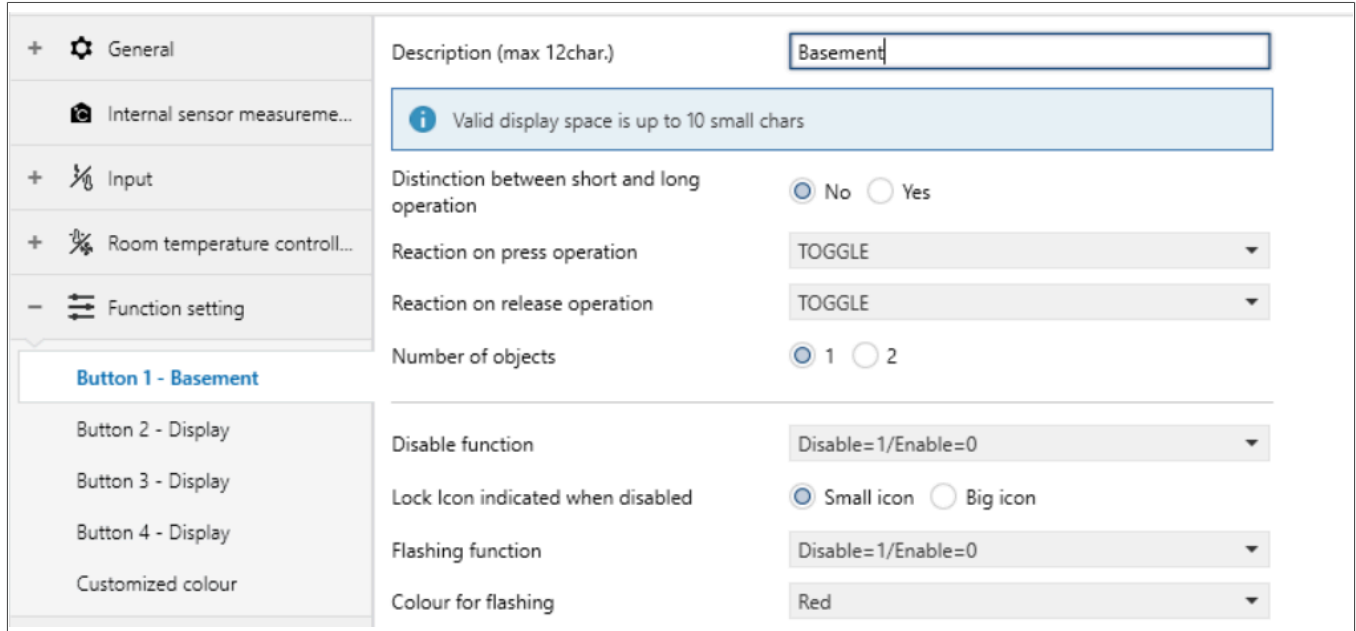


Fig. 35: Switch function

Parameter	Description	Value
Label (max 12 characters)	Up to 12 characters can be entered here to describe the switching function. The label is placed in the top center of the display.	
Distinguishing between short and long actuation	This parameter determines whether a distinction should be made between short and long actuation. If Yes is selected, a separate function can be selected for the short and long actuation.	<b>No</b> Yes
Reaction on actuation <sup>[1]</sup> Reaction when released <sup>[1]</sup>	This parameter is used to set which function is to be performed when the button is pressed or released.	<b>No reaction</b> OFF ON <b>TOGGLE</b>
	No response: No telegram is sent. OFF: A telegram is sent when it is switched off. ON A switch-on telegram is sent. Toggle: Each key press causes a switch between ON and OFF. For example, if the last telegram for an has been sent (or received), the next operation triggers a telegram for. If the key is pressed again, a telegram for ON is sent, etc. This means that the device always remembers the previous state and switches to the opposite value during the next operation.	
Reaction at a short press of a button <sup>[2]</sup> Response to long key presses <sup>[2]</sup>	This parameter is used to set which function is to be executed when a short or long key is pressed.	<b>No reaction</b> OFF ON <b>TOGGLE</b>

Parameter	Description	Value
	<p>No response: No telegram is sent.</p> <p>OFF: A telegram is sent when it is switched off.</p> <p>ON A switch-on telegram is sent.</p> <p>Toogle: Each key press causes a switch between ON and OFF. For example, if the last telegram for an has been sent (or received), the next operation triggers a telegram for. If the key is pressed again, a telegram for ON is sent, etc. This means that the device always remembers the previous state and switches to the opposite value during the next operation.</p>	
Number of objects	This parameter is not visible until one of these values is selected under <b>Reaction on Release</b> : ON, OFF, TOGGLE. This determines whether only one object is available for the Release Response function, or whether one object is available for Release and Release respectively.	<b>1</b> <b>2</b>
Lock the button	This determines whether the key function can be locked or not.	<b>Lock</b> Lock=1/Release=0 Lock=0/Release=1
Display lock icon when locked	This parameter is visible when the previous parameter <b>Lock=1/Release=0</b> or <b>Lock=0/Release=1</b> is selected. Here, the symbol size is defined which should be displayed if the button is deactivated.	<b>Symbol small</b> Symbol large
<p>The large symbol is the lock symbol, which replaces the original symbol, while the small symbol shows the two symbols side by side, with the lock symbol being a small symbol in the right corner. For the exact effect, please refer to the description of the user interface. Note: The deactivation function applies to all of the following functions except the 'status indicator'.</p>		
Flashing function	This parameter is used to set whether the flashing function should be activated.	<b>Lock</b> Lock=1/Release=0 Lock=0/Release=1
Color for flashing	This parameter specifies the color for the symbol to flash	Foreground <b>Red</b> Dark green ...

The flashing function is only used for switching, dimming and blinds. The flashing function takes precedence over the normal status indicators and returns to the normal display after the flashing has ended. See Chapter 7.1 for specific flash effects.

- [1] These two parameters are visible if the default value **No** is selected in the parameter **Distinguishand between short and long actuation**.
- [2] These two parameters are visible when the value **Yes** is selected in the parameter **Distinguishand between short and long actuation**.



Repeating parameters are no longer explained in the following chapters.  
Their use is similar.

### 3.5.1.1.2 Dimming function

+  General	Description (max 12char.)	Basement
+  Internal sensor measureme...	Valid display space is up to 10 small chars	
+  Input	Reaction on short operation	ON
+  Room temperature controll...	Reaction on long operation	Brighter/Darker
-  Function setting	Dimming mode	<input checked="" type="radio"/> Start-Stop dimming <input type="radio"/> Step dimming
+ <b>Button 1 - Basement</b>	Disable function	Disable=1/Enable=0
+ Button 2 - Display	Lock Icon indicated when disabled	<input checked="" type="radio"/> Small icon <input type="radio"/> Big icon
+ Button 3 - Display	Flashing function	Disable=1/Enable=0
+ Button 4 - Display	Colour for flashing	Red

Fig. 36: Dimming function

Parameter	Description	Value
Reaction at a short press of a button	This parameter is used to set the value to be sent when the button is pressed briefly.	No reaction OFF ON <b>TOGGLE</b>
Response to long key presses	This parameter is used to set the value to be sent when a long key is pressed.	No reaction brighter darker <b>lighter/darker</b>
Dimming mode	This parameter is not visible until the value lighter, darker, or lighter/darker is selected.	<b>Start-stop dimming</b> Step dimming
	Start-stop dimming: A dimming of light or dark telegrams is sent when dimming begins, and a stop telegram is sent when dimming ends. The dimming telegram is not sent cyclically. Step dimming: The dimming mode is level 1 and the dimming telegram is sent cyclically. When the dimming process is finished, a stop dimming telegram is sent immediately.	
Step size	This parameter specifies the step size, i.e. the value that is sent each time a key is pressed.	100% 50% 25% <b>12.5%</b> 6.25% 3.13% 1.56%
Time interval cyclic telegram (0..25, 0=send once)	The time interval for cyclic sending of the telegram is defined here. If 0 is selected, the telegram is sent only once and the brightness value is set with a step to the value of the step variable. If a value > 0 is selected, the brightness value is in-	<b>0 ... 25 *0.1s</b>

---

Parameter	Description	Value
	<p>creased by the value in the step size until reaching 100% with each interval.</p> <p>The smaller the increments, the more time intervals could be set and vice versa.</p>	

---

### 3.5.1.1.3 Function RGB switch/send value

The screenshot shows a configuration window for 'Button 1 - Basement'. The 'Description' field contains 'Basement'. A blue information box states 'Valid display space is up to 10 small chars'. The 'Object datatype of absolute brightness' is set to '1x3byte'. Both 'Reaction on short operation' and 'Reaction on long operation' are set to 'Absolute value'. The 'RGB Value' for both reactions is '#FFFFFF'. The 'Disable function' dropdown is set to 'Disable=1/Enable=0'. The sidebar on the left shows 'Function setting' expanded with 'Button 1 - Basement' selected.

Fig. 37: Function RGB switch/send value

Parameter	Description	Value
Data type for absolute brightness	This parameter specifies the data type to be applied for the function. 1 x Communication object: All three shades, R-G-B, are sent to the bus via a common object. 3 x communication objects: All three shades, R-G-B, are sent from the bus via a separate object.	<b>1x3Byte</b> 3x1Byte
Reaction at a short press of a button Response to long key presses	This parameter is used to set which function is to be executed when a short or long key is pressed.	No reaction OFF ON <b>TOGGLE</b> <b>Absolute value</b>
RGB value	This parameter is not visible until the value Absolute Value is selected. Here you can enter the exact color value in the hexadecimal code or set it in the color swatch box.	<b>#FFFFFFF</b> Color patch

**3.5.1.1.4 Function RGBW switch / send value**

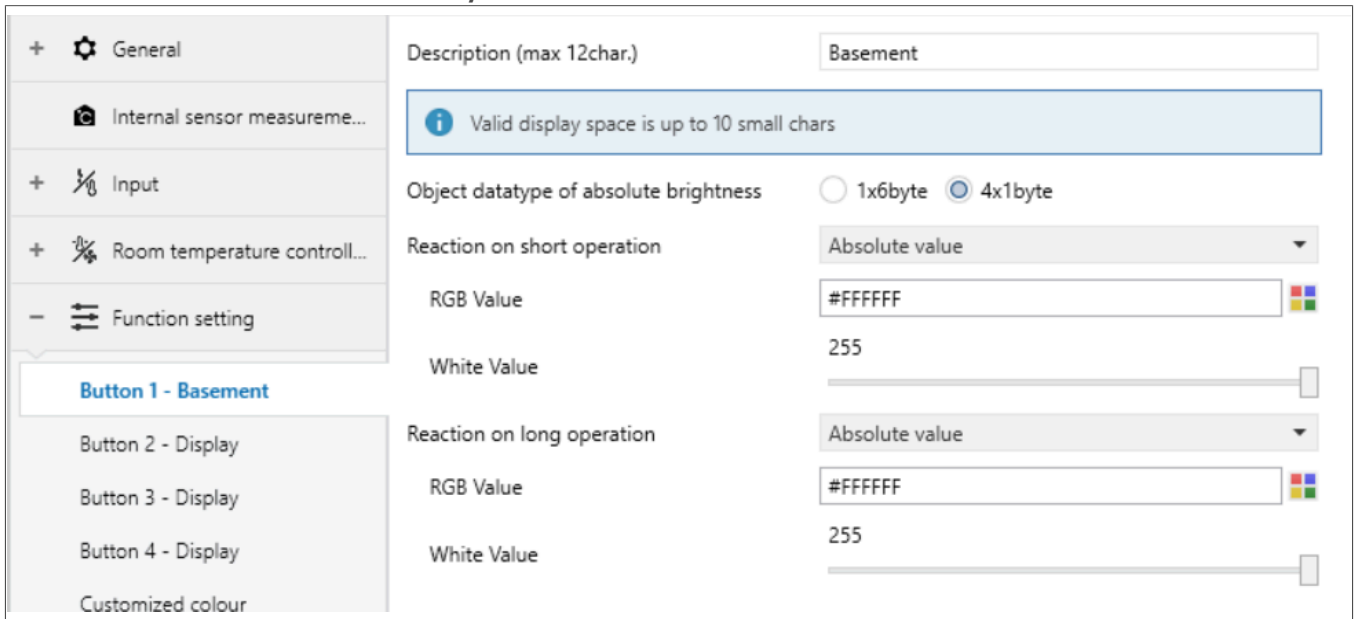


Fig. 38: RGBW Switch/Send value function

Parameter	Description	Value
Data type for absolute brightness	This parameter specifies the data type to be applied for the function. 1 x Communication object: All four shades, R-G-B-w, are sent to the bus via a common object. 4 x communication objects: All four shades, R-G-B-W, are sent from the bus via a separate object.	<b>1x6Byte</b> 4x1Byte
Reaction at a short press of a button Response to long key presses	This parameter is used to set which function is to be executed when a short or long key is pressed.	No reaction OFF ON <b>TOGGLE</b> <b>Absolute value</b>
RGB value	This parameter is not visible until the value Absolute Value is selected. Here you can enter the exact color value in the hexadecimal code or set it in the color swatch box.	<b>#FFFFFFF</b> Color patch
Value for white	This parameter is not visible until the value Absolute Value is selected. Here, the value for the white color can be set using a slider bar.	0 - 255

### 3.5.1.1.5 Switch color temperature / send value

+  General	Description (max 12char.)	Basement
+  Internal sensor measureme...	Valid display space is up to 10 small chars	
+  Input	Reaction on short operation	Absolute value ▾
+  Room temperature controll...	Send brightness value	100 ▾ %
-  Function setting	Send Colour temperature value	4000 ▾ K
+ Button 1 - Basement	Reaction on long operation	Absolute value ▾
+ Button 2 - Display	Send brightness value	100 ▾ %
+ Button 3 - Display	Send Colour temperature value	4000 ▾ K
+ Button 4 - Display	Disable function	Disable=1/Enable=0 ▾

Fig. 39: Color temperature function Switch/send value

Parameter	Description	Value
Reaction at a short press of a button Response to long key presses	This parameter is used to set which function is to be executed when a short or long key is pressed.	No reaction OFF ON <b>TOGGLE</b> <b>Absolute value</b>
Send the brightness value	This parameter is not visible until the value Absolute Value is selected. The brightness value can be set here	0 ... 100%
Send color temperature	This parameter is not visible until the value Absolute Value is selected. The color temperature of the illuminant is set here.	1000 ... <b>4000</b> ... 10000K

The illuminant must be suitable for the set color temperature values.

**3.5.1.1.6 Send value**

+  General	Description (max 12char.)	Basement
+  Internal sensor measureme...	Valid display space is up to 10 small chars	
+  Input	Reaction on short operation	2byte float value ▼
+  Room temperature controll...	Value 1	1000
-  Function setting	Reaction on long operation	No reaction ▼
Button 1 - Basement	Disable function	Disable=1/Enable=0 ▼

Fig. 40: Send value

Parameter	Description	Value
Reaction to short test pressure	These two parameters are used to set the type of data to be sent for long/short operations.	No reaction
Response to long key presses		<b>1bit value [on/off]</b> 2bit value[0..3] 4bit value[0..15] 1byte value[0..255] 2byte value[0..65535] 2byte float value 4byte value[0..4294967295] 4byte float value

The following parameters are visible when No Response is not selected.

Value 1	This parameter is used to set the data value to be sent in response to short/long key presses. The range of values is defined according to the data type previously selected.
Value 2	

### 3.5.1.1.7 Scene control

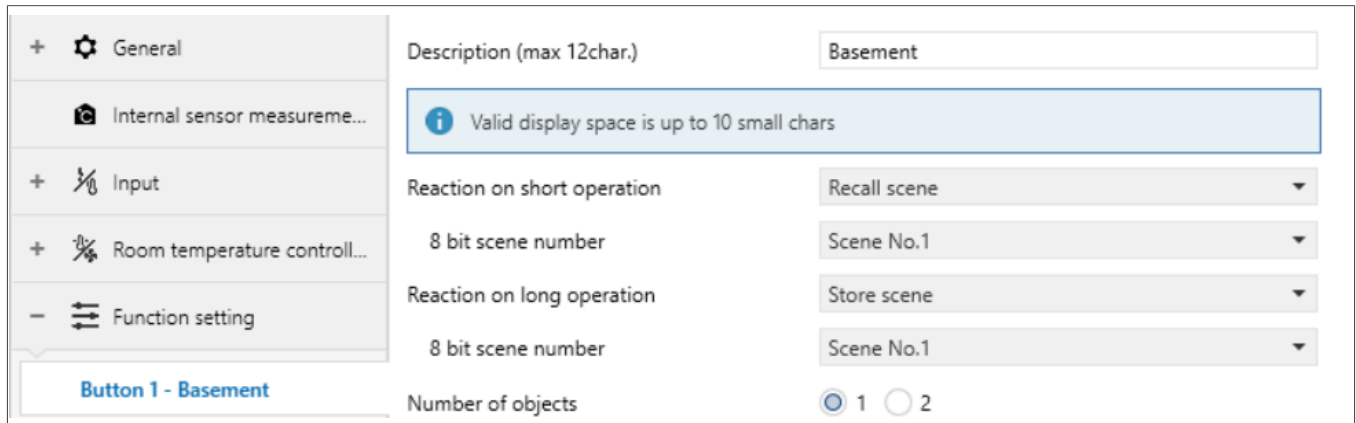


Fig. 41: Scene control

Parameter	Description	Value
Reaction at a short press of a button	These two parameters are used to set up scene recall or save scene at long/short key press.	No reaction
Response to long key presses		<b>Call up the scene</b> Save scene
8 bit scene number	This parameter is visible when "Scene Calls or Save Scene is selected.	<b>Scene No.1</b> ... Scene No. 63
Number of objects	This parameter is visible if the Long Operation Response parameter is not set to No Response. Specify the number of objects for short/long operation.	1 <b>2</b>

**3.5.1.1.8 Blind**

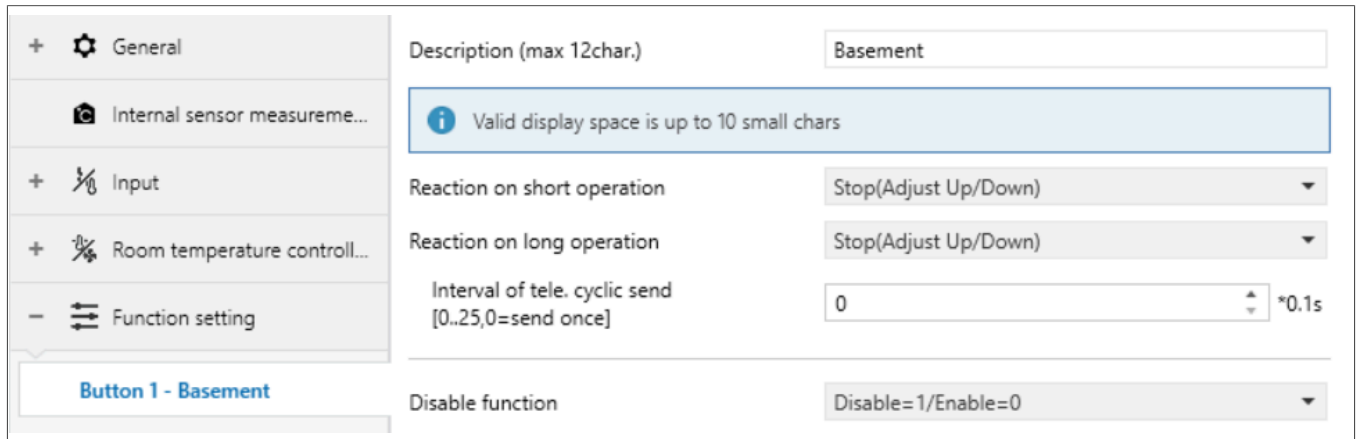


Fig. 42: Blind

Parameter	Description	Value
Reaction at a short press of a button	These two parameters are used to set the actions to be performed at short/long key presses.	No reaction
Response to long key presses		Up Down Up/down Stop (adjustment up) Stop (adjustment down) Stop (up/down adjustment)
Time interval cyclic telegram [0..25,0=send once]	This parameter is visible when the <b>Response to Stop...</b> is set. Set the time interval for the cyclic transmission of the telegram for the blind angle adjustment.	0 ... 25 *0.1s

No response: No action is taken.

To: The curtains/blinds are opened or moved upwards.

From: The curtains/blinds are closed or moved downwards.

Up/Down: The curtains/blinds are alternately opened/closed or moved up/down.

Stop (move up): The curtain movement is stopped or the angle of the blinds is adjusted upwards.

Stop (move down): The curtain movement is stopped or the angle of the blinds is adjusted downwards.

Stop (move up/down): The curtain movement is stopped or the angle of the blinds is alternately adjusted up/down.

### 3.5.1.1.9 Shift register

Fig. 43: Shift register

Parameter	Description	Value
Offset type	This parameter is used to set the shift type.	Shift via step values Shift without step values
<p><b>Shift via step values:</b> Here you can set the start value and the stop value of the shift, as well as the value by which the value is increased (from low to high) or decreased (from high to low) with each shift.</p> <p><b>Offset without step values:</b> If there is no step value, you can set the actual value that is sent each time you shift (up to 10 values), with a value sent each time.</p>		
<p>The following three parameters are visible when <b>shift over step values</b> is selected.</p>		
Value starts at	This parameter is used to set the start value of the offset.	0 ... 240
Value ends with (must be greater than the initial value)	This parameter is used to set the offset stop value.	1 ... 10 ... 250

The setting of the values must meet this condition:  
Value starts at > Value ends at the end value → **must** be **greater** than the start value

Fig. 44: Shift register - error message

Parameter	Description	Value
Step size	This parameter is used to adjust the rise (from low to high) or fall (from high to low) of the value.	0 ... <b>2</b> ... 240
The following parameters are visible when <b>shift without step values</b> is selected.		
Object data type	This parameter is used to set the object data type for the shift object.	<b>1byte unsigned value</b> Scene number HLK mode 1byte percent
Shift number	This parameter is used to set the number of shifts, whereby up to 10 values can be selected.	<b>1</b> ... 10
Value x	This parameter is used for the value sent during each shift operation.	1byte unsigned value - 0 ... 255  Scene number - 1 ... 64  HLK mode - Comfort mode - Standby mode - Night mode - Frost/heat protection  1byte percent - 1 ... 100 %
Direction	This parameter is used to set the switching direction.	From the lowest to the highest cyclical then stop From highest to lowest then stop <b>From the lowest to the highest cyclical</b> From highest to lowest cyclical
	At - Stop: If the highest/lowest value is reached, then further key presses do not have any effect For - cyclical: The next time you press the key, the highest value will jump to the lowest value and vice versa	
Reset function	This parameter is used to set whether the shift reset function is to be activated.	<b>Lock</b> Activate with a long key press
	<b>Lock:</b> Shift cannot be reset. <b>Activating with a long key press:</b> Shift can be reset by pressing and holding down. After the reset, the shift function starts again with a value of 1.	

### 3.5.1.1.10 Multifunction

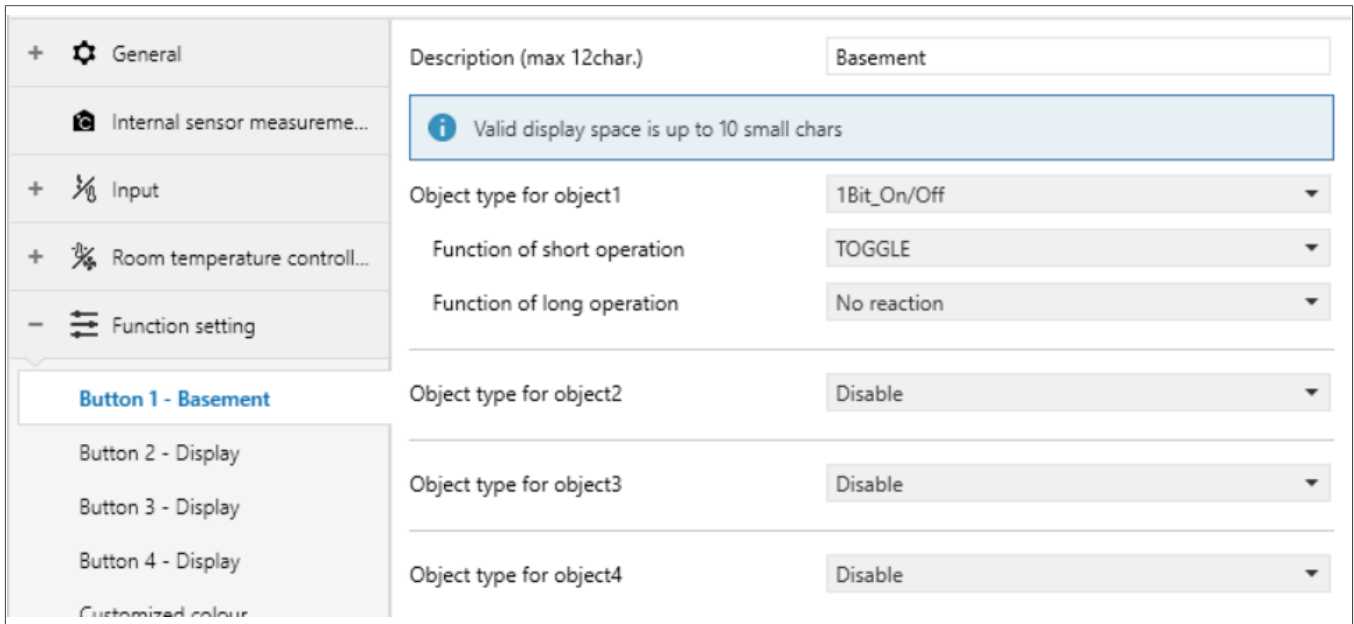


Fig. 45: Multifunction

Parameter	Description	Value
Object type for object x (x=1...4)	This parameter is used to set the data type for the short/long key press function.	Lock <b>1Bit_EIN/AUS</b> 1bit_up/down 1Byte_SzeneAbrufen 1Byte_SzeneSpeichern 1Byte_Prozent 1byte_value without sign 14Byte_String

Only **object type for object 1** and in the function with short key press, sending a **14 byte string** object is supported.

Function with a short press of a button	These two parameters are used to specify the specific values to be sent when the operation is executed.	No reaction <b>Send value</b>
Function with long key press		
Value X (1bit_ON/OFF)	Depending on the selected object type, one of these values x parameters opens. Here, the individual value type can be sent to the bus	No reaction ON OFF <b>TOGGLE</b>
Value X (1bit_up/down)		No reaction Up Down <b>TOGGLE</b>

Parameter	Description	Value
Value x (Scene No.) <sup>[1]</sup>		<b>Scene No.1 ... Scene No.64</b>
Value x (percent) <sup>[2]</sup>		0 ... <b>30</b> ... 100%
Value X (1byte_value without sign)		0 ... <b>127</b> ... 255
Value x (14Byte_String)		String 10 bytes allowed

[1] This parameter is visible if the values 1byte\_percent are used for short/long key press function.

[2] This parameter is visible if the values 1Byte\_Scene Retrieve or 1Byte\_Scene Save are used for short/long key press function.

### 3.5.1.1.11 Delay mode

Fig. 46: Delay mode

Parameter	Description	Value
Short-key object type Long-key object type	These two parameters are used to set the object type for a short or long key press.	Lock <b>1Bit_EIN/AUS</b> 4Bit_Dimmen 1byte_value without sign
Send mode	This parameter sets the send mode when and how the value is sent to the bus.	<b>No action on actuation; delay then send value 1</b> No action on actuation; delay then send value 2 Send value 1 on actuation, delay then send value 2 Send value 2 on actuation, delay then send value 1
Delay time [0..6500]	Sets the time from which the first or second command, depending on the mode, is sent to the bus.	0 ... <b>10</b> ... 6500s
Value 1/2 (1bit_ON/OFF)		Off On
Value 1/2 (4bit_dimming)		0 ... 15
Value 1/2 (1byte_value without sign)		0 ... 255

**3.5.1.1.12 Operating mode RTR**

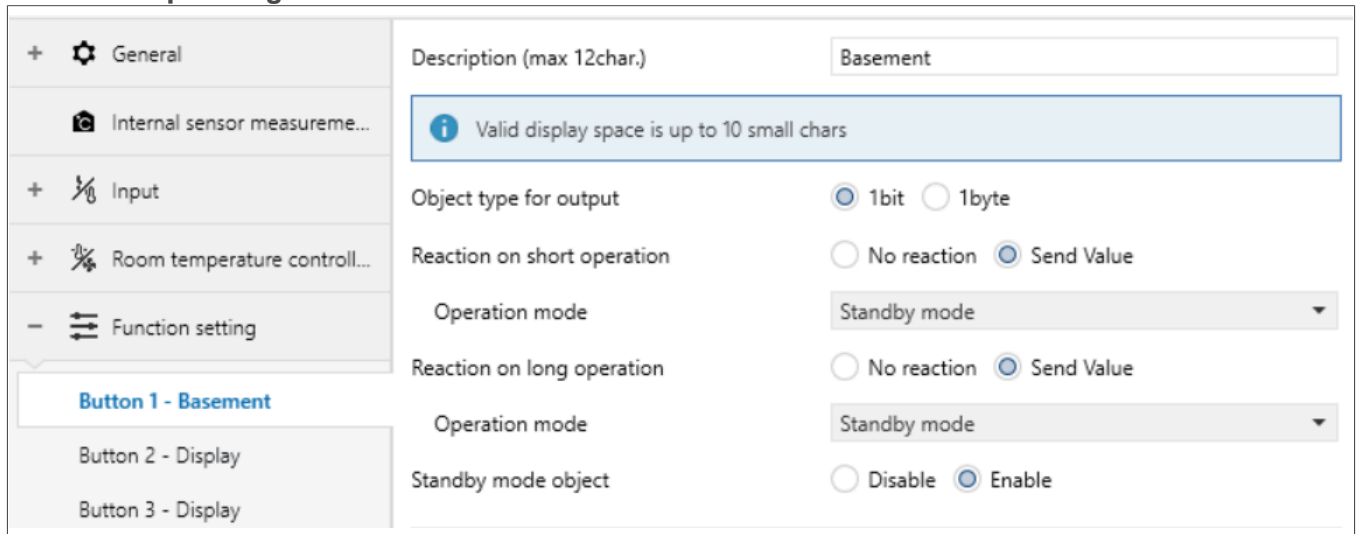


Fig. 47: Operating mode RTR

Parameter	Description	Value
Output object type	This parameter specifies the object type. Depending on the selection, additional parameters or parameters adapted to the object type are opened.	<b>1bit</b> 1byte
Reaction at a short press of a button Response to long key presses	This parameter determines whether or not a value should be sent at short/long key press	No reaction Send value
Operating mode	This parameter specifies the value that is to be sent to the bus as a mode when the button is pressed.	Auto <sup>[1]</sup> <b>Comfort mode</b> Standby mode Night mode Frost/heat protection
Standby mode object <sup>[2]</sup>	Determines whether the object of the standby mode should be activated.	<b>Lock</b> activate

[1] Visible if **1byte** is selected under **Object type for output**.

[2] Visible when **1bit** is selected under **Object type for output**.

### 3.5.1.1.13 String 14 bytes

Fig. 48: String 14 bytes

Parameter	Description	Value
Reaction at a short press of a button	These two parameters are used to specify the specific values to be sent when the operation is executed.	No reaction
Response to long key presses		Send value
String (14 byte) value	Here you can enter an individual text that is to be sent to the bus by pressing a short or long key.	Hello World!! Text box A maximum of 14 bytes are permitted.

**3.5.1.1.14 Value display**

+  General	Description (max 12char.)	Basement
+  Internal sensor measureme...	Valid display space is up to 10 small chars	
+  Input	Display function	Ext. temperature value (DPT 9.001)
+  Room temperature controll...	Text for unit	°C
-  Function setting	Time period for request external value [0...255]	10 min

Fig. 49: Status indicator

Parameter	Description	Value
Display function	This parameter is used to set the data type of the status display.	Int.. Temperature value (DPT 9,001) Int.. Moisture value (DPT 9,007) Ext. Temperature value (DPT 9,001) Ext. Moisture value (DPT 9,007) 1byte percent value (DPT 5,001) 1byte unsigned value (DPT 5,010) 2byte unsigned value (DPT 7,001) 2byte Lux value (DPT 9,004) 2byte floating point number (DPT 9.x) 4byte integer value (DPT 12.001) 4byte floating point number (DPT 14.x) 14byte string (DPT 16.001)
Text for unit of measure	This parameter is used to set the unit of the selected object data type.	When <b>Temperature</b> is selected, the unit is set to <b>°C</b> . If <b>humidity</b> or <b>1 byte percentage</b> is selected, the unit is set to <b>%</b> . If the <b>other options</b> are selected, up to <b>5 characters</b> can be entered.
Cycle time to read external value [0..255]	This parameter is visible when the data type of an external sensor is selected. The time period for the read request of the external sensor is set here. If the value = = is not queried cyclically.	0 ... <b>10</b> ... 255 min

### 3.5.1.1.15 RGB dimming

- + General
- + Internal sensor measureme...
- + Input
- + Room temperature controll...
- Function setting
- + Scene Group function

Description (max 12char.) Basement

i Valid display space is up to 10 small chars


Reaction on short operation

Reaction on long operation

Sub dimming page preview

Switch toggle

Enter into the sub dimming page



Button 1	press to select to adjust H value	Button 2	press to select to adjust S value
Button 3	press to select to adjust V value	Button 4	NA
Button 5	press to decrease value	Button 6	press to increase value

Object datatype 1x3byte

Reaction on "off" operation 
 Only switch object send value 0  
 Brightness objects send value 0

Reaction on "on" operation 
 Only switch object send value 1  
 Preset colour brightness value

---

Step of H (hue) 10 °


Step of S (saturation) 5 %

Step of V (value) 5 %

Fig. 50: RGB dimming

Parameter	Description	Value
Reaction at a short press of a button	These two parameters are used to explain the short/long key response. By default, a short key press switches between ON and OFF.	
Response to long key presses	If you press the button for a long time, the RGB DIMM page is called up. The RGB DIMM page preview and button operation below these parameters can be found in the specific user interface description.	

Parameter	Description	Value
Object data type	This parameter is used to set the object data type for RGB dimming.	1x3Byte
Behavior on OFF command	This parameter is used to set the sent telegram for an OFF command.	<b>Only switching object sends value 0</b> Brightness objects send value 0

Parameter	Description	Value
Behavior on a command	This parameter is used to set the sent telegram for a command.	<b>Only switching object sends value</b> <b>1</b> Preset color brightness value
RGW value	Parameter is not visible until the <b>preset color brightness value</b> has been selected. A fixed, preset value for the RGB color value can be set here.	<b>#FFFFFFF</b> 
Step of H (hue)	This parameter is used to set the step value for the hue.	<b>10 .. 20 .. 30 .. 40 .. 60°</b>
Step of S (saturation)	This parameter is used to set the step value for saturation.	<b>5 .. 10 .. 20%</b>
Step of V (value)	This parameter is used to set the step value of Value.	<b>5 .. 10 .. 20%</b>

### 3.5.1.1.16 RGBW dimming

- + General
- + Internal sensor measureme...
- + Input
- + Room temperature controll...
- Function setting
- Button 1 - Basement**
- Button 2 - Display
- Button 3 - Display
- Button 4 - Display
- Customized colour
- Logic function
- + Scene Group function


Description (max 12char.)

Valid display space is up to 10 small chars

Reaction on short operation Switch toggle

Reaction on long operation Enter into the sub dimming page

Sub dimming page preview



Button 1	press to select to adjust H value	Button 2	press to select to adjust S value
Button 3	press to select to adjust V value	Button 4	press to select to adjust W value
Button 5	press to decrease value	Button 6	press to increase value

Object datatype 
 1x6byte  3byte+1byte

Reaction on "off" operation 
 Only switch object send value 0  
 Brightness objects send value 0

Reaction on "on" operation 
 Only switch object send value 1  
 Preset colour brightness value

---

Step of H (hue)  °

Step of S (saturation)  %

Step of V (value)  %


Step of W(white brightness)  %

---

Disable function

Fig. 51: RGBW dimming

Parameter	Description	Value
Reaction at a short press of a button	These two parameters are used to explain the short/long key response. By default, a short key press switches between ON and OFF.	
Response to long key presses	If you press the button for a long time, the RGBW DIMM page is called up. Display of the preview of the RGBW DIMM page and the key operation below these parameters can be found in the specific description of the user interface.	

Parameter	Description	Value
Object data type	This parameter is used to set the object data type for RGB dimming.	<b>1x6Byte</b> 3Byte + 1Byte
Behavior on OFF command	This parameter is used to set the sent telegram for an OFF command.	<b>Only switching object sends value 0</b> Brightness objects send value 0
Behavior on a command	This parameter is used to set the sent telegram for a command.	<b>Only switching object sends value 1</b> Preset color brightness value
RGB value	Parameter is not visible until the <b>preset color brightness value</b> has been selected. A fixed, preset value for the RGBW color value can be set here.	<b>#FFFFFF</b> 
Brightness value white	Parameter is not visible until the <b>preset color brightness value</b> has been selected. A fixed, preset value for the brightness value white can be set here.	0 ... 100%
Step of H (hue)	This parameter is used to set the step value for the hue.	<b>10</b> .. 20 .. 30 .. 40 .. 60°
Step of S (saturation)	This parameter is used to set the step value for saturation.	<b>5</b> .. 10 .. 20%
Step of V (value)	This parameter is used to set the step value of Value.	<b>5</b> .. 10 .. 20%
Step of W (Brightness White)	This parameter is used to set the step value for white brightness.	<b>5</b> .. 10 .. 20%

### 3.5.1.1.17 Colour temperature dimming

- + General
- + Internal sensor measureme...
- + Input
- + Room temperature controll...
- Function setting
- Button 1 - Basement**
- Button 2 - Display
- Button 3 - Display
- Button 4 - Display
- Customized colour
- Logic function
- + Scene Group function

Description (max 12char.)

Valid display space is up to 10 small chars


Reaction on short operation

Reaction on long operation

Sub dimming page preview

Switch toggle

Enter into the sub dimming page



Button 1	press to decrease colour temperature	Button 2	press to increase colour temperature
Button 3	press to decrease brightness	Button 4	press to increase brightness
Button 5	NA	Button 6	NA

Object datatype of colour temperature

1byte relative percentage value  
 2byte absolute value

Reaction on "off" operation

Only switch object send value 0  
 Brightness objects send value 0

Reaction on "on" operation

Only switch object send value 1  
 Preset colour brightness value

Min. colour temperature [2000..7000]  K

Max. colour temperature [2000..7000]  K


---

Step of colour temperature  K

Step of brightness  %

Fig. 52: Colour temperature dimming

Parameter	Description	Value
Reaction at a short press of a button	These two parameters are used to explain the short/long key response. By default, a short key press switches between ON and OFF.	
Response to long key presses	If you press the button for a long time, the RGB DIMM page is called up. Display of the preview of the color temperature dimming page and the key operation below these parameters can be found in the specific description of the user interface.	

Parameter	Description	Value
Data type for color temperature	This parameter is used to set the object data type for color temperature dimming.	1byte relative percentage value <b>2byte absolute value</b>
<p>If <b>1 byte relative percentage</b> is selected, this applies to products with a driver of 0/1-10 V. The control telegram is of the type Percentage value and the step value is set via ETS. The absolute color temperature is displayed on the screen instead of the percentage value. The telegram range is between 0 and 100%.</p> <p>If 2-byte absolute value is selected, this applies to products that support KNX color temperature. The control telegram is of the type 'Absolute Color Temperature' and the step value is set via ETS, whereby the absolute color temperature is displayed directly on the screen. The telegram range depends on the configuration of the max./min. parameters.</p>		
Behavior on OFF command	This parameter is used to set the sent telegram for an OFF command.	<b>Only switching object sends value 0</b> Brightness objects send value 0
Behavior on a command	This parameter is used to set the sent telegram for a command.	<b>Only switching object sends value 1</b> Preset color brightness value
Brightness is	This parameter is visible if the <b>preset color brightness value</b> is previously selected.	0 ... 100%
Min. Color temperature [2000..2700]	These two parameters are used to set the adjustable range of color temperature.	2000 ... <b>2700</b> ... 7000K
Max. Color temperature [2000..2700]		2000 ... <b>6500</b> ... 7000K
<p>For color temperature, the minimum value must be less than the maximum value, otherwise a red warning message will be displayed in the ETS.</p>		
		
<p>Fig. 53: Color temperature dimming - error message</p>		
Step of color temperature	This parameter is used to set the step value of the color temperature.	100 .. <b>200</b> .. 500 .. 1000K
Step of brightness	This parameter is used to set the Brightness step value.	<b>5</b> .. 10 .. 20%

### 3.5.1.1.18 Presentation of status information

The following settings for the display of status information can be made for all functions.

Darstellung Statusinformation	Über Taster-Schalt Objekt Status
Anzeigeweise	Bezeichnung der Taste + Symbol
Symbol bei Objektwerte=1	☾ Licht Ein
Farbe bei Objektwert=1	Orange
Symbol bei Objektwerte=0	☾ Licht Aus
Farbe bei Objektwert=0	Vordergrund

Fig. 54: Status information - via button-switch object status

Darstellung Statusinformation	Über externes Status Objekt 1 Bit
Anzeigeweise	Bezeichnung der Taste + Symbol
Symbol bei Objektwerte=1	☾ Licht Ein
Farbe bei Objektwert=1	Orange
Symbol bei Objektwerte=0	☾ Licht Aus
Farbe bei Objektwert=0	Vordergrund

Fig. 55: Status information - via external status object 1bit

Darstellung Statusinformation	Über externes Status Objekt 1 Byte
Anzeigeweise	Bezeichnung der Taste + Symbol
Objekt Datentyp	<input checked="" type="radio"/> 1Byte[0..255] <input type="radio"/> 1Byte[0..100%]
Typ Schwellwertvergleich	<input checked="" type="radio"/> Zwischen den Schwellwerten <input type="radio"/> Gleich dem Schwellwert
Anzahl Schwellwerte	1
Schwellwert 1 ist	0
<b>Wenn Objektwert &lt;= Schwellwert 1</b>	
Symbol ist	Licht Ein
Farbe ist	Vordergrund
<b>Wenn Objektwert &gt; Schwellwert 1</b>	
Symbol ist	Licht Ein
Farbe ist	Rot

Fig. 56: Status information - via external status object 1byte

Darstellung Statusinformation	Immer
Anzeigeweise	Bezeichnung der Taste + Symbol
Symbol für Anzeige	Deckenleuchte
Farbe der Anzeige	Vordergrund

Fig. 57: Status information - always



If only 1 page is selected, the buttons 5 and 6 only support the scene function and not the following configuration.

Parameter	Description	Value
Presentation of status information	This parameter is used to set the status display of the button,  For buttons with switching function, including switching, dimming, RGB switching/send value, RGB switching/send value, Color temperature switching/send value, RGB dimming, RGBW dimming or color temperature dimming.	<b>Via the object status button switch</b> Via external status object 1bit Via external status object 1byte Always
	For keys without switching function, including value transmitter, scene control, blind, shift register, Multi-mode, delay mode, or RTC mode.	Via external status object 1bit <b>Via external status object 1byte</b> Always Button press indicator
	If the String 14Byte function is selected.	Always <b>Button press indicator</b>
	When the value display function is selected.	<b>Always</b>

Table 13: Presentation of status information

Via key switch status object: Via the status object of the key switch: Displays the status via the feedback of the status object of the key;

Via external status object 1 bit: Via external status object 1 bit: Displays the status via the feedback value from the external 1-bit object;

Via external status object 1 bytes: Via external status object 1 bytes: Displays the status by comparing the value returned by the external 1-byte object with the threshold value

Always: Display always in the same status.

Button press display: Key-press indicator: Two flashes (0.5 s on and 0.5 s off) when the button is pressed, then return to the normal display; pressing again during the flash cycle does not reset the cycle.

Parameter	Description	Value
Display mode	This parameter is used to set the display type of the button.  Are these functions, such as switches, dimming, RGB switching/send value, RGB switching/send value, Colour temperature switching/sending value, value transmitter, scene control, blind, shift register, Multiple operation, delay mode, RTC operating mode, RGB dimming, RGBW dimming, or color temperature dimming, selected, these values are displayed.	<b>Name of the key + symbol</b> Symbol only Name of the key
	If the String 14Byte function is selected.	<b>Name of the key + symbol</b>

Table 14: Presentation of status information

The description of the key is configured using the parameter 'Description (max. 12 characters)'.

Parameter	Description	Value
Symbol for object value =1 Symbol when object value = 0	These two parameters are visible when 'Symbol ...' is selected as the display type.	Light on Light OFF ... PM10
Color at object value =1 Color at object value =0	These two parameters are used to set the color of the symbol and text if the value of the status object telegram is 1 or 0.	<b>Foreground</b> Red Dark green ... Individual color 5
	If the String 14Byte function is selected.	<b>Name of the key + symbol</b>

Table 15: Presentation of status information

**The following parameters are visible when the status display 'Via external status object 1 bytes' is selected:**

Parameter	Description	Value
Object data type	This parameter is used to set the object data type of the status display.	<b>1Byte [0..255]</b> 1Byte[0..100%]
Threshold comparison type	This parameter is used to set the threshold comparison type. You can choose to display the value if it is between the threshold or the threshold.	<b>Between the thresholds</b> Equal to the threshold value
Number of thresholds	This parameter is used to set the number of threshold comparisons.	1 / 2 / 3 / 4 <sup>[1]</sup> 1 / 2 / 3 / 4 / 5 <sup>[2]</sup>
Threshold value is 1	This parameter is used to set the threshold. The status is displayed by comparing the input value with the threshold value. Options are displayed according to the <b>Object Data Type</b> parameter.	<b>0 ... 255</b> <b>0 ... 100 %</b>

[1] Visible when the **Threshold Comparison type** has the value selected **between the thresholds**.

[2] Visible when the **Threshold Comparison type** is set to the value **equal to the threshold values**.

Depending on the threshold comparison type and number of threshold comparisons, you can specify the icon and color that corresponds to the threshold comparison.

Parameter	Description	Value
Icon	This parameter is visible when <b>Symbol</b> is selected as the display type. Set the icon to display according to the threshold comparison.	Light on Light OFF ... PM10
Color is	This parameter is used to set the color of the symbol and text that match the threshold comparison.	<b>Foreground</b> Red Dark green

Parameter	Description	Value
		...
		Individual color 5

The following parameters are visible when the status indicator is set to **Always**:

Parameter	Description	Value
Icon	This parameter is visible when <b>Symbol</b> is selected as the display type. Set the icon to display according to the threshold comparison.	Light on Light OFF ... PM10
Color is	This parameter is used to set the color of the symbol and text that match the threshold comparison.	<b>Foreground</b> Red Dark green ... Individual color 5

### 3.5.1.2 Rocker

The following chapters describe the functions that are available in the button settings as a **rocker**.

#### 3.5.1.2.1 Switch function

Fig. 58: Rocker - Shift function

Parameter	Description	Value
Label (max 12 characters)	Up to 12 characters can be entered here to describe the switching function. The label is placed in the top center of the display.	
Distinguishing between short and long actuation	This parameter determines whether a distinction should be made between short and long actuation. If Yes is selected, a separate function can be selected for the short and long actuation.	No Yes
Behavior when pressing a button (for left rocker)	These parameters are used to set the actions to be performed when the contact is pressed/released or when the left/right rocker buttons are pressed for a long time. The object value is updated when the input is set.	No reaction
Behavior when the button is released (for left rocker)		ON
Behavior when pressing a button (for right rocker)		OFF
Behavior when pressing a button (for right rocker)		TOGGLE
	No response: No telegram is sent. OFF: A telegram is sent when it is switched off. ON A switch-on telegram is sent. Toggle: Each key press causes a switch between ON and OFF. For example, if the last telegram for an has been sent (or received), the next operation triggers a telegram for. If the key is pressed again, a telegram for ON is sent, etc. This means that the device always remembers the previous state and switches to the opposite value during the next operation.	
Number of objects	This parameter is not visible until one of these values is selected under <b>Reaction on Release</b> : ON, OFF, TOGGLE. This	1 2

Parameter	Description	Value
	determines whether only one object is available for the Release Response function, or whether two objects are available for Release and Release respectively.	
Lock the button	This parameter is used to set the trigger value for disabling/activating contacts.	<b>Lock</b> Lock=1/Release=0 Lock=0/Release=1
Display lock icon when locked	This parameter is visible when the previous parameter <b>Lock=1/Release=0</b> or <b>Lock=10Release=1</b> is selected. Here, the symbol size is defined which should be displayed if the button is deactivated.	<b>Symbol small</b> Symbol large
<p>The large symbol is the lock symbol, which replaces the original symbol, while the small symbol shows the two symbols side by side, with the lock symbol being a small symbol in the right corner. For the exact effect, please refer to the description of the user interface. Note: The deactivation function applies to all of the following functions except the 'status indicator'.</p>		
Flashing function	This parameter is used to set whether the flashing function should be activated.	<b>Lock</b> Lock=1/Release=0 Lock=0/Release=1
Color for flashing	This parameter specifies the color for the flashing of the symbol	Foreground Red Dark green ...

The flashing function is only used for switching, dimming and blinds. The flashing function takes precedence over the normal status indicators and returns to the normal display after the flashing has ended. See Chapter 7.1 for specific flash effects.

- [1] These two parameters are visible if the default value **No** is selected in the parameter **Distinguishand between short and long actuation**.
- [2] These two parameters are visible when the value **Yes** is selected in the parameter **Distinguishand between short and long actuation**.

3.5.1.2.2 Dimming function

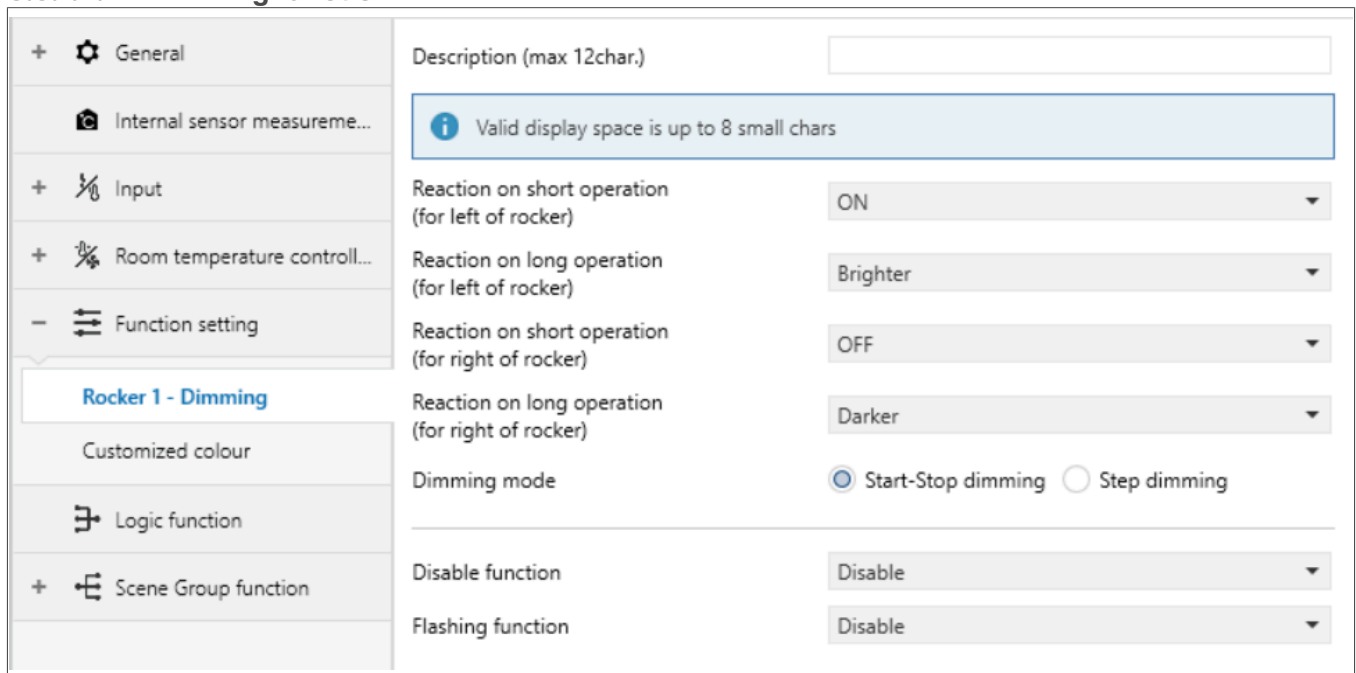


Fig. 59: Rocker - dimming function

Parameter	Description	Value
Short button response (for left/right rocker)	This parameter is used to set the value to be sent when the button is pressed briefly.	<b>No reaction</b> OFF ON TOGGLE
	No response: No telegram is sent. OFF: A telegram is sent when it is switched off. ON A switch-on telegram is sent. Toggle: Each key press causes a switch between ON and OFF. For example, if the last telegram for an has been sent (or received), the next operation triggers a telegram for. If the key is pressed again, a telegram for ON is sent, etc. This means that the device always remembers the previous state and switches to the opposite value during the next operation.	
Response to long button press (for left/right rocker)	This parameter is used to set the value to be sent when a long key is pressed.	No reaction <b>brighter</b> darker lighter/darker
	No action: No telegrams were sent. Brighter The dimming value is sent. Darker The dimming value is sent. Brighter/darker: Dimming and dimming are sent alternately.	
Dimming mode	This parameter is not visible until the value lighter, darker, or lighter/darker is selected.	<b>Start-stop dimming</b> Step dimming
	Start-stop dimming: A dimming of light or dark telegrams is sent when dimming begins, and a stop telegram is sent when dimming ends. The dimming telegram is not sent cyclically.	

Parameter	Description	Value
	Step dimming: The dimming mode is level 1 and the dimming telegram is sent cyclically. When the dimming process is finished, a stop dimming telegram is sent immediately.	
Step size	This parameter specifies the step size, i.e. the value that is sent each time a key is pressed.	100% 50% 25% <b>12.5%</b> 6.25% 3.13% 1.56%
Time interval cyclic telegram (0..25, 0=send once)	<p>The time interval for cyclic sending of the telegram is defined here. If = is selected, the telegram is sent only once and the brightness value is set to the value of the step size with one step. If a value &gt; 0 is selected, the brightness value is increased by the value in the step size until reaching 100% with each interval.</p> <p>The smaller the increments, the more time intervals could be set and vice versa.</p>	0 ... 25 *0.1s

**3.5.1.2.3 Scene control function**

Fig. 60: Rocker - Scene control

Parameter	Description	Value
Short button response (for left/right rocker)	These two parameters are used to set up scene recall or save scene at long/short key press.	No reaction
Response to long button press (for left/right rocker)		<b>Call up the scene</b> Save scene
8 bit scene number	This parameter is visible when "Scene Calls or Save Scene is selected.	<b>Scene No.1</b> ... Scene No. 63
Number of objects	This parameter is visible if the Long Operation Response parameter is not set to No Response. Specify the number of objects for short/long operation.	1 <b>2</b>

### 3.5.1.2.4 Function blind

Fig. 61: Rocker - blinds

Parameter	Description	Value
Short button response (for left/right rocker)	These two parameters are used to set the actions to be performed at short/long key presses.	No reaction
Response to long button press (for left/right rocker)		Up
		Down
		Up/down
		Stop (adjustment up)
		Stop (adjustment down)
		Stop (up/down adjustment)
Time interval cyclic telegram [0..25,0=send once]	This parameter is used to set the time interval for sending telegrams for cyclic adjustment of the blind angle.	0 ... 25 *0.1s

No action: No action is taken.

To: The curtains/blinds are opened or moved upwards.

From: The curtains/blinds are closed or moved downwards.

Up/Down: The curtains/blinds are alternately opened/closed or moved up/down.

Stop (move up): The curtain movement is stopped or the angle of the blinds is adjusted upwards.

Stop (move down): The curtain movement is stopped or the angle of the blinds is adjusted downwards.

Stop (move up/down): The curtain movement is stopped or the angle of the blinds is alternately adjusted up/down.

3.5.1.2.5 Setpoint specification function

Fig. 62: Rocker - setpoint specification

Parameter	Description	Value
Function	This parameter is used to set the type of adjustment of the set temperature.	<b>Setpoint correction (absolute)</b> Increase/decrease offset (relative) Offset setpoint correction (relative)
	Setpoint correction (absolute): Applies to the absolute adjustment of the setpoint temperature Increase/Decrease Offset (relative): Applies to the relative adjustment of the setpoint temperature offset via a 1-bit object Offset setpoint correction (relative): Applies to the relative adjustment of the offset of the setpoint temperature	
Reaction on actuation	This parameter is used to specify whether only the set temperature should be displayed when the button is pressed for the first time or whether the command should be executed simultaneously.	<b>First display the setpoint value</b> Run command and display setpoint first
Operation of the rocker	This parameter is used to set the operating mode of the rocker.	increase/decrease <b>decrease/increase</b>
	Increase/Decrease: The left side of the rocker increases the set temperature and the right side decreases the set temperature. Decrease/increase: The left side of the rocker decreases the set temperature and the right side increases the set temperature.	
Setpoint correction step	This parameter is visible when Setpoint Temperature Adjustment Setpoint Correction (absolute) or Offset Setpoint Correction (relative) is selected.	<b>0.5 K</b> 1 K

The following applies for the absolute setting: If the current set point temperature is 21°C, it is increased by 0.5°C, so that the current set point temperature is changed to 21.5°C and sent to the bus. If reduced by 0.5°C, the current set temperature is changed to 20.5°C and sent to the bus.

For a relative setting, the step value is 1 K, the current offset is 0 K. Increase per time to send an offset of 1 K to the bus. If the current offset is -1 K, decrease per time to send an offset of -2 K to the bus.

**Setpoint correction (absolute)**

The following parameters are visible when the setpoint temperature adjustment setpoint correction (absolute) is selected:

Parameter	Description	Value
Initial value if no response at startup	This parameter is used to set the initial setpoint temperature value after the voltage is restored or the download is complete if no response was received at start-up.	5 ... <b>20</b> ... 37°C
Min. Setpoint temperature	These two parameters are used to set the adjustable range of the setpoint temperature.	5 ... <b>19</b> ... 37°C
Max. Setpoint temperature		5 ... <b>26</b> ... 37°C

If the set temperature is outside the limited range, the limited temperature is output. At the set temperature, the minimum value must be less than the maximum value.

**Increase/decrease offset (relative)**

The following parameters are visible when the set point temperature adjustment increase/decrease offset (relative) is selected:

Parameter	Description	Value
Operation of the rocker	This parameter is used to set the function with which rocker side the value is to be reduced/increased.	increase/decrease <b>decrease/increase</b>

**Offset setpoint correction (relative)**

The following parameters are visible when the setpoint temperature adjustment offset setpoint correction (relative) is selected:

Parameter	Description	Value
Initial value if no response at startup	This parameter is used to set the initial value of the setpoint temperature offset after voltage recovery or completion of the download if no response was received at startup.	-10 ... <b>0</b> ... 10K
Min. Setpoint offset [-10..0]	This parameter is used to set the maximum offset when reducing the setpoint temperature offset (negative offset).	-10 ... <b>-5</b> ... 0K
Max. Setpoint offset [0..10]	This parameter is used to set the maximum offset when the setpoint temperature offset (forward offset) increases.	0 ... <b>5</b> ... 10K

For the offset, the min. value and the max. value must not be equal to 0 at the same time. A red warning message is displayed:

Min. setpoint offset [-10..0]	<input type="text" value="0"/>	K
Max. setpoint offset [0..10]	<input type="text" value="0"/>	K

### 3.5.1.2.6 Rocker status display

#### Left/right field indicator

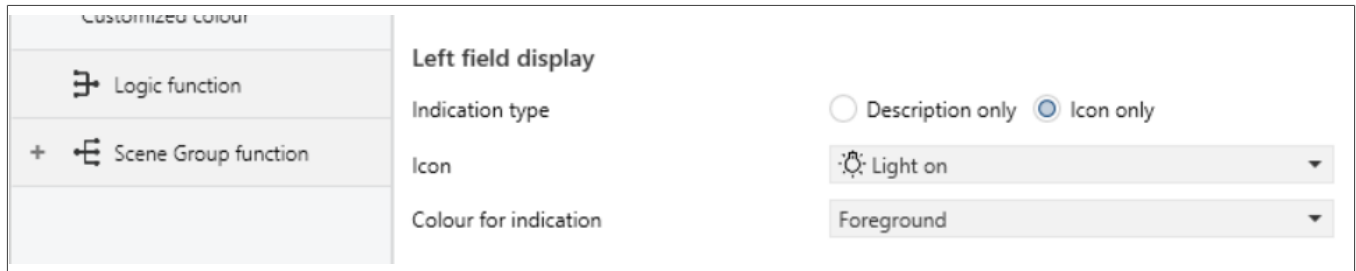


Fig. 63: Left field indicator

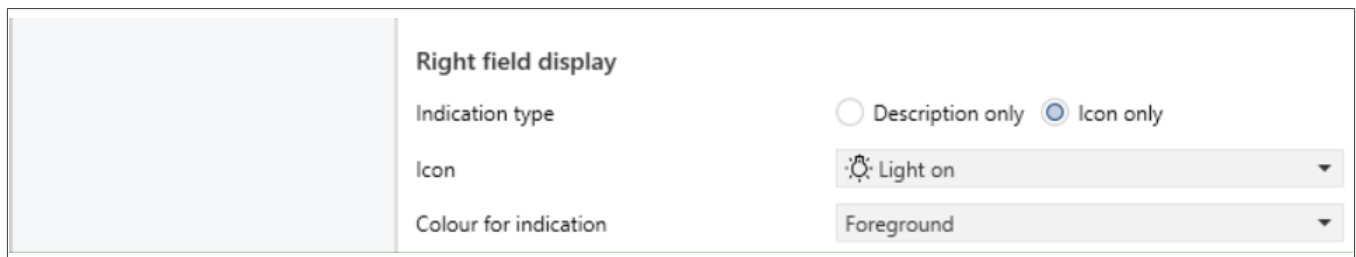


Fig. 64: Right field indicator

Parameter	Description	Value
Display mode	This parameter is used to set the display type for the left/right panel of the rocker.	Name only Symbol only
Symbol only	This parameter is visible when the display type is 'Symbol only'. Set the status indicator icon.	<b>Light on</b> Light OFF ... PM10
Label (max. 7 characters)	This parameter is used to set the description for the left/right field of the rocker buttons, maximum 7 characters.	
Color of the display		Foreground ... Individual color 4

Center field display

<b>Middle field display</b>	
Status indication	Via button switch status object
Indication type	Icon + Description of button
Icon for object value=1	Light on
Colour for object value=1	Orange
Icon for object value=0	Light off
Colour for object value=0	Foreground

Fig. 65: Display - via the Switch Object Status button

<b>Middle field display</b>	
Status indication	Via external status object 1 bit
Indication type	Icon + Description of button
Icon for object value=1	Light on
Colour for object value=1	Orange
Icon for object value=0	Light off
Colour for object value=0	Foreground

Fig. 66: Display - via external status object 1 bit

<b>Middle field display</b>	
Status indication	Via external status object 1 byte
Indication type	Icon + Description of button
Object datatype	<input type="radio"/> 1byte[0..255] <input checked="" type="radio"/> 1byte[0..100%]
Threshold compare type	<input checked="" type="radio"/> Between the threshold value <input type="radio"/> Equal to the threshold value
Number of threshold	1
Threshold value 1 is	0 %

Fig. 67: Display - via external status object 1 bytes

	<b>If object value ≤ threshold value 1</b>	
	Icon is	: Light on
	Colour is	Foreground
	<b>If object value &gt; threshold value 1</b>	
	Icon is	: Light on
	Colour is	Red

Fig. 68: Display - via external status object 1 bytes

	<b>Middle field display</b>	
	Status indication	Via external status object 2 byte
	Indication type	Icon+status value
	Icon for indication	: Light on
	Colour for indication	Foreground

Fig. 69: Display - via external status object 2 bytes

	<b>Middle field display</b>	
	Status indication	Via external status object 2 byte float
	Indication type	Icon+status value
	Temperature display units	Celsius(°C)
	Icon for indication	: Light on
	Colour for indication	Foreground

Fig. 70: Display - via external status object 2 byte float

	<b>Middle field display</b>	
	Status indication	Always
	Indication type	Icon + Description of button
	Icon for indication	: Light on
	Colour for indication	Foreground

Fig. 71: Display - always

Parameter	Description	Value
Presentation of status information	This parameter is used to set the status display of the button.	
	With the switching function	Via the object status button switch
		Via external status object 1 bit Via external status object 1 bytes

Parameter	Description	Value
		Always
	If the <b>Scene Control</b> or <b>Blinds</b> button function is selected, there is no value <b>via button-switch object</b> in the above options	
	If the <b>dimming</b> function is selected, you can also select in addition to the above options	Via external status object 2 bytes
	If Setpoint Adjustment is selected, the following options are available.	Via external status object 1 bit 2 byte float via external status object Always

**Via the object status button switch** : Displays the status via the feedback value of the status object of the switch

**Via external status object 1 bit**: Displays the status via the feedback value of the external 1-bit object

**Via external status object 1 bytes**: Displays the status by comparing the feedback value of the external 1-byte object with the threshold value

**Via external status object 2 bytes**: Displays the received integer value, such as color temperature

**Via external status object 2 byte float**: Displays the received float value, e.g. temperature

**Always**: Display always in the same status.

Parameter	Description	Value
Display mode	This parameter is used to set the display type of the button.	Name of the key Symbol only Name of the key + symbol Status value Symbol + Status value Int.temp + status value

When the **Shift** or **Scene Control** function is selected, there are no **status** options, i.e. the options have no **status value** and no **...status value**.

If the **dimming** or **blind** function is selected, the **Int.temp + status value** option is not supported, and the options have no **status value** and **...status value** if the status display is selected **via the Object Status button, via the Object 1 bit external status** or **Always**.

If the **Setpoint Adjustment** function is selected, there are no status options when the status display is selected **via external status object 1 bit** or **always**, i.e. the options have no **status value** or none...**S-status value** .. If **Object 2 byte float** is selected **via external status**, only the status options are supported.

The following parameters are visible if **1 bit object** status is selected as the status display **via button-switch** or **via external status object**:

Parameter	Description	Value
Symbol for object value=1	These two parameters are visible when 'Symbol ...' is selected as the display type.	Light ON
Symbol for object value=0		Light OFF
Color for object value=1	These two parameters are used to set the color of the symbol and text if the value of the status object telegram is 1 or 0.	...
Color for object value=0		PM10
Color for object value=1	These two parameters are used to set the color of the symbol and text if the value of the status object telegram is 1 or 0.	Foreground
Color for object value=0		Individual color 5

The following parameters are visible when the status display 'Via external status object 1 bytes' is selected:

Parameter	Description	Value
Object data type	This parameter is used to set the object data type of the status display.	1Byte[0..255] <b>1Byte[0..100%]</b>
Threshold comparison type	This parameter is used to set the threshold comparison type. You can choose to display the value if it is between the threshold or the threshold.	<b>Between the thresholds</b> Equal to the threshold value
Number of thresholds	This parameter is used to set the number of threshold comparisons.	
	When is selected <b>between the thresholds</b>	1 / 2 / 3 / 4
	If <b>equal to the threshold</b> is selected	1 / 2 / 3 / 4 / 5
Threshold value x is (x=1...5)	This parameter is used to set the threshold. The status is displayed by comparing the input value with the threshold value. Depending on the selection under Object data type, you can choose between value (0...255) or percentage value (0...100%).	<b>At 1 bytes [0...255]</b> 0 ... 255 <b>At 1 bytes[0...100%]</b> 0 ... 100 %

Depending on the threshold comparison type and number of threshold comparisons, you can specify the icon and color that corresponds to the threshold comparison. Parameters as follows:

Parameter	Description	Value
Icon	This parameter is visible if the display type is 'Symbol...' is selected. Here you can set which symbol is displayed for the function used.	Light ON Light OFF ... PM10
Color is	This parameter is used to set the color of the symbol and text that match the threshold comparison.	Foreground ... Individual color 5

The following parameters are visible when the status display **via external status object 2 byte float** is selected:

Parameter	Description	Value
Unit temperature display	This parameter is used to set the temperature unit displayed on the screen.	Celsius(°C) Fahrenheit(°F) Kelvin(K)

The temperature accuracy is 0.1.

The following parameters are visible if **2 bytes** or **Always** is selected as the status display **via external status object**:

Parameter	Description	Value
Icon for display	This parameter is visible if the display type is 'Symbol...' is selected. Here you can set which symbol is displayed for the function used.	Light ON Light OFF ... PM10
Color for display	This parameter is used to set the color of the symbol and text that match the threshold comparison.	Foreground ... Individual color 5

### 3.5.1.3 Individual colors

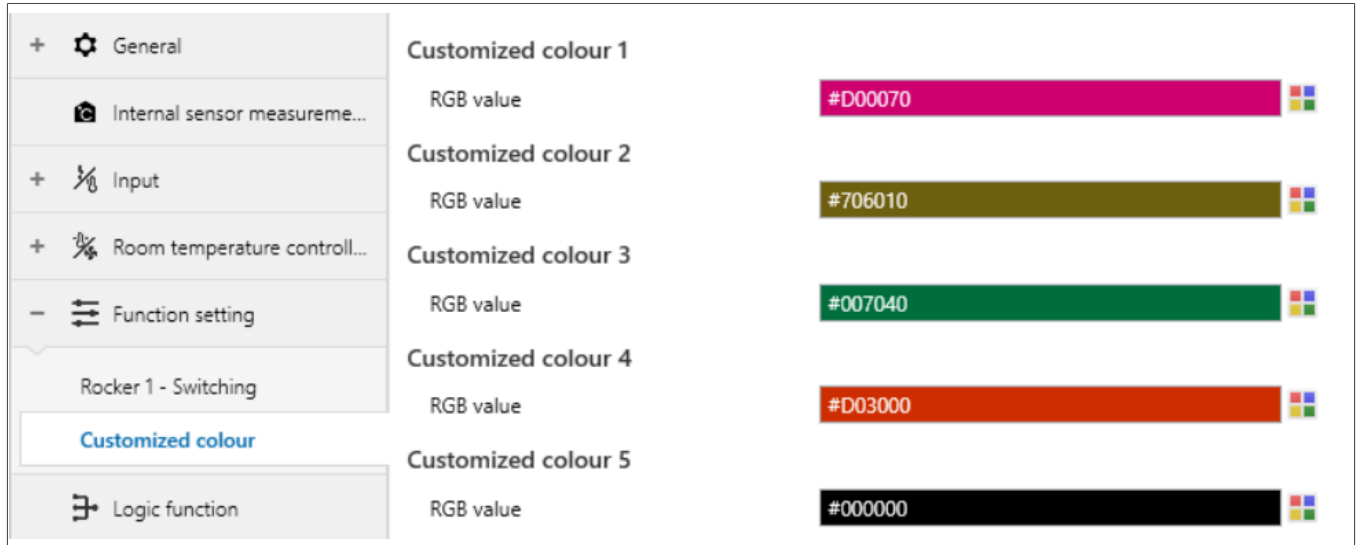


Fig. 72: Individual colors

Parameter	Description	Value
<b>Individual color x (x=1...5)</b>		
RGB value	This parameter is used to set the user-defined color of the status display. The user can define up to 5 colors.	#000000 ... #FFFFFFF 

### 3.5.2 Multifunction thermostat

- + Allgemein
- + Interne Temperaturmessung
- + Eingang
- + Raumtemperaturregler
- **Einstellung Funktionen**
- + HLK - HLK Wohn  
Individuelle Farbe
- + Logikfunktionen
- + Szenen Gruppe Funktion

Funktion Multifunktionsthermostat ▾

---

Raumtemperatur Regelung als HLK Steuerung ▾

Display Voransicht

Taste 1	Drücken um Ein/Aus-Schalten	Taste 2	Durch Betätigen wird die Funktionsseite gewechselt falls Multifunktion aktiv ist
Taste 3	kurzes Drücken zum Umschalten der Lüftergeschwindigkeit, langes Drücken zum Umschalten auf Automatik	Taste 4	Wenn Betriebs inaktiv, drücken um Heizen/Kühlen umzustellen; Wenn Betriebsart aktiv, drücken um Betriebsart zu wechseln, langes Drücken umschalten Heizen/Kühlen
Taste 5	Drücken um Temperatur zu verringern	Taste 6	Drücken um Temperatur zu erhöhen

Fussbodenheizung Funktion

Lüftung Funktion

Verzögerungszeit um Einstellungsseite zu verlassen 3.0 ▾ s

Temperaturanzeige Einheit 
 Celsius(°C)  Fahrenheit(°F)

Fig. 73: Multifunction thermostat

Parameter	Description	Value
Room temperature control as	This parameter is used for setting the room temperature control function.	<b>Lock</b> HLK control VRF (variable refrigerant flow) control
Underfloor heating function	This parameter is used to set whether the underfloor heating function should be activated. When selected, parameters to be set further open	
Ventilation function	This parameter is used to set whether the ventilation function should be activated. When selected, parameters to be set further open	
Delay time to exit the settings page	This parameter is used to set the delay time for automatically exiting the page after operation and is mainly used for the sub-function settings of RTC, under-floor heating and ventilation. Telegrams	0.5 ... <b>3.0 s</b> ... 10 s.

Parameter	Description	Value
	are sent immediately, e.g. setpoint temperature; the exact definition depends on the user interface.	
Unit temperature display	Selects the temperature unit to be displayed.	<b>Celsius (°C)</b> Fahrenheit (°F)

---

**3.5.2.1 Fan Coil Unit (FCU) settings**

+  General	Type of heating/cooling control	Switching PWM(use PI control) ▼
Internal sensor measureme...	Invert control value	<input type="radio"/> No <input checked="" type="radio"/> Yes
+  Input	PWM cycle time [1..255]	15 min
-  Room temperature controll...	Heating speed	Hot water heating(5K/150min) ▼
	Cooling speed	User defined ▼
Setpoint	Proportional range [10..100]	40 *0.1K
<b>Heating/Cooling control</b>	Reset time [0..255]	150 min
Fan auto.control	Cyclically send control value [0..255]	10 min

Fig. 74: Fan coil unit parameter settings

+  General	Type of heating/cooling control	Switching PWM(use PI control) ▼
Internal sensor measureme...	Invert control value	<input type="radio"/> No <input checked="" type="radio"/> Yes
+  Input	PWM cycle time [1..255]	15 min
-  Room temperature controll...	Heating speed	Hot water heating(5K/150min) ▼
	Cooling speed	User defined ▼
Setpoint	Proportional range [10..100]	40 *0.1K
<b>Heating/Cooling control</b>	Reset time [0..255]	150 min
Fan auto.control	Cyclically send control value [0..255]	10 min

Fig. 75: Fan coil unit - window contact

Parameter	Description	Value
Label (max. 12 characters)	Up to 12 characters can be entered here to describe the switching function. The label is placed in the top center of the display.	
Internal humidity indicator	This parameter is used to set whether the internal humidity should be displayed on the screen. The humidity is determined in the <b>Internal temperature measurement</b> settings.	
Means	This parameter is used to set the HVAC control mode of operation.	Single Master Slave

Table 16: Settings General

Single

- The device is set to single control and with a temperature control algorithm, the output directly controls the actuator.

### Master

- The unit's FCU control is set to multi-control, and a temperature control algorithm dominates the unit's performance. When the device restarts, it sends the current status to the bus, such as power on/off, set temperature, control mode, operating mode, and fan speed polling.

### Slave

- The FCU controller of the device is set to slave control. Currently, the FCU is only used as a touch screen and display, without a temperature control algorithm. When the device is restarted, it sends a status prompt, such as power on/off, set temperature, control mode, operating mode, Fan speed.

Parameter	Description	Value
Room temperature reference of	This parameter is used to select the temperature sensor to be applied.	Internal probe External probe Internal and external probe combined

Table 17: Selection of temperature sensors

If the **Internal sensor** value is selected in the **Room temperature reference** parameter, the room temperature is set and processed in the settings under Internal temperature measurement [Chapter 3.2, Internal temperature measurement](#) .

Parameter	Description	Value
Cycle time to read external sensor [0..255]	This parameter is visible when ...External probe is selected. The time period for the read request of the external temperature sensor is set here.	0 ... <b>5</b> ... 255 min

The following parameters are visible when the **Internal and External Probe Combined** value is selected at **room temperature Reference of**.

Combination ratio	This parameter is used to determine the ratio between the two temperature sensors in the calculation of the control parameters.	10% internal, 90% external
		...
		<b>50% internal, 50% external</b>
		...
		90% internal, 10% external

Table 18: Measurement / transmission behavior


### Example:

For example, if the option is **40% internal to 60% external**, then the internal probe is 40%, the external probe is 60%, and the control temperature is calculated as follows.

Control temperature = (internal sensor temperature × 40%) + (external sensor temperature × 60%). The appliance regulates and displays the temperature according to the calculated temperature.

If two sensors are combined for detection and one sensor has an error, the temperature value detected by the other sensor is used.

Parameter	Description	Value
Transmit temperature when changed	This parameter is used to set whether the current temperature value is to be sent to the bus when the temperature is changed by the value x. If deactivated, no transmission occurs.	Lock 0.5 ... <b>1.0</b> ... 10.0K
Send temperature cyclically [0..255,0=in-active)	Set the time for the cyclic transmission of the temperature measured value to the bus. No transmission if the value is 0.	<b>0</b> ... 255 min



The cyclic sending and sending of changes are independent of each other.

Control value according to temp. Error [0..100] (for 2-point control, value'=0, value'>0'=1)	This is where the control value is set if a temperature error occurs. For a 2-point control, the parameter value is 0, as is the control value. If the parameter value is greater than 0, the control value is 1.	<b>0</b> ... 100 %
--	---	--------------------

Table 19: Transmit behavior on change

Parameter	Description	Value
Temperature display display	This parameter is used to set which temperature should be displayed on the display.	Setpoint temperature <b>Current temperature</b>
Setpoint temperature setting step	This parameter is used to set the setpoint temperature setting step.	<b>0.5 K</b> 1.0 K

Table 20: Temperature indication on the display

Parameter	Description	Value
On/Off function	This parameter is used to set whether and how the on/off function is to be used.	<b>Lock</b> Only via button Only via object About both, key and object

Table 21: Behavior in the event of voltage loss

**Deactivate:** The on/off function of the device is deactivated.

**Only via key:** Switch on/off only by pressing the button on the control panel.

**Only via object:** Switch on/off only via the object.

**About both, key and object:** Switch on/off both via the button on the control panel and via the object.

Parameter	Description	Value
On/Off status after download	If the <b>slave</b> working mode is selected, this parameter is not visible. Set the behavior of the display after software download.	Off <b>On</b>
On/Off status after power recovery	If the <b>slave</b> working mode is selected, this parameter is not visible. Set the behavior of the display after power returns.	Off On <b>As before power failure</b>

Table 22: Behavior in the event of voltage loss

**OFF:** The FCU control interface is turned off when the device is turned on. This interface is not operational and the FCU is not running.

**ON** The FCU control interface is turned on when the device is turned on. This interface is ready for operation and the FCU internally calculates the current control status according to the control type.

**As before the power failure:** The FCU control interface returns to the pre-power failure state. When it is turned on, the FCU internally calculates the current control status based on the control type.

Parameter	Description	Value
Room temperature control mode	This parameter is used to set the room temperature control mode.	Heating Cooling Heating and cooling

The following parameters are visible when the **Heating and Cooling** value is selected.

Heating/cooling switchover	This parameter is used to set the heating/cooling switching mode.	Only via button Only via object <b>About both, key and object</b> Automatic transfer switch
----------------------------	---	--

In slave mode, only the value is visible **via object**.

Download the heating/cooling status after	If the Slave mode is selected, this parameter is not visible. Sets the rule mode after software download.	<b>Heating</b> Cooling
Heating/cooling status after power recovery	If the Slave mode is selected, this parameter is not visible. Sets the control mode after the voltage returns.	Heating Cooling <b>As before power failure</b>

**As before the power failure:** The control mode is restored after the voltage is restored as before the power failure. If the device is being used for the first time or a new feature page has been activated, the control mode is in an indefinite state after the device is started and must be selected manually at this time.

Room temperature control system	If the Slave mode is selected, this parameter is not visible. Defines the type of pipe system, i.e. the pipe types for the water inlet/outlet of the heating/cooling system.	2 pipe system <b>4 pipe system</b>
---------------------------------	---	---------------------------------------

Table 23: Control mode room temperature

**2-pipe system:** Uses a common inlet and outlet pipe for heating and cooling, i.e. both hot and cold water are controlled by the same valve.

**4-pipe system:** Features separate inlet and outlet pipes for heating and cooling, with two valves required to control the flow of hot and cold water.

If the **room temperature operating mode** parameter is not activated, the following parameters are visible.

Parameter	Description	Value
Initial setpoint temperature	If the Slave mode is selected, this parameter is not visible. The temperature setpoint is set here.	10 ... 21 ... 37°C
Min. / Max. Setpoint [5..37]	These parameters are used to set the adjustable range of the setpoint temperature. The minimum value should be less than the maximum value.  If the <b>initial setpoint temperature</b> is outside the min. / Max. Range, the limited temperature is output. The set temperature must be less than the maximum, otherwise it cannot be changed in ETS.	5 ... 37°C

If the **room temperature operating mode** parameter is activated, the following parameters are view.

Parameter	Description	Value
Download the controller status after	If the Slave mode is selected, this parameter is not visible. Sets the rule mode after software download.	<b>Comfort mode</b> Standby mode Night mode
Regulator status after power recovery	If the Slave mode is selected, this parameter is not visible. Sets the control mode after the voltage returns.	Comfort mode Standby mode Night mode Frost/heat protection <b>As before power failure</b>
Comfort extension [0..255,0=Inactive]	If the Slave mode is selected, this parameter is not visible. Sets the extended time of the comfort mode.  If the value is >0, the extension is enabled and the 1-bit <b>Extended Comfort Mode</b> object is displayed.  When the object receives telegram 1, the comfort mode is activated. If telegram 1 is received again during the delay time, the time is reset. After the time has elapsed, the comfort mode returns to the previous operating mode.  Comfort mode is exited when a new operating mode is activated during the delay time. Changing the operating mode stops the time measurement, but does not stop the time measurement by switching between heating and cooling.	<b>0</b> ... 255 min
1-bit object function for operating mode	If the Slave mode is selected, this parameter is not visible. Specifies whether to enable the 1-bit object function for operating mode. When this option is enabled, the 1-bit object function for the operating mode is displayed. If a 1-bit telegram is sent, the corresponding mode is activated.	

Parameter	Description	Value
1-bit object for standby mode	This parameter is visible when the previous parameter is enabled. Specifies whether to enable the 1-bit object for standby mode. When this option is enabled, the 1-bit object function for standby mode is displayed.	

The following parameters are only visible when the value **Automatic switchover** is selected under **Heating/Cooling Switching** and the value **Heating and Cooling** is selected under **Room Temperature Control Mode**.

Parameter	Description	Value
Upper dead zone	If the Slave mode is selected, this parameter is not visible.	0.5 ... <b>2.0</b> ... 10.0K
Lower dead zone	Sets the dead zone area for automatic switching between heating and cooling.	0.5 ... <b>2.0</b> ... 10.0K

Table 24: Automatic H/K switchover with dead zone

In the heater control mode, the mode changes from heating to cooling when the actual temperature (T) is greater than or equal to the set temperature + of the upper dead zone.

For cooling control, the mode changes from cooling to heating when the actual temperature (T) is less than or equal to the set temperature + of the upper dead zone.

### Window contact function

The following parameters are only visible if the **slave mode**, the **room temperature mode** function and the **window contact input** function are not activated.

Parameter	Description	Value
Window contact delay [0..65535]	Sets the window contact detection delay time. This means that if a telegram <b>window</b> is received <b>open</b> , the device considers this as a valid signal and executes the behavior after this delay time.	0 ... <b>5</b> ... 65535s
Mode of operation for window open	When the window is detected open, the heating/cooling system is set to the set mode. The operating mode, switching state, set temperature and heating/cooling mode states are recorded in the background when control telegrams are received and executed after closing the window. If no telegram is received during the time control, the system returns to the mode that was set before the window was opened.	Night mode <b>Frost/heat protection</b>

Table 25: Window contact

### Bus presence detection function

If the Slave mode is selected, this parameter is not visible.

This parameter is visible when the operating mode is activated.

Specifies whether a link is to be established with the status of a bus presence detector. When a presence is detected, the comfort mode is activated and returned to the original mode after leaving the room.

If a telegram/manual operation is carried out during the time period to adjust the mode, the telegram is stored in the background and the comfort mode is exited and returned to the original mode after leaving the room.

**Fan parameters**

If this parameter is activated, the menu for the fan is visible.

**Parameter scene**

If this parameter is activated, the menu for the scene becomes visible. If the Slave mode is selected, this parameter is not visible.

### Setpoint

<ul style="list-style-type: none"> <li>-  Allgemein</li> <li>  Einstellung der Seiten</li> <li>  Allgemeine Einstellungen</li> <li>  Einstellung Bildschirmschoner</li> <li>  Einstellung Nacht Modus</li> <li>  Sommerzeit Einstellung</li> <li>  Näherungssensor</li> <li> Interne Temperaturmessung</li> <li>+  Eingang</li> <li> Raumtemperaturregler</li> <li>-  Einstellung Funktionen</li> <li>- HLK - ...</li> </ul>	Solltemperaturanzeige	<input checked="" type="radio"/> Relativ <input type="radio"/> Absolut	
	Basissollwert Temperatur	20.0 °C	
	<b>Heizen</b>		
	Reduzierung Heizen im Standby Modus [0..10]	2 K	
	Reduzierung Heizen im Nacht Modus [0..10]	4 K	
	Sollwert Temperatur bei Frostschutz [5..10]	7 °C	
	<b>Kühlen</b>		
	Erhöhung Kühlen im Standby Modus [0..10]	2 K	
	Erhöhung Betriebsart Nacht Kühlen[0..10]	4 K	
	Sollwert Temperatur bei Hitzeschutz[30..37]	35 °C	
Min. Sollwert Temperatur [5..37]	10 °C		
Max. Sollwert Temperatur [5..37]	32 °C		

**Sollwert**

Fig. 76: Setpoint settings - relative

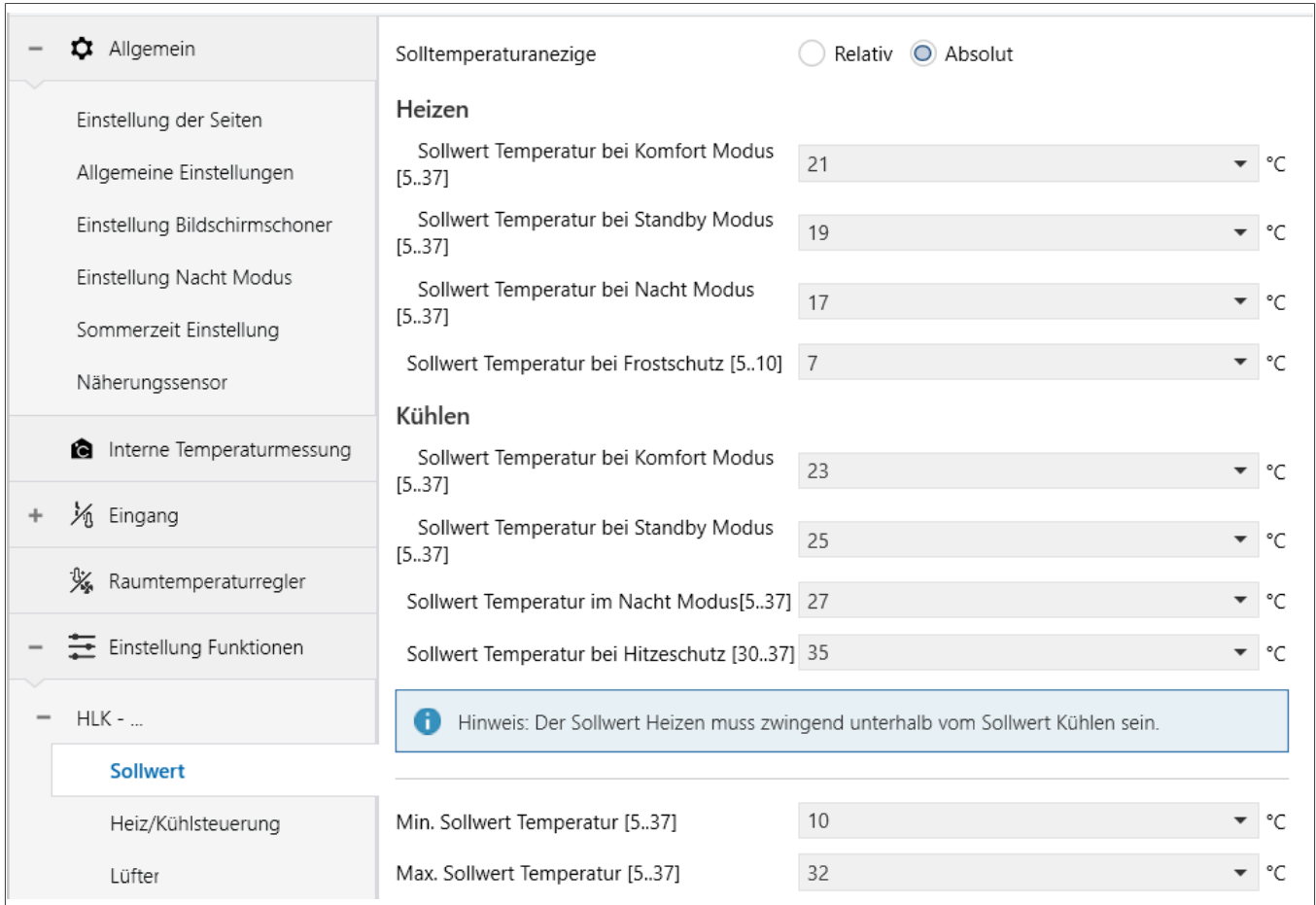


Fig. 77: Setpoint settings - absolute

The following parameters are only **active** if the value **Slave is not selected** under Parameter **Method** and the parameter **Room temperature mode** is **activated**.

Parameter	Description	Value
Setpoint temperature display	This parameter is used to set the setpoint.	Relative <b>Absolute</b>

Table 26: Setpoint temperature display

**Relative:** First, a basic setpoint temperature is defined. From this, the device calculates the set values for reduction and then increases the temperature values for each individual mode.

**Absolute:** Each mode can be set to its heating and/or cooling temperature.

The following parameters are visible when the value **Relative** is selected under **Set Temperature Display**.

Parameter	Description	Value
Base setpoint temperature	This parameter is used to set the base set point temperature from which the temperature value of each mode is derived.	10 ... <b>20</b> ... 35°C

Table 27: Setpoint temperature indicator - relative

The following two parameters are only visible if the value **Heating and Cooling** is selected under **room temperature control mode** and the value **Automatic switching** is selected under **heating/cooling switching** and only apply to comfort mode.

Parameter	Description	Value
Upper dead zone	If the Slave mode is selected, this parameter is not visible.	0.5 ... <b>2.0</b> ... 10.0K
Lower dead zone	Sets the dead zone area for automatic switching between heating and cooling.	0.5 ... <b>2.0</b> ... 10.0K

Table 28: Automatic H/K switchover with dead zone

In the heater control mode, the mode changes from heating to cooling when the actual temperature (T) is greater than or equal to the set temperature + of the upper dead zone.

For cooling control, the mode changes from cooling to heating when the actual temperature (T) is less than or equal to the set temperature + of the upper dead zone.

Parameter	Description	Value
Reduction of heating in standby mode [0..10] Increase cooling in standby mode [0..10]	These two parameters are used to set the setpoint for standby mode.	0 ... <b>2</b> ... 10K

Heating: The standby mode setpoint is the temperature setpoint minus the reference value.

Cooling: The standby mode setpoint is the temperature setpoint plus the reference value.

Reduction of heating in night mode [0..10] Increase Cooling in Night Mode [0..10]	These two parameters are used to set the setpoint for night mode.	0 ... <b>4</b> ... 10K
--	---	------------------------

Heating: The setpoint of the night mode is the temperature setpoint minus the reference value.

Cooling: The setpoint of the night mode is the temperature setpoint plus the reference value.

Temperature setpoint for frost protection [5..10]	This parameter is used to set the setpoint value for the anti-freeze mode for the heater.	5 ... 7 ... 10°C
---	---	------------------

In anti-freeze mode, when the room temperature drops to the set point, the controller triggers a control telegram so that the associated heater controller outputs a heater control to prevent the temperature from getting too low.

Temperature setpoint for heat protection [30..37]	This parameter is used to set the set point for the cooling overheat protection mode.	30 ... <b>35</b> ... 37°C
---	---	---------------------------

In heat protection mode, when the set room temperature is reached, the controller triggers a control telegram so that the associated cooling controller outputs a cooling controller to prevent the temperature from being too high.

Table 29: Setpoint temperature indicator relative - heating-cooling

The following parameters are visible when the value **Absolute** is selected under the **setpoint temperature display**.

Parameter	Description	Value
Heating - setpoint temperature		
In comfort mode [5..37]	These parameters are used to set the set temperature in comfort, standby and night mode during heating.	5 ... <b>21</b> ... 37°C
In standby mode [5..37]		5 ... <b>19</b> ... 37°C
At night mode [5..37]		5 ... <b>17</b> ... 37°C
In case of frost protection [5..10]	This parameter is used to set the set temperature during heating in antifreeze mode.	5 ... <b>7</b> ... 10°C

Table 30: Setpoint temperature indication absolute

Parameter	Description	Value
Cooling setpoint temperature		
In comfort mode [5..37]	These parameters are used to set the set temperature in comfort, standby and night mode during cooling.	5 ... <b>23</b> ... 37°C
In standby mode [5..37]		5 ... <b>25</b> ... 37°C
At night mode [5..37]		5 ... <b>27</b> ... 37°C
In case of frost protection [30..37]	This parameter is used to set the set temperature in the over-heat protection mode during cooling.	30 ... <b>35</b> ... 37°C

Table 31: Setpoint temperature indication absolute



The setpoint value for heating must be below the setpoint value for cooling.

In absolute setting mode, if you select 'Heating and Cooling', regardless of whether it is manual, bus or automatic switching, the heating setpoint must be less than or equal to the cooling setpoint of the same operating mode. At the same time, these set temperatures must not exceed the configured range of maximum and minimum values. If this is not the case, the setting in ETS cannot be changed.

- ① If the ambient temperature is higher than the set temperature of the current mode in cooling mode, the system switches to cooling mode. If the ambient temperature is lower than the set temperature of the current mode in heating mode, the system switches to heating mode.
- ② In the same operating mode, the setpoint temperature difference between cooling and heating remains constant, whether it is written to the bus or set on the control panel. This means that when the set point temperature is set, the set point temperatures for cooling and heating must be updated simultaneously in the current operating mode.
- ③ If the user is operating the control panel or the set temperature is received via the bus, the value must still be limited according to the upper and lower thresholds, i.e. the heating and cooling temperature must not be below the minimum or above the maximum value. If the parameter configuration of ETS does not meet this condition, warnings are displayed.



In the relative/absolute setting, the set temperature is configured in protection mode only via ETS and is not limited by the min/max value. The user cannot change it using the button on the screen.

**Heating - cooling control**

If the Slave mode is selected, this parameter is not visible.

<ul style="list-style-type: none"> <li>+  Allgemein</li> <li> Interne Temperaturmessung</li> <li> Eingang</li> <li> Raumtemperaturregler</li> <li>-  Einstellung Funktionen</li> <li>- HLK - ...             <ul style="list-style-type: none"> <li>Sollwert</li> <li style="background-color: #e0e0e0;"><b>Heiz/Kühlsteuerung</b></li> <li>Lüfter</li> </ul> </li> </ul>	Steuerungsart Heizen	Schaltend Ein/Aus (2 Punkt-Regelung)
	Steuerwert invertiert	<input type="checkbox"/>
	Untere Hysterese [0..200]	10 *0.1K
	Obere Hysterese [0..200]	10 *0.1K
	Steuerungsart Kühlen	Schaltend Ein/Aus (2 Punkt-Regelung)
	Steuerwert invertiert	<input type="checkbox"/>
	Untere Hysterese [0..200]	10 *0.1K
	Obere Hysterese [0..200]	10 *0.1K
	Steuerwert zyklisch senden[0..255]	0 min

Fig. 78: Switching on/off (2-point control)

<ul style="list-style-type: none"> <li>+  Allgemein</li> <li> Interne Temperaturmessung</li> <li> Eingang</li> <li> Raumtemperaturregler</li> <li>-  Einstellung Funktionen</li> <li>- HLK - ...             <ul style="list-style-type: none"> <li>Sollwert</li> <li style="background-color: #e0e0e0;"><b>Heiz/Kühlsteuerung</b></li> <li>Lüfter</li> </ul> </li> </ul>	Steuerungsart Heizen	Schaltend PWM (verwendet PI-Regelung)
	Steuerwert invertiert	<input type="checkbox"/>
	PWM Zykluszeit [1..255]	15 min
	Heizgeschwindigkeit	Warmwassersystem(5K/150min)
	Steuerungsart Kühlen	Schaltend PWM (verwendet PI-Regelung)
	Steuerwert invertiert	<input type="checkbox"/>
	PWM Zykluszeit [1..255]	15 min
	Kühlgeschwindigkeit	Deckenkühlung(5K/240min)
	Steuerwert zyklisch senden[0..255]	0 min

Fig. 79: Switching PWM (uses PI control)

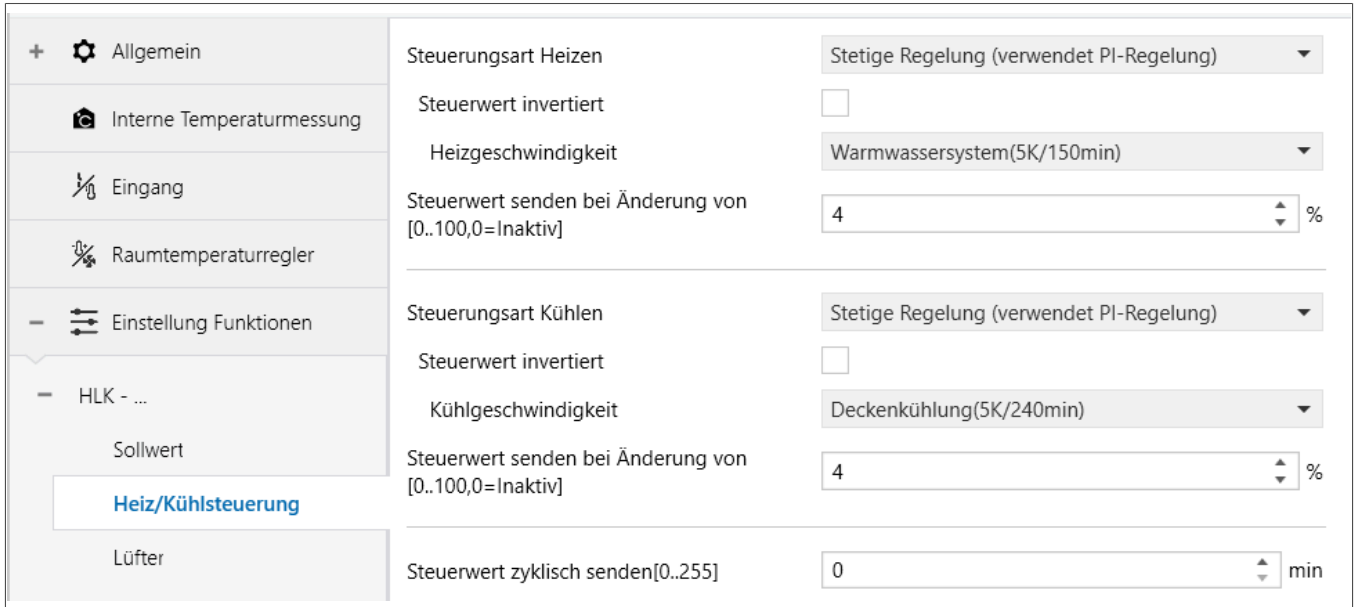


Fig. 80: Continuous control (uses PI control)

Parameter	Description	Value
Heating/cooling control type	This parameter is used to set the type of heating/cooling control. Different control types are suitable for controlling different temperature controllers.	<b>Continuous control (uses PI control)</b> Switching PWM (uses PI control) Switching ON/OFF (2-point control)
Control value inverted	This parameter is used to set whether the control value should be inverted or sent normally so that the control value is suitable for the valve type. If this option is enabled, the rule value is sent to the bus via objects after inversion.	

Table 32: Heating-cooling control

These two following parameters are only available for 2-point control.

Parameter	Description	Value
Lower hysteresis [0..200]	These two parameters are used to set the lower/upper hysteresis temperature for FCU heating or cooling.	0 ... <b>10</b> ... 200 *0.1K
Upper hysteresis [0..200]		

Table 33: Heating-cooling control 2-point control

### For heating:

If the actual temperature (T) is > the set temperature + the high hysteresis temperature, the heater is stopped.

If the actual temperature (T) is < the set temperature - the lower hysteresis temperature, the heater is started.

Example: The lower hysteresis temperature is 1 K, the upper hysteresis temperature is 2 K, the target temperature is 22 °C. If T is higher than 24°C, the heater is stopped. If T is lower than 24°C, the heater will start. If T is between 21 and 24°C, the previous status is retained.

**For cooling:**

If the actual temperature (T) is < the set temperature - the lower hysteresis temperature, the cooling is stopped.

If the actual temperature (T) is > the set temperature + the high hysteresis temperature, the cooling is started.

Example: The lower hysteresis temperature is 1 K, the upper hysteresis temperature is 2 K, the target temperature is 26 °C. If T is lower than 25°C, cooling is stopped. If T is lower than 28°C, cooling starts. If T is between 28 and 25°C, the previous status is retained.

**2-point control**

The 2-point control mode is a very simple control mode. When using this control mode, the upper hysteresis temperature and the lower hysteresis temperature must be set via parameters. The following effects must be taken into account when setting the hysteresis temperature.

- ① If the hysteresis interval is small, the temperature range is also small, but the frequent transmission of control values results in a high load on the bus.
- ② If the hysteresis interval is high, the switch switching frequency is low, but unpleasant temperature changes can easily occur.

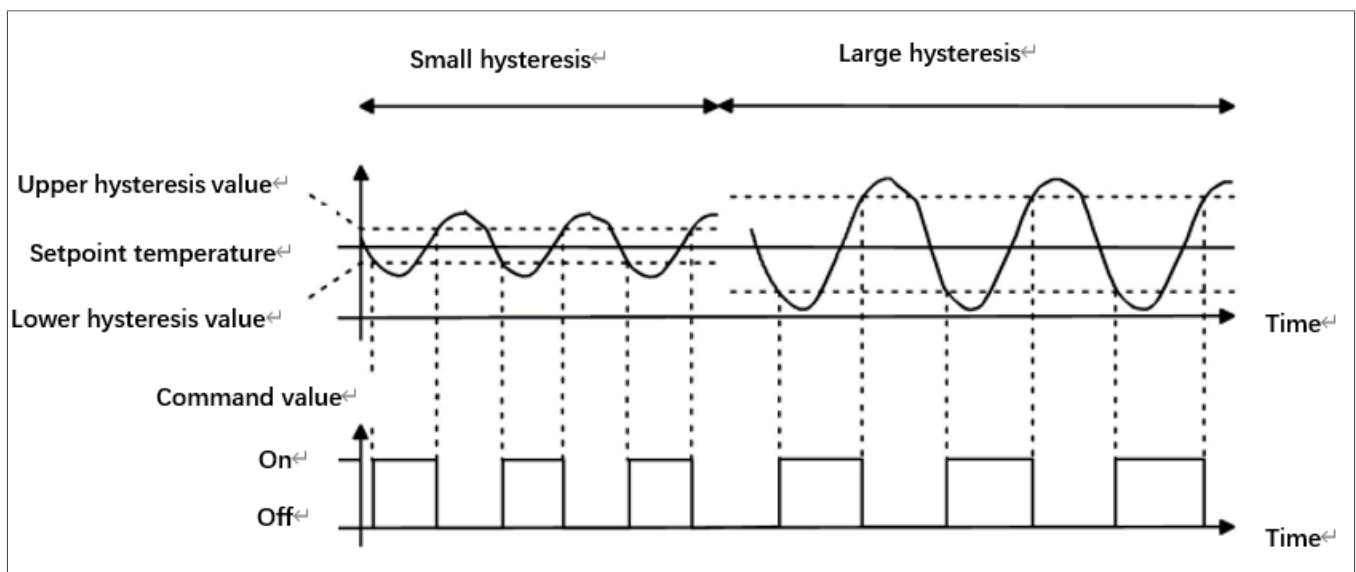


Fig. 81: Effects of hysteresis on the switching function of the control value (heater) in 2-point control mode

These two parameters are visible if one of the values **switching PWM** or **continuous control** has been selected under **Heating/Cooling Control Type**.

This parameter is only visible if the control type is Shift PWM (Use PI Control).

Parameter	Description	Value
PWM cycle time [1..255]	This parameter defines the cycle time in which the value is to be sent.	1 ... 15 ... 255 min

Table 34: Parameters for PI control

The object sends the switching value according to the duty cycle of the control value. For example, if the set period is 10 min and the control value is 80%, the object sends an open telegram for 8 minutes. When the control value is changed, the time-duty ratio of the on/off telegram of the object also changes, but the period remains the time of the parameter setting.

The PI values of **switching PWM (uses PI control)** and **continuous control (uses PI control)** are identical, but differ in the control objects. The control object continuous control (uses PI control) outputs the PI value (1 bytes) directly, while the control object switching outputs PWM (uses PI control) according to the duty ratio of the control value **ON/OFF telegram**.

Parameter	Description	Value
Heating speed	This parameter determines the heating system used and the heating system speeds based on it.	<b>Hot water system (5K/150min)</b> Underfloor heating (5K/240min) Electric heating (4K/100min) Split unit (4K/90min) Custom
Cooling speed	This parameter determines the cooling system used and the cooling system speeds based on it.	<b>Ceiling cooling (5K/240min)</b> Split unit (4K/90min) Fan coil unit (4K/90min) Custom

Table 35: Parameters for PI control

These two parameters are visible when the **Heating or Cooling Speed** value is **Custom**.

Parameter	Description	Value
Proportional range [10..100] P-value	These two values are used to set the PI value of the PI controller.	10 ... <b>40</b> ... 100 *0.1K
Integration time [0..255] I-value		0 ... <b>150</b> ... 255 min

Table 36: Parameters for user-defined control

This parameter is visible when the value **Continuous control** is selected in the **Heating/Cooling Control Type** parameter.

Parameter	Description	Value
Send control value when changing [0..100,0=Inactive]	These parameters are used to set the change of the control parameter when a new telegram is to be sent to the bus.	0 ... <b>4</b> ... 100%

Table 37: Parameters for continuous control

In PI control mode, the predefined control parameters of each PI controller in the heating or cooling system are recommended as follows:

Heating system	P-value	I-value (integration time)	Recommended PI rule type	Recommended period duration for PWM
Hot water system	5 K	150 min	Continuous/PWM	15 min
Underfloor heating	5 K	240 min	PWM	15-20 min
Electric heating	4 K	100 min	PWM	10-15 min
Split unit	4 K	90 min	PWM	10-15 min
Fan coil unit	4 K	90 min	Continuous	--

Table 38: Heating

Cooling system	P-value	I-value (integration time)	Recommended PI rule type	Recommended period duration for PWM
Ceiling cooling	5 K	240 min	PWM	15 20min
Split unit	4 K	90 min	PWM	10-15 min
Fan coil unit	4 K	90 min	Continuous	--

Table 39: Cooling

### Custom

If the Heating/Cooling Speed parameter is set to **Custom**, the parameter values of P (scaling factor) and I (integration time) can be set via the parameter. When setting the parameters, observe the fixed PI value specified in the table above. Even with minor changes to the control parameters, the control behavior changes significantly. In addition, the integration time should be set correctly. If the integration time is too long, the adjustment is slow and the vibration is not clear; if the integration time is too short, the adjustment is fast, but oscillations occur. 0 means that the integral term is not used.

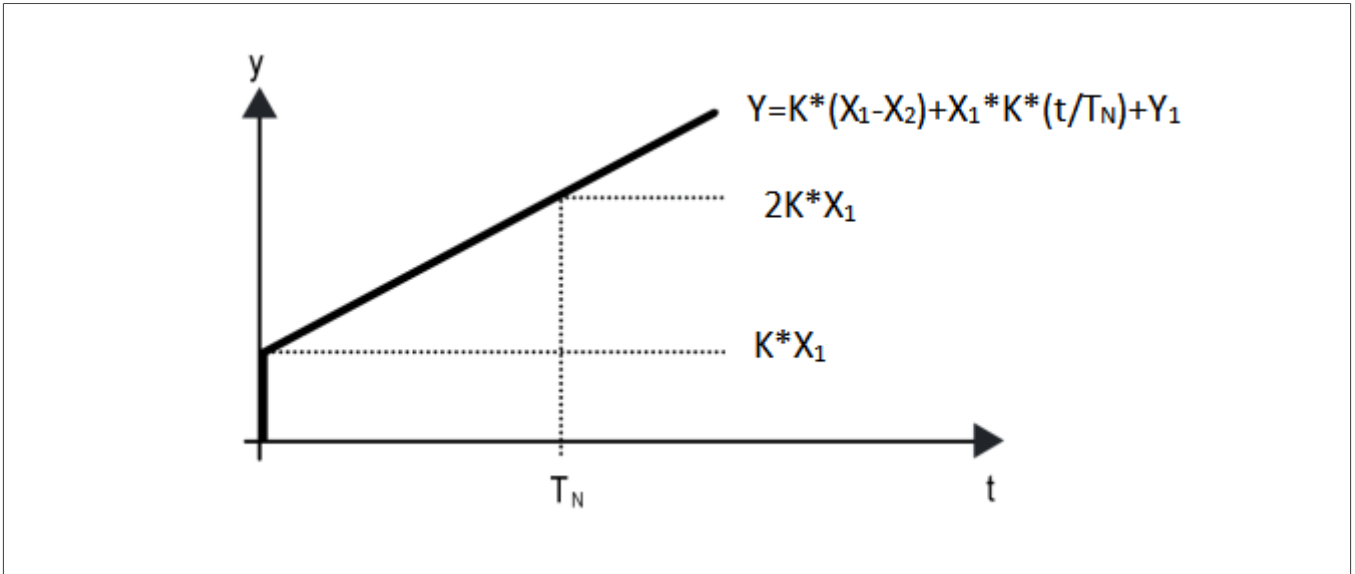


Fig. 82: Control value of the PI control mode

Y Control value

Y1: Last control value

X1: Temperature deviation = set temperature - actual temperature

X2: Last temperature deviation = set temperature - actual temperature

$T_N$ : Integration time

K Scaling factor (the scaling factor is not zero)

PI control algorithm:  $Y = K * (X1-X2) + X1 * K * T / TN + Y1$

If the integration time is set to zero, the PI control algorithm is:  $Y = K (X1-X2) + Y2$

**Setting and influence of user-defined parameters:**

Parameter setting	Impact
K If the control range is too small	Quick setting, there will be overshoot
K If the control range is too small	Slow setting, but no overshoot
$T_N$ : If the integration time is too short	Quick adjustment, but oscillations occur
$T_N$ : If the integration time is too long	Slow adjustment, no obvious oscillations

Parameter	Description	Value
Send control value cyclically [0..255]	This parameter is used to set the cycle in which the value is to be sent to the bus.	0 ... 255 min

Table 40: Parameters for continuous control

**Fans**

This parameter window is displayed when fan speed control is enabled. If the status is not read after the download is complete, the fan speed is turned off.

The screenshot shows a configuration window for a fan. On the left is a sidebar with a tree view containing: Allgemein, Interne Temperaturmessung, Eingang, Raumtemperurregler, Einstellung Funktionen, HLK - ... (with sub-items Sollwert, Heiz/Kühlsteuerung, Lüfter, Szene, Individuelle Farbe), Logikfunktionen, and Szenen Gruppe Funktion. The main content area is titled 'Objekt Datentyp von 1Byte Lüftergeschwindigkeit' and has two radio buttons: 'Prozent (DPT\_5,001)' (selected) and 'Lüfterstufe (DPT\_5,100)'. Below this are sections for 'Wert für Lüftergeschwindigkeit' (with input fields for slow: 33, medium: 67, fast: 100), 'Art der Rückmeldung Lüftergeschwindigkeit' (with status value fields for slow, medium, fast), 'Automatik Funktion' (set to 'Lokale Steuerung'), and 'Einstellung Automatik Lüftergeschwindigkeit'. This section includes 'Bedingung für die PI Regelung' with speed threshold fields (AUS->niedrig: 80, niedrig->mittel: 150, mittel->hoch: 200, and hysteresis: 10) and 'Bedingung für die 2 Punkt Regelung' with temperature difference fields (AUS->niedrig: 20, niedrig->mittel: 30, mittel->hoch: 40, and hysteresis: 10). At the bottom is 'Mindestbetriebszeit in Lüftergeschwindigkeit' set to 60 seconds.

Fig. 83: Parameters - Fan

Parameter	Description	Value
Object data type of 1byte fan speed	This parameter is used to set the object data type for the fan speed of 1 bytes.	<b>Percent (DPT_5,001)</b> Fan stage (DPT_5,100)
Fan speed value		

Parameter	Description	Value
slowly Medium fast	These three parameters are used to set the value that is sent each time the fan speed is changed. Fan speed off if the telegram value is 0.	1 ... 100 % 1 ... 255
Type of feedback signal for fan speed		
Slow jam value Congestion value for medium Jam value for fast	These three parameters are used to set the status feedback value for each fan speed. The device updates and displays the fan speed according to the feedback value.	1 ... 100 % 1 ... 255



The output value and status value must meet the **low < medium < high** condition. If this is not the case, they cannot be changed in ETS and a red warning message is displayed

Wert für Lüftergeschwindigkeit langsam	33	%
Wert für Lüftergeschwindigkeit mittel	32	%
Wert für Lüftergeschwindigkeit schnell	100	%

Fig. 84: Fan error message

Automatic function	This parameter is used to set the type of control of the fan function. If the value <b>SLAVE</b> is selected under parameter <b>method</b> , only the values inhibit and external control are available here in this parameter. Local control is not visible.	<b>Lock</b> Local control External control
--------------------	--	--

The following parameters are only visible when the value **Local control** is selected under **Automatic function**.

Under PI control, the control value is controlled within the conditions for PI control. The controller turns the fan on/off or changes the fan speed according to the threshold range of the control values.

### Conditions for PI control

Parameter	Description	Value
Threshold velocity OFF <--> low [1..255]	Defines the threshold for speed between OFF <--> Low.	1 ... <b>80</b> ... 255
If the control value is greater than or equal to this set threshold, the fan starts at low speed; if the control value is less than this set threshold, the fan turns off.		
Threshold Speed low <--> mean [1..255]	Defines the threshold value for speed between low <--> medium.	1 ... <b>150</b> ... 255

Table 41: Automatic fan speed settings

Parameter	Description	Value
	If the control value is greater than or equal to this set threshold, the fan will start running at medium speed; if the control value is less than this set threshold, the fan will start running at low speed.	
Threshold velocity average <-> high [1..255]	Defines the threshold value for speed between medium <-> high .	1 ... <b>200</b> ... 255
	If the control value is greater than or equal to this setting threshold, start operation at high fan speed.	

Table 41: Automatic fan speed settings

The device evaluates the threshold in ascending order.

Initial Check →OFF <->Low Fan Speed Threshold →Low Fan Speed <->Medium Fan Speed →Medium Fan Speed <->High Fan Speed.

Correct operation is only guaranteed in this case:

The threshold of OFF <-> Low Fan Speed is lower than the threshold of Low Fan Speed <-> Medium Fan Speed, and the threshold of Low Fan Speed <-> Medium Fan Speed is lower than the threshold of Medium Fan Speed <-> High Fan Speed.

Parameter	Description	Value
Threshold value hysteresis in +/-[0..50]	This parameter is used to set the hysteresis value of the threshold value, which can prevent unnecessary fan action if the control value fluctuates near the threshold value.	0 ... <b>10</b> ... 50

Table 42: Hysteresis

If the value is 0, there is no hysteresis. The fan turns on the fan when the rule value is greater than the threshold. If the hysteresis value is 10 and the threshold value is 50, then the upper threshold value is 60 (threshold + hysteresis value) and the lower threshold value is 40 (threshold - hysteresis value). If the control value is between 40 and 60, the fan will not activate and the previous status will be retained. Only values less than 40 or greater than or equal to 60 change the operating status of the fan.

**Conditions for the 2-point control**

In 2-point control, the controller decides whether the fan is switched on and off or the fan speed based on the temperature difference between the actual temperature and the set temperature.

Cooling Temperature difference = actual temperature – set temperature

heating Temperature difference = target temperature – actual temperature

Parameter	Description	Value
Temperature difference velocity OFF <-> low [1..200]	This parameter is used to set the temperature difference for speed OFF<->low.	1 ... <b>20</b> ... 200 *0.1°C
	If the temperature difference is greater than or equal to this set temperature difference, the fan starts running at low speed; if it is smaller than this set temperature difference, the fan is switched off.	

Table 43: Conditions for the 2-point control

Parameter	Description	Value
Temperature difference speed low <-> mean [1..200]	Define the temperature difference for low speed <-> medium speed.	1 ... <b>30</b> ... 200 *0.1°C
If the control value is greater than or equal to this set temperature difference, start the fan at medium speed.		
Temperature difference velocity medium <-> high [1..200]	Define the temperature difference for Speed Medium<->High.	1 ... <b>40</b> ... 200 *0.1°C
If the control value is greater than or equal to this set temperature difference, the high fan speed is started.		
Hysteresis temperature difference in [0..50]	This parameter is used to set the hysteresis value of the temperature difference, which can prevent unnecessary fan activity if the control value fluctuates near the temperature difference. If the value is 0, no hysteresis. The fan switches to speed as soon as the control value is greater than the temperature difference.	0 ... <b>10</b> ... 50 *0.1°C

Table 43: Conditions for the 2-point control

### Example:

The hysteresis value is 0.5 °C and the temperature difference is 1 °C.

Then the upper temperature difference limit is 1.5 °C (temperature difference + hysteresis value) and the lower temperature difference limit is 0.5 °C (temperature difference – hysteresis value). If the control value is between 0.5°C and 1.5°C, the fan will not activate and the previous status will be retained. Only values below 0.5°C or greater or equal to 1.5°C change the operating status of the fan.

Parameter	Description	Value
Minimum operating time at fan speed [0..65535]	This parameter is applied for both PI control and 2-point control. Sets the fan dwell time from the current fan speed to a higher or lower fan speed, i.e. the minimum time for fan speed operation.	0 ... <b>60</b> ... 65535s
If you want to switch to a different fan speed, you must wait for this time before changing the fan speed. If the current fan speed has been running long enough, the fan speed can be changed quickly.		
0: There is no minimum runtime, but the delay time when switching the fan speed must still be taken into account.		

Table 44: Conditions for the 2-point control

**Scene**

If the value **Slave** is selected under Parameter **Method**, this parameter window is not visible.

This parameter window is visible when the scene function is activated.



Fig. 85: Parameter scene

Parameter	Description	Value
X -> Assign Scene No. [1..64,0=Inactive]	This parameter is used to set the number of the triggered scene. Up to 5 triggered scenes are supported.	0 ... 64 0= inactive

Scenes can be recalled or saved. A newly saved scene is permanently saved.

Table 45: Parameter scene

The following three parameters are visible if the option is greater than 0:

Parameter	Description	Value
ON/OFF	This parameter is used to set the ON/OFF status.	ON OFF <b>Unchanged</b>

The following parameter is not visible if the value **OFF** has been selected previously.

Operating mode	This parameter is visible when the operating mode is activated. Set the status of the operating mode.	Comfort mode Standby mode Night mode Frost/heat protection <b>Unchanged</b>
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Table 46: Parameter scene

### 3.5.2.2 VRF setting

Fig. 86: Parameter VRF (variable refrigerant flow)

Parameter	Description	Value
Label (max. 12 characters)	Up to 12 characters can be entered here to describe the switching function. The label is placed in the top center of the display.	
Internal humidity indicator	This parameter is used to set whether the internal humidity should be displayed on the screen. The humidity is set in the <b>Internal temperature measurement</b> settings.	
Room temperature reference of	This parameter is used to select the temperature sensor to be used.	<b>Internal sensor</b> External probe

Table 47: Parameters General VRF

If the **Internal sensor** value is selected in the **Room temperature reference** parameter, the room temperature is set and processed in the settings under Internal temperature measurement [Chapter 3.2, Internal temperature measurement](#) .

Parameter	Description	Value
Cycle time to read external sensor [0..255]	This parameter is visible when ...External probe is selected. The time period for the read request of the external temperature sensor is set here.	0 ... <b>10</b> ... 255 min
Temperature display display	This parameter is used to determine which temperature should be displayed on the display.	Setpoint temperature <b>Current temperature</b>

Table 48: Parameters General VRF

Parameter	Description	Value
Data point type for setpoint	This parameter is used to set the object data type of the setpoint temperature.	Value in °C (DTP_5,010) <b>Floating point value in °C (DTP_9,001)</b>
Setpoint temperature setting step	This parameter is used to set the setpoint temperature setting step. If <b>value in °C (DPT_5,010)</b> is selected, only the value 1K is selectable.	<b>0.5 K</b> 1.0 K
Min. / Max. Setpoint [16..32]	These parameters are used to set the adjustable range of the setpoint temperature, with the minimum value being less than the maximum value. If the set temperature exceeds the limited range, the device will output the limited temperature. The set temperature must be less than the maximum.	16 ... 32°C
Fan swings	This parameter is used to set whether the swing function of the blades should be activated. When enabled, Pan = 1 or Stop = 0 over a 1-bit object. A long press of the button switches between the functions swivel function and stop.	
Scene	This parameter is used to set whether the scene function should be visible. When enabled, it is connected to power on/off, mode, fan speed, set temperature.	
Send delay between telegrams	This parameter is visible when the scene function is activated. Set the delay time between the sent telegrams.	Lock <b>100 ms</b> 300 ms 500 ms

Table 48: Parameters General VRF

Mode

Mode	Parameter	Value
Automatik Modus	Ausgabewert für Automatik	0
	Statuswert für Automatik	0
Heizbetrieb	Ausgang Wert für Heizen	1
	Statuswert für Heizen	1
Kühlbetrieb	Ausgang Wert für Kühlen	3
	Statuswert für Kühlen	3
Lüfterbetrieb	Ausgabewert für Lüfter	9
	Statuswert für Lüfter	9
Entfeuchten Modus	Ausgang Wert für Entfeuchten	14
	Status Wert für Entfeuchten	14

Fig. 87: Parameter mode


Parameter	Description	Value
Automatic mode	The corresponding setting parameters are visible when these parameters are activated.	
Heating operation		
Cooling mode		
Fan operation		
Dehumidification mode		
Output value for auto- matic	These parameters are visible when the corresponding mode is activated.	0 ... 255
Output value for heat- ing	Sets the status feedback value for each mode.	
Output value for cooling		
Output value for fans		
Output value for dehu- midification		

Table 49: Parameter mode

**Fans**

Fig. 88: Fan parameters

Parameter	Description	Value
Object data type of 1byte fan speed	This parameter is used to set the object data type for the fan speed of 1 bytes.	<b>Percent (DPT_5,001)</b> Fan stage (DPT_5,100)
Fan speed value		
auto	These parameters are used to set the value that is sent each time the fan speed is changed. 4 fan speeds are supported: Auto, Low, Medium, High.	1 ... 100 %
slowly		1 ... 255
Medium		
fast		
Type of feedback signal for fan speed		
Status value for Auto	These parameters are used to set the status feedback value for each fan speed and support 4 fan speeds: Auto, Low, Medium, High. The device updates the display according to the feedback values.	1 ... 100 %
Slow jam value		1 ... 255
Congestion value for medium		
Jam value for fast		

 The output value and status value must meet the **low < medium < high** condition. If this is not the case, they cannot be changed in ETS and a red warning message is displayed

Parameter	Description	Value
	Statuswert für Lüftergeschwindigkeit auto	0 %
	Statuswert für Lüftergeschwindigkeit langsam	68 %
	Statuswert für Lüftergeschwindigkeit mittel	67 %
	Statuswert für Lüftergeschwindigkeit schnell	100 %

Fig. 89: Fan error message

**Scene**

This parameter window is visible when the scene function is activated.

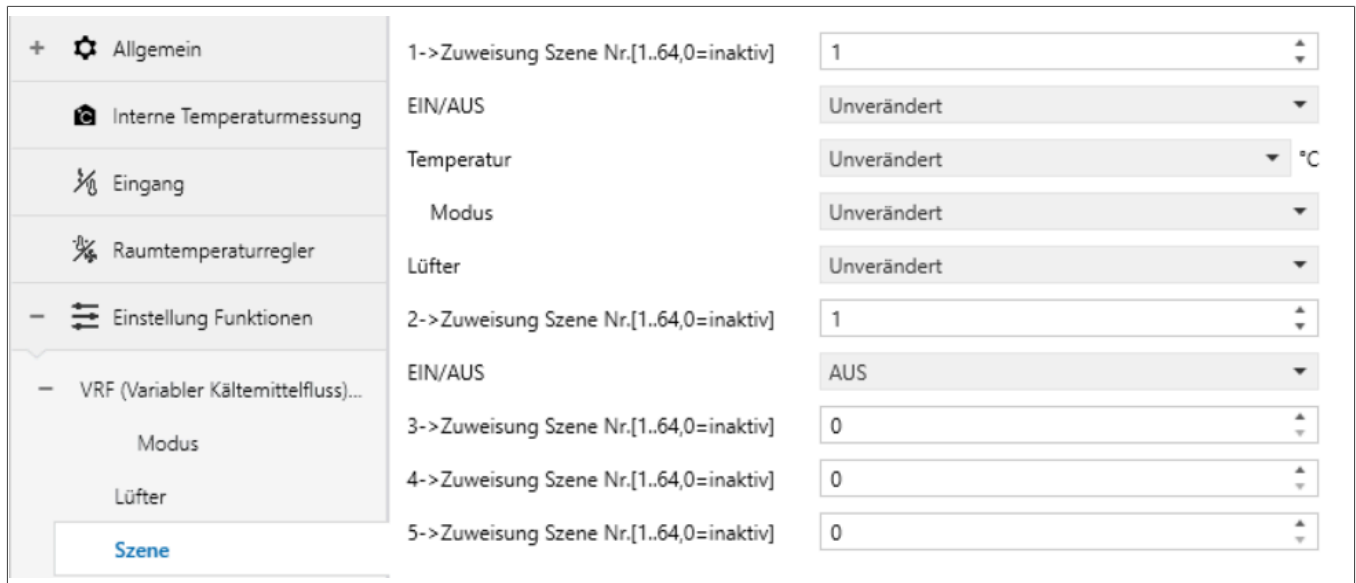


Fig. 90: Parameter scene

Parameter	Description	Value
X -> Assign Scene No. [1..64,0=inactive]	This parameter is used to set the number of the triggered scene. Up to 5 triggered scenes are supported.	0 ... 64 <b>0= inactive</b>

Scenes can be recalled or saved. When a new scene is saved, it is permanently saved.

Table 50: Parameter scene

The following three parameters are visible if the option is greater than 0:

Parameter	Description	Value
ON/OFF	This parameter is used to set the ON/OFF status.	ON OFF <b>Unchanged</b>

The following parameter is not visible if the value **OFF** has been selected previously.

Temperature	This parameter is used to set the setpoint temperature.	16 ... 32°C <b>Unchanged</b>
Operating mode	Sets the operating mode.	Auto Heating Cooling Fans <b>Unchanged</b>
Fans	This parameter is used to set the fan speed.	Auto slowly

Table 51: Parameter scene

Parameter	Description	Value
		Medium fast <b>Unchanged</b>



ON/OFF, temperature, mode, and fan speed are sent in the order shown. If the operation is not completed during the delay time and a new command is received, the new command is executed. Unperformed operations are ignored.

Table 51: Parameter scene

### 3.5.2.3 Underfloor heating setting

+  Allgemein	Bezeichnung (max 12 Zeichen)	<input type="text"/>
Interne Temperaturmessung	Anzeige interne Feuchtigkeit	<input checked="" type="checkbox"/>
Eingang	Methode	Single
Raumtemperaturregler	Raumtemperatur Referenz von	Interner Fühler
-  Einstellung Funktionen	Steuerwert nach Temp. Fehler [0..100] (Bei 2-Punkt Regelung, Wert '>0'=1)	0 %
+ VRF (Variabler Kältemittelfluss)...	Temperatur Anzeige Display	<input type="radio"/> Sollwert Temperatur <input checked="" type="radio"/> Aktuelle Temperatur
+ Fussbodenheizung - ...	Sollwert Temperatur Einstellschritt	<input checked="" type="radio"/> 0.5K <input type="radio"/> 1K
Individuelle Farbe	Standard Solltemperatur [16..32]	20 °C
Logikfunktionen	Min. Sollwert Temperatur [16..32]	16 °C
+  Szenen Gruppe Funktion	Max. Sollwert Temperatur [16..32]	32 °C
	Ein/Aus Funktion	Über beides, Taste und Objekt
	Ein/Aus Status nach Download	<input type="radio"/> AUS <input checked="" type="radio"/> EIN
	Ein/Aus Status nach Spannungswiederkehr	Wie vor Spannungsausfall
	Art der Temperatursteuerung	Schaltend Ein- / Aus (2-Punkt-Regelung)
	Objektwert für Heizen Ein/Aus	<input checked="" type="radio"/> Heizen Ein=1, Heizen Aus=0 <input type="radio"/> Heizen Ein=0, Heizen Aus=1
	Untere Hysterese [0..200]	10 *0.1K
	Obere Hysterese [0..200]	10 *0.1K
	Steuerwert Heizen zyklisch senden [0..255]	0 min
	Szene	<input checked="" type="checkbox"/>

Fig. 91: Underfloor heating settings

Parameter	Description	Value
Label (max. 12 characters)	Up to 12 characters can be entered here to describe the switching function. The label is placed in the top center of the display.	
Internal humidity indicator	This parameter is used to set whether the internal humidity should be displayed on the screen. The humidity is determined in the <b>Internal temperature measurement</b> settings.	
Means	This parameter is used to set the HVAC control mode of operation.	Single Master Slave

Table 52: Settings General

### Single

- The underfloor heating function of the device is set to single control and the temperature control algorithm directly controls the actuator. When the device restarts, it sends the current status to the bus, such as on/off, set temperature.

### Master

- The underfloor heating function of the unit is set to multi-control, and a temperature control algorithm is used to control the unit. When the device restarts, it sends the current status to the bus, such as on/off, set temperature.

### Slave

- The underfloor heating function of the device is set to slave control. In this mode of operation, the device is only used as an operating and display device. The second device of the so-called master takes over the actual control. When the device is restarted, it sends a status query, e.g. on/off, set temperature.

Parameter	Description	Value
Room temperature reference of	This parameter is used to select the temperature sensor to be applied.	<b>Internal probe</b> External probe Internal and external probe combined

Table 53: Selection of temperature sensors

If the **Internal sensor** value is selected in the **Room temperature reference** parameter, the room temperature is set and processed in the settings under Internal temperature measurement [Chapter 3.2, Internal temperature measurement](#) .

Parameter	Description	Value
Cycle time to read external sensor [0..255]	This parameter is visible when ...External probe is selected. The time period for the read request of the external temperature sensor is set here.	0 ... <b>5</b> ... 255 min
The following parameters are visible when the <b>Internal and External Probe Combined</b> value is selected at <b>room temperature Reference of</b> .		
Combination ratio	This parameter is used to determine the ratio between the two temperature sensors in the calculation of the control parameters.	10% internal, 90% external ... <b>50% internal, 50% external</b> ... 90% internal, 10% external

Table 54: Measurement / transmission behavior

### Example:

For example, if the option is **40% internal to 60% external**, then the internal probe is 40%, the external probe is 60%, and the control temperature is calculated as follows.

Control temperature = (internal sensor temperature × 40%) + (external sensor temperature × 60%). The appliance regulates and displays the temperature according to the calculated temperature.

If two sensors are combined for detection and one sensor has an error, the temperature value detected by the other sensor is used.

Parameter	Description	Value
Transmit temperature when changed	This parameter is used to set whether the current temperature value is to be sent to the bus when the temperature is changed by the value x. If deactivated, no transmission occurs.	Lock 0.5 ... <b>1.0</b> ... 10.0K
Send temperature cyclically [0..255,0=inactive)	Set the time for the cyclic transmission of the temperature measured value to the bus. No transmission if the value is 0.	<b>0</b> ... 255 min



The cyclic sending and sending of changes are independent of each other.

Control value according to temp. Error [0..100] (for 2-point control, value'=0, value'>0'=1)	<p>If the value <b>Slave</b> is set in the <b>METHOD</b> parameter, this parameter is not visible.</p> <p>This is where the control value is set if a temperature error occurs.</p> <p>For a 2-point control, the parameter value is 0, as is the control value.</p> <p>If the parameter value is greater than 0, the control value is 1.</p>	<b>0</b> ... 100 %
--	---	--------------------

Table 55: Transmit behavior on change

Parameter	Description	Value
Temperature display display	<p>This parameter is used to set the temperature to be displayed on the display.</p> <p>If the current temperature is displayed, the device sends a telegram to the bus only once when the setpoint temperature is set for the first time.</p>	Setpoint temperature <b>Current temperature</b>
Setpoint temperature setting step	This parameter is used to set the setpoint temperature setting step.	<b>0.5 K</b> 1.0 K
Standard set temperature [16..32]	<p>If the Slave mode is selected, this parameter is not visible.</p> <p>The default setpoint temperature is set here.</p>	16 ... <b>20</b> ... 32°C
Min. / Max. Setpoint [5..37]	<p>These parameters are used to set the adjustable range of the setpoint temperature.</p> <p>The default set point temperature must not be below the minimum set point temperature.</p>	5 ... 37°C

Table 56: Temperature indication on the display

Parameter	Description	Value
	The default set point temperature must not be above the maximum set point temperature. In both cases, the values can only be set up to the standard set temperature value.	

Table 56: Temperature indication on the display

Parameter	Description	Value
On/Off function	This parameter is used to set how the on/off function is to be activated.	<b>Lock</b> Only via button Only via object About both, key and object

Table 57: Behavior in the event of voltage loss

**Deactivate:** The on/off function of the device is deactivated.

**Only via key:** Switch on/off only by pressing the button on the control panel.

**Only via object:** Switch on/off only via the object.

**About both, key and object:** Switch on/off both via the button on the control panel and via the object.

Parameter	Description	Value
On/Off status after download	If the <b>slave</b> working mode is selected, this parameter is not visible. Set the behavior of the display after software download.	Off <b>On</b>
On/Off status after power recovery	If the <b>slave</b> working mode is selected, this parameter is not visible. Set the behavior of the display after power returns.	Off On <b>As before power failure</b>

Table 58: Behavior in the event of voltage loss

**OFF:** The FCU control interface is turned off when the device is turned on. This interface is not operational and the FCU is not running.

**ON** The FCU control interface is turned on when the device is turned on. This interface is ready for operation and the FCU internally calculates the current control status according to the control type.

**As before the power failure:** The FCU control interface returns to the pre-power failure state. When it is turned on, the FCU internally calculates the current control status based on the control type.

Parameter	Description	Value
Type of temperature control	This parameter is used to set the type of temperature control. Different control types are suitable for controlling different temperature controllers.	<b>Continuous control (uses PI control)</b>

Table 59: Type of temperature control

Parameter	Description	Value
		Switching PWM (uses PI control)
		Switching ON/OFF (2-point control)

Table 59: Type of temperature control

The following parameters are visible if the value **Switching ON/OFF (2-point control)** is selected under **Type of temperature control**

With 2-point control, the heater is switched off when the temperature is above a certain set point and switched on when it is below a certain set point.

Parameter	Description	Value
Object value for heating on/off	This parameter sets the activation value for switching the underfloor heating on and off	<b>Heating on=1, Heating off=0</b> Heating on=0, Heating off=1
Lower hysteresis [0..200]	These two parameters are used to set the lower/upper hysteresis setpoint temperature of the underfloor heater.	0 ... <b>10</b> ... 200 *0.1K
Upper hysteresis [0..200]		0 ... <b>10</b> ... 200 *0.1K

Table 60: Type of temperature control

If the actual temperature (T) is > the set temperature + the high hysteresis temperature, the heater is stopped.

If the actual temperature (T) is < the set temperature - the lower hysteresis temperature, the heater is started.

Example: The lower hysteresis temperature is 1 K, the upper hysteresis temperature is 2 K, the target temperature is 22 °C. If T is higher than 24°C, the heater is stopped. If T is lower than 24°C, the heater will start. If T is between 21 and 24°C, the previous status is retained.

These parameters are visible if one of the values **switching PWM** or **continuous control** has been selected under **Type of temperature control**.

In pulse width modulation (PWM) mode (with PI control), the valve of the underfloor heating system is cyclically actuated according to the set control values.

In continuous control mode (with PI control), the vertical of the underfloor heating is continuously opened/closed according to the set control values.

Parameter	Description	Value
Control value inverted	This parameter is used to set whether the control value should be inverted or sent normally so that the control value is suitable for the valve type. If enabled, send the control value to the bus after inversion via objects.	
Heating speed	This parameter determines the heating system used and the heating system speeds based on it.	<b>Hot water system (5K/150min)</b> Underfloor heating (5K/240min)

Table 61: Parameters for PI control

Parameter	Description	Value
		Electric heating (4K/100min) Custom

Table 61: Parameters for PI control

Parameter	Description	Value
PWM cycle time [1..255]	This parameter defines the cycle time in which the value is to be sent.	1 ... 15 ... 255 min

Table 62: Parameters for PI control

This parameter is only visible if the switching control type is PWM (uses PI control) and is used to set the cycle of the control object cycle to send the switching value. The object sends the switching value according to the duty cycle of the control value.

Example:

The set period is 10 minutes and the control value is 80%, then the object sends an open telegram after 8 minutes and a closed telegram after 2 minutes. When the control value changes, the object's working cycle for sending the on/off telegram also changes, but the period still corresponds to the time of the parameter setting.

Parameter	Description	Value
Heating speed	This parameter determines the heating system used and the heating system speeds based on it.	<b>Hot water system (5K/150min)</b> Underfloor heating (5K/240min) Electric heating (4K/100min) Custom
Proportional range [10..100] P-value	These two values are used to set the PI value of the PI controller.	10 ... <b>40</b> ... 100 *0.1K
Integration time [0..255] I-value		0 ... <b>150</b> ... 255 min

Table 63: Parameters for PI control

Parameter	Description	Value
Send control value when changing [0..100,0=Inactive]	These parameters are used to set the change in the control parameter for which a new telegram is to be sent to the bus.	0 ... <b>4</b> ... 100%

Table 64: Parameters for continuous control

Parameter	Description	Value
Send heating control value cyclically [0..255]	This parameter is used to set the cycle in which the value is to be sent to the bus.	0 ... 255 min

Table 65: Parameters for continuous control

### Scene

If the value **Slave** is selected under Parameter **Method**, this parameter window is not visible.

This parameter window is visible when the scene function is activated.

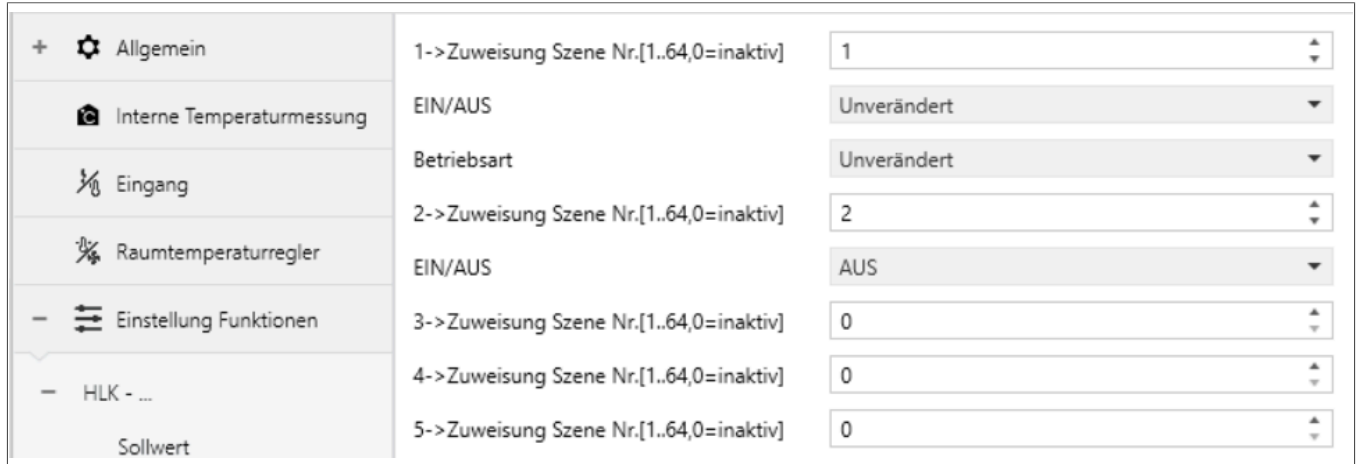


Fig. 92: Parameter scene

Parameter	Description	Value
X -> Assign Scene No. [1..64,0=Inactive]	This parameter is used to set the number of the triggered scene. Up to 5 triggered scenes are supported.	0 ... 64 0= inactive

Scenes can be recalled or saved. When a new scene is saved, the original stored new scene will remain valid if the voltage is restored after the bus is switched off.

Table 66: Parameter scene

The following three parameters are visible if the option is greater than 0:

Parameter	Description	Value
ON/OFF	This parameter is used to set the ON/OFF status.	ON OFF <b>Unchanged</b>

The following parameter is not visible if the value **OFF** has been selected previously.

Temperature	This parameter is visible when the operating mode is activated. Set the status of the operating mode.	16 ... 32°C <b>Unchanged</b>
-------------	---	---------------------------------

Table 67: Parameter scene

### 3.5.2.4 Ventilation setting

+  Allgemein	Bezeichnung (max 12 Zeichen)	<input type="text"/>
Interne Temperaturmessung	Ein/Aus Status nach Download	<input checked="" type="radio"/> AUS <input type="radio"/> EIN
Eingang	Ein/Aus Status nach Spannungswiederkehr	Wie vor Spannungsausfall <span style="float: right;">▼</span>
Raumtemperaturregler	Standard Lüftergeschwindigkeit beim Einschalten	langsam <span style="float: right;">▼</span>
-  Einstellung Funktionen	Objekt Datentyp von 1Byte Lüftergeschwindigkeit	<input checked="" type="radio"/> Prozent (DPT_5.001) <input type="radio"/> Lüfterstufe (DPT_5.100)
- HLK - ...	<b>Wert für Lüftergeschwindigkeit</b>	
Sollwert	Wert für Lüftergeschwindigkeit langsam	<input type="text" value="33"/> %
Heiz/Kühlsteuerung	Wert für Lüftergeschwindigkeit mittel	<input type="text" value="67"/> %
Lüfter	Wert für Lüftergeschwindigkeit schnell	<input type="text" value="100"/> %
Szene	<b>Art der Rückmeldung Lüftergeschwindigkeit</b>	
- Fussbodenheizung - ...	Statuswert für Lüftergeschwindigkeit langsam	<input type="text" value="33"/> %
Szene	Statuswert für Lüftergeschwindigkeit mittel	<input type="text" value="67"/> %
- Lüftung - ...	Statuswert für Lüftergeschwindigkeit schnell	<input type="text" value="100"/> %
Lüfter Automatik Steuerung	Automatik Funktion	<input checked="" type="checkbox"/>
Szene	Wärmerückgewinnung	<input checked="" type="checkbox"/>
Individuelle Farbe	Betriebsstundenzähler Filter	<input checked="" type="checkbox"/>
Logikfunktionen	Betriebszeit [100..10000]	<input type="text" value="1000"/> h
+  Szenen Gruppe Funktion	Szene	<input checked="" type="checkbox"/>

Fig. 93: Fan settings

Parameter	Description	Value
Label (max. 12 characters)	Up to 12 characters can be entered here to describe the switching function. The label is placed in the top center of the display.	

Table 68: Settings General

Parameter	Description	Value
On/Off status after download	It is determined whether the function is active or not.	Off <b>On</b>
On/Off status after power recovery	Set the behavior of the display after power returns.	Off On <b>As before power failure</b>

Table 69: Behavior in the event of voltage loss

OFF: The appliance switches off the ventilation when the voltage is restored.

ON The appliance switches on the ventilation when the voltage is restored.

**As before the power failure:** When the voltage is restored, the device returns to the pre-power failure state.

Parameter	Description	Value
Default fan speed when turning on	This parameter is used to adjust the fan speed after the ventilation is switched on.	<b>slowly</b> Medium fast Last status
If <b>the last status</b> is selected and you are not sure about the fan speed, the low fan speed should be enabled by default.		
Object Data type of 1 bytes fan speed	This parameter is used to set the object data type for the fan speed of type 1 bytes.	Percent (DPT_5,001) Fan stage (DPT_5,100)

Table 70: Settings General

Parameter	Description	Value
Fan speed value		
slowly Medium fast	These three parameters are used to set the value that is sent each time the fan speed is changed. Fan speed off if the telegram value is 0.	1 ... 100 % 1 ... 255 (fan stage)
Type of feedback of the fan speed Status value for fan speed		
slowly Medium fast	These three parameters are used to set the status feedback value for each fan speed. The device updates and displays the fan speed according to the feedback value.	1 ... 100 % 1 ... 255 (fan stage)

Table 71: Fan speed value

### Automatic function

This parameter is used to set whether the automatic fan speed function should be activated. When enabled, it can be linked to the measurement values for PM2.5 or CO2 or VOC, and the sensor data is retrieved via the bus.

### Heat recovery

This parameter is used to set the heat recovery. When activated, two additional communication objects (object 321/309) are displayed

### Hourmeter filter

Parameter	Description	Value
Operating hour meter	This parameter is used to set whether the function of the hour meter should be activated.	

Table 72: Fan - additional functions

Parameter	Description	Value
Operating time	This parameter can be used to monitor the life of the fan filter. After the set operating time has expired, a message is sent to the bus. Display for maintenance/service personnel	100 ... <b>1000</b> ... 10000h

Table 72: Fan - additional functions

The operating time of the filter can be reset via the **Reset filter counter** object. The operating time can also be reset by pressing and holding the fan button (3 seconds).

The reset is sent to the bus by telegram. The lifetime of the filter can be counted using the Operating hours counter object. The count time is expressed in hours. The count value is sent to the bus when it has changed, and the filter count time can be changed using the Modify Filter Timer Counter object.

### Parameter scene

If this parameter is activated, the menu for the scene becomes visible.

### Automatic control fan

The following function is visible when the **automatic** function is activated under **ventilation**.

+  Allgemein	Steuerreferenzwert von	PM2.5
Interne Temperaturmessung	Objekt Datentyp von PM2.5	<input checked="" type="radio"/> Wert in ug/m3(DPT_7.001) <input type="radio"/> Fließkommawert in ug/m3(DPT_9.030)
Eingang	Zyklische Abfragezeit externen Sensor [0..255]	10 min
Raumtemperaturregler	Geschwindigkeitsstatus nach Fehler Steuerwert	AUS
-  Einstellung Funktionen	Schwellwert AUS<->niedrig [1..999]	35
- HLK - ...	Schwellwert Geschwindigkeit niedrig<->mittel [1..999]	75
Sollwert	Schwellwert Geschwindigkeit mittel<->hoch [1..999]	115
Heiz/Kühlsteuerung	Hysterese ist Schwellwert in +/-[10..30]	10
Lüfter	Mindestbetriebszeit in Lüftergeschwindigkeit [0..65535]	10 s
Szene		

Fig. 94: Fan - automatic control

Parameter	Description	Value
Control reference value of	This parameter is used to set the reference value in automatic mode.	CO2 VOC PM2.5

Table 73: Tax reference value

Parameter	Description	Value
Object data type of CO2	This parameter is used to set the data type of CO2. The data type determines the object type.	Value in ppm (PDT_7,001) <b>Floating point value in ppm (DPT_9,008)</b>

Table 74: Object values for TYPE CO2

Parameter	Description	Value
Object data type of VOC Object data type of PM2.5	This parameter is used to set the data type of VOC or PM2.5. The data type determines the object type.	<b>Value in µg/m³ (PDT_7,001)</b> Floating point value in µg/m³ <b>(DPT_9,008)</b>

Table 75: Object values for TYPE VOC /PM2.5

Parameter	Description	Value
Cyclic scan time of external sensor [0..255]	This parameter is used to set the time period during which the device sends a request to the external sensor to read the control value.	0 ... <b>10</b> ... 255min
Speed status after error	This parameter is used to set the fan speed after an error has been detected	<b>OFF</b> slowly Medium fast
Threshold FROM <-> low [1..4000]	Defines the threshold value for speed FROM <-> low. If the control value is greater than or equal to this set threshold, the fan starts at low speed; if the control value is less than this set threshold, the fan turns off.	1 ... 4000
Threshold FROM <-> low [1..999]		1 ... 999
Threshold low <-> mean [1..4000]	Defines the threshold value for low speed <-> medium. If the control value is greater than or equal to this setting threshold, start the fan at medium speed.	1 ... 4000
Threshold low <-> mean [1..999]		1 ... 999
Threshold medium <-> high [1..4000]	Defines the threshold value for speed medium <-> high. If the control value is greater than or equal to this setting threshold, start operation at high fan speed.	1 ... 4000
Threshold medium <-> high [1..999]		1 ... 999

Table 76: Object values for TYPE CO2 / VOC /PM2.5

The device evaluates the threshold in ascending order.

Initial Check →OFF <->Low Fan Speed Threshold →Low Fan Speed <->Medium Fan Speed →Medium Fan Speed <->High Fan Speed.

Correct operation is only guaranteed in this case:

The threshold of OFF <-> Low Fan Speed is lower than the threshold of Low Fan Speed <-> Medium Fan Speed, and the threshold of Low Fan Speed <-> Medium Fan Speed is lower than the threshold of Medium Fan Speed <-> High Fan Speed.

Parameter	Description	Value
Hysteresis is threshold value in +/- [100..400]	This parameter is used to set the hysteresis value of the threshold value, which can prevent unnecessary fan action if the control value fluctuates near the threshold value.	100 ... <b>200</b> ... 400
Hysteresis is threshold value in +/- [10..30]		<b>10</b> ... 30

Table 77: Object values for TYPE VOC /PM2.5

Example:

The control type is CO<sub>2</sub>, the hysteresis value is 100 and the threshold value is 450, then the upper threshold value is 550 (threshold + hysteresis value) and the lower threshold value is 350 (threshold - hysteresis value).

If the control value is between 350 and 550, the fan will not activate and the previous status will be retained. Only values less than 350 or greater than or equal to 550 change the operating status of the fan. As shown in the following figure:

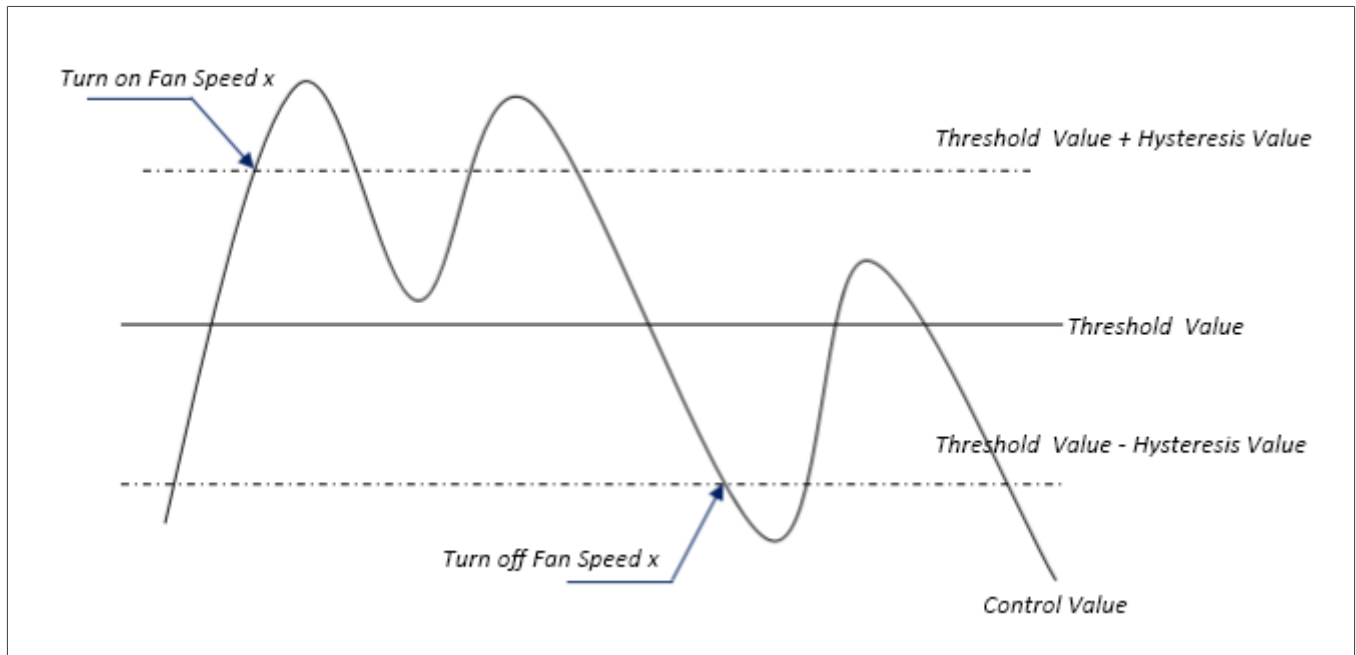


Fig. 95: Hysteresis threshold value



If hysteresis is enabled and a threshold is exceeded, the fan function is set as follows:

- 1) The hysteresis determines the control point at which the fan speed conversion takes place.
- 2) When the fan speed is converted, the new fan speed is determined by the control value and the threshold value, regardless of the hysteresis.

#### Example for 1) In the note with control reference value PM2.5:

Threshold value for OFF  $\leftrightarrow$  low = 35.

Threshold for low  $\leftrightarrow$  mean = 55.

Medium  $\leftrightarrow$  high threshold value = 75.

The hysteresis value = 25.

The speed of the fan increases from:

The **Fan OFF** status changes at a control value of 60 ( $\geq 25+35$ ), and the new fan speed is the mean fan speed (since 60 is between 55 and 75, regardless of the hysteresis at that time), so the low fan speed is ignored.

The behavior of the fan speed when lowering from a high fan speed: The high fan speed changes at a control value of 50 ( $< 75-25$ ), and the new fan speed is the low fan speed (since 50 is between 35 and 55, regardless of hysteresis), so the fan speed is ignored.

**Example for 2) In the note:**

Threshold value for OFF <-> low = 35.

Threshold for low <-> mean = 55.

Medium <-> high threshold value = 75.

The hysteresis value = 25.

The fan speed of the fan turbine increases from:

The status of the **ventilator OFF** changes when the control value is 30 ( $\geq 20+10$ ). When the control value 41 is received, the new speed is in the middle range (because the hysteresis is ignored if the value 41 is between 40 and 70), so the low speed is ignored. If the control value 39 is received, the new speed will be low (because the hysteresis will be ignored if the value 39 is between 20 and 40).

If the fan speed drops from high:

The high speed is switched on when the control value is 60 ( $< 70-10$ ). If the control value 39 is received, the new speed will be low (because the hysteresis will be ignored if the value 39 is between 20 and 40), therefore the mean speed will be ignored. If the control value is 0, the fan is switched off under all circumstances.

Parameter	Description	Value
Minimum operating time at fan speed [0..65535]	Sets the fan dwell time from the current fan speed to a higher or lower fan speed, which is the minimum time for fan speed operation.	0 ... 10 ... 65535 s.

Table 78: Operating time

If you want to switch to a different fan speed, you must wait for this period of time before you can change the fan speed. If the current fan speed has been running long enough, the fan speed can be changed quickly.

0: There is no minimum term

## Scene

This parameter window is visible when the scene function is activated.



Fig. 96: Parameter scene

Parameter	Description	Value
X -> Assign Scene No. [1..64,0=Inactive]	This parameter is used to set the number of the triggered scene. Up to 5 triggered scenes are supported.	0 ... 64 0= inactive

Scenes can be recalled or saved. When a new scene is saved, the original stored new scene will remain valid if the voltage is restored after the bus is switched off.

Table 79: Parameter scene

The following three parameters are visible if the option is greater than 0:

Parameter	Description	Value
ON/OFF	This parameter is used to set the ON/OFF status.	ON OFF <b>Unchanged</b>
The following parameter is not visible if the value <b>OFF</b> has been selected previously.		
Operating mode	This parameter is visible when the operating mode is activated. Set the status of the operating mode.	Comfort mode Standby mode Night mode Frost/heat protection <b>Unchanged</b>
Heat recovery		<b>Unchanged</b> OFF ON

Table 80: Parameter scene


**3.5.3 Audio control**

- Allgemein
- Einstellung der Seiten
- Allgemeine Einstellungen
- Einstellung Bildschirmschoner
- Einstellung Nacht Modus
- Sommerzeit Einstellung
- Näherungssensor
- Interne Temperaturmessung
- Eingang
- Raumtemperaturregler

Funktion

Display Voransicht

Audio Steuerung



Taste 1	Kurzes Drücken zum Ein/Aus-Schalten	Taste 2	Kurzes Drücken für Play/Pause, langes Drücken für Mute
Taste 3	Drücken für vorherigen Titel	Taste 4	Drücken für nächsten Titel
Taste 5	Drücken um Lautstärke zu verringern	Taste 6	Drücken um Lautstärke zu erhöhen

Fig. 97: Audio control

When Audio Control is selected, this window displays the corresponding audio control button functions.

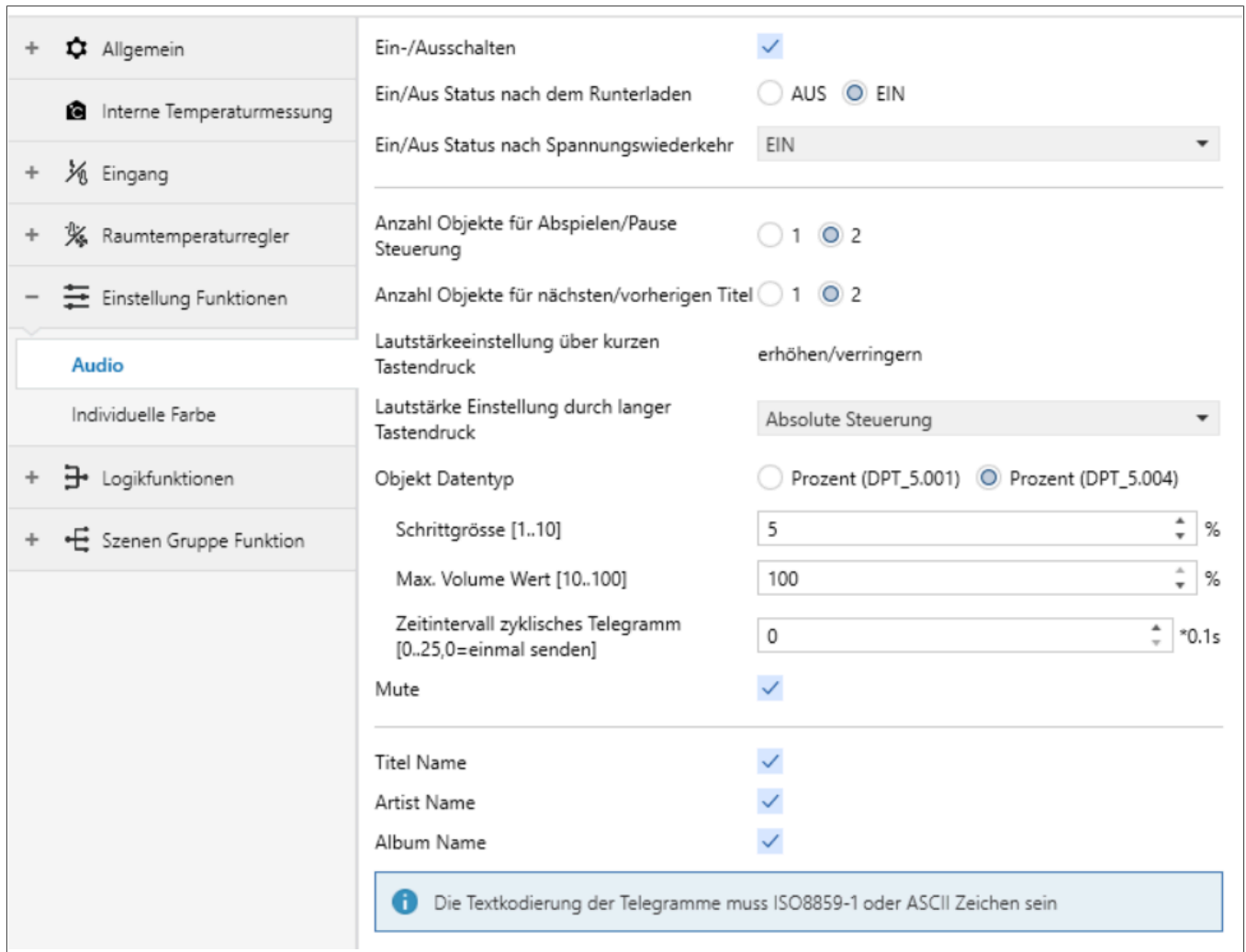


Fig. 98: Audio function - parameter 1

Parameter	Description	Value
Switch on/switch off	This parameter determines whether the power on/off function should be activated. When power on and off is enabled, you can set the initial state after power recovery or download. If power on/off is disabled, the audio interface is always on. The power on/off icon is not visible on the screen when this feature is disabled. The following two parameters are visible when this feature is enabled:	
On/Off status after download	This parameter is used to set the on/off status of the audio control interface after downloading.	<b>Off</b> On
On/Off status after power recovery	This parameter is used to set the on/off status of the audio control interface after the device voltage is restored.	Off On
		<b>Before power failure</b>
	Off: The device turns off when power is restored, this interface cannot be operated. ON: The appliance switches on when the voltage is restored. This interface can be operated. Before power failure: The device returns to the same operating state as before the power failure after the voltage has been restored.	
Number of objects for play/pause control	This parameter is used to set the number of objects controlling playback/pause: 1 common object or 2 separate objects.	<b>1</b> 2

Parameter	Description	Value
Number of objects for next/previous title	This parameter is used to set the number of objects controlling the next/previous title: 1 common object or 2 separate objects.	<b>1</b> 2
Volume adjustment via a short key press	This parameter is used to set the type of control for the volume control via a short press.	increase/decrease
Volume adjustment by pressing a long key	This parameter is used to set the type of control for volume control over a long press.	<b>Lock</b> Relative control Absolute control
<p>Lock: No long key press possible.            Relative control: Sending 4-bit and stop telegrams            Absolute control: Press the button to send absolute volume telegrams and release the button to send 1-bit telegrams. Regardless of whether it is a relative or absolute control, the volume displayed on the screen refers only to the telegrams from the bus and cannot be updated by pressing the button for a long time or by pressing the button briefly. The following parameter is visible when Relative Control is selected:</p>		
Means	This parameter is used to set the working mode of the relative control.	<b>Start-stop</b> Step setting
Step size	This parameter is used to set the relative adjustment increment.	
	If Start-Stop is selected, the option is only 100%.	<b>100%</b>
	If Step Adjustment is selected, the options are	100% 50% ... 3.13% 1.56%
<p>Example: The increment is 50%, the telegram value is: Increase is 10 and decrease is 2, similar to relative dimming telegrams.</p>		
<p><b>The following three parameters are visible when Absolute Control is selected</b></p>		
Object data type	This parameter is used to set the object data type of absolute adjustment.	<b>Percent (DPT5.001)</b> Percent (DPT5.004)
Step size [1..10]	This parameter is used to set the absolute adjustment increment. Example: The current volume is 10%, the increment is 5%, after one adjustment the output volume is 15%.	1 ... <b>5</b> ... 10%
Max. Volume Value [10..100]	This parameter is used to set the maximum volume value.	10 ... 100%
Time interval cyclic telegram [0..25,0=send once]	This parameter is used to set the time interval for cyclic volume adjustment telegrams that are sent over a long process. The time interval is set to 0 by default when relative control and start-stop are selected.	<b>0</b> ... 5 *0.1 s.

Parameter	Description	Value
Mute	This parameter is used to set whether the mute function should be activated.	
Title Name	This parameter is used to specify whether the title name should be displayed.	
Artist Name	This parameter is used to specify whether the artist's name should be displayed.	
Album Name	Use this parameter to specify whether the album name should be displayed.	



The encoding data for track name, artist name, and album name is linked to the language of the user interface. The languages used are ISO8859 or ASCII.

### 3.6 Logic functions

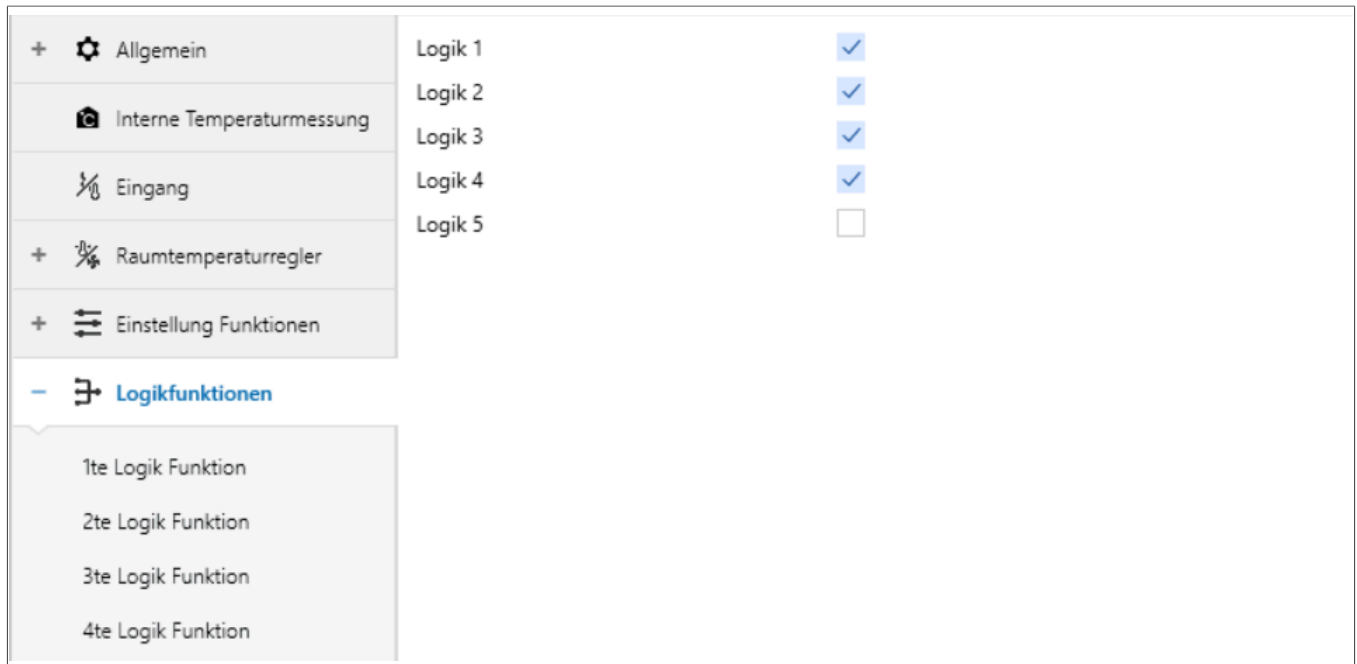



Fig. 99: Logic function 1



Fig. 100: Logic function 2

Parameter	Description	Value
Logic 1 ... Logic 8	This parameter is used to set the logic function. When selected, the corresponding logic function page is displayed. Up to 8 logic functions can be activated.	
Description of the logic function	Up to 30 characters can be entered here to describe the switching function. The label is placed in the top center of the display.	
Function of the channel	This parameter is used to set the function of the channel.	<b>AND</b> OR XOR Gate forwarding Threshold comparison Convert data type Gate function Delay mode Stairway light


 The communication objects are the same for the functions of the **AND / OR / XOR** channel. Only the algorithm is different. Therefore, these three functions are described together in the following chapter.

### 3.6.1 FUNCTION AND / OR / XOR

+  Allgemein	Funktion des Kanals	AND
Interne Temperaturmessung	Eingang a	Getrennt
Eingang	Vorgabewert	<input checked="" type="radio"/> 0 <input type="radio"/> 1
+  Raumtemperaturregler	Eingang b	Getrennt
+  Einstellung Funktionen	Vorgabewert	<input checked="" type="radio"/> 0 <input type="radio"/> 1
-  Logikfunktionen	Eingang c	Getrennt
<b>1te Logik Funktion</b>	Vorgabewert	<input checked="" type="radio"/> 0 <input type="radio"/> 1
2te Logik Funktion	Eingang d	Getrennt
3te Logik Funktion	Vorgabewert	<input checked="" type="radio"/> 0 <input type="radio"/> 1
4te Logik Funktion	Eingang e	Getrennt
+  Szenen Gruppe Funktion	Vorgabewert	<input checked="" type="radio"/> 0 <input type="radio"/> 1
	Eingang f	Getrennt
	Vorgabewert	<input checked="" type="radio"/> 0 <input type="radio"/> 1
	Eingang g	Getrennt
	Vorgabewert	<input checked="" type="radio"/> 0 <input type="radio"/> 1
	Eingang h	Getrennt
	Vorgabewert	<input checked="" type="radio"/> 0 <input type="radio"/> 1
	Ergebnis ist invertiert	<input checked="" type="radio"/> Nein <input type="radio"/> Ja
	Objektwert des Eingangs lesen nach Busspannungswiederkehr	<input checked="" type="radio"/> Nein <input type="radio"/> Ja
	Ausgang senden, wenn	<input checked="" type="radio"/> Neues Telegramm empfangen wird <input type="radio"/> Bei jeder Änderung des Ausgangs-Objekts
	Verzögerungszeit senden: Basis	Keiner
	Faktor: 1..255	1

Fig. 101: Logic function AND / OR / XOR

Parameter	Description	Value
Input a, b, c, d, e, f, g, h	This parameter is used to set whether input x is to be used and then calculated normally or inverted.  Disconnected: Input is not used. Normal: The input signal is used in this way. Inverted: The input signal is inverted and then used.	<b>Separated</b> Normal Inverted
Default value	This parameter is used to set the initial value of the logic input.	<b>0</b> 1

Parameter	Description	Value
Result is inverted	This parameter is used to specify whether the result of the logical calculation should be inverted.  No The result is output in this way. Yes: The result is inverted and then output.	<b>No</b> Yes
Read the object value of the input after the bus voltage returns	This parameter is used to specify whether the read request should be sent to the logic input object after the device voltage is restored or after programming is complete.	No Yes
Send output when	This parameter is used to set the condition for sending the logic result.  New telegram is received: The logical result is sent to the bus each time the object receives a new input value. Each time the source object is changed: Only if the logical result has changed will it be sent to the bus.	<b>New telegram is received</b> Each time the source object is changed
<div style="border: 1px solid black; padding: 5px; display: flex; align-items: center;">  <p>When a logical calculation is performed for the first time, the logical result is sent even if there is no change.</p> </div>		
Send delay time: Basic	This parameter is used to set the delay time for transferring the result of the logical calculation to the bus.	<b>None</b> 0.1 ... 25 s
Factor: 1..255	The factor is used to calculate the delay time.	<b>1 ... 255</b>
Calculation of the delay time	Time = base x factor If the 'None' option is selected from 'Base', there is no delay.	

### 3.6.2 Gate forwarding

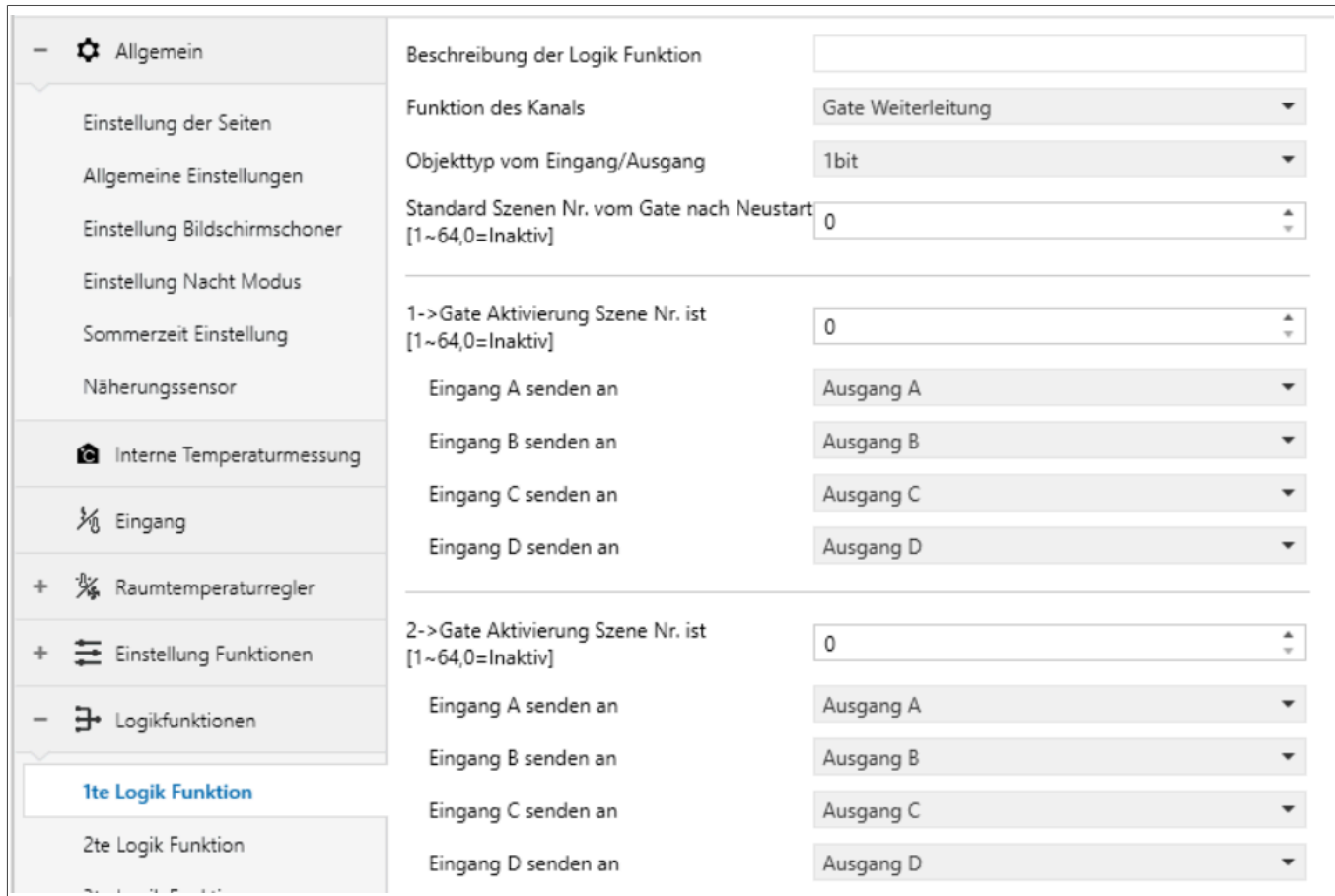


Fig. 102: Logic function - port forwarding

Parameter	Description	Value
Object type from input/output	This parameter is used to set the object type for input/output.	<b>1bit</b> 4bit 1byte
Standard Scenes No. from Gate after Restart [1~64,0=Inactive]	This parameter is used to set the initial scene in which logical gate forwarding can occur by default after the device is started. This must be configured in the parameters.	<b>0 = inactive</b> 1 ... 64
<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">  It is recommended to select the gate scene before commissioning, otherwise the start scene will be activated by default.                 </div>		
X -> Gate Activation Scene No. is [1~64,0=Inactive]	This parameter is used to set the scene number for routing the logic gate. Up to 8 trigger scene numbers can be set for each logic.	<b>0 = inactive</b> 1 ... 64
Send input A/B/C/D to	This parameter is used to set the output of input X (X=A/B/C/D) after gate forwarding.	Input A. Input B. ... INPUT B, C, D.

Parameter	Description	Value
	Depending on the option, an input can be routed to one or more outputs, where the output value corresponds to the input value.	

---

### 3.6.3 Threshold comparison

Fig. 103: Threshold comparison

Parameter	Description	Value
Threshold data type	This parameter is used to set the data type for the threshold.	4-bit value (DPT3.007) <b>1-byte value without sign (DPT5.010)</b> 2-byte value without sign (DPT7.001) 2-byte value with sign (DPT8.x) 2-byte float value (DPT9.x) 4-byte value without sign [0..4294967295] Ext. Temperature value (DPT 9,001) Ext. Humidity value (DPT 9,007) Illumination (DPT 9,004)
Threshold	This parameter is used to set the threshold whose range depends on the data type.	4-bit value (DPT3.007) - 0 ... 15 1-byte value without sign (DPT5.010) - 0 ... 255 2-byte value without sign (DPT7.001) - 0 ... 6555 2-byte value with sign (DPT8.x) - -32768 --- 32767 2-byte float value (DPT9.x) - -670760 ... 670760 4-byte value without sign [0..4294967295] - 0 ... 4294967295


Parameter	Description	Value
		Ext. Temperature value (DPT 9,001) - -20 ... 95°C. Ext. Moisture value (DPT 9,007) - 0 ... 100% Illuminance (DPT 9,004) - 0 ... 65535 lux
Hysteresis threshold value <sup>[1]</sup>	This parameter specifies the hysteresis threshold.	0 ... 500
If object value < threshold	This parameter is used to set the logical result value to be sent if the threshold is less than, equal to, not equal to, greater than, less than, or equal to the setting value.	<b>Do not send the telegram</b>
If object value = threshold		Send value 1
If Object Value > Threshold		Send value 0
If object value != threshold value		
If object value >= threshold value		
If object value <= threshold		
	If the object data type is '2-byte floating point value (DPT9.x)', the object value can only be set lower or greater than the threshold value.	
	Do not send a telegram: Even if the condition is fulfilled, no telegram is sent. Send value '0'/'1': If the condition is satisfied, send telegram 0 or 1. If there is a conflict between the parameter setting options, the value to be sent when the final parameter condition is reached is sent.	


[1] Visible when **threshold data type** the **value 2byte flow value** or **value illuminance** is selected.

### Example:

The parameter 'If object value = threshold' is set to "Send value '0'"; the parameter 'If object value <= threshold' is set to "Send value '1'"; if the object value corresponds to the threshold, the logical result sends '1'.

Parameter	Description	Value
Send output when	This parameter is used to set the condition for sending the logic result.	<b>New telegram is received</b> Each time the source object is changed
	New telegram is received: The logical result is sent to the bus each time the object receives a new input value.	

Parameter	Description	Value
	Each time the source object is changed: Only if the logical result has changed will it be sent to the bus.	
	 When a logical calculation is performed for the first time, the logical result is sent even if there is no change.	
Send delay time: Basic	This parameter is used to set the delay time for transferring the result of the logical calculation to the bus.	<b>None</b> 0.1 ... 25 s
Factor: 1..255	The factor is used to calculate the delay time.	<b>1</b> ... 255
Calculation of the delay time	Time = base x factor If the 'None' option is selected from 'Base', there is no delay.	

Parameter	Description	Value
Input a, b, c, d, e, f, g, h	This parameter is used to set whether input x is to be used and then calculated normally or inverted.	<b>Separated</b> Normal Inverted
	Disconnected: Input is not used. Normal: The input signal is used in this way. Inverted: The input signal is inverted and then used.	
Default value	This parameter is used to set the initial value of the logic input.	<b>0</b> 1
Result is inverted	This parameter is used to specify whether the result of the logical calculation should be inverted.	<b>No</b> Yes
	No The result is output in this way. Yes: The result is inverted and then output.	
Read the object value of the input after the bus voltage returns	This parameter is used to specify whether the read request should be sent to the logic input object after the device voltage is restored or after programming is complete.	No Yes
Send output when	This parameter is used to set the condition for sending the logic result.	<b>New telegram is received</b> Each time the source object is changed
	New telegram is received: The logical result is sent to the bus each time the object receives a new input value. Each time the source object is changed: Only if the logical result has changed will it be sent to the bus.	
	 When a logical calculation is performed for the first time, the logical result is sent even if there is no change.	

Parameter	Description	Value
Send delay time: Basic	This parameter is used to set the delay time for transferring the result of the logical calculation to the bus.	<b>None</b> 0.1 ... 25 s
Factor: 1..255	The factor is used to calculate the delay time.	<b>1</b> ... 255
Calculation of the delay time	Time = base x factor If the 'None' option is selected from 'Base', there is no delay.	

### 3.6.4 Convert data type

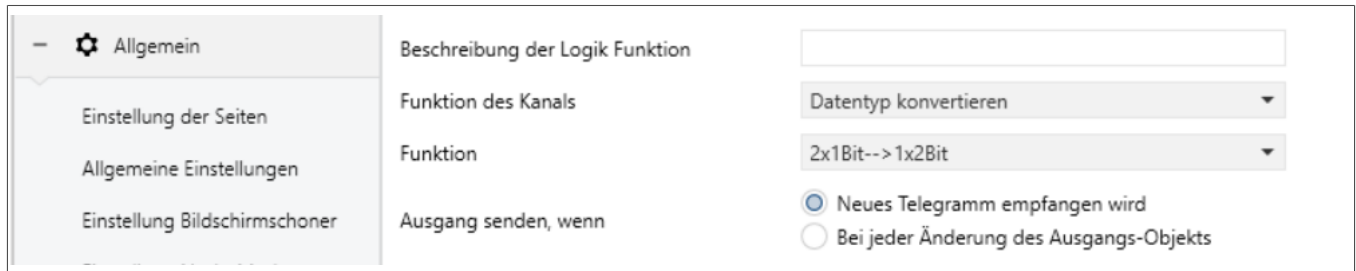



Fig. 104: Convert data type

Parameter	Description	Value
Function		<b>2x1bit-1x2bit</b> 8x1bit-1x1byte 1x1byte-1x2byte 2x1byte-1x2byte 2x2byte-1x4byte 1x1byte-8x1bit 1x2byte-2x1byte 1x4byte-2x2byte 1x3byte-3x1byte 3x1byte-1x3byte
Send output when	This parameter is used to set the condition for sending the logic result.  New telegram is received: The logical result is sent to the bus each time the object receives a new input value. Each time the source object is changed: Only if the logical result has changed will it be sent to the bus.	<b>New telegram is received</b> Each time the source object is changed
 When a logical calculation is performed for the first time, the logical result is sent even if there is no change.		

**3.6.5 Gate function**

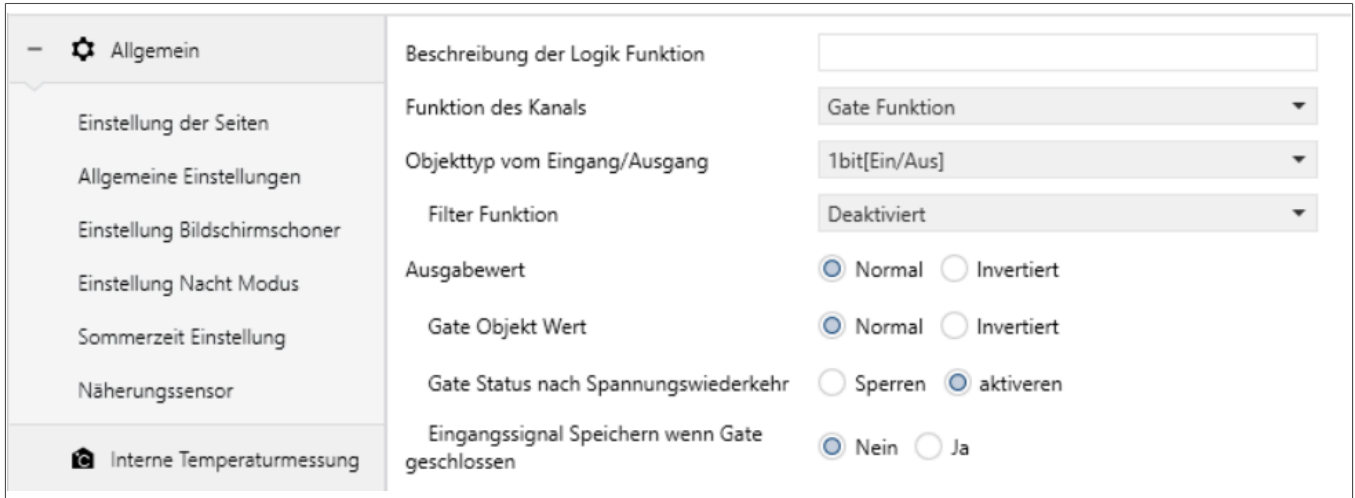


Fig. 105: Gate function

Parameter	Description	Value
Object type from input/output	This parameter is used to set the object type for input/output.	1bit [on/off] 1byte [0..100%] 1byte [0..255] 2byte [float] 2byte [0..65535]
Filter function	This parameter is visible when '1 bit [on/off]' is selected. Specify whether telegrams are to be filtered (ON or OFF), only one of them is to be allowed through or all are to be allowed through.  Disabled: The ON or OFF telegrams are not filtered. Filter out a: Off can happen, one cannot happen. Filter out of: One can happen, one cannot happen.	<b>Disabled</b> Filter out one Filter out
Output value	This parameter is visible when '1 bit [on/off]' is selected. Specifies whether the value should be inverted and then output.	<b>Normal</b> Inverted
Gate object value	This parameter is used to specify whether the value of the Gate object should be inverted and then output.	<b>Normal</b> Inverted
Gate status after power recovery	This parameter is used to set the gate status after power recovery.	<b>Lock</b> activate
Input signal Save when gate is closed	This parameter is used to set whether the input signal should be stored when the gate is closed.  <b>No</b> Clear this option to save the input. The input values received during the closing phase of the gate are ignored. <b>Yes:</b> Select this option to save the input. The input values received during the closing phase of the gate are output when the gate is open (regardless of whether the input value has changed or not).	<b>No</b> Yes

### 3.6.6 Delay mode

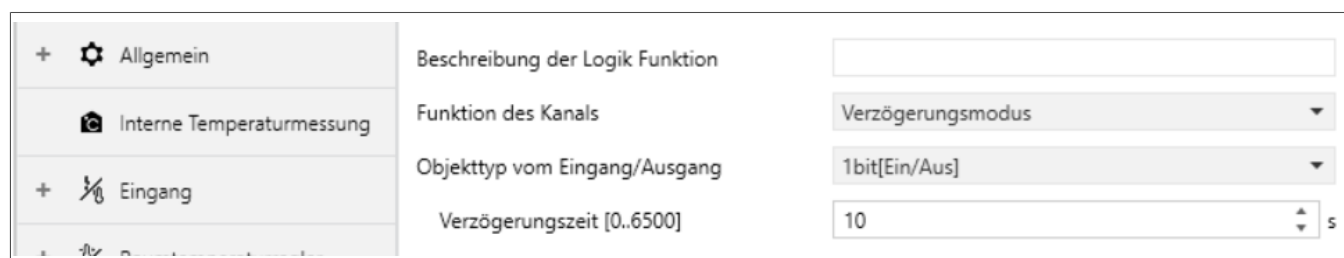


Fig. 106: Delay mode

Parameter	Description	Value
Object type from input/output	This parameter is used to set the object type for input/output.	<b>1bit [on/off]</b> 1byte [0..100%] 1byte [0..255] 2byte [float] 2byte [0..65535]
Delay time [0..6500]	This parameter is used to set the delay time at which the output object forwards the value when the input object receives the telegram.	0 ... <b>10</b> ... 6500 s.

**3.6.7 Stairway light**

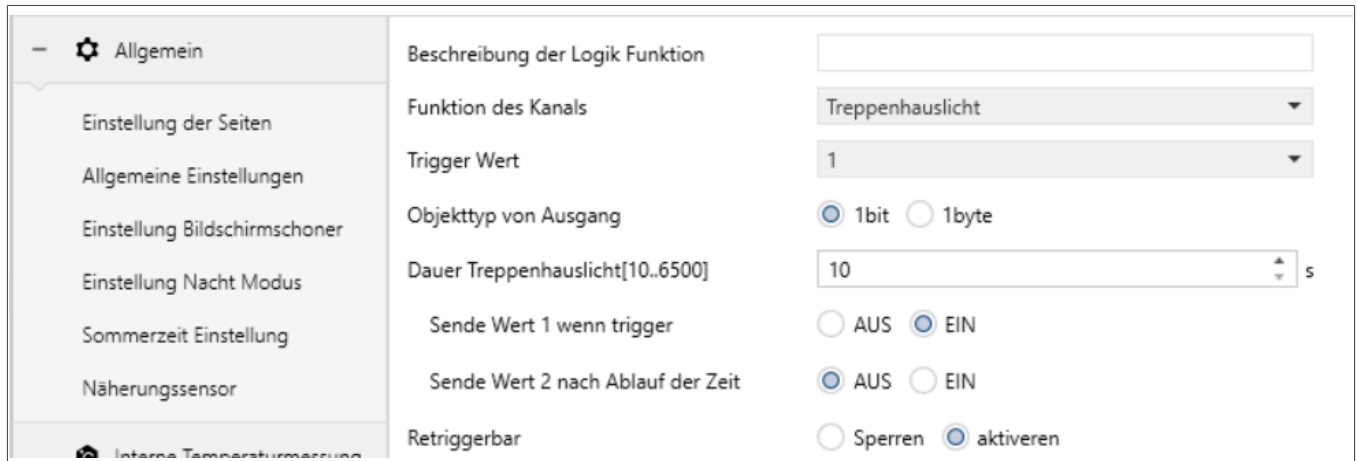


Fig. 107: Stairway light

Parameter	Description	Value
Trigger Value	This parameter is used to set the telegram value of the <b>Trigger Value</b> object.	0 <b>1</b> 0 or 1
Object type of output	This parameter is used to set the object type of the output.	1bit 1byte
Duration [10..6500]	This parameter is used to set the duration of the stair lighting after the stair lighting is switched on.	<b>10</b> ... 6500 s if the value is 1bit
Send value 1 when trigger	These parameters are used to set the value to be sent. Send the value 1 when triggered and 2 when the duration expires. The options are displayed according to the data type of the output object.	If the value is 1bit Off <b>On</b>
Send value 2 after the time has expired		If the value is 1byte 0 ... 255
Retriggerable	This parameter is used to set whether a resynchronization is to be triggered if the received trigger value is within the delay time.	Lock <b>activate</b>

### 3.7 Scenes group function

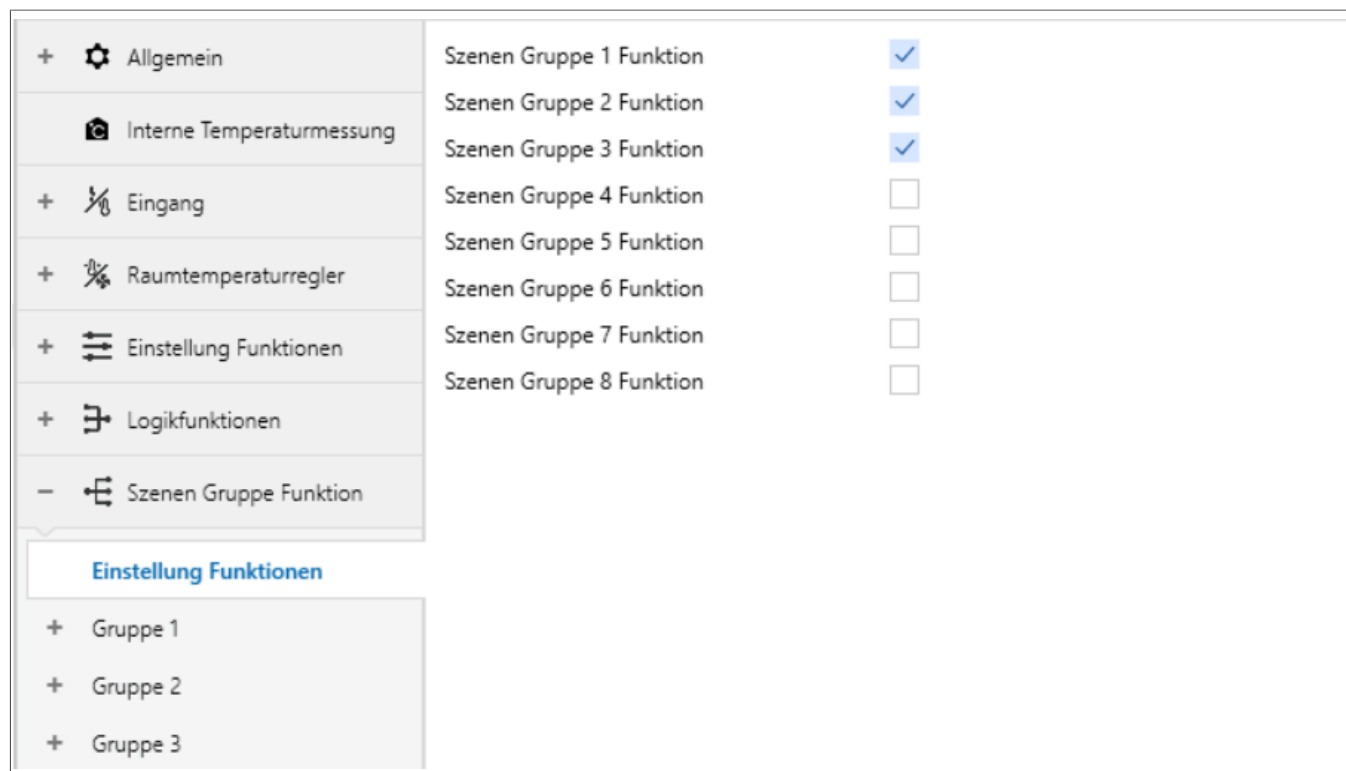


Fig. 108: Scenes group X function

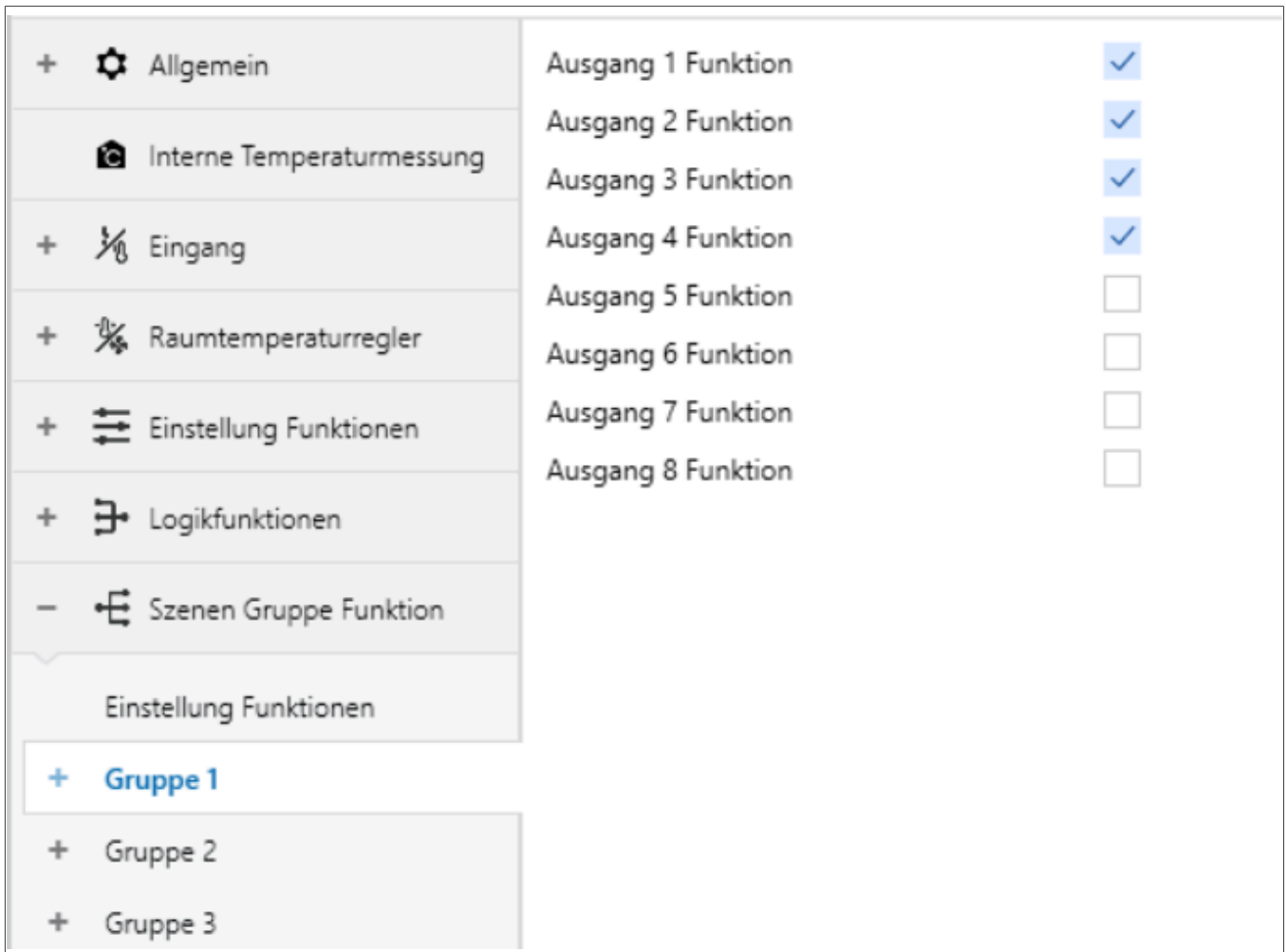


Fig. 109: Scenes group x function output X.

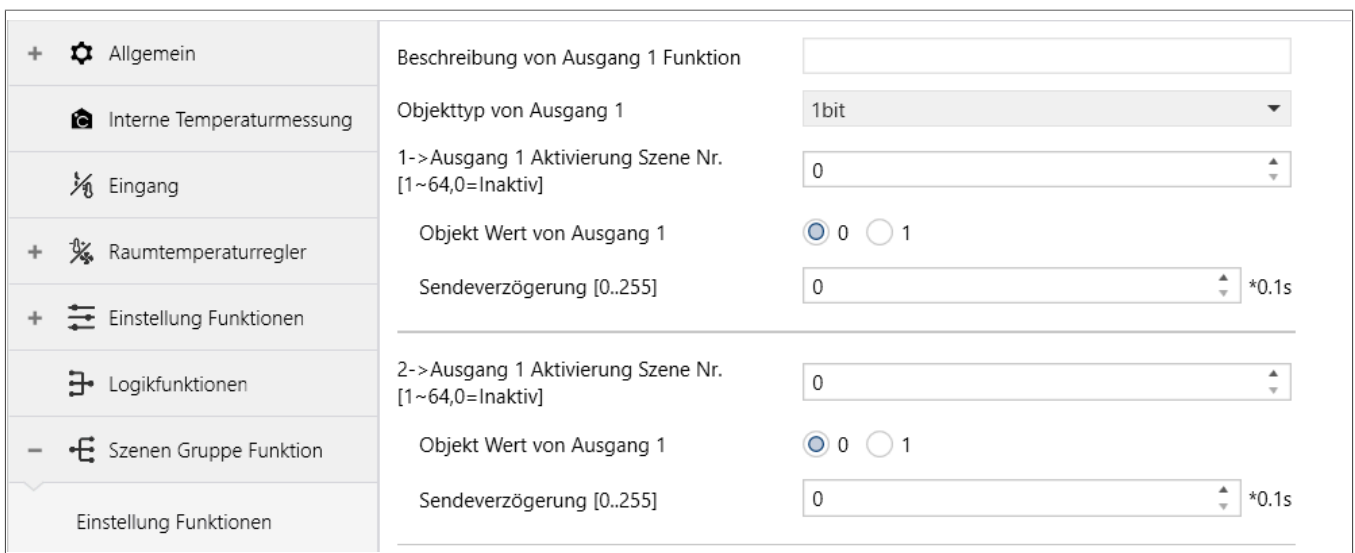


Fig. 110: Scenes group x function output X parameters

Parameter	Description	Value
Scenes group X function	The number of scenes group function can be selected here. Up to a maximum of 8 groups can be activated.	Scenes group 1 function ...

Parameter	Description	Value
		Scenes group 8 function
Output Y function	The number of outputs per scene group function can be selected here. Up to a maximum of 8 groups can be activated.	Output 1 function ... Output 8 function



The **Y function output** is identical for each of the eight groups 1 ... 8. Therefore, only one **output function** is described in the following.



Parameter	Description	Value
Description of output Y function	With this parameter, an individual name output Y of group X can be entered. A maximum of 30 characters are allowed.	
Object type of output Y	This parameter is used to set the object type for Group X output Y	1bit 1byte 2byte RGB RGBW

If you select one of the different object types, further parameters will open.

### Object type of output Y - 1byte / 2byte

Parameter	Description	Value
Object data type 1byte	Here, the Data Type object is selected for the selected Output Y object type.	<b>1byte unsigned value</b> HLK mode
Object data type 2byte	Here, the Data Type object is selected for the selected Output Y object type.	<b>2byte unsigned value</b> Temperature value

Parameter	Description	Value
Z ->Output Y Activation Scene No. [1..64,0=Inactive]	This parameter is used to set the triggered scene number of group X output Y Up to 8 triggered scenes can be configured for each output.	<b>0 = inactive</b> 1 ... 64
Object value of output Y	This parameter is used to set the output value. The range depends on the data type of output Y.	1bit - <b>0</b> - 1  1byte unsigned value - 0 ... <b>127</b> ... 255 -

Parameter	Description	Value
		HLK mode
		- <b>Comfort mode</b>
		- Standby mode
		- Night mode
		- Frost/heat protection
		2byte unsigned value
		- 0 ... <b>32767</b> ... 65535
		Temperature value
		- -5 ... <b>25</b> ... 45°C
		RGB
		- #FFFFFF
		- 
		RGBW
		- #FFFFFF
		- 
		- Value for white 0 ... <b>255</b>
Send delay [0..255]	This parameter is used to set the delay time for the transmission of the output value to the bus.	0 ... <b>255</b> *0.1s

## 4 Description of the user interface

The device with LCD screen is operated via 6 buttons, the buttons being used for different purposes depending on the function. The operation of the button(s) is configured in the ETS.



Fig. 111: Device view

The following chapters explain the user interfaces separately according to each function.

## 4.1 Functions of the tracing sensor

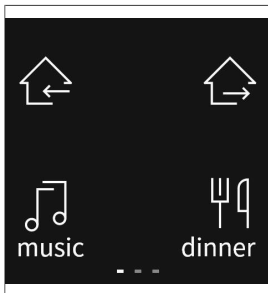


Fig. 112: Selection of functions I.

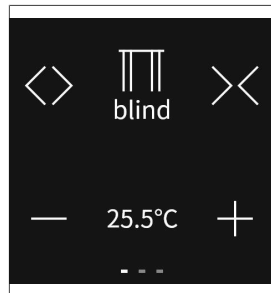


Fig. 113: Selection of functions II.

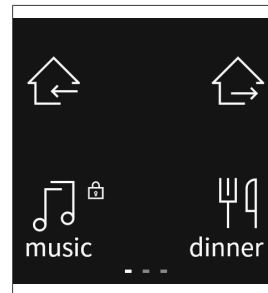


Fig. 114: Music function locked

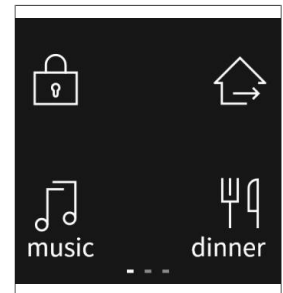


Fig. 115: Function coming home is blocked

You can set 1 pages with 4 buttons, 2 pages with 8 buttons or 3 pages with 12 buttons.

When 1 page is selected, the two buttons on the bottom of the unit (button 5 and button 6) only support the scene function.

When 2 or 3 pages are selected, the two buttons on the bottom of the unit (button 5 and button 6) are used to switch between the function pages.

### When used as an individual key:

Only keys 1 ... 4 can be set as single keys. Each button can be configured with different display types, including Symbol, Description, or Symbol + Description.


### When used as a rocker:

Buttons 1/2 and buttons 3/4 can be set as rocker. The center field is used to display the status with the display types symbol, description, symbol + description, status value or symbol + status value. The left and right fields can only be set as an icon or description and flash twice (0.5 s on and 0.5 s off) when the button is pressed. If the button is pressed again during the flash cycle, the cycle will not be reset. The color of the icon is set via the status.



### Note

When the blinking function is activated for switch, DIMM or blind functions, there are different flashing effects when pressing the buttons depending on the configured display type: Continuous blinking (1 second on and 1 second off) when symbol or description is selected; only symbol flashes when symbol + description is selected; While the other selection involves the flashing of the icon or description or status value, depending on the configuration. For rocker buttons, the flashing function is applied only to the center field, the left/right field does not flash when the flashing function is activated.

The lock icon  indicates when the stored function of the key is locked. The display type is configured using the parameter.

Depending on the configuration, a distinction is made between short and long key presses. A long key press can trigger additional functions.

### 4.1.1 RGB dimming



The RGB dimming function can only be selected if the value **Individual keys** is selected in the function **Fix parameterized keys**.

- ☑ The single key (example: Button 4) is assigned the RGB dimming function and the following screen view is visible.



Fig. 116: Screen view RGB dimming

- Press and hold the button until the RGB dimming view appears on the screen.



Fig. 117: RGB dimming

Button 1	Press the key to adjust the H (hue) value.	Button 2	Press the button to adjust the S (saturation) value.
Button 3	Press the key to adjust the value V (value).	Button 4	No function
Button 5	Press the button to decrease the value.	Button 6	Press the key to increase the value.

Table 81: RGB dim

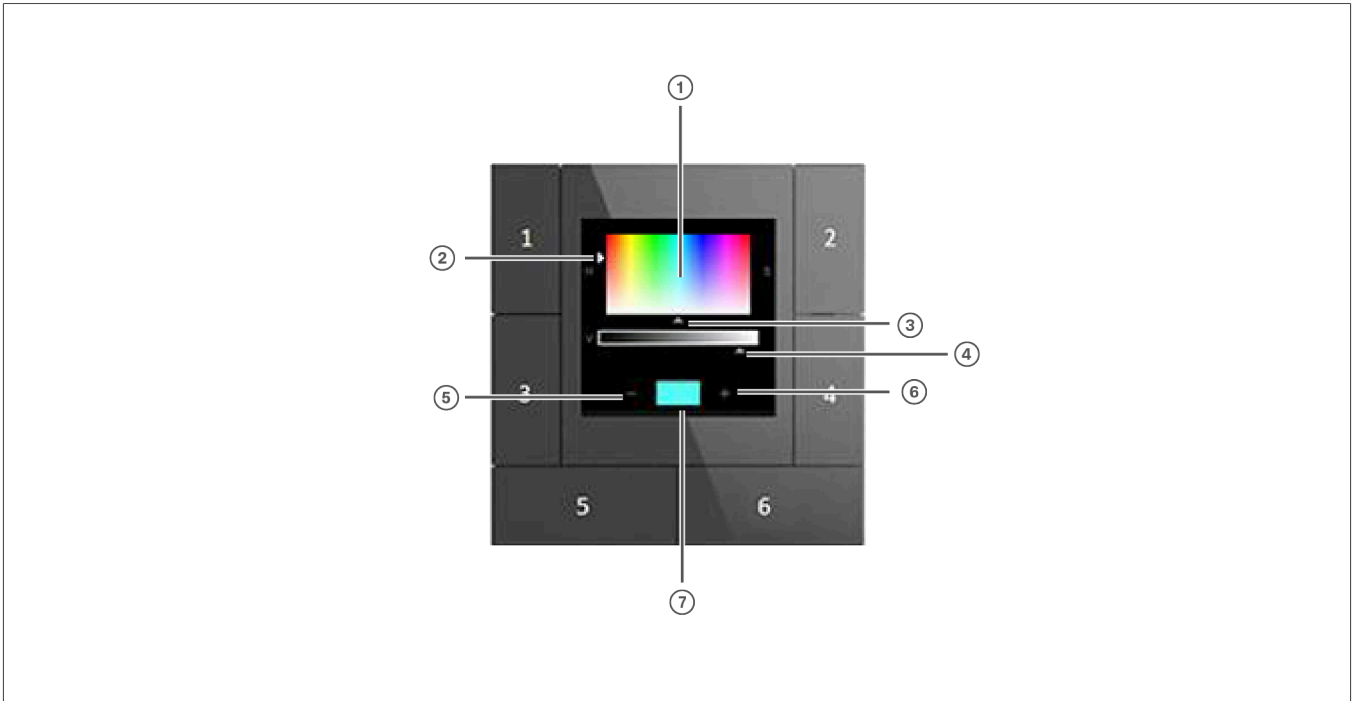


Fig. 118: RGB dim

- ① This area is the color matching area.
- ② This is the arrow icon to adjust the saturation. It is white and flashes when it is selected, otherwise it is gray.
- ③ This is the arrow icon to adjust the hue. It is white and flashes when it is selected, otherwise it is gray.
- ④ This is the arrow icon used to adjust the value. It is white and flashes when it is selected, otherwise it is gray. The top bar is the area for adjusting the brightness.
- ⑤ Decrease the selected value using the button corresponding to this icon and the arrow moves with the operation.
- ⑥ Increase the selected value with the button corresponding to this icon and the arrow moves with the operation.
- ⑦ This area displays the effect of the color setting.

### 4.1.2 RGBW dimming

The RGBW dimming function can only be selected if the value **Individual keys** is selected in the function **Fix parameterized keys**.

- ☑ The single key (example: Button 4) is assigned the RGBW dimming function and the following screen view is visible.



Fig. 119: Screen view for RGBW dimming

- Press and hold the button until the RGBW dimming view appears on the screen.

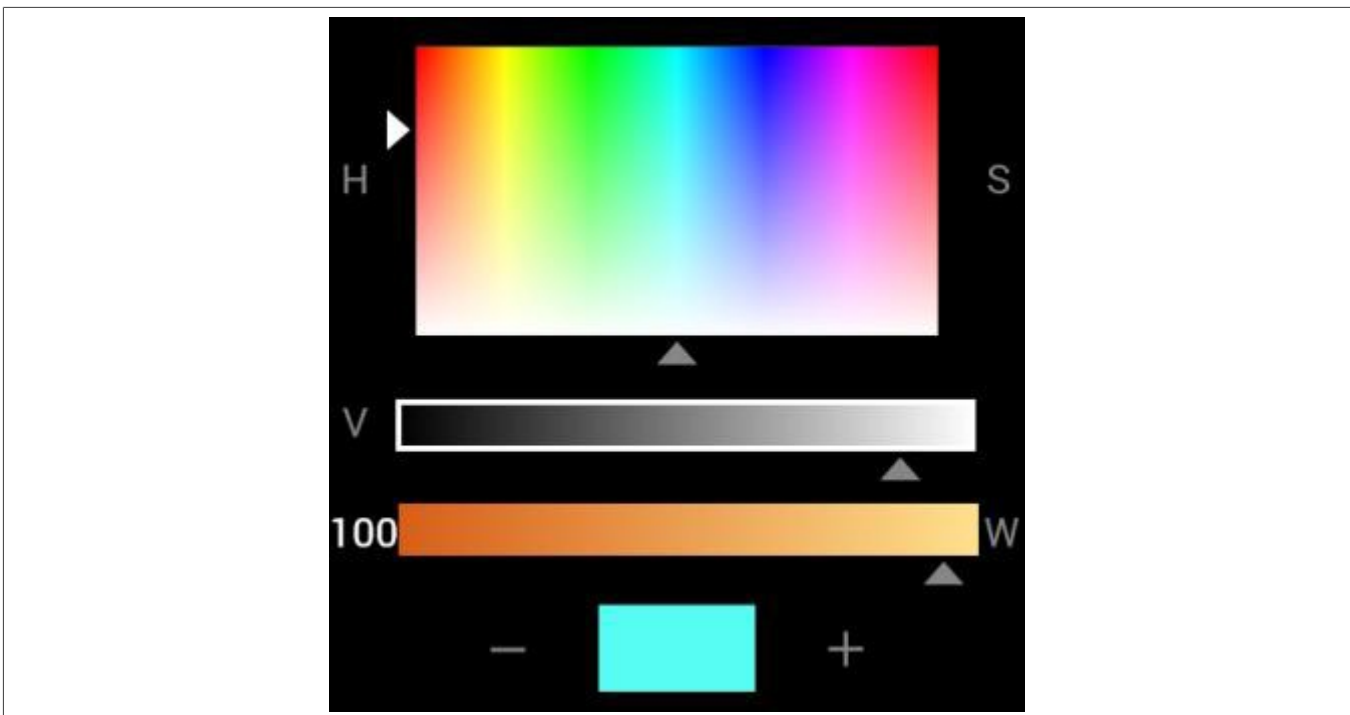


Fig. 120: RGBW dimming

Button 1	Press the key to adjust the H (hue) value.	Button 2	Press the button to adjust the S (saturation) value.
Button 3	Press the key to adjust the value V (value).	Button 4	Press the button to adjust the W (white brightness) value.

Table 82: RGB dim

Button 5	Press the button to decrease the value.	Button 6	Press the key to increase the value.
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Table 82: RGB dim

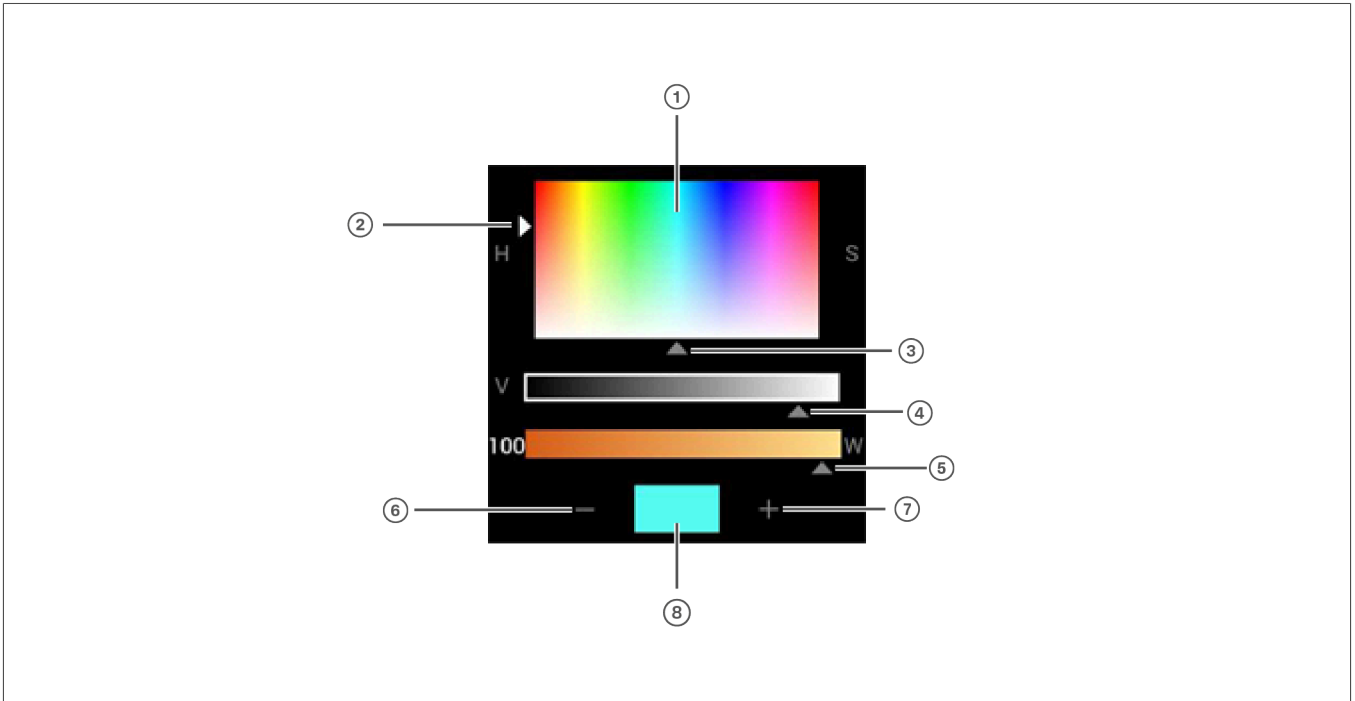


Fig. 121: Dim RGBW

- ① This area is the color matching area.
- ② This is the arrow icon to adjust the saturation. It is white and flashes when it is selected, otherwise it is gray.
- ③ This is the arrow icon to adjust the hue. It is white and flashes when it is selected, otherwise it is gray.
- ④ This is the arrow icon used to adjust the value. It is white and flashes when it is selected, otherwise it is gray. The top bar is the area for adjusting the brightness.
- ⑤ This is the arrow icon for setting the white brightness. It is white and flashes when it is selected, otherwise it is gray. The top bar is the area for setting the white brightness.
- ⑥ Decrease the selected value using the button corresponding to this icon and the arrow moves as you type.
- ⑦ Increase the selected value with the button corresponding to this icon and the arrow moves as you type.
- ⑧ This area displays the effect of the color setting.

### 4.1.3 Dim the color temperature

i

The Dim Color Temperature function can only be selected if the value **Individual Keys** is selected in the **Fix** function.

- ☑ The single key (example: Button 4) is assigned the function color temperature dimming and the following screen view is visible.



Fig. 122: Screen view for RGW dimming

- Press and hold the button until the RGBW dimming view appears on the screen.



Fig. 123: Dim the color temperature

Button 1	Press the button to adjust the color temperature	Button 2	Press the button to increase the color temperature.
Button 3	Press the button to decrease the brightness.	Button 4	Press the button to increase the brightness.
Button 5	No function.	Button 6	No function.

Table 83: Dim the color temperature

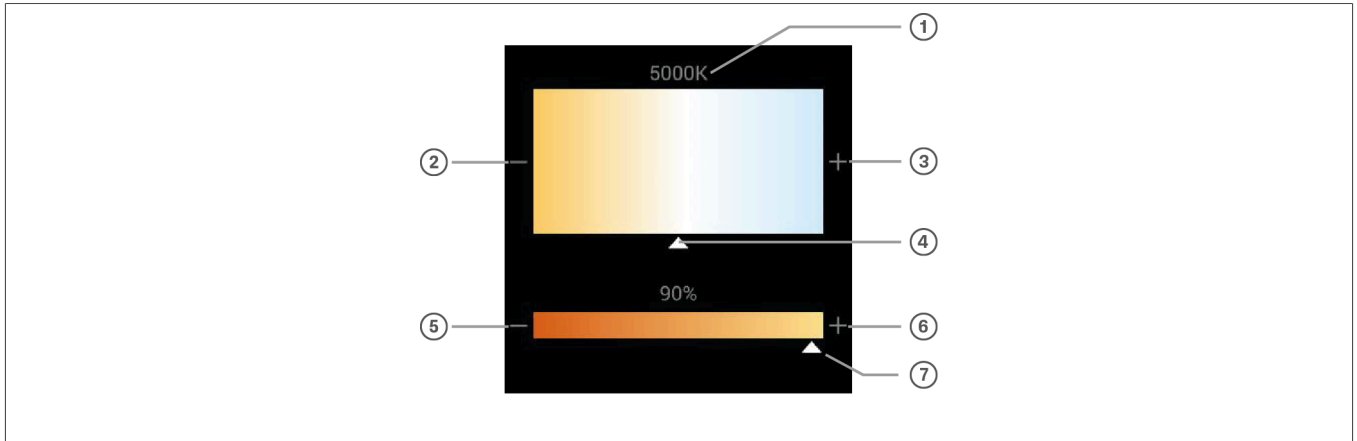


Fig. 124: Dim the color temperature

- ① This range is the color temperature setting range, and the current color temperature is displayed at the top.
- ② Decrease the color temperature using the button corresponding to this symbol.
- ③ Increase the color temperature with the button corresponding to this symbol.
- ④ This is the arrow icon for setting the color temperature. The arrow moves according to the operation of ②③.
- ⑤ Decrease the brightness with the button corresponding to this icon.
- ⑥ Increase the brightness with the button corresponding to this icon.
- ⑦ This is the arrow icon for adjusting the brightness. The arrow moves according to the operation of ⑤⑥. The top bar is the area for adjusting the brightness, and the current brightness is displayed above the bar.

## 4.2 Room thermostat



Depending on the configuration of the device as a room temperature controller, not all functions are available.

### 4.2.1 Control page for HVAC control

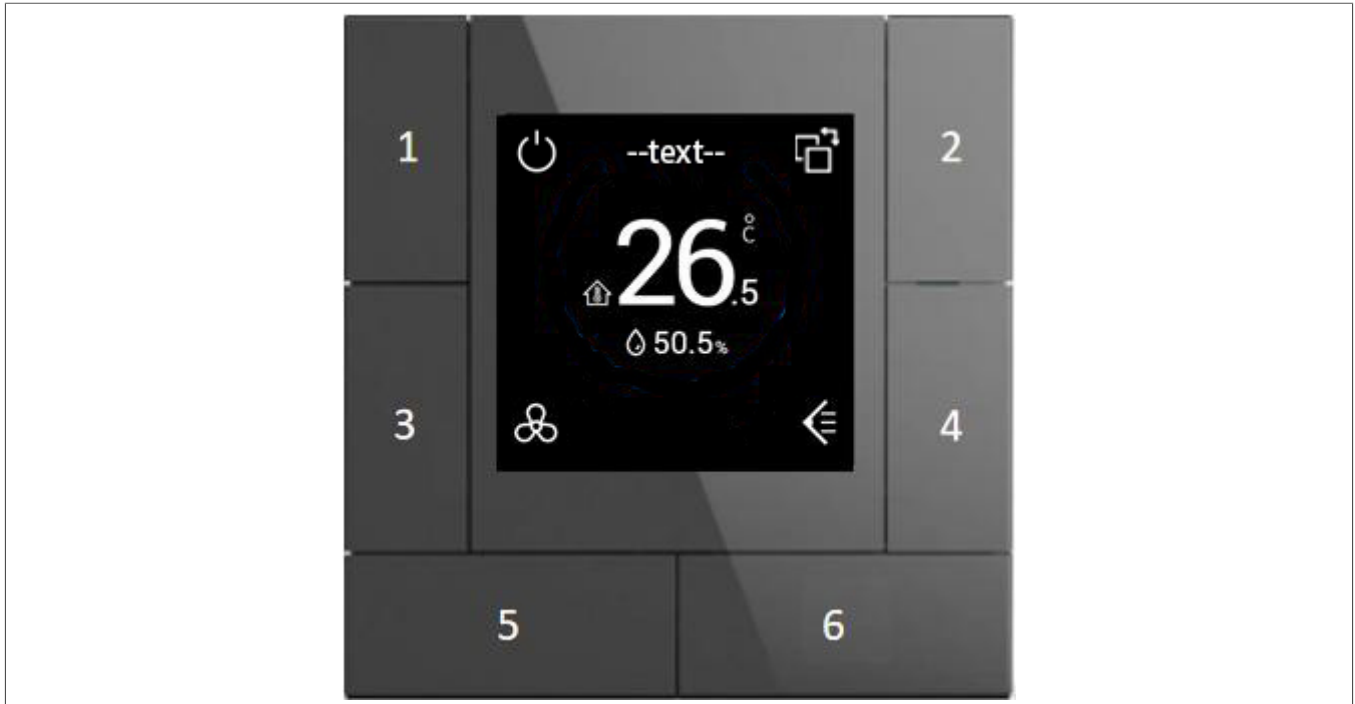


Fig. 125: FCU control side

Button 1	Press the button to switch off the device.	Button 2	If more than one function is activated, press the button to switch the function page.
Button 3	Short button press: Switch the fan speed Long button press: Switch to automatic mode	Button 4	If the operating mode is disabled, press the button to switch between heating and cooling mode. If the operating mode is enabled, Short button press: – Change operating mode  Long button press: – Switch between heating and cooling mode
Button 5	Press the button to lower the temperature value.	Button 6	Press the button to increase the temperature value.

Table 84: Menu selection (Fig. 144)

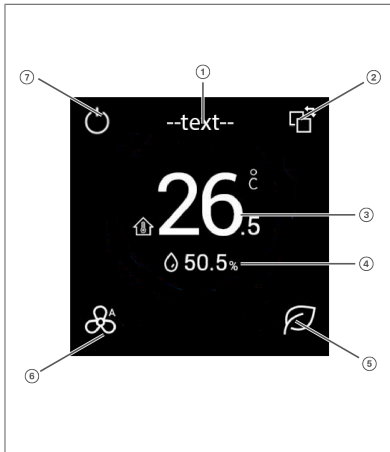


Fig. 126: Unit switched on cooling mode

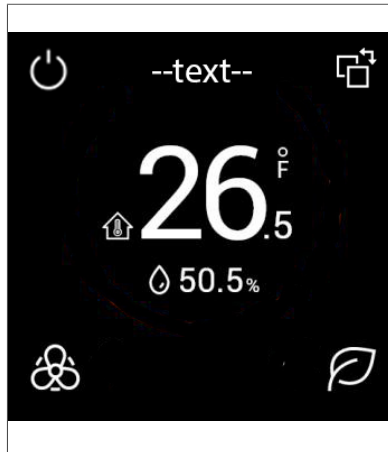


Fig. 127: Unit switched on heating mode

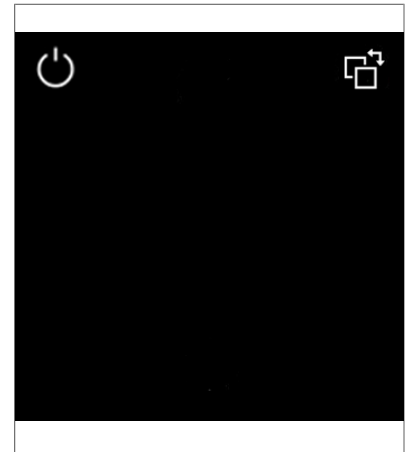


Fig. 128: Device switched off

When the device is turned on, the temperature and humidity, control mode, room operating mode, fan speed, and other status information are displayed according to the ETS configuration. When the device function is switched off, the screen view is displayed as shown in the picture (([Fig. 128: Device switched off](#))).

- ① This area displays the display name for the feature page. The text is configured via ETS.
- ② Pressing the adjacent button switches to the next function page.
- ③ This area displays the set temperature or actual temperature configured via ETS. If no data has been received for the actual temperature, nothing is displayed.

The symbols are defined as follows:

The symbols are defined as follows:

- Room temperature
- External temperature
- Combined temperature
- Setpoint temperature

When the actual temperature is displayed, when the button is set, the set temperature is automatically changed to 0.5 K or 1 K, which is configured via the ETS. When the unit of set temperature is set to degrees Celsius, the set temperature range is 5 to 37°C by default. The temperature setting range can be changed via the parameter setting.

- ④ This area displays the humidity. Settings must be made in the ETS.
- ⑤ If the operating mode is enabled on ETS, this area displays the room operating mode. A short press of a button switches the operating mode circularly.
  - Comfort mode
  - Standby mode
  - Eco mode
  - Protection mode
- ⑥ This area shows the fan speed . A short press of the button allows you to switch between the different stages.
  - Off
  - Low
  - Medium
  - High
  - Automatic

- ⑦ Pressing the adjacent button closes this function page.

**4.2.2 Control page for air conditioner**

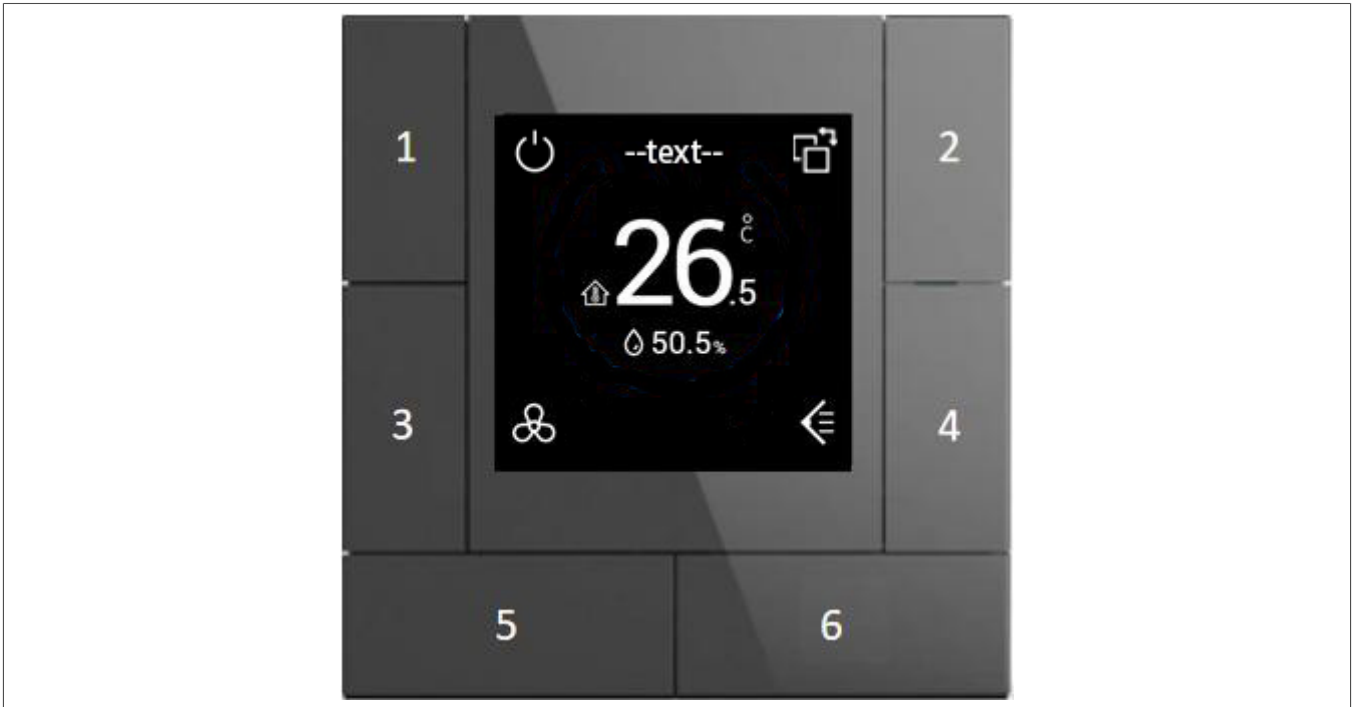
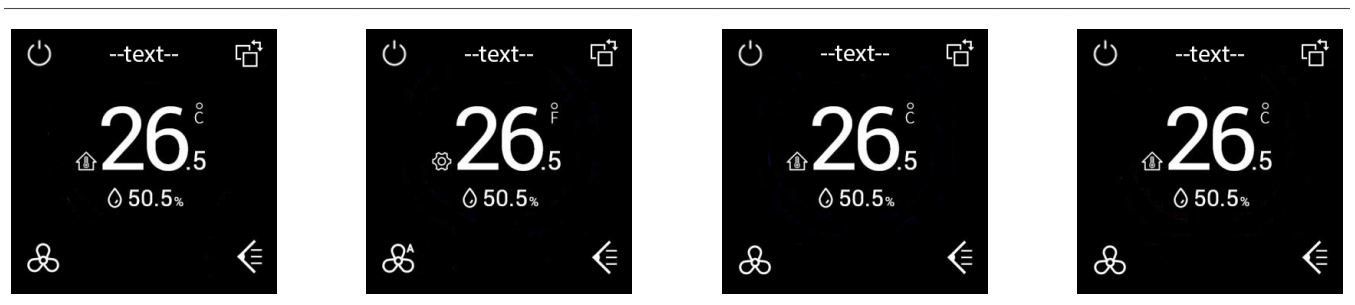


Fig. 129: VRF control page

Button 1	Press the button to switch off the device.	Button 2	If more than one function is activated, press the button to switch the function page.
Button 3	Short button press: Switch the fan speed Long button press: Switch to the oscillation state	Button 4	Press the button to change mode
Button 5	Press the button to lower the temperature value.	Button 6	Press the button to increase the temperature value.

Table 85: Menu selection (Fig. 144)



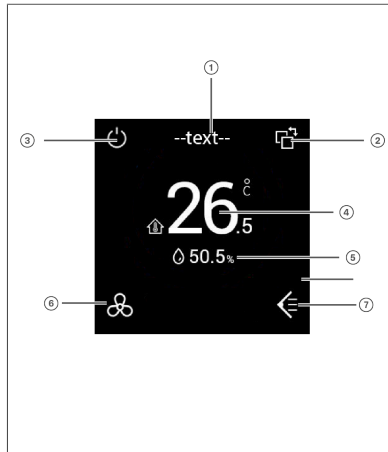
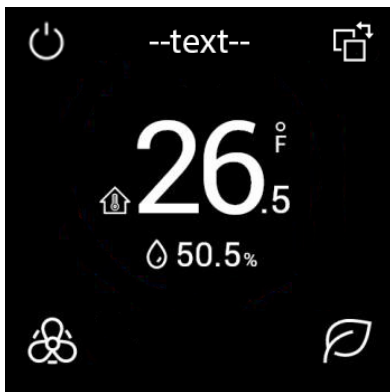


Fig. 130: Unit switched on heating mode

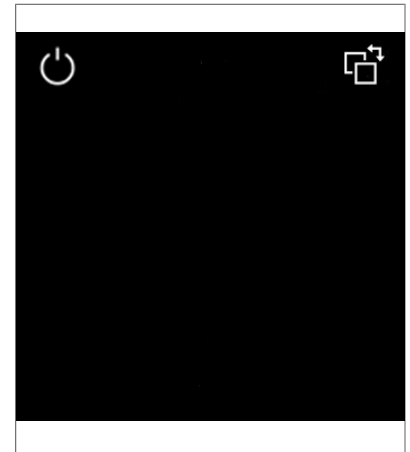


Fig. 131: Device switched off

- ① This area displays the display name for the feature page. The text is configured via ETS.
- ② Pressing the adjacent button switches to the next function page.
- ③ Pressing the adjacent button closes this function page.
- ④ This area displays the set temperature or actual temperature configured via ETS. If no data has been received for the actual temperature, nothing is displayed.  
The symbols are defined as follows:  
The symbols are defined as follows:

- Room temperature
- External temperature
- Combined temperature
- Setpoint temperature

When the actual temperature is displayed, when the button is set, the set temperature is automatically changed to 0.5 K or 1 K, which is configured via the ETS. When the set temperature setting is complete, stop the setting and display the actual temperature. When the unit of set temperature is set to degrees Celsius ( ), the set temperature range is 5 to 37 by default. The temperature setting range can be changed via the parameter setting.

- ⑤ This area displays the humidity. Settings must be made in the ETS.
- ⑥ This area shows the fan speed. A short press of the button allows you to switch between the different stages.
  - Off
  - Low
  - Medium
  - High
  - Automatic

This icon becomes the default when the fan speed is uncertain.

- ⑦ This area displays the swing status of the leaves. It is activated in ETS and can be switched by pressing and holding the button.
  - Stop
  - Leaf movement
  - Show as default when the status of the wing swing is uncertain

4.2.3 Control side for (additional) underfloor heating

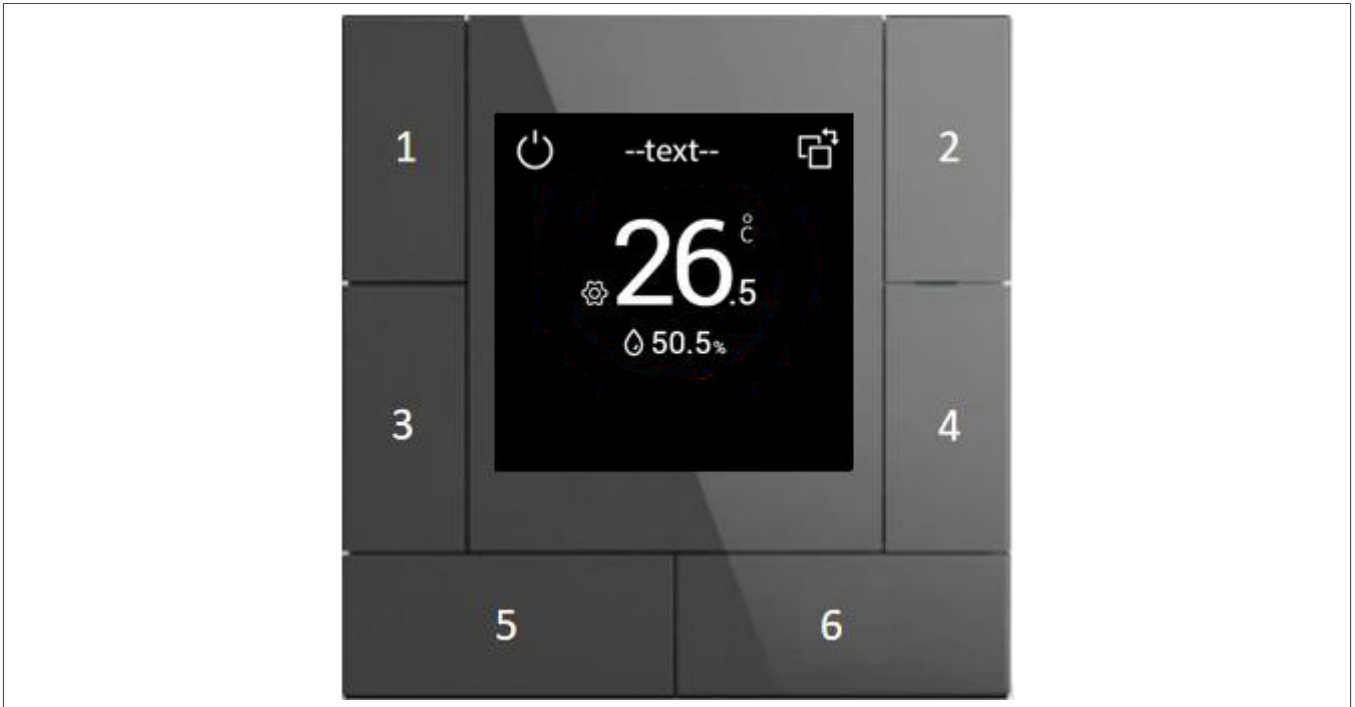


Fig. 132: Floor heating side

Button 1	Press the button to switch off the device.	Button 2	If more than one function is activated, press the button to switch the function page.
Button 3	No function	Button 4	No function
Button 5	Press the button to lower the temperature value.	Button 6	Press the button to increase the temperature value.

Table 86: Menu selection (Fig. 144)

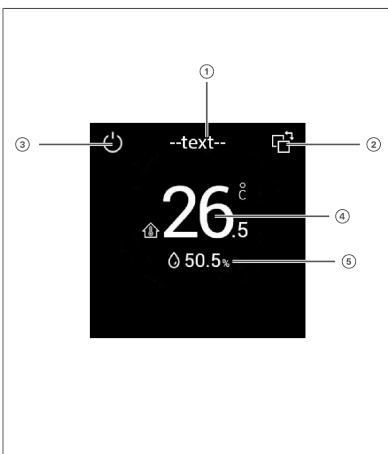


Fig. 133: Unit switched on cooling mode

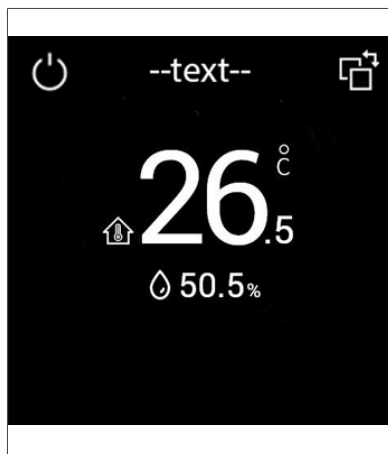


Fig. 134: Unit switched on heating mode

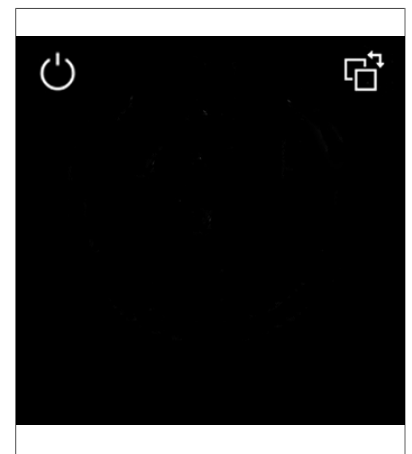






Fig. 135: Device switched off

When the appliance is switched on, the temperature and humidity, the heating status and other status information are displayed according to the ETS configuration. When it is off, the screen view is displayed ( Fig. 135: Device switched off , right).

- ① This area displays the display name for the feature page. The text is configured via ETS.
- ② Pressing the adjacent button switches to the next function page.
- ③ Pressing the adjacent button switches off the heater.
- ④ This area displays the set temperature or actual temperature configured via ETS. If no data has been received for the actual temperature, nothing is displayed.

The symbols are defined as follows:

The symbols are defined as follows:

- Room temperature 
- External temperature 
- Combined temperature 
- Setpoint temperature 

When the actual temperature is displayed, when the button is set, the set temperature is automatically changed to 0.5 K or 1 K, which is configured via ETS. When the set temperature setting is complete, stop the setting and display the actual temperature. When the unit of set temperature is set to degrees Celsius ( ), the set temperature range is 16 to 32 by default.

- ⑤ This area displays the humidity. Settings must be made in the ETS.



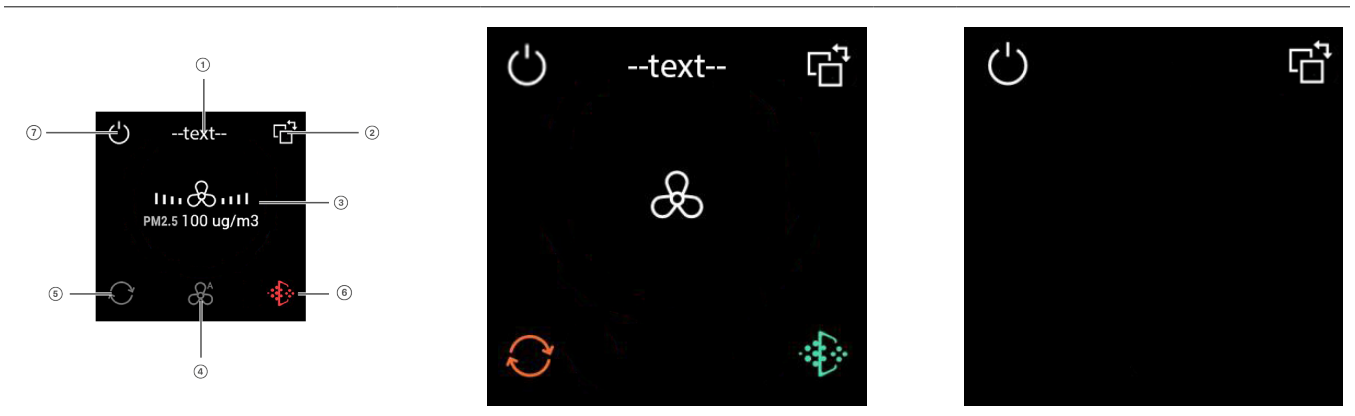
4.2.4 Control side for ventilation systems




Fig. 136: Ventilation side

Button 1	Press the button to switch off the device.	Button 2	If more than one function is activated, press the button to switch the function page.
Button 3	Press the button for heat recovery.	Button 4	Briefly press to switch to automatic mode Press and hold for 1 second to reset the filter time Press and hold for 3 seconds to end the filter alarm
Button 5	Press the button to decrease fan speed.	Button 6	Press the button to increase fan speed.

Table 87: Control side for ventilation systems



When the device is turned on, the heat recovery, fan speed, filter, and other status information are displayed according to the ETS configuration. When it is turned off, the screen view is displayed (see picture on the right).

- ① This area displays the display name for the feature page. The text is configured via ETS.
- ② This area shows the status of the function page in the locked state. Pressing the adjacent button switches to the next function page.
- ③ This area is displayed according to the auto status.  
A short press of a button to switch to auto status.
- ④ This area displays the automatic fan speed icon  when the device is in automatic mode. It is not displayed when exiting automatic mode.





Auto mode displays fan speed and air quality information (CO<sub>2</sub>/PM<sub>2.5</sub>/VOC).

When the automatic mode is exited, the fan speed is displayed, where the levels are indicated by the number of levels on both sides.

A short press of the button switches the fan speed circularly.

- Low 
- Medium 
- High 

Whether or not automatic fan speed control is enabled is determined by parameter configuration. When disabled, the automatic fan speed is not displayed in the ④ area, and the fan speed is always displayed in the ③ area. When the automatic control is enabled and in the automatic status, the fan speed levels are automatically cyclically displayed: Low/medium/high.

- ⑤ This area displays the status of heat recovery.  
A short press of a button causes a switch between 'heat recovery on' and 'heat recovery off'.
  - Heat recovery 
  - Heat recovery 
- ⑥ This range indicates the life of the ventilation filter.
  - Display when the filter is in normal condition 
  - Indication when the end of the filter life has been reached 

The lifetime of the filter is determined by the parameter configuration or updated via the bus. When the filter time reaches the value specified in the parameters, an alarm status can be output via the bus to remind the user to change the filter and reset the filter time. End the alarm by pressing and holding the button (3 seconds) or over the object. .

- ⑦ Pressing the adjacent button switches off the ventilation.

### 4.3 Control page for audio function



Fig. 137: Audio control page

Button 1	Briefly press to switch on/off. Press and hold for <b>Play</b> . <sup>[1]</sup>	Button 2	Briefly press for <b>play / pause</b> . Press and hold <b>Mute</b> . <sup>[1]</sup>
Button 3	Press for previous track.	Button 4	Press for next track.
Button 5	Press to decrease the volume. Long button press: Volume is reduced to relative / absolute value, the step value being determined by the parameter. <sup>[1]</sup>	Button 6	Press to increase the volume. Long button press: Volume is increased to relative / absolute value, the step value being determined by the parameter. <sup>[1]</sup>

Table 88: Control page for audio function

[1] Relative adjustment does not return the volume to display on the screen after prolonged operation.

#### On-screen display

When the audio device is turned on, the playback status, playback mode, volume, mute, The track name, album name, artist name, and other status information according to the ETS configuration is displayed as soon as they are transferred from the audio device ((Fig. 138: Menu selection)). When it is turned off, the function interface is shown as shown in Figure(Fig. 140: Music function switched off).

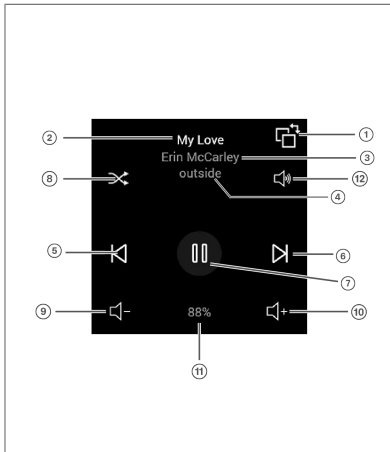


Fig. 138: Menu selection

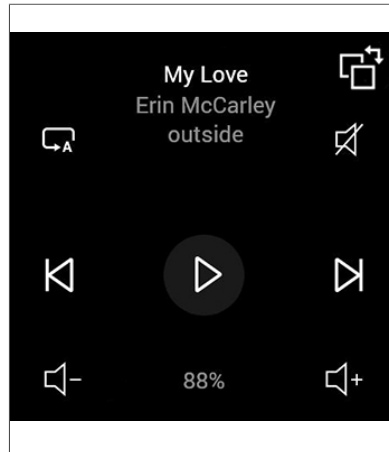


Fig. 139: Mute

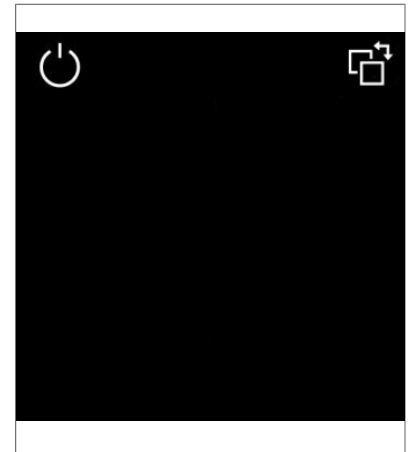


Fig. 140: Music function switched off

- ① Pressing the adjacent button switches to play/pause or mute.
- ② This area displays the track name that is received via the bus.
- ③ This area displays the name of the artist that is received via the bus.
- ④ This area displays the name of the album that is received via the bus.
- ⑤ Select the previous title.
- ⑥ Select the next track.
- ⑦ This area displays the Play/Pause status. Pressing key 2 switches over.
- ⑧ This area displays the playback mode that can be cyclically switched using the button: Single playback, random playback, playlist.
- ⑨ This area displays the volume that can be reduced by pressing the button.
- ⑩ This area displays the volume that can be increased by pressing the button.
- ⑪ This area displays the volume.



The volume on the screen ⑪ does not change by pressing the volume buttons, but is only updated when a telegram is reported back via the bus.

- ⑫ This area displays the mute status. A long press of a button enables or disables the mute function. In the muted state, the mute icon is displayed ((Fig. 139: Mute)). If the mute function is disabled, nothing is displayed here.

## 4.4 Screen saver

The display of the screen saver display is set and parameterized in the ETS. The date and time can be changed directly on the device or via the bus (see [Page setting](#) ).

The date and time are always visible on the display. In addition, two of these values can be displayed:

Additional display values.

- Internal temperature
- Internal humidity
- External temperature
- External humidity
- VOC
- CO2
- Brightness
- Wind speed



Fig. 141: Display time/date

Display date and time only

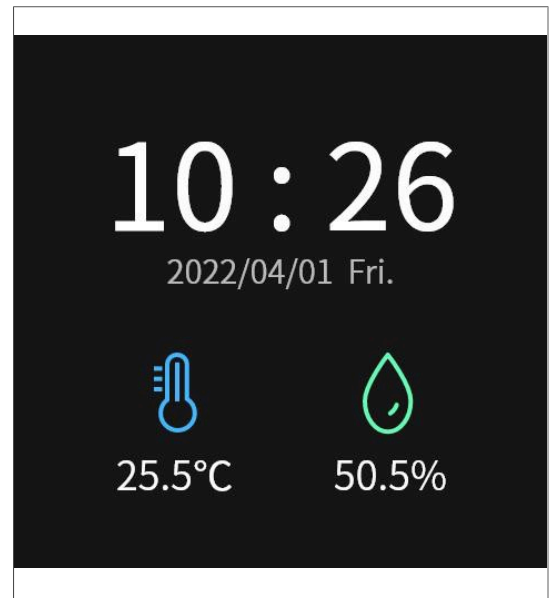


Fig. 142: Display time/date and more

Displays the date, time and other parameters set in the ETS, such as room temperature or humidity.

After a delay time set in the software, the screen switches to the screen saver state. If the device is operated, the screen saver is terminated. In the ETS, it can be set whether this key press is processed immediately, i.e. triggers a function or only serves to wake up.

## 4.5 Page setting



Fig. 143: Settings page

- 1 Press the upper right button 2 and the lower left button 5 simultaneously for 5 seconds. The 'Settings' menu page opens (Fig. 144).

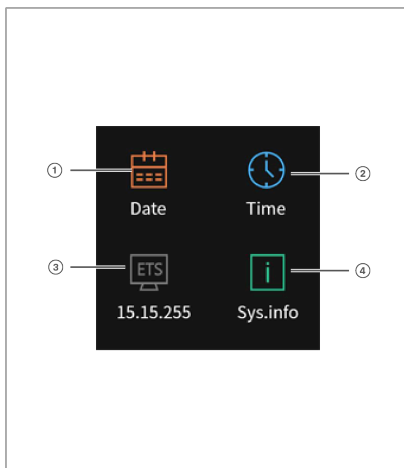


Fig. 144: Menu selection



Fig. 145: Adjust the date



Fig. 146: Adjust the time

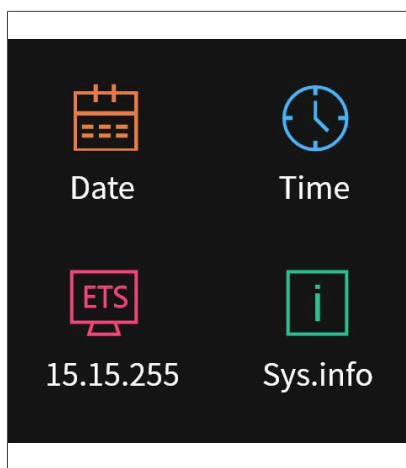


Fig. 147: Physical address display

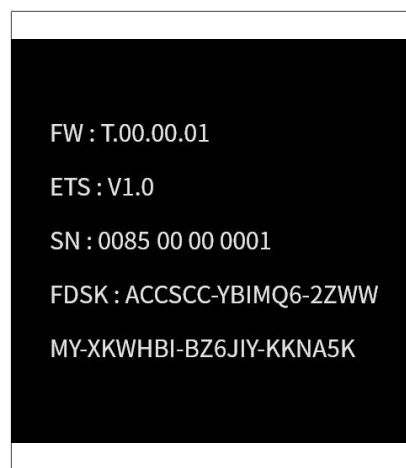


Fig. 148: Display system/device information

Button 1	Press the key to open the <b>Ad-just Date</b> menu.	Button 2	Press the key to open the <b>Ad-just Time</b> menu.
Button 3	Press the key to <b>start/exit programming mode</b> .	Button 4	Press the button to display <b>system information</b> for the device.
Button 5	Press and hold the button to return to the previous page.	Button 6	Press and hold the button to exit the page.

Table 89: Menu selection ([Fig. 144](#))

### Change the date manually on the device

☑ The Settings Menu page is open.

① Press key 1 [Fig. 144](#).

The Date Change menu page opens.

② Press the keys to change the day, month or year (see table).

Button 1	Decrease the value of the <b>day</b> : Press the key repeatedly until the value is reached.	Button 2	Increase the value of the <b>day</b> : Press the key repeatedly until the value is reached.
Button 3	Decrease <b>Month</b> Value: Press the key repeatedly until the value is reached.	Button 4	Increase <b>Month</b> Value: Press the key repeatedly until the value is reached.
Button 5	Decrease <b>Year</b> Value: Press the key repeatedly until the value is reached.	Button 6	Increase <b>Year</b> Value: Press the key repeatedly until the value is reached.

Table 90: Change the day, month, and year

③ Press and hold button 5 to return to the previous page or press and hold button 6 to exit the page.

### Change the time

☑ The Settings menu page is visible

① Press key 2 [Fig. 144](#).

The "Time change menu page opens.

② Press the keys to change the hour or minute (see table).

③ Press button 5 to return to the previous page or press button 6 to exit the page.

Button 1	Decrease the <b>hour</b> value. Press the key repeatedly until the value is reached.	Button 2	Increase the <b>hour</b> value. Press the key repeatedly until the value is reached.
Button 3	Decrease the value <b>minute</b> . Press the key repeatedly until the value is reached.	Button 4	Increase the value <b>Minute</b> . Press the key repeatedly until the value is reached.
Button 5	Press and hold the button to return to the previous page.	Button 6	Press and hold the button to exit the page.

Table 91: Change the time

#### Start/exit programming mode

☑ The Settings menu page is visible

① Press key 3 [Fig. 144](#).

The 'Setting' menu page remains visible and the icon  changes color .

Programming can be performed.

② Press button 3 again.

Exiting programming mode.

③ Press button 5 to return to the previous page or press button 6 to exit the page.

#### View system information

☑ The Settings menu page is visible

• Press key 4 [Fig. 144](#).

System Information Menu page is displayed. The following information is displayed (see list)

- FW firmware version
- ETS - ETS database version
- Serial number

• Press button 5 to return to the previous page or press button 6 to exit the page.

## 4.6 Other

### Display serial number

If there is no application, the device application download is complete, or power is restored to the device, the device is initialized and the following display view is displayed.

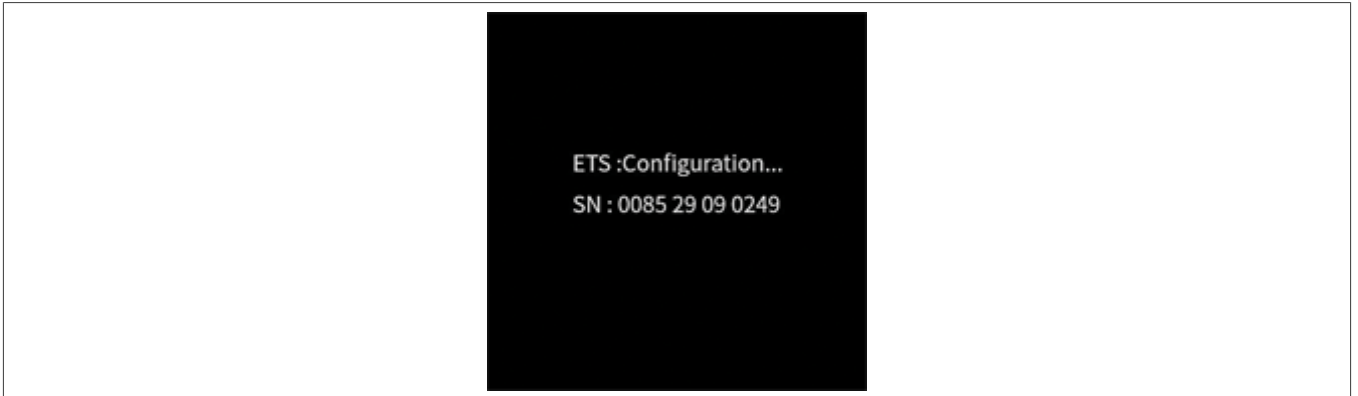


Fig. 149: Display serial number

During the download, the entire control panel is locked, see picture Cover locked.

### Lock the device control panel

The user can lock or unlock the user interface of the device via the bus. Once locked, the display shows this view and the entire device can no longer be operated except for receiving telegrams from the bus.

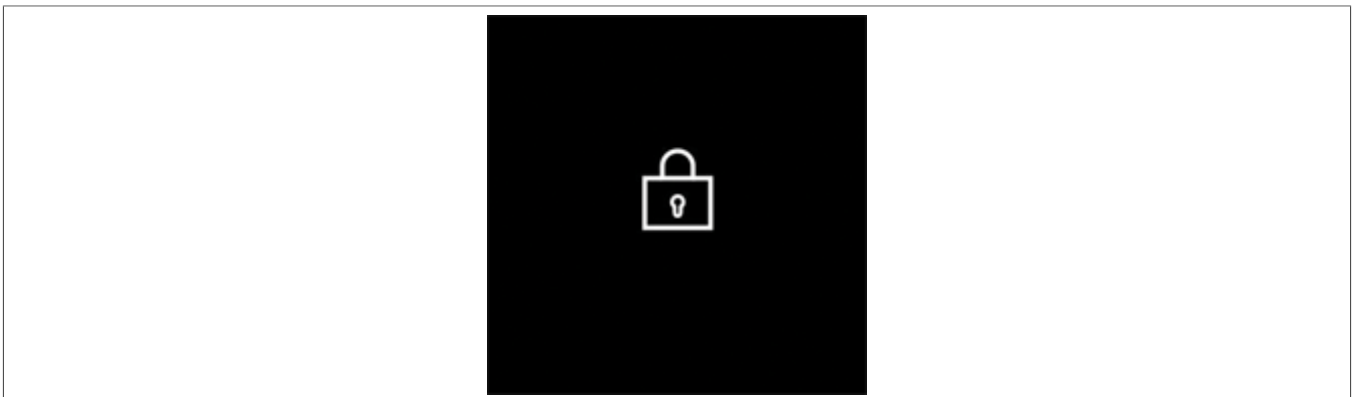


Fig. 150: Screen lock

### **Alarm function**

The alarm function is activated in the ETS. If a telegram is sent via the bus to these alarm communication objects, the window is displayed and an alarm tone sounds. The text to be displayed, the duration of the alarm tone and the automatic repetition time of the alarm tone can be set. The alarm can be acknowledged on the device.

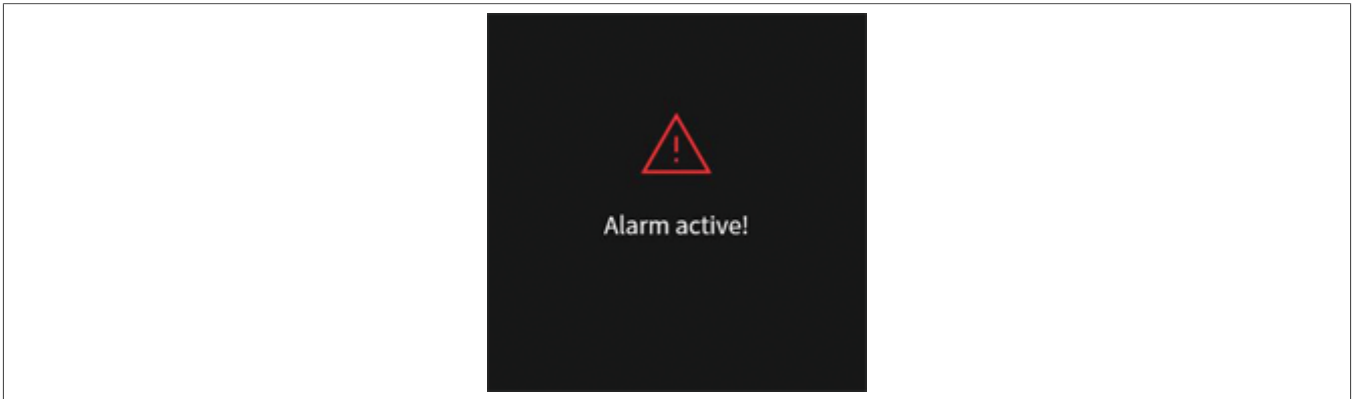


Fig. 151: Alarm function

## 5 Communication objects

The communication object is the medium for communication with other devices on the bus; that is, only the communication object can communicate with the bus.

### Flag Description

- K - Communication (Communication): The 'main switch' flag. If it is deactivated, the communication object cannot participate in bus traffic. Should almost always be enabled.
- L - Read (Read): Allows the object to respond to a read request (GroupValueRead). Used, for example, to query the status of an actuator via a visualization.
- S - Write (Write): Allows the object to accept a value by means of a write telegram (GroupValueWrite). Necessary for inputs such as buttons or for changing actuator states.
- Ü - Transmit: If set, the object actively transfers the new value to the bus as soon as it changes. Important to report status changes to other participants.
- A - Update (Update): The object updates its own value when a response (GroupValueResponse) is received from another subscriber to a read request

## 5.1 Communication objects – General

Nummer *	Name	Objektfunktion	Ve Gr Länge	K	L	S	Ü	A	Datentyp	Priorität
2	Allgemein	Datum	3 bytes	K	-	S	-	-	Datum	Niedrig
3	Allgemein	Zeit	3 bytes	K	-	S	-	-	Tageszeit	Niedrig
4	Allgemein	Helligkeit Bildschirm	1 byte	K	-	S	-	-	Prozent (0..100%)	Niedrig

Fig. 152: Communication Object - General 1

345	Erweiterte Funktionen	Touchpad sperren	1 bit	K	-	S	-	-	Freigeben	Niedrig
347	Erweiterte Funktionen	Nacht Modus	1 bit	K	L	-	Ü	-	Tag/Nacht	Niedrig
348	Erweiterte Funktionen	Status Sommerzeit	1 bit	K	L	-	Ü	-	Freigeben	Niedrig
349	Erweiterte Funktionen	Akt./Deakt. Näherungssensor Funktion	1 bit	K	-	S	-	-	Freigeben	Niedrig
351	Erweiterte Funktionen	Näherungssensor Ausgang	1 byte	K	-	-	Ü	-	Szenen Nummer	Niedrig
352	Erweiterte Funktionen	Alarm Bestätigung	1 bit	K	-	-	Ü	-	Bestätigung	Niedrig
353	Erweiterte Funktionen	Alarm Meldung	14 bytes	K	-	S	-	-	Zeichen (ISO 8859-1)	Niedrig
354	Erweiterte Funktionen	Alarm Eingang	1 bit	K	-	S	Ü	A	Alarm	Niedrig
355	Erweiterte Funktionen	Sende Szene bei Sperre	1 byte	K	-	-	Ü	-	Szenen Nummer	Niedrig

Fig. 153: Communication Object - General 1

No.	Name	Object function	Length	Flag	DPT
2	General	Date	3 byte	K, S	11,001 date

The communication object is used to change the display date via the bus.

The communication object is used to change the display date via the bus.

3	General	Time	3 byte	K, S	11,001 time of day
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The communication object is used to change the display duration via the bus.

The communication object is used to change the display duration via the bus.

4	General	Brightness screen	1 byte	K, S	5.001 Percentage (0...100%)
---	---------	-------------------	--------	------	-----------------------------

The communication object is used to adjust the brightness of the current mode. For example, if the device is in Normal mode, only the brightness is adjusted in Normal mode, while in Night mode, the brightness is still determined by its parameters.

Note: The brightness in the screen saver cannot be changed using this object. Brightness range: 20–100%; if the telegram value is less than 20%, 20% is output directly.

345	Advanced function	Lock the touchpad	1 bit	K, S	1,003 Release
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The communication object is used to lock the control panel. After the is locked, the control panel no longer responds to operating procedures, but can still receive bus telegrams. The value of the telegram is defined by the parameter.

347	Advanced function	Night mode	1 bit	K, S, Ü, A. K, L, Ü	1,024 day/night
-----	-------------------	------------	-------	------------------------	-----------------

This communication object is used to send the day/night status to the bus. Telegram value:

0 - day

1 - night

The object flag is K, L, Ü when the day/night status is switched according to the time or sunrise and sunset time. The changeover cannot be made via the bus using a telegram value.

The object flag is K, S, Ü, A if the day/night status is switched according to the object; the changeover is made via the bus using a telegram value. When the device is restarted, the object sends a status query telegram (if the send function is activated in the general interface).

No.	Name	Object function	Length	Flag	DPT
348	Advanced function	Daylight saving time status	1 bit	K, L ;Ü	1,003 Release
<p>The communication object is used to send the status telegrams of daylight saving time to the bus. Telegrams:</p> <p>1 - Activate daylight saving time 0 - Disable daylight saving time</p>					
349	Advanced function	Current/Deactivate Proximity sensor function	1 bit	K, S	1,003 Release
<p>The communication object is used to enable or disable the proximity function.</p>					
350	Advanced function	Proximity sensor input	1 bit	K, S	1.001 Switching
<p>The communication object is visible when the proximity function is triggered by the object. Receive telegram value from the bus:</p> <p>1 - Activate the proximity <b>sensor</b> function 0 - Unavailable1 bit</p>					
351	Advanced function	Proximity sensor output	1 bit 1 byte 2 byte	K, Ü	1.001 Switching 5,010 count (0..255) 17,001 scenes number 5.001 Percentage (0...100%) 7,001 pulse
<p>The communication object is defined by the <b>Object type</b> parameter <b>from the Value output</b>. If the proximity function is triggered, the object can send the set parameter value (1 bytes/2 bytes) or the <b>ON</b> status (1 bits) separately to the bus. The range of values depends on the selected data type.</p>					
352	Advanced function	Alarm acknowledgment	1 bit	K, Ü	1,016 Confirmation
<p>When the user confirms the warning message on the screen, the communication object sends an acknowledgment telegram to the bus, where the telegram value is 1.</p>					
353	Advanced function	Alarm message	14 byte	K, S	16,001 characters (ISO 8859-1)
<p>The communication object is used to receive the warning message displayed on the screen from the bus. If no value is initially received, the warning pop-up is displayed blank.</p>					
354	Advanced function	Alarm input	1 bit	K, S, Ü, A.	1.005 Alarm
<p>The communication object is used to receive the alarm signal from the bus.</p> <p>0 - No alarm 1 Alarm</p> <p>When the device is restarted, the object sends a status query telegram (if the send parameter is activated).</p>					
355	Advanced function	Send scene when locked	1 byte	K, Ü	17,001 scenes number
<p>The communication object is visible when the control panel lock function and the external scene function are enabled. Used to call up a command for an external scene.</p>					

No.	Name	Object function	Length	Flag	DPT
356	Screen saver element X.	PM2.5/PM10/VOC VALUE	2 byte	K, S, Ü, A.	7,001 pulses 9,030 Density ( $\mu\text{g}/\text{m}^3$ )

The communication object is used to receive the measured value for PM2.5/PM10/VOC and to retrieve the corresponding value from the bus in order to update it in the display in  $\mu\text{g}/\text{m}^3$ .

Area: 0-999  $\mu\text{g}/\text{m}^3$

The data type of the object is determined by the parameter setting. When the device is restarted, the objects send a status query telegram (if the send parameter is activated). The other objects of the screen saver behave in the same way.

356	Screen saver element X.	Int.. Temperature Ext. Temperature	2 byte	K, S, Ü, A.	9,001 tempera- ture
-----	-------------------------	---------------------------------------	--------	-------------	------------------------

The communication object is used to receive a temperature reading sent by an external temperature sensor and the corresponding value received from the bus is displayed on the screen.

Measuring range: -40...40°C

356	Screen saver element X.	Int.. Moisture Ext. Humidity	2 byte	K, S, Ü, A.	9,007 Moisture (%)
-----	-------------------------	---------------------------------	--------	-------------	-----------------------

The communication object is used to receive a humidity reading sent by an external humidity sensor and the corresponding value received by the bus is displayed on the screen.

Measuring range: 0-100 %

356	Screen saver element X.	CO2	2 byte	K, S, Ü, A.	7,001 pulse 9,008 parts/mil- lion (ppm)
-----	-------------------------	-----	--------	-------------	---

The communication object is used to receive the measured CO2 value and retrieve the corresponding value from the bus to update it in ppm on the display. Area: 0-4000 ppm; the data type of the object is determined by the parameter setting.

356	Screen saver element X.	Brightness	2 byte	K, S, Ü, A.	7,013 Brightness (lux) 9,004 Lux (Lux)
-----	-------------------------	------------	--------	-------------	--

The communication object is used to receive the measured value for the brightness and to retrieve the corresponding value from the bus in order to display it in lux on the display. Area: 0-65535 lux; the data type of the object is determined by the parameter setting.

356	Screen saver element X.	Wind speed	2 byte	K, S, Ü, A.	9,005 Speed (m/ s) 9,028 Wind speed (km/h)
-----	-------------------------	------------	--------	-------------	---

The communication object is used to receive the measured wind speed value and to retrieve the corresponding value from the bus in order to display it on the display in m/s or km/h. The data type of the object is determined by the parameter setting.

## 5.2 Communication object - internal probe

5	Interner Fühler	Temperatur Wert	2 bytes	K L - Ü -	Temperatur (°C)	Niedrig
6	Interner Fühler	Alarm niedrige Temperatur	1 bit	K L - Ü -	Alarm	Niedrig
7	Interner Fühler	Hohe Temperatur Alarm	1 bit	K L - Ü -	Alarm	Niedrig
8	Interner Fühler	Feuchtigkeit Wert	2 bytes	K L - Ü -	Feuchtigkeit (%)	Niedrig
9	Interner Fühler	Low Feuchtigkeit Alarm	1 bit	K L - Ü -	Alarm	Niedrig
10	Interner Fühler	Hohe Feuchtigkeit Alarm	1 bit	K L - Ü -	Alarm	Niedrig

Fig. 154: Internal temperature measurement

No.	Name	Object function	Length	Flag	DPT
5	Internal probe	Temperature value	2 byte	K, L, Ü	9.001 Temperature (°C)
<p>The communication object is used to transmit the temperature value acquired by the device's integrated temperature sensor to the bus.</p> <p>Value range: -5 to +60</p>					
6	Internal probe	Low temperature alarm	1 bit	K, L, Ü	1.005 Alarm
<p>The communication object is used to send the low temperature alarm signal to the bus as soon as the temperature falls below the low threshold set in the parameter.</p>					
7	Internal probe	High temperature alarm	1 bit	K, L, Ü	1.005 Alarm
<p>The communication object is used to send the high temperature alarm signal to the bus when the temperature exceeds the high threshold set in the parameter.</p>					
8	Internal probe	Moisture value	2 byte	K, L, Ü	9,007 Moisture (%)
<p>The communication object is used to receive moisture readings sent by the humidity sensor over the bus.</p> <p>Knife gauge: 0-100 %</p>					
9	Internal probe	Low humidity alarm	1 bit	K, L, Ü	1.005 Alarm
<p>The communication object is used to send the low humidity alarm signal to the bus when the humidity drops below the low threshold set in the parameter.</p>					
10	Internal probe	High humidity alarm	1 bit	K, L, Ü	1.005 Alarm
<p>The communication object is used to send the high humidity alarm signal to the bus as soon as the humidity exceeds the high threshold set in the parameter.</p>					

### 5.3 Communication Object - Input

244	Eingang 1 - Temperatur Sonde	Aktuelle Temperatur, Sensor	2 bytes	K L - Ü -	Temperatur (°C)	Niedrig
247	Eingang 2 - Temperatur Sonde	Aktuelle Temperatur, Sensor	2 bytes	K L - Ü -	Temperatur (°C)	Niedrig

Fig. 155: Input - temperature value

244	Eingang 1 - Schaltsensor	Schalten	1 bit	K L S Ü A	Schalten	Niedrig
247	Eingang 2 - Schaltsensor	Schalten	1 bit	K L S Ü A	Schalten	Niedrig

Fig. 156: Input - touch sensor

244	Eingang 1 - Szenensteuerung	Szene	1 byte	K - - Ü -	Szenensteuerung	Niedrig
247	Eingang 2 - Szenensteuerung	Szene	1 byte	K - - Ü -	Szenensteuerung	Niedrig

Fig. 157: Input - scene control

244	Eingang 1 - String Senden	String	14 bytes	K - - Ü -	Zeichen (ISO 8859-1)	Niedrig
247	Eingang 2 - String Senden	String	14 bytes	K - - Ü -	Zeichen (ISO 8859-1)	Niedrig

Fig. 158: Input - string string 14 bytes

No.	Name	Object function	Length	Flag	DPT
244 247	Input X - probe temperature	Current temperature, sensor	2 byte	K, L, Ü	9.001 Temperature (°C)

The communication object is used to transmit the temperature value acquired by the external temperature sensor of the device to the bus.

Measuring range: -50 to 99.8

The name in parentheses changes according to the parameter 'Description (max. 30 characters)'. If the 'Description' field is empty, 'Input x - ...' is displayed by default. The same applies to the following points.

245 248	Input X - probe temperature	Temperature error message, sensor	1 bit	K, L, Ü	1.005 Alarm
------------	-----------------------------	-----------------------------------	-------	---------	-------------

The communication object is used to send the error report of the external temperature sensor and the object value is set according to the parameters.

244 247	Input X - switch sensor	Switching	1 bit	K, L, S, Ü, A.	1.001 Switching
244 247	Input X - switch sensor	Close Switching, Short Switching	1 bit	K, L, S, Ü, A.	1.001 Switching
245 248	Input X - switch sensor	Open Shift, long Shift	1 bit	K, L, S, Ü, A.	1.001 Switching

These communication objects are used to trigger a switching operation. Whether a common object or two separate objects are used depends on the parameter setting.

When using a common object, only the **Switch** object is visible. When two separate objects are used, **closing/opening** is visible if there is no difference between short and long operation.

**Short/long** is visible when there is a difference between short and long operation.

Telegrams:

- 0 - Off
- 1 - on

No.	Name	Object function	Length	Flag	DPT
244 247	Input X - switch sensor	Scene	1 byte	K, Ü	18.001 Scene control
244 247	Input X - switch sensor	Close/Short, scene	1 byte	K, Ü	18.001 Scene control
245 248	Input X - switch sensor	Open/Long, scene	1 byte	K, Ü	18.001 Scene control

These communication objects are used to send a 8-bit command to recall or save a scene. Whether a common object or two separate objects are used depends on the parameter setting. When using a common object, only the **Scene** object is visible. When two separate objects are used, closing/opening is visible if there is no difference between short and long operation. Short/long is visible when there is a difference between short and long operation.

Detailed 8-bit meaning:

8-bit command for the (binary code): FXNNNNNN

F 0 to recall a scene; 1 to store a scene

X 0

NNNNN: Scene number (0 ... 63)

Value of the object message	Description
0	Calling up scene 1
1	Calling up scene 2
2	Calling up scene 3
3	Calling up scene 4
...	...
63	Calling up scene 64
128	Load - Scene 1
129	Load - Scene 2
...	...
191	Load - Scene 64

The setting options for the parameter are between 1 and 64.

However, the **SCENE** communication object that corresponds to the received telegram is between 0 and 63. For example, if the parameter is set to 1, the **SCENE** communication object sends a value of 0.

244 247	Input X - switch sensor	String	14 byte	K, Ü	16,001 characters (ISO 8859-1)
244 247	Input X - switch sensor	Close/Short, String	14 byte	K, Ü	16,001 characters (ISO 8859-1)
245 248	Input X - switch sensor	Open/Long, String	14 byte	K, Ü	16,001 characters (ISO 8859-1)

These communication objects are used to send the string to the bus. Whether a common object or two separate objects are used depends on the parameter setting.

When using a common object, only the **String** object is visible.

When two separate objects are used, **closing/opening** is visible if there is no difference between short and long operation.

**Short/long** is visible when there is a difference between short and long operation.

246 249	Input X - switch sensor	Lock	1 bit	K, S	1,003 Release
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No.	Name	Object function	Length	Flag	DPT
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The communication object is used to disable or enable the contact input function, including binary input functions, including switches, scenes, and string transmission.

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## 5.4 Communication object - room temperature controller

358	Raumtemperaturregler	Ein-/Ausschalten	1 bit	K L S - -	Schalten	Niedrig
359	Raumtemperaturregler	Externer Temperatur Sensor	2 bytes	K - S Ü A	Temperatur (°C)	Niedrig
360	Raumtemperaturregler	Aktuelle Sollwertvorgabe	2 bytes	K - S - -	Temperatur (°C)	Niedrig
364	Raumtemperaturregler	Heiz/Kühlbetrieb	1 bit	K - S - -	heizen/kühlen	Niedrig
365	Raumtemperaturregler	Betriebsart	1 byte	K - S - -	HVAC Modus	Niedrig
366	Raumtemperaturregler	Komfort Modus	1 bit	K - S - -	Freigegeben	Niedrig
367	Raumtemperaturregler	Nacht Modus	1 bit	K - S - -	Freigegeben	Niedrig
368	Raumtemperaturregler	Frost-/Hitzeschutz Modus	1 bit	K - S - -	Freigegeben	Niedrig
369	Raumtemperaturregler	Standby Modus	1 bit	K - S - -	Freigegeben	Niedrig
371	Raumtemperaturregler	Lüfter Automatikbetrieb	1 bit	K - S - -	Freigegeben	Niedrig
372	Raumtemperaturregler	Fensterkontakt	1 bit	K - S - A	Fenster/Tür	Niedrig
373	Raumtemperaturregler	Präsenzerfassung	1 bit	K - S - A	Belegung	Niedrig
374	Raumtemperaturregler	Aktuelle Temperatur, Status	2 bytes	K L - Ü -	Temperatur (°C)	Niedrig
377	Raumtemperaturregler	Aktueller Temperatur Sollwert, Status	2 bytes	K L - Ü -	Temperatur (°C)	Niedrig
378	Raumtemperaturregler	Heiz/Kühlbetrieb, Status	1 bit	K L - Ü -	heizen/kühlen	Niedrig
379	Raumtemperaturregler	Betriebsart, Status	1 byte	K L - Ü -	HVAC Modus	Niedrig
380	Raumtemperaturregler	Komfort Modus, Status	1 bit	K L - Ü -	Freigegeben	Niedrig
381	Raumtemperaturregler	Nacht Modus, Status	1 bit	K L - Ü -	Freigegeben	Niedrig
382	Raumtemperaturregler	Frost-/Hitzeschutz Modus, Status	1 bit	K L - Ü -	Freigegeben	Niedrig
383	Raumtemperaturregler	Standby Modus, Status	1 bit	K L - Ü -	Freigegeben	Niedrig
384	Raumtemperaturregler	Steuerwert Heizen	1 byte	K L - Ü -	Prozent (0..100%)	Niedrig
385	Raumtemperaturregler	Steuerwert Kühlen	1 byte	K L - Ü -	Prozent (0..100%)	Niedrig
386	Raumtemperaturregler	Lüftergeschwindigkeit	1 byte	K - - Ü -	Lüfterstufe (0..255)	Niedrig

Fig. 159: Room temperature controller

No.	Name	Object function	Length	Flag	DPT
358	Room thermostat	Switch on/switch off	1 Bid	K, L, S	1.001 Switching
<p>The communication object is used to receive the telegram from the bus to control the activation and deactivation of the HVAC system.</p> <p>1 - ON 0 - OFF</p>					
359	Room thermostat	External temperature sensor	2 byte	K, S; Ü, A.	9.001 Temperature (°C)
<p>The communication object is used to receive an external temperature value via the bus. Measuring range: -50 to 99.8</p>					
360	Room thermostat	Current setpoint specification Basic setpoint correction	2 byte	K, S	9.001 Temperature (°C)
<p><b>The current setpoint</b> is displayed when the operating mode is not activated, as well as during absolute adjustment. Allows you to change the baseline value of the set temperature and to change the setpoint temperature value of the current room operating mode during absolute adjustment.</p> <p><b>Basic setpoint correction</b> is only <b>relatively</b> visible when the <b>setpoint temperature</b> is <b>displayed</b> and is used to change the base value of the set temperature, i.e. the temperature setting value of the comfort mode and the setting temperature of the standby mode and the night mode change according to the relative change.</p> <p>In protection mode, only the temperature setting value of the protection mode is changed.</p>					
361	Room thermostat	Setpoint offset (offset)	1 bit	K, S	1,007 step
<p>The communication object is only visible if the absolute setting and the offset function are activated. Sets the offset to adjust the set temperature indirectly. The step value is set according to the parameter.</p> <p>1 - Increase the offset 0 - Decrease the offset</p>					

No.	Name	Object function	Length	Flag	DPT
362	Room thermostat	Flow value offset	2 byte	K, S	9,002 Temperature difference (K)
The communication object is only visible if the absolute calibration and the offset function are activated. Allows you to change the cumulative offset over a 2-byte float value.					
363	Room thermostat	Setpoint offset reset	1 bit	K, S	1,015 Reset
The communication object is only visible if the absolute setting and the offset function are activated. The offset value is reset if the telegram has the value 1.					
364	Room thermostat	Heating/cooling mode	1 bit	K, S	1.100 Heating/cooling
The communication object is used to control the heating and cooling via the bus. 1 - Heating 0 - Cooling					
365	Room thermostat	Operating mode	1 byte	K, S	20.102 HVAC mode
366	Room thermostat	Comfort mode	1 bit	K, S	1,003 Release
367	Room thermostat	Night mode	1 bit	K, S	1,003 Release
368	Room thermostat	Frost/heat protection mode	1 bit	K, S	1,003 Release
369	Room thermostat	Standby mode	1 bit	K, S	1,003 Release
370	Room thermostat	Comfort extension	1 bit	K, S	1,016 Confirmation
The communication object is used to activate the comfort mode. 1 - Activate comfort mode 0 - No function Activates the comfort extension mode when the object receives telegram 1. If telegram 1 is received again during the delay time, the time is reset again. When the time has elapsed, the appliance returns from comfort mode to the previous operating mode. If a new operating mode occurs during the delay time, the comfort mode is exited. Changing the operating mode stops the time measurement, but does not switch between heating and cooling.					
371	Room thermostat	Automatic fan operation	1 bit	K, S	1,003 Release
The communication object is used to activate the automatic operation of the fan via the bus. 1 - Car 0 - End automatic mode					
372	Room thermostat	Window contact	1 bit	K, S, A.	1,019 window/door
The communication object is used to receive the switching state of the window contact. 1 - Open the window 0 - Close the window					
373	Room thermostat	Presence recording	1 bit	K, S, A.	1,018 Occupancy
The communication object is used to receive the room occupancy status from the presence detector.					

No.	Name	Object function	Length	Flag	DPT
1 - used 0 - unused					
374	Room thermostat	Current temperature, status	2 byte	K, L, Ü	9.001 Temperature (°C)
The communication object is visible when the temperature reference value of the RTC function is a combination of internal and external sensor. Used to send the actual temperature determined after the combination to the bus.					
375	Room thermostat	BAIS setpoint temperature, status	2 byte	K, L, Ü	9.001 Temperature (°C)
The communication object is only visible if it is relatively adapted. Used to send the current setpoint temperature to the bus. Current setpoint temperature value = set parameter value (or base value of object 19) + cumulative offset value					
376	Room thermostat	Setpoint offset, status	2 byte	K, L, Ü	9,002 Temperature difference (K)
The communication object is only visible if it is relatively adapted. Used to send the accumulated deviation value of the set base temperature to the bus.					
377	Room thermostat	Current temperature setpoint, status	2 byte	K, L, Ü	9.001 Temperature (°C)
The communication object is used to send the currently set temperature to the bus.					
378	Room thermostat	Heating/cooling mode status	1 bit	K, L, Ü	1.100 Heating/cooling
The communication object is used to report the telegram back to the bus for switching between cooling and heating mode.					
379	Room thermostat	Operating mode, status	1 byte	K, L, Ü	20.102 HVAC mode
380	Room thermostat	Comfort mode, status	1 bit	K, L, Ü	1,003 Release
381	Room thermostat	Night mode, status	1 bit	K, L, Ü	1,003 Release
382	Room thermostat	Frost/heat protection mode, status	1 bit	K, L, Ü	1,003 Release
383	Room thermostat	Standby mode, status	1 bit	K, L, Ü	1,003 Release

These communication objects are used to send the status of the RTR operating mode to the bus.

For 1 bytes: Object 38 is visible, telegrams: 1 - Comfort, 2 - Standby, 3 - Economy mode, 4 - Protection, others reserved.

For 1 bits:

Object 39 - Comfort mode

Object 40 - Night mode

Object 41 - Protection mode

Object 42 - Standby mode

If a mode is activated, the corresponding object sends only telegram **1**. If the 1-bit standby object is not activated, standby mode is activated when the Comfort, Night Mode and Protection objects together send telegram **0**.

If the 1-bit standby object is enabled, enable standby mode only when the standby object is sending **1**.

**Note:** When switching over over the bus, it is not necessary to send the mode status to the bus. The same applies to fan speed and other operating modes.

No.	Name	Object function	Length	Flag	DPT
384	Room thermostat	Heating control value	1 bit 1 byte	K, L, Ü	1.001 Switching 5.001 Percentage (0...100%)
385	Room thermostat	Cooling control value	1 bit 1 byte	K, L, Ü	1.001 Switching 5.001 Percentage (0...100%)

The communication object is used to send the manipulated value of the heating or cooling function to the bus. The data type of the object depends on the parameter setting.

386	Room thermostat	Fan speed	1 byte	K, Ü	5.001 Percentage (0...100%) 5,100 fan stage (0..255)
387	Room thermostat	Fan speed low	1 bit	K, Ü	1.001 Switching
388	Room thermostat	Fan speed medium	1 bit	K, Ü	1.001 Switching
389	Room thermostat	Fan speed high	1 bit	K, Ü	1.001 Switching
390	Room thermostat	Fan speed	1 bit	K, Ü	1.001 Switching

These communication objects are used to send control telegrams for the fan speed to the bus.

The 1-bit object is visible according to the parameter setting:

Object 46 - Low fan speed

Object 47 - Average fan speed

Object 48 - High fan speed

Object 49 - Fan speed off

Only the corresponding object sends telegram **1** if a specific fan speed is selected. If the 1-bit OFF object is not activated, all objects send telegram **0** when the fan speed is switched off (this applies to the connection to a fan drive from GVS);

If the 1-bit OFF object is activated, only the 1-bit OFF object sends telegram **1** (this applies to the connection to a fan drive from other manufacturers).

1 byte The corresponding telegram value of each fan speed is defined by the parameter. Activate the corresponding fan speed and object 45 sends the corresponding telegram value of the fan speed to the bus.

## 5.5 Communication object - fixed parameterized keys



The functions of the rocker are almost identical to those of the individual buttons. Therefore, the following chapter describes the functions only for the individual key.

148	Taste 1 - Schalten	Schalten	1 bit	K - - Ü -	Schalten	Niedrig
153	Taste 1 - Schalten	Status Schalten	1 bit	K - S Ü A	Schalten	Niedrig
156	Taste 2 - Schalten	Schalten	1 bit	K - - Ü -	Schalten	Niedrig
161	Taste 2 - Schalten	Status Schalten	1 bit	K - S Ü A	Schalten	Niedrig
164	Taste 3 - Schalten	Schalten	1 bit	K - - Ü -	Schalten	Niedrig
169	Taste 3 - Schalten	Status Schalten	1 bit	K - S Ü A	Schalten	Niedrig
172	Taste 4 - Schalten	Schalten	1 bit	K - - Ü -	Schalten	Niedrig
177	Taste 4 - Schalten	Status Schalten	1 bit	K - S Ü A	Schalten	Niedrig

Fig. 160: Switch function

148	Taste 1 - Dimmen	Kurz, Schalten	1 bit	K - - Ü -	Schalten	Niedrig
149	Taste 1 - Dimmen	Lang, Dimming	4 bit	K - S Ü -	Dimmer Schritt	Niedrig
153	Taste 1 - Dimmen	Status Schalten	1 bit	K - S Ü A	Schalten	Niedrig
156	Taste 2 - Dimmen	Kurz, Schalten	1 bit	K - - Ü -	Schalten	Niedrig
157	Taste 2 - Dimmen	Lang, Dimming	4 bit	K - S Ü -	Dimmer Schritt	Niedrig
161	Taste 2 - Dimmen	Status Schalten	1 bit	K - S Ü A	Schalten	Niedrig
164	Taste 3 - Dimmen	Kurz, Schalten	1 bit	K - - Ü -	Schalten	Niedrig
165	Taste 3 - Dimmen	Lang, Dimming	4 bit	K - S Ü -	Dimmer Schritt	Niedrig
169	Taste 3 - Dimmen	Status Schalten	1 bit	K - S Ü A	Schalten	Niedrig
172	Taste 4 - Dimmen	Kurz, Schalten	1 bit	K - - Ü -	Schalten	Niedrig
173	Taste 4 - Dimmen	Lang, Dimming	4 bit	K - S Ü -	Dimmer Schritt	Niedrig
177	Taste 4 - Dimmen	Status Schalten	1 bit	K - S Ü A	Schalten	Niedrig
180	Taste 5 - Dimmen	Kurz, Schalten	1 bit	K - - Ü -	Schalten	Niedrig
181	Taste 5 - Dimmen	Lang, Dimming	4 bit	K - S Ü -	Dimmer Schritt	Niedrig
185	Taste 5 - Dimmen	Status Schalten	1 bit	K - S Ü A	Schalten	Niedrig

Fig. 161: Dimming function

148	Taste 1 - RGB	Schalten	1 bit	K - - Ü -	Schalten	Niedrig
149	Taste 1 - RGB	Dimmwert RGB	3 bytes	K - - Ü -	RGB Wert 3x(0..255)	Niedrig
153	Taste 1 - RGB	Status Schalten	1 bit	K - S Ü A	Schalten	Niedrig
156	Taste 2 - RGB	Schalten	1 bit	K - - Ü -	Schalten	Niedrig
157	Taste 2 - RGB	Dimmwert RGB	3 bytes	K - - Ü -	RGB Wert 3x(0..255)	Niedrig
161	Taste 2 - RGB	Status Schalten	1 bit	K - S Ü A	Schalten	Niedrig
164	Taste 3 - RGB	Schalten	1 bit	K - - Ü -	Schalten	Niedrig
165	Taste 3 - RGB	Dimmwert RGB	3 bytes	K - - Ü -	RGB Wert 3x(0..255)	Niedrig
169	Taste 3 - RGB	Status Schalten	1 bit	K - S Ü A	Schalten	Niedrig
172	Taste 4 - RGB	Schalten	1 bit	K - - Ü -	Schalten	Niedrig
173	Taste 4 - RGB	Dimmwert RGB	3 bytes	K - - Ü -	RGB Wert 3x(0..255)	Niedrig
177	Taste 4 - RGB	Status Schalten	1 bit	K - S Ü A	Schalten	Niedrig
180	Taste 5 - RGB	Schalten	1 bit	K - - Ü -	Schalten	Niedrig
181	Taste 5 - RGB	Dimmwert RGB	3 bytes	K - - Ü -	RGB Wert 3x(0..255)	Niedrig
185	Taste 5 - RGB	Status Schalten	1 bit	K - S Ü A	Schalten	Niedrig

Fig. 162: Switch the RGB dimming/value function

148	Taste 1 - RGBW	Schalten	1 bit	K - - Ü -	Schalten	Niedrig
149	Taste 1 - RGBW	Dimmwert RGBW	6 bytes	K - - Ü -	RGB Wert 4x(0..255)	Niedrig
153	Taste 1 - RGBW	Status Schalten	1 bit	K - S Ü A	Schalten	Niedrig
156	Taste 2 - RGBW	Schalten	1 bit	K - - Ü -	Schalten	Niedrig
157	Taste 2 - RGBW	Dimmwert RGBW	6 bytes	K - - Ü -	RGB Wert 4x(0..255)	Niedrig
161	Taste 2 - RGBW	Status Schalten	1 bit	K - S Ü A	Schalten	Niedrig
164	Taste 3 - RGBW	Schalten	1 bit	K - - Ü -	Schalten	Niedrig
165	Taste 3 - RGBW	Dimmwert RGBW	6 bytes	K - - Ü -	RGB Wert 4x(0..255)	Niedrig
169	Taste 3 - RGBW	Status Schalten	1 bit	K - S Ü A	Schalten	Niedrig
172	Taste 4 - RGBW	Schalten	1 bit	K - - Ü -	Schalten	Niedrig
173	Taste 4 - RGBW	Dimmwert RGBW	6 bytes	K - - Ü -	RGB Wert 4x(0..255)	Niedrig
177	Taste 4 - RGBW	Status Schalten	1 bit	K - S Ü A	Schalten	Niedrig
180	Taste 5 - RGBW	Schalten	1 bit	K - - Ü -	Schalten	Niedrig
181	Taste 5 - RGBW	Dimmwert RGBW	6 bytes	K - - Ü -	RGB Wert 4x(0..255)	Niedrig
185	Taste 5 - RGBW	Status Schalten	1 bit	K - S Ü A	Schalten	Niedrig

Fig. 163: Switch the RGBW dimming/value function

148	Taste 1 - Farbtemperatur	Schalten	1 bit	K - - Ü -	Schalten	Niedrig
149	Taste 1 - Farbtemperatur	Helligkeitswert	1 byte	K - - Ü -	Prozent (0..100%)	Niedrig
150	Taste 1 - Farbtemperatur	Farbtemperatur Wert	2 bytes	K - - Ü -	Absolute Farbtemperatur...	Niedrig
153	Taste 1 - Farbtemperatur	Status Schalten	1 bit	K - S Ü A	Schalten	Niedrig
156	Taste 2 - Farbtemperatur	Schalten	1 bit	K - - Ü -	Schalten	Niedrig
157	Taste 2 - Farbtemperatur	Helligkeitswert	1 byte	K - - Ü -	Prozent (0..100%)	Niedrig
158	Taste 2 - Farbtemperatur	Farbtemperatur Wert	2 bytes	K - - Ü -	Absolute Farbtemperatur...	Niedrig
161	Taste 2 - Farbtemperatur	Status Schalten	1 bit	K - S Ü A	Schalten	Niedrig
164	Taste 3 - Farbtemperatur	Schalten	1 bit	K - - Ü -	Schalten	Niedrig
165	Taste 3 - Farbtemperatur	Helligkeitswert	1 byte	K - - Ü -	Prozent (0..100%)	Niedrig
166	Taste 3 - Farbtemperatur	Farbtemperatur Wert	2 bytes	K - - Ü -	Absolute Farbtemperatur...	Niedrig
169	Taste 3 - Farbtemperatur	Status Schalten	1 bit	K - S Ü A	Schalten	Niedrig
172	Taste 4 - Farbtemperatur	Schalten	1 bit	K - - Ü -	Schalten	Niedrig
173	Taste 4 - Farbtemperatur	Helligkeitswert	1 byte	K - - Ü -	Prozent (0..100%)	Niedrig
174	Taste 4 - Farbtemperatur	Farbtemperatur Wert	2 bytes	K - - Ü -	Absolute Farbtemperatur...	Niedrig
177	Taste 4 - Farbtemperatur	Status Schalten	1 bit	K - S Ü A	Schalten	Niedrig
180	Taste 5 - Farbtemperatur	Schalten	1 bit	K - - Ü -	Schalten	Niedrig
181	Taste 5 - Farbtemperatur	Helligkeitswert	1 byte	K - - Ü -	Prozent (0..100%)	Niedrig
182	Taste 5 - Farbtemperatur	Farbtemperatur Wert	2 bytes	K - - Ü -	Absolute Farbtemperatur...	Niedrig
185	Taste 5 - Farbtemperatur	Status Schalten	1 bit	K - S Ü A	Schalten	Niedrig

Fig. 164: Color temperature function Switch/send value

148	Taste 1 - Wert senden	Kurz, 1Bit Wert	1 bit	K - - Ü -	Schalten	Niedrig
155	Taste 1 - Wert senden	Darstellung Statusinformation	1 byte	K - S Ü A	Prozent (0..100%)	Niedrig
156	Taste 2 - Wert senden	Kurz, 1Bit Wert	1 bit	K - - Ü -	Schalten	Niedrig
163	Taste 2 - Wert senden	Darstellung Statusinformation	1 byte	K - S Ü A	Prozent (0..100%)	Niedrig
164	Taste 3 - Wert senden	Kurz, 1Bit Wert	1 bit	K - - Ü -	Schalten	Niedrig
171	Taste 3 - Wert senden	Darstellung Statusinformation	1 byte	K - S Ü A	Prozent (0..100%)	Niedrig
172	Taste 4 - Wert senden	Kurz, 1Bit Wert	1 bit	K - - Ü -	Schalten	Niedrig
179	Taste 4 - Wert senden	Darstellung Statusinformation	1 byte	K - S Ü A	Prozent (0..100%)	Niedrig
180	Taste 5 - Wert senden	Kurz, 1Bit Wert	1 bit	K - - Ü -	Schalten	Niedrig
187	Taste 5 - Wert senden	Darstellung Statusinformation	1 byte	K - S Ü A	Prozent (0..100%)	Niedrig

Fig. 165: Send value function

148	Taste 1 - Szene	Szene	1 byte	K - - Ü -	Szenensteuerung	Niedrig
155	Taste 1 - Szene	Darstellung Statusinformation	1 byte	K - S Ü A	Prozent (0..100%)	Niedrig
156	Taste 2 - Szene	Szene	1 byte	K - - Ü -	Szenensteuerung	Niedrig
163	Taste 2 - Szene	Darstellung Statusinformation	1 byte	K - S Ü A	Prozent (0..100%)	Niedrig
164	Taste 3 - Szene	Szene	1 byte	K - - Ü -	Szenensteuerung	Niedrig
171	Taste 3 - Szene	Darstellung Statusinformation	1 byte	K - S Ü A	Prozent (0..100%)	Niedrig
172	Taste 4 - Szene	Szene	1 byte	K - - Ü -	Szenensteuerung	Niedrig
179	Taste 4 - Szene	Darstellung Statusinformation	1 byte	K - S Ü A	Prozent (0..100%)	Niedrig
180	Taste 5 - Szene	Szene	1 byte	K - - Ü -	Szenensteuerung	Niedrig
187	Taste 5 - Szene	Darstellung Statusinformation	1 byte	K - S Ü A	Prozent (0..100%)	Niedrig

Fig. 166: Scene control function

148	Taste 1 - Jalousie	Auf/Ab, Rollladen/Jal.	1 bit	K - S Ü -	Auf/Ab	Niedrig
149	Taste 1 - Jalousie	Stop/Adjust, Rollladen/Jal.	1 bit	K - S Ü -	Schritt	Niedrig
155	Taste 1 - Jalousie	Darstellung Statusinformation	1 byte	K - S Ü A	Prozent (0..100%)	Niedrig
156	Taste 2 - Jalousie	Auf/Ab, Rollladen/Jal.	1 bit	K - S Ü -	Auf/Ab	Niedrig
157	Taste 2 - Jalousie	Stop/Adjust, Rollladen/Jal.	1 bit	K - S Ü -	Schritt	Niedrig
163	Taste 2 - Jalousie	Darstellung Statusinformation	1 byte	K - S Ü A	Prozent (0..100%)	Niedrig
164	Taste 3 - Jalousie	Auf/Ab, Rollladen/Jal.	1 bit	K - S Ü -	Auf/Ab	Niedrig
165	Taste 3 - Jalousie	Stop/Adjust, Rollladen/Jal.	1 bit	K - S Ü -	Schritt	Niedrig
171	Taste 3 - Jalousie	Darstellung Statusinformation	1 byte	K - S Ü A	Prozent (0..100%)	Niedrig
172	Taste 4 - Jalousie	Auf/Ab, Rollladen/Jal.	1 bit	K - S Ü -	Auf/Ab	Niedrig
173	Taste 4 - Jalousie	Stop/Adjust, Rollladen/Jal.	1 bit	K - S Ü -	Schritt	Niedrig
179	Taste 4 - Jalousie	Darstellung Statusinformation	1 byte	K - S Ü A	Prozent (0..100%)	Niedrig
180	Taste 5 - Jalousie	Auf/Ab, Rollladen/Jal.	1 bit	K - S Ü -	Auf/Ab	Niedrig
181	Taste 5 - Jalousie	Stop/Adjust, Rollladen/Jal.	1 bit	K - S Ü -	Schritt	Niedrig
187	Taste 5 - Jalousie	Darstellung Statusinformation	1 byte	K - S Ü A	Prozent (0..100%)	Niedrig

Fig. 167: Function blind

148	Taste 1 - Shift register	Register Wert	1 byte	K - S Ü A	Zählimpulse (0..255)	Niedrig
155	Taste 1 - Shift register	Darstellung Statusinformation	1 byte	K - S Ü A	Prozent (0..100%)	Niedrig
156	Taste 2 - Shift register	Register Wert	1 byte	K - S Ü A	Zählimpulse (0..255)	Niedrig
163	Taste 2 - Shift register	Darstellung Statusinformation	1 byte	K - S Ü A	Prozent (0..100%)	Niedrig
164	Taste 3 - Shift register	Register Wert	1 byte	K - S Ü A	Zählimpulse (0..255)	Niedrig
171	Taste 3 - Shift register	Darstellung Statusinformation	1 byte	K - S Ü A	Prozent (0..100%)	Niedrig
172	Taste 4 - Shift register	Register Wert	1 byte	K - S Ü A	Zählimpulse (0..255)	Niedrig
179	Taste 4 - Shift register	Darstellung Statusinformation	1 byte	K - S Ü A	Prozent (0..100%)	Niedrig
180	Taste 5 - Shift register	Register Wert	1 byte	K - S Ü A	Zählimpulse (0..255)	Niedrig
187	Taste 5 - Shift register	Darstellung Statusinformation	1 byte	K - S Ü A	Prozent (0..100%)	Niedrig

Fig. 168: Shift register function

148	Taste 1 - Multifunktion	Objekt1-EIN/AUS	1 bit	K - S Ü -	Schalten	Niedrig
149	Taste 1 - Multifunktion	Objekt2-EIN/AUS	1 bit	K - S Ü -	Schalten	Niedrig
150	Taste 1 - Multifunktion	Objekt3-EIN/AUS	1 bit	K - S Ü -	Schalten	Niedrig
151	Taste 1 - Multifunktion	Objekt4-EIN/AUS	1 bit	K - S Ü -	Schalten	Niedrig
155	Taste 1 - Multifunktion	Darstellung Statusinformation	1 byte	K - S Ü A	Prozent (0..100%)	Niedrig
156	Taste 2 - Multifunktion	Objekt1-EIN/AUS	1 bit	K - S Ü -	Schalten	Niedrig
157	Taste 2 - Multifunktion	Objekt2-EIN/AUS	1 bit	K - S Ü -	Schalten	Niedrig
158	Taste 2 - Multifunktion	Objekt3-EIN/AUS	1 bit	K - S Ü -	Schalten	Niedrig
159	Taste 2 - Multifunktion	Objekt4-EIN/AUS	1 bit	K - S Ü -	Schalten	Niedrig
163	Taste 2 - Multifunktion	Darstellung Statusinformation	1 byte	K - S Ü A	Prozent (0..100%)	Niedrig
164	Taste 3 - Multifunktion	Objekt1-EIN/AUS	1 bit	K - S Ü -	Schalten	Niedrig
165	Taste 3 - Multifunktion	Objekt2-EIN/AUS	1 bit	K - S Ü -	Schalten	Niedrig
166	Taste 3 - Multifunktion	Objekt3-EIN/AUS	1 bit	K - S Ü -	Schalten	Niedrig
167	Taste 3 - Multifunktion	Objekt4-EIN/AUS	1 bit	K - S Ü -	Schalten	Niedrig

Fig. 169: Function multifunction

148	Taste 1 - Verzögerung	Kurz, Verzögerungsmodus	1 bit	K - - Ü -	Schalten	Niedrig
155	Taste 1 - Verzögerung	Darstellung Statusinformation	1 byte	K - S Ü A	Prozent (0..100%)	Niedrig
156	Taste 2 - Verzögerung	Kurz, Verzögerungsmodus	1 bit	K - - Ü -	Schalten	Niedrig
163	Taste 2 - Verzögerung	Darstellung Statusinformation	1 byte	K - S Ü A	Prozent (0..100%)	Niedrig
164	Taste 3 - Verzögerung	Kurz, Verzögerungsmodus	1 bit	K - - Ü -	Schalten	Niedrig
171	Taste 3 - Verzögerung	Darstellung Statusinformation	1 byte	K - S Ü A	Prozent (0..100%)	Niedrig
172	Taste 4 - Verzögerung	Kurz, Verzögerungsmodus	1 bit	K - - Ü -	Schalten	Niedrig
179	Taste 4 - Verzögerung	Darstellung Statusinformation	1 byte	K - S Ü A	Prozent (0..100%)	Niedrig
180	Taste 5 - Verzögerung	Kurz, Verzögerungsmodus	1 bit	K - - Ü -	Schalten	Niedrig
187	Taste 5 - Verzögerung	Darstellung Statusinformation	1 byte	K - S Ü A	Prozent (0..100%)	Niedrig

Fig. 170: Delay mode function

148	Taste 1 - RTR Betrieb	Betriebsart	1 byte	K - - Ü -	HVAC Modus	Niedrig
155	Taste 1 - RTR Betrieb	Darstellung Statusinformation	1 byte	K - S Ü A	Prozent (0..100%)	Niedrig
156	Taste 2 - RTR Betrieb	Betriebsart	1 byte	K - - Ü -	HVAC Modus	Niedrig
163	Taste 2 - RTR Betrieb	Darstellung Statusinformation	1 byte	K - S Ü A	Prozent (0..100%)	Niedrig
164	Taste 3 - RTR Betrieb	Betriebsart	1 byte	K - - Ü -	HVAC Modus	Niedrig
171	Taste 3 - RTR Betrieb	Darstellung Statusinformation	1 byte	K - S Ü A	Prozent (0..100%)	Niedrig
172	Taste 4 - RTR Betrieb	Betriebsart	1 byte	K - - Ü -	HVAC Modus	Niedrig
179	Taste 4 - RTR Betrieb	Darstellung Statusinformation	1 byte	K - S Ü A	Prozent (0..100%)	Niedrig
180	Taste 5 - RTR Betrieb	Betriebsart	1 byte	K - - Ü -	HVAC Modus	Niedrig
187	Taste 5 - RTR Betrieb	Darstellung Statusinformation	1 byte	K - S Ü A	Prozent (0..100%)	Niedrig

Fig. 171: RTR mode function

148	Taste 1 - String	String	14 bytes	K - - Ü -	Zeichen (ISO 8859-1)	Niedrig
156	Taste 2 - String	String	14 bytes	K - - Ü -	Zeichen (ISO 8859-1)	Niedrig
164	Taste 3 - String	String	14 bytes	K - - Ü -	Zeichen (ISO 8859-1)	Niedrig
172	Taste 4 - String	String	14 bytes	K - - Ü -	Zeichen (ISO 8859-1)	Niedrig
180	Taste 5 - String	String	14 bytes	K - - Ü -	Zeichen (ISO 8859-1)	Niedrig

Fig. 172: Function String (14 byte)

148	Taste 1 - RGB	Schalten	1 bit	K	-	-	Ü	-	Schalten	Niedrig
149	Taste 1 - RGB	Dimmwert RGB	3 bytes	K	-	-	Ü	-	RGB Wert 3x(0..255)	Niedrig
151	Taste 1 - RGB	RGB Helligkeit, Status	3 bytes	K	-	S	Ü	A	RGB Wert 3x(0..255)	Niedrig
153	Taste 1 - RGB	Status Schalten	1 bit	K	-	S	Ü	A	Schalten	Niedrig
156	Taste 2 - RGB	Schalten	1 bit	K	-	-	Ü	-	Schalten	Niedrig
157	Taste 2 - RGB	Dimmwert RGB	3 bytes	K	-	-	Ü	-	RGB Wert 3x(0..255)	Niedrig
159	Taste 2 - RGB	RGB Helligkeit, Status	3 bytes	K	-	S	Ü	A	RGB Wert 3x(0..255)	Niedrig
161	Taste 2 - RGB	Status Schalten	1 bit	K	-	S	Ü	A	Schalten	Niedrig
164	Taste 3 - RGB	Schalten	1 bit	K	-	-	Ü	-	Schalten	Niedrig
165	Taste 3 - RGB	Dimmwert RGB	3 bytes	K	-	-	Ü	-	RGB Wert 3x(0..255)	Niedrig
167	Taste 3 - RGB	RGB Helligkeit, Status	3 bytes	K	-	S	Ü	A	RGB Wert 3x(0..255)	Niedrig
169	Taste 3 - RGB	Status Schalten	1 bit	K	-	S	Ü	A	Schalten	Niedrig
172	Taste 4 - RGB	Schalten	1 bit	K	-	-	Ü	-	Schalten	Niedrig
173	Taste 4 - RGB	Dimmwert RGB	3 bytes	K	-	-	Ü	-	RGB Wert 3x(0..255)	Niedrig
175	Taste 4 - RGB	RGB Helligkeit, Status	3 bytes	K	-	S	Ü	A	RGB Wert 3x(0..255)	Niedrig
177	Taste 4 - RGB	Status Schalten	1 bit	K	-	S	Ü	A	Schalten	Niedrig
180	Taste 5 - RGB	Schalten	1 bit	K	-	-	Ü	-	Schalten	Niedrig
181	Taste 5 - RGB	Dimmwert RGB	3 bytes	K	-	-	Ü	-	RGB Wert 3x(0..255)	Niedrig
183	Taste 5 - RGB	RGB Helligkeit, Status	3 bytes	K	-	S	Ü	A	RGB Wert 3x(0..255)	Niedrig
185	Taste 5 - RGB	Status Schalten	1 bit	K	-	S	Ü	A	Schalten	Niedrig

Fig. 173: RGB dimming function

148	Taste 1 - RGBW	Schalten	1 bit	K	-	-	Ü	-	Schalten	Niedrig
149	Taste 1 - RGBW	Dimmwert RGBW	6 bytes	K	-	-	Ü	-	RGB Wert 4x(0..255)	Niedrig
151	Taste 1 - RGBW	RGBW Helligkeit, Status	6 bytes	K	-	S	Ü	A	RGB Wert 4x(0..255)	Niedrig
153	Taste 1 - RGBW	Status Schalten	1 bit	K	-	S	Ü	A	Schalten	Niedrig
156	Taste 2 - RGBW	Schalten	1 bit	K	-	-	Ü	-	Schalten	Niedrig
157	Taste 2 - RGBW	Dimmwert RGBW	6 bytes	K	-	-	Ü	-	RGB Wert 4x(0..255)	Niedrig
159	Taste 2 - RGBW	RGBW Helligkeit, Status	6 bytes	K	-	S	Ü	A	RGB Wert 4x(0..255)	Niedrig
161	Taste 2 - RGBW	Status Schalten	1 bit	K	-	S	Ü	A	Schalten	Niedrig
164	Taste 3 - RGBW	Schalten	1 bit	K	-	-	Ü	-	Schalten	Niedrig
165	Taste 3 - RGBW	Dimmwert RGBW	6 bytes	K	-	-	Ü	-	RGB Wert 4x(0..255)	Niedrig
167	Taste 3 - RGBW	RGBW Helligkeit, Status	6 bytes	K	-	S	Ü	A	RGB Wert 4x(0..255)	Niedrig
169	Taste 3 - RGBW	Status Schalten	1 bit	K	-	S	Ü	A	Schalten	Niedrig
172	Taste 4 - RGBW	Schalten	1 bit	K	-	-	Ü	-	Schalten	Niedrig
173	Taste 4 - RGBW	Dimmwert RGBW	6 bytes	K	-	-	Ü	-	RGB Wert 4x(0..255)	Niedrig
175	Taste 4 - RGBW	RGBW Helligkeit, Status	6 bytes	K	-	S	Ü	A	RGB Wert 4x(0..255)	Niedrig
177	Taste 4 - RGBW	Status Schalten	1 bit	K	-	S	Ü	A	Schalten	Niedrig
180	Taste 5 - RGBW	Schalten	1 bit	K	-	-	Ü	-	Schalten	Niedrig
181	Taste 5 - RGBW	Dimmwert RGBW	6 bytes	K	-	-	Ü	-	RGB Wert 4x(0..255)	Niedrig
183	Taste 5 - RGBW	RGBW Helligkeit, Status	6 bytes	K	-	S	Ü	A	RGB Wert 4x(0..255)	Niedrig
185	Taste 5 - RGBW	Status Schalten	1 bit	K	-	S	Ü	A	Schalten	Niedrig

Fig. 174: Function RGBW dimming

No.	Name	Object function	Length	Flag	DPT
148	Taste 1 - Farbtemperatur	Schalten	1 bit	K - - Ü -	Schalten
149	Taste 1 - Farbtemperatur	Helligkeitswert	1 byte	K - - Ü -	Prozent (0..100%)
150	Taste 1 - Farbtemperatur	Absolute Farbtemperatur	2 bytes	K - - Ü -	Absolute Farbtemperatur...Niedrig
151	Taste 1 - Farbtemperatur	Helligkeit, Status	1 byte	K - S Ü A	Prozent (0..100%)
152	Taste 1 - Farbtemperatur	Absolute Farbtemperatur, Status	2 bytes	K - S Ü A	Absolute Farbtemperatur...Niedrig
153	Taste 1 - Farbtemperatur	Status Schalten	1 bit	K - S Ü A	Schalten
156	Taste 2 - Farbtemperatur	Schalten	1 bit	K - - Ü -	Schalten
157	Taste 2 - Farbtemperatur	Helligkeitswert	1 byte	K - - Ü -	Prozent (0..100%)
158	Taste 2 - Farbtemperatur	Absolute Farbtemperatur	2 bytes	K - - Ü -	Absolute Farbtemperatur...Niedrig
159	Taste 2 - Farbtemperatur	Helligkeit, Status	1 byte	K - S Ü A	Prozent (0..100%)
160	Taste 2 - Farbtemperatur	Absolute Farbtemperatur, Status	2 bytes	K - S Ü A	Absolute Farbtemperatur...Niedrig
161	Taste 2 - Farbtemperatur	Status Schalten	1 bit	K - S Ü A	Schalten
164	Taste 3 - Farbtemperatur	Schalten	1 bit	K - - Ü -	Schalten
165	Taste 3 - Farbtemperatur	Helligkeitswert	1 byte	K - - Ü -	Prozent (0..100%)
166	Taste 3 - Farbtemperatur	Absolute Farbtemperatur	2 bytes	K - - Ü -	Absolute Farbtemperatur...Niedrig
167	Taste 3 - Farbtemperatur	Helligkeit, Status	1 byte	K - S Ü A	Prozent (0..100%)
168	Taste 3 - Farbtemperatur	Absolute Farbtemperatur, Status	2 bytes	K - S Ü A	Absolute Farbtemperatur...Niedrig
169	Taste 3 - Farbtemperatur	Status Schalten	1 bit	K - S Ü A	Schalten
172	Taste 4 - Farbtemperatur	Schalten	1 bit	K - - Ü -	Schalten
173	Taste 4 - Farbtemperatur	Helligkeitswert	1 byte	K - - Ü -	Prozent (0..100%)
174	Taste 4 - Farbtemperatur	Absolute Farbtemperatur	2 bytes	K - - Ü -	Absolute Farbtemperatur...Niedrig
175	Taste 4 - Farbtemperatur	Helligkeit, Status	1 byte	K - S Ü A	Prozent (0..100%)
176	Taste 4 - Farbtemperatur	Absolute Farbtemperatur, Status	2 bytes	K - S Ü A	Absolute Farbtemperatur...Niedrig
177	Taste 4 - Farbtemperatur	Status Schalten	1 bit	K - S Ü A	Schalten

Fig. 175: Dimming color temperature function

No.	Name	Object function	Length	Flag	DPT
148	Button x Rocker x-y	Press Shift	1 bit	K, Ü	1.001 Switching
149	Button x Rocker x-y	Release the switch	1 bit	K, Ü	1.001 Switching
151	Button x Rocker x-y	Flashing function	1 bit	K, S, A.	1,003 Release
152	Button x Rocker x-y	Press, switch status	1 bit	K, Ü	1.001 Switching
153	Button x Rocker x-y	Release, switch status	1 bit	K, Ü	1.001 Switching

These communication objects are used to trigger a switching operation. Whether a common object or two separate objects are used depends on the parameter setting for push/release and for short and long actuation.

When using a common object, only **switching** and **switching status** are visible. When two separate objects are used, **actuation/release** is visible if there is no difference between short and long actuation.

Short/long is visible when there is a difference between short and long actuation.

0 - Off

1 - on

Obj.148/Obj.149 Used to send telegrams for switch control to the bus.

Obj.152/Obj.153 Used to receive the feedback of the switch status from the bus.

When the device is restarted, the object sends a status query telegram (if the send parameter is activated in the device).

The name in parentheses changes with the parameter Label (max. 12 characters). If the description is empty, **key 1 - ...** is displayed by default. The same applies to the following points.

Dimming function					
No.	Name	Object function	Length	Flag	DPT
148	Button x Rocker x-y	In short, switching	1 bit	K, Ü	1.001 Switching
149	Button x Rocker x-y	Long, dimming	4 bit	K, S, Ü	3,007 dimer step
153	Button x Rocker x-y	Switch status	1 bit	K, S, Ü, A.	1.001 Switching

No.	Name	Object function	Length	Flag	DPT
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These communication objects are used for switching and dimming, whereby a distinction is made between long and short operation.

Obj.148, Obj.153: As described above.

OBJ.149: Used to trigger a relative dimming operation.

Dimming if the telegram of the object 'Long, dimming' has the value 1 to 7. The larger this range, the smaller the setting step. That is, the maximum level when dimming down is 1, the minimum level when dimming down is 7, and the dimming stops at 0.

Dimming if the telegram is 9 to 15, and the larger this range, the smaller the setting level. This means that the maximum level for dimming is 9, the minimum level for dimming is 15 and the dimming is terminated at 8.

### Blind

148	Button x Rocker x-y	Up/down, roller shutter/jal.	1 bit	K, S, Ü	1.008 Up/Down
149	Button x Rocker x-y	Stop/adjust, roller shutter/blind.	1 bit	K, S, Ü	1,007 step

These two communication objects are used to control the roller shutters, blinds or curtains.

OBJ.148: Used to control the lifting and lowering of the blind.

0 - Power up

1 - Power up

OBJ.149: Used to stop the blind movement.

1 - Stop

### Send value

148	Button x	In short, ...	1 bit	K, Ü	1.001 Switching
		1 bit value (on/off)	2 bit		2,001 priority. Switching
		2 bit value (0..3)	4 bit		3.007 dimmer step
		4 bit value (0..15)	1 byte		5.010 counting pulses (0...255)
		1 byte value (0..255)	2 byte		7.001 pulses
		2 byte value (0..65535)	2 byte		9) 2-byte floating point value
		2 bytes flow value	2 byte		12,001 counts
		4 bytes value	4 byte		14) 4-byte floating point value
		4 bytes flow value	4 byte		
149	Button x	Long, ...	1 bit	K, Ü	1.001 Switching
		1 bit value (on/off)	2 bit		2,001 priority. Switching
		2 bit value (0..3)	4 bit		3.007 dimmer step
		4 bit value (0..15)	1 byte		5.010 counting pulses (0...255)
		1 byte value (0..255)	2 byte		7.001 pulses
		2 byte value (0..65535)	2 byte		9) 2-byte floating point value
		2 bytes flow value	2 byte		12,001 counts
		4 bytes value	4 byte		14) 4-byte floating point value
		4 bytes flow value	4 byte		

These communication objects are used to transfer values.

The object type and range of values are determined by the **Short/Long Key** Response parameter setting.

Obj.148: Used to send a telegram to the bus during short-term operation.

No.	Name	Object function	Length	Flag	DPT
Obj.149: Used to send a telegram to the bus during long-term operation.					
148	Button x Rocker x-y	Scene	1 byte	K, Ü	18.001 Scene control
148	Button x Rocker x-y	In short, scene	1 byte	K, Ü	18.001 Scene control
149	Button x Rocker x-y	Long scene	1 byte	K, Ü	18.001 Scene control

These communication objects are used to send a 8-bit command to recall or save a scene. Whether a common object or two separate objects are used depends on the parameter setting. When using a common object, only the **Scene** object is visible. When two separate objects are used, closing/opening is visible if there is no difference between short and long operation. Short/long is visible when there is a difference between short and long operation.

Detailed 8-bit meaning:

8-bit command for the (binary code) ON: FXNNNNNN

F 0 to recall a scene; 1 to store a scene

X 0

NNNNN: Scene number (0 ... 63)

Value of the object message	Description
0	Calling up scene 1
1	Calling up scene 2
2	Calling up scene 3
3	Calling up scene 4
...	...
63	Calling up scene 64
128	Load - Scene 1
129	Load - Scene 2
...	...
191	Load - Scene 64

The setting options for the parameter are between 1 and 64.

However, the **SCENE** communication object that corresponds to the received telegram is between 0 and 63. For example, if the parameter is set to 1, the **SCENE** communication object sends a value of 0.

Shift register					
148	Button x	Value tab	1 byte	K, S, Ü, A.	5.010 counting pulses (0...255) 17.001 Scene number 20.102 HVAC mode 5.001 Percentage (0...100%)
155	Button x	Representation of status information	1 byte	K, S, Ü, A.	5.001 Percentage (0...100%) 1.001 Switching

This communication object is used to move the register. To send the value to the bus, the object type is specified by the Data type parameter setting.

148	Key x - RGB	Switching	1 bit	K, Ü	1.001 Switching
149	Key x - RGB	RGB dimming value	3 byte	K, Ü	232.600 RGB value 3x(0...255)
151	Key x - RGB	RGB dimming value, status	3 byte	K, S, Ü, A.	232.600 RGB value 3x(0...255)
153	Key x - RGB	Switch status	1 bit	K, S, Ü, A.	1.001 Switching

No.	Name	Object function	Length	Flag	DPT
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These communication objects are used for RGB switching/value transfer and dimming as well as for RGBW dimming.

Obj.148, Obj.153: As described above.

If the object type RGB (1x3 bytes) or RGBW (3 bytes + 1 bytes) is selected, Obj.149 and Obj.151 are visible.

OBJ.149: Sends the brightness value of a RGB tri-color lamp to the bus.

Obj.151: Visible only with dimming function; used to receive brightness telegrams of the RGB three-color lamp from the bus.

3-byte code for RGB DIMM object, data type: U8 U8 U8, as follows:

	3 <sub>MSB</sub>	2	1 <sub>LSB</sub>	
	R	G	B	
	UUUUUUUUU	UUUUUUUUU	UUUUUUUUU	

R: Dimming value for red; G: Dimming value for green; B: Dimming value for blue.

148	Key x - RGBW	Switching	1 bit	K, Ü	1.001 Switching
149	Key x - RGBW	Dimming value RGBW	6 byte	K, Ü	251.600 RGB value 4x(0...255)
151	Key x - RGBW	Dimming value RGBW, status	6 byte	K, S, Ü, A.	251.600 RGB value 4x(0...255)
153	Key x - RGBW	Switch status	1 bit	K, S, Ü, A.	1.001 Switching

These communication objects are used to switch/send values and dim RGBW lamps.

Obj.148, Obj.153: As described above.

If '1x6 bytes' is selected as the RGBW object type, Obj.149 and Obj.151 are visible.

OBJ.149: Sends the brightness value of a four-color RGBW lamp to the bus.

OBJ.151: Visible only when dimming, used to receive the brightness telegram of the RGBW four-color lamp from the bus.

Encoding the data type of the 6-byte RGBW dimming object: U8 U8 U8 U8 R8 R4 B4, AS FOLLOWS:

6 <sub>MSB</sub>	5	4	3	2	1 <sub>LSB</sub>
R	G	B	W	Reserve	RrrrmR mg MB mW
UUUUUUUUU	UUUUUUUUU	UUUUUUUUU	UUUUUUUUU	0000000	0000BBBB

R: Dimming value for red; G: Dimming value for green; B: Dimming value for blue; W: Dimming value for white.

MR: Determines if the red dimming value is valid, 0 = invalid, 1 = valid

Mg: Determines if the green dimming value is valid, 0 = invalid, 1 = valid

MB: Determines if the blue dimming value is valid, 0 = invalid, 1 = valid

MW: Determines if the white dimming value is valid, 0 = invalid, 1 = valid.

149	Key x - RGBW	Dimming value red	1 byte	K, Ü	5.001 Percentage (0...100%)
151	Key x - RGBW	Dimming value green	1 byte	K, Ü	5.001 Percentage (0...100%)
152	Key x - RGBW	Blue dimming value	1 byte	K, Ü	5.001 Percentage (0...100%)
153	Key x - RGBW	Dimming value white	1 byte	K, Ü	5.001 Percentage (0...100%)

These communication objects are used to switch over or transfer RGB and RGBW values.

OBJ.149 to OBJ.151 are visible if the object type RGB 3x1 byte or the object type RGBW 4x1 byte is selected.

OBJ.152 is only visible if 4x1 bytes is selected for RGBW. Telegrams: 0 ... 100%

OBJ.149: Used to send the brightness value of control channel R (Red) to the bus.

No.	Name	Object function	Length	Flag	DPT
OBJ.150: Used to send the brightness value of control channel G (green) to the bus.					
OBJ.151: Used to send the brightness value of control channel B (blue) to the bus.					
OBJ.152: Used to send the brightness value of control channel W (white) to the bus.					
150	Key x - RGBW	Dimming value white	1 byte	K, Ü	5.001 Percentage (0...100%)
152	Key x - RGBW	Dimming value white, status	1 byte	K, S, Ü, A.	5.001 Percentage (0...100%)

These communication objects are used for RGBW dimming and are visible if the object type is 3 bytes + 1 bytes. Telegrams: 0 ... 100%

Obj.150: Sends the brightness value of control channel W (white) to the bus.

Obj.152: Used to receive the brightness telegram of control channel W (white) from the bus.

148	Key x - color temperature	Switching	1 bit	K, Ü	1.001 Switching
149	Key x - color temperature	Brightness value	1 byte	K, Ü	5.001 Percentage (0...100%)
150	Key x - color temperature	Color temperature value	2 byte	K, Ü	7.600 Absolute colour temperature (K)
155	Key x - color temperature	Brightness value, status	1 byte	K, S, Ü, A.	5.001 Percentage (0...100%)
153	Key x - color temperature	Switch status	1 bit	K, S, Ü, A.	1.001 Switching

These communication objects are used for switching the color temperature, for value transfer and for dimming.

Obj.148, Obj.153: As described above.

Obj.149: Sends the color temperature DIMM telegram to the bus, i.e., sends the brightness value. Telegrams: 0...100 %

Obj.150: Displays only the 'color temperature value' when switching/sending the value and displays either the 'relative color temperature in percent' or the 'absolute color temperature' for the dimming function, depending on the object type. Used to send the color temperature control telegram to the bus.

Telegram: 1 byte is 0..100% and 2 byte is 2000...7000 K.

Obj.151: Visible only when dimming, is used to receive the brightness value status from the bus.

OBJ.152: Only visible with dimming function, display of 'relative percentage color temperature status' or 'absolute color temperature' depending on the object type. Receives the color temperature status from the bus.

148	Key x - multi-function	Object x - ON/OFF	1 bit	K, S, Ü	1.001 Switching
		Object x - up/down	1 bit	K, S, Ü	1.008 Up/Down
		Object x - Scene control	1 byte	K, Ü	18.001 Scene control
		Object x - Percent	1 byte	K, Ü	5,001 percent (0..100%)
		Object x - unsigned	1 byte	K, Ü	5.010 counting pulses (0...255)
		Object x - String	14 byte		16,001 characters (ISO 8859-1)

These communication objects are used for multiple control.

Up to four objects can be activated simultaneously and the values of four objects of different data types can be sent to the bus with a single command. The range of values that can be sent is determined by the data type, and the data type is determined by the parameter setting.

**Note: The '14 byte' specification applies only to object 1.**

No.	Name	Object function	Length	Flag	DPT
<b>Delay mode</b>					
148	Key x - Delay mode	Short, delay mode	1 bit 4 bit 1 byte	K, Ü	1.001 Switching 3.007 dimmer step 5.010 counting pulses (0...255)
149	Key x - Delay mode	Long, delay mode	1 bit 4 bit 1 byte	K, Ü	1.001 Switching 3.007 dimmer step 5.010 counting pulses (0...255)

These communication objects are used for delay mode. The range of values that can be sent is determined by the data type, and the data type is determined by the parameter setting.

Obj.148: Used to send the value to the bus in delay mode when a short key is pressed.

Obj.149: Used to send the value in delay mode to the bus after a long key press.

<b>Operating mode RTR</b>					
148	Key x - RTR operation	Operating mode	1 byte	K, Ü	20.102 HVAC mode
148	Key x - RTR operation	Comfort mode	1 bit	K, Ü	1,003 Release
149	Key x - RTR operation	Night mode	1 bit	K, Ü	1,003 Release
150	Key x - RTR operation	Frost/heat protection	1 bit	K, Ü	1,003 Release
151	Key x - RTR operation	Standby mode	1 bit	K, Ü	1,003 Release

These communication objects are used for RTR operation. They are used to send the operating mode to the bus.

### For 1 bytes:

Object 148 is visible, telegrams: 1 – comfort, 2 – standby, 3 – night, 4 – frost/heat protection, others reserved.

### For 1 bits:

Object 148 - Comfort mode

Object 149 - Night mode

Object 150 - Frost/Heat Protection Mode

Object 151 - Standby mode

Only the corresponding object sends the telegram '1' when a mode is activated. If the 1-bit standby object is not activated, all three objects (Comfort, Night, Protection) send a 0 to activate standby mode.

When the 1-bit standby object is enabled, only the standby object sends a 1 to enter standby mode.

<b>String</b>					
148	Key x- string	String	14 byte	K, Ü	16,001 characters (ISO 8859-1)

This communication object is used to create strings. It is used to send the string to the bus.

<b>Value display</b>					
148	Key x- value display	Value display	1 byte 2 byte 4 byte	K, S, Ü, A.	5.001 Percentage (0...100%) 5,010 counts 5.010 counting pulses (0...255)

No.	Name	Object function	Length	Flag	DPT
					7,001 pulses 9,001 temperature 9,004 Lux (Lux) 9) 2-byte floating point value 12,001 counts 14) 4-byte floating point value
148	Key x- value display	Value display	14 byte	K, S	16,001 characters (ISO 8859-1)

This communication object is used to display the status. It is used to receive the status display data and retrieve the corresponding value from the bus to be updated on the display. The range of values is determined by the data type and the data type is determined by the parameter setting.

### Setpoint specification (only when the button functions as a rocker)

148	Rocker x - set-point value	Current setpoint specification	2 byte	K, Ü	9,001 Temperature (°C)
149	Rocker x - set-point value	Temperature setpoint specification	2 byte	K, S, Ü, A.	9,001 Temperature (°C)

These communication objects are used to set the setpoint temperature and are visible when **setpoint correction (absolute)** is selected.

Obj.148: Used to send the current set temperature to the bus when the button is pressed.

Obj.149: Receives the current set temperature.

When the device is restarted, the object sends a status query telegram (if the parameter transmission is activated).

148	Rocker x - set-point value	Setpoint offset	1 bit	K, Ü	1,007 step
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This communication object is used to set the set temperature and is displayed when **Increase/Decrease Offset (relative)** is selected. Used to send the telegrams for increasing/decreasing the set temperature to the bus when the button is pressed.

Telegrams:

0 - Decrease

1 - Increase

148	Rocker x - set-point value	Offset setpoint correction	2 byte	K, Ü	9,002 Temperature difference (K)
149	Rocker x - set-point value	Offset of current setpoint	2 byte	K, S, Ü, A.	9,002 Temperature difference (K)

These communication objects are used to set the setpoint correction and are visible when **offset setpoint correction (relative)** is selected.

Obj.148: Used to send the offset of the current setpoint correction to the bus when the button is pressed.

Obj.149: Used to receive the offset of the current setpoint correction from the bus.

When the device is restarted, the object sends a status query telegram (if the parameter transmission is activated).

151	Rocker x - Shift Rocker x - dimming Rocker x - blind	Flashing function	1 bit	K, S, A.	1,003 Release
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No.	Name	Object function	Length	Flag	DPT
<p>This communication object is only used for switches, dimmer and blinds. Allows you to activate or deactivate the flashing function.</p>					
154	Rocker x	Lock	1 bit	K, Ü	1.003 Release
<p>This communication object is used for all of the above functions except the status display. It is used to enable or disable the contact input function.</p>					
153	Rocker x	Status	1 bit	K, S, Ü, A.	1.001 Switching
155	Button x	Representation of status information	1 byte	K, S, Ü, A.	5.001 Percentage (0...100%)

This communication object is used to control the status of the on-screen keys via the bus and can also receive status feedback.

The value range of the telegrams is determined by the data type, and the data type is determined by the parameter setting. When the device is restarted, the object sends a status query telegram (if the send parameter is activated under General).

## 5.6 Communication Objects - Multifunction Thermostat

### 5.6.1 Communication Objects - HVAC Control

When the operating mode is set to 'Master', the read requests for the external sensor (with separate enable parameter, see below), the fan speed, the window and the presence after power recovery are sent to the bus, as well as the status of ON/OFF, the actual temperature (combined), the current set temperature, the heating/cooling mode, the operating mode, The fan speed and the automatic fan. If the operating mode is Single, the read requests for the external sensor, fan speed, window, and presence after power recovery are sent to the bus, as well as the status of the actual temperature (combined). If the operating mode is 'Slave', after power recovery, send status queries for the following functions: Power On/Off, External Sensor, Current Set Temperature, Heating/Cooling Mode, Operating Mode, Fan speed and automatic fan.

250	HLK - ...	Sperrfunktion	1 bit	K - S - -	Freigeben	Niedrig
251	HLK - ...	Ein-/Ausschalten	1 bit	K - S - -	Schalten	Niedrig
252	HLK - ...	Externer Temperatur Sensor	2 bytes	K - S Ü A	Temperatur (°C)	Niedrig
253	HLK - ...	Basis Sollwerttemperatur	2 bytes	K - S - A	Temperatur (°C)	Niedrig
254	HLK - ...	Heiz/Kühlbetrieb	1 bit	K - S - A	heizen/kühlen	Niedrig
255	HLK - ...	Betriebsart	1 byte	K - S - A	HVAC Modus	Niedrig
260	HLK - ...	Lüftergeschwindigkeit, Status	1 byte	K - S Ü A	Prozent (0..100%)	Niedrig
261	HLK - ...	Lüfter Automatikbetrieb, Status	1 bit	K - S Ü A	Freigeben	Niedrig
263	HLK - ...	Fensterkontakt	1 bit	K - S Ü A	Fenster/Tür	Niedrig
264	HLK - ...	Präsenzerfassung	1 bit	K - S Ü A	Belegung	Niedrig
266	HLK - ...	Szene	1 byte	K - S - -	Szenensteuerung	Niedrig
267	HLK - ...	Ein/Aus, Status	1 bit	K L - Ü -	Schalten	Niedrig
268	HLK - ...	Aktuelle Temperatur	2 bytes	K L - Ü -	Temperatur (°C)	Niedrig
269	HLK - ...	Basissollwert Temperatur, Status	2 bytes	K L - Ü -	Temperatur (°C)	Niedrig
270	HLK - ...	Aktuelle Sollwertvorgabe, Status	2 bytes	K L - Ü -	Temperatur (°C)	Niedrig
271	HLK - ...	Heiz/Kühlbetrieb, Status	1 bit	K L - Ü -	heizen/kühlen	Niedrig
272	HLK - ...	Betriebsart, Status	1 byte	K L - Ü -	HVAC Modus	Niedrig
277	HLK - ...	Steuerwert Heizen/Kühlen	1 bit	K L - Ü -	Schalten	Niedrig
279	HLK - ...	Lüftergeschwindigkeit	1 byte	K L - Ü -	Prozent (0..100%)	Niedrig
280	HLK - ...	Lüfter Automatikbetrieb	1 bit	K L - Ü -	Freigeben	Niedrig

Fig. 176: Multifunction thermostat - HVAC

No.	Name	Object function	Length	Flag	DPT
250	HVAC	Disable function	1 bit	K, S	1,003 Release
251	HVAC	Switch on/switch off	1 bit	K, S	1.001 Switching
251	HVAC	On/Off, Status	1 bit	K, S, Ü, A.	1.001 Switching

When **Master** or **Single** mode is selected, the flag is set to K, S.

**Switching on/off** is visible and is used to receive telegrams from the bus to control switching on and off.

If the operating mode is **Slave**, the flag is K, S, Ü, A.

**On/Off, status** is visible and is used to receive the on/off status that is reported back by the device via the bus.

Telegrams:

1 - on

0 - Off

No.	Name	Object function	Length	Flag	DPT
252	HVAC	External temperature sensor	2 byte	K, S, Ü, A.	9.001 Temperature (°C)
The communication object is used to receive the room temperature from the bus, send query requests cyclically, and display the results on the screen.					
253	HVAC	Setpoint temperature base	2 byte	K, S, A.	9.001 Temperature (°C)
253	HVAC	Temperature setpoint specification	2 byte	K, S, A.	9.001 Temperature (°C)
253	HVAC	Current temperature setpoint status	2 byte	K, S, Ü, A.	9.001 Temperature (°C)

If the method is **Master**, the label is K, S, A:

**Temperature setpoint** setting is visible when the operating mode is not activated and at absolute setting. Allows you to change the baseline value of the set temperature and to change the setpoint temperature value of the current room operating mode at absolute setting.

**Base setpoint temperature** is only visible when set relative and is used to change the base value of the set temperature, i.e. the temperature setting in comfort mode, whereby the setpoint temperature in standby mode and in economy mode changes according to the relative change. In protection mode, only the temperature setting of the protection mode is changed.

If the method is **slave**, the indicator is K, S, Ü, A. Only the **current temperature setpoint status** is visible and is used to receive the status of the current setpoint temperature, which is reported back by the controller via the bus.

For **Single**, these objects do not exist.

254	HVAC	Heating/cooling mode	1 bit	K, S, A.	1.100 Heating/cooling
254	HVAC	Heating/cooling mode, status	1 bit	K, S, Ü, A.	1.100 Heating/cooling

If the method is **Master** or **Single**, the flag is K, S, A. **Heating/cooling** mode is visible and is used to receive telegrams from the bus to control the heating/cooling mode.

If the method is **Slave**, the flag is K, S, Ü, A and **HVAC, status** is visible and is used to receive the HVAC status that is reported back by the controller over the bus.

Telegrams:

1 - Heating

0 - Cooling

255	HVAC	Operating mode	1 byte	K, S, A.	20.102 HVAC mode
255	HVAC	Operating mode, status	1 byte	K, S, Ü, A.	20.102 HVAC mode
256	HVAC	Comfort mode	1 bit	K, S, A.	1,003 Release
257	HVAC	Standby mode	1 bit	K, S, A.	1,003 Release
258	HVAC	Night mode	1 bit	K, S, A.	1,003 Release
259	HVAC	Frost/heat protection mode	1 bit	K, S, A.	1,003 Release

With 1 bytes, object 255 is visible:

No.	Name	Object function	Length	Flag	DPT
<p>If the <b>Master</b> or <b>Single</b> method is selected, the flag is K, S, A.</p> <p><b>Operating mode</b> is visible and is used to receive telegrams from the bus to control the operating mode.</p> <p>When the <b>Slave</b> method is selected, the K, S, Ü, A flag is set and the <b>operating mode, status</b> is visible. This is used to receive the status of the operating mode, which is reported back by the controller via the bus.</p> <p>Telegram value:</p> <p>1 – Comfort, 2 – Standby, 3 – Economy mode, 4 – Protection, others reserved.</p> <p>With 1 bits, this is used to receive telegrams from the bus for controlling the individual operating modes:</p> <p>Object 256 - Comfort mode            Object 227 - Standby mode            Object 258 - Night mode            Object 259 - Protection mode</p> <p>When the object receives the telegram ‘1’, the corresponding mode is activated and the display status of the mode on the screen is also updated to the corresponding mode.</p> <p>If the 1-bit standby object is not enabled, the three Comfort, Night, and Protection objects all send a 0 to enter standby mode. If the 1-bit standby object is enabled, only the standby object sends a 1 to enter standby mode; a 0 is ignored. If the method is <b>Single</b> or <b>Slave</b>, these four 1-bit objects are not visible.</p>					
260	HVAC	Fan speed status	1 byte	K, S, Ü, A.	5.001 Percentage (0...100%)
<p>The communication object is used to receive the current fan speed from the bus. The value of the telegram is determined by the data type setting of the parameter.</p>					
261	HVAC	Automatic mode fan, status	1 byte	K, S, Ü, A.	1,003 Release
<p>The communication object is used to retrieve the status of the automatic fan operation from the bus.</p> <p>Telegrams:</p> <p>1 – Automatic            0 – Cancel automatic operation</p>					
262	HVAC	Comfort mode, add-on	1 bit	K, Ü	1,016
<p>The communication object is used to activate the comfort mode for a certain period of time.</p> <p>Telegrams:</p> <p>1 - Activate comfort mode            0 - Not available</p> <p>Comfort mode is activated when the object receives telegram 1. If telegram 1 is received again within the delay time, the timer is started again. When the time expires, the object returns from comfort mode to the previous operating mode. If a new operating mode is received within the delay time, the comfort mode is exited. Changing the operating mode stops the time measurement, but does not stop switching between heating and cooling.</p> <p>If the <b>Slave</b> method is selected, this object is not visible.</p>					
263	HVAC	Window contact	1 bit	K, S, Ü, A.	1,019 window/door
<p>The communication object is used to receive the switching state of the window contact.</p> <p>Telegrams:</p> <p>1 – Open the window            0 – Close the window</p> <p>If the <b>Slave</b> method is selected, this object is not visible.</p>					

No.	Name	Object function	Length	Flag	DPT
264	HVAC	Presence recording	1 bit	K, S, Ü, A.	1,018 Occupancy
<p>The communication object is used to receive the room occupancy status from the presence detector.</p> <p>Telegrams:            1 – Used            0 – Unoccupied</p> <p>If the <b>Slave</b> method is selected, this object is not visible.</p>					
266	HVAC	Scene	1 byte	K, S	18.001 Scene control
<p>The communication object is visible when the scene function is activated. Recall/save scenes via the bus.</p> <p>If the <b>Slave</b> method is selected, this object is not visible.</p>					
267	HVAC	On/Off status	1 bit	K, L, Ü	1.001 Switching
267	HVAC	Switch on/switch off	1 bit	K, Ü	1.001 Switching
<p>When the <b>Master</b> or <b>Single</b> method is selected, the flag is K, L, Ü, and ON/OFF status is visible.</p> <p>This is used to report the status of the power on and power off to the bus.</p> <p>When the <b>Slave</b> method is selected, the flag is K, Ü, and <b>On/Off</b> is visible and is used to send the On/Off telegram to the bus.</p>					
268	HVAC	Current temperature	2 byte	K, L, Ü	9.001 Temperature (°C)
<p>The communication object is used to transmit the actual temperature value recorded by the combination temperature sensor of the device to the bus.</p>					
269	HVAC	Base setpoint temperature, status	2 byte	K, L, Ü	9.001 Temperature (°C)
<p>If the <b>Master</b> method is selected, the communication object is displayed when the relative setting is selected. Used to send the current base temperature setpoint to the bus.</p> <p>If the <b>Slave</b> method is selected, this object is not visible.</p>					
270	HVAC	Current setpoint specification, status	2 byte	K, L, Ü	9.001 Temperature (°C)
270	HVAC	Current setpoint specification	2 byte	K, Ü	9.001 Temperature (°C)
<p>When the <b>Master</b> method is selected, the flags K, L, Ü are displayed, and <b>Current setpoint, Status</b> is visible and is used to report the status of the current setpoint temperature back to the bus.</p> <p>When the <b>Slave</b> method is selected, the flags K, Ü are displayed and Current setpoint is visible and used to send the current setpoint temperature to the bus. If the <b>Single</b> method is selected, this object is not visible.</p>					
272	HVAC	Operating mode, status	1 bit	K, L, Ü	1.100 Heating/cooling
272	HVAC	Operating mode	1 byte	K, Ü	20.102 HVAC mode
273	HVAC	Comfort mode, status	1 bit	K, L, Ü	1,003 Release
274	HVAC	Standby mode, status	1 bit	K, L, Ü	1,003 Release

No.	Name	Object function	Length	Flag	DPT
275	HVAC	Night mode, status	1 bit	K, L, Ü	1,003 Release
276	HVAC	Standby mode, status	1 bit	K, L, Ü	1,003 Release

With 1 bytes, object 272 is visible:

When the **Master** or **Single** method is selected, the flag is K, L, Ü, and **HEAT/COOLING, STATUS** is visible and is used to report the status of the operating mode back to the bus.

When the **Slave** method is selected, the flag is K, Ü, and the operating mode is visible and used to send the operating mode to the bus.

Telegrams: 1: Comfort mode; 2: Standby mode; 3: Economy mode; 4: Protection mode; others reserved.

For 1 bits:

Change to the corresponding mode and the object of the corresponding mode sends the telegram '1' to the bus.

If the method is **Single** or **Slave**, these four 1-bit objects are not visible.1-bit

277	HVAC	Heating/cooling control value Heating control value	1 byte	K, L, Ü	1.001 Switching 5.001 Percentage (0...100%)
278	HVAC	Cooling control value	1 bit	K, L, Ü	1.001 Switching

These communication objects are used to send the control value of the heating or cooling function to the bus. The display of the object depends on the control mode and the control system (2-pipe or 4-pipe system), and the data type of the object depends on the parameter setting.

If the **Slave** method is selected, these two objects are not visible.

279	HVAC	Fan speed	1 byte	K, Ü K, L, Ü	5.001 Percentage (0...100%) 5,100 fan stage (0..255)
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The communication object is used to send control telegrams for the fan speed to the bus. The corresponding telegram value for each fan speed is defined via the parameter. Activate the corresponding fan speed on the operator panel and send the corresponding telegram value of the fan speed to the bus.

If the **Master** method is selected, the flag is C,R,T.

If the **Slave** or **Single** method is used, the flag is K, Ü.

280	HVAC	Automatic operation fan	1 bit	K, L, Ü	1,003 Release
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The communication object is used to activate the automatic operation of the fan via the bus.

Telegrams:

1 - Automatic

0 - Cancel automatic

If the **Master** method is selected, the flag is C,R,T.

If the **Single** method is selected, the flag is C,T.

### 5.6.2 Communication Objects - VRF

The system must return to the pre-power failure state when power is restored and send the following status queries:

- Switch on/switch off
- Operating mode
- Fan speed
- Set temperature
- External temperature sensor
- Swivel angle of the leaves.

281	VRF (Variabler Kältemittelfluss) - ...	Sperrfunktion	1 bit	K - S - - -	Freigeben	Niedrig
282	VRF (Variabler Kältemittelfluss) - ...	Ein/Aus, Status	1 bit	K - S Ü A	Schalten	Niedrig
283	VRF (Variabler Kältemittelfluss) - ...	Externer Temperatur Sensor	2 bytes	K - S Ü A	Temperatur (°C)	Niedrig
284	VRF (Variabler Kältemittelfluss) - ...	Aktueller Temperatur Sollwert, Status	2 bytes	K - S Ü A	Temperatur (°C)	Niedrig
285	VRF (Variabler Kältemittelfluss) - ...	Steuerungssystem, Status	1 byte	K - S Ü A	HVAC Kontrollmodus	Niedrig
286	VRF (Variabler Kältemittelfluss) - ...	Lüftergeschwindigkeit, Status	1 byte	K - S Ü A	Prozent (0..100%)	Niedrig
287	VRF (Variabler Kältemittelfluss) - ...	Lüfter Schwingen (1-schwingend,0-stopp), Sta...	1 bit	K - S Ü A	Start/Stop	Niedrig
289	VRF (Variabler Kältemittelfluss) - ...	Szene	1 byte	K - S - -	Szenensteuerung	Niedrig
290	VRF (Variabler Kältemittelfluss) - ...	Ein-/Ausschalten	1 bit	K - - Ü -	Schalten	Niedrig
291	VRF (Variabler Kältemittelfluss) - ...	Aktuelle Sollwertvorgabe	2 bytes	K - - Ü -	Temperatur (°C)	Niedrig
292	VRF (Variabler Kältemittelfluss) - ...	Lüftergeschwindigkeit	1 byte	K - - Ü -	Prozent (0..100%)	Niedrig
293	VRF (Variabler Kältemittelfluss) - ...	Lüfter Schwingen (1-schwingend,0-stopp)	1 bit	K - - Ü -	Start/Stop	Niedrig
294	VRF (Variabler Kältemittelfluss) - ...	Steuerungssystem	1 byte	K - - Ü -	HVAC Kontrollmodus	Niedrig

Fig. 177: Multifunction thermostat - VRF

No.	Name	Object function	Length	Flag	DPT
281	VRF	Disable function	1 bit	K, S	1,003 Release
<p>The communication object is used to lock or unlock the VRF control function.</p> <p>Telegrams: 0 - Locks 1 - Unlock</p>					
282	VRF	On Off, Status	1 bit	K, S, Ü, A.	1.001 Switching
<p>The communication object is used to receive and send the telegram for switching the VRF on and off from the bus.</p> <p>Telegrams: 1 - on 0 - Off</p>					
283	VRF	External temperature sensor	2 byte	K, S, Ü, A.	9.001 Temperature (°C)
<p>The communication object is used to receive the room temperature from the bus, send query commands cyclically and display the results on the screen.</p>					
284	VRF	Current temperature set-point, status	1 byte 2 byte	K, S, Ü, A.	5.010 counting pulses (0...255) 9.001 Temperature (°C)
<p>The communication object is used to receive the current temperature setpoint from the bus.</p>					
285	VRF	Control system status	1 byte	K, S, Ü, A.	20,105 HVAC control mode

No.	Name	Object function	Length	Flag	DPT
<p>The communication object is used to receive the current operating mode from the bus. Different telegrams represent different operating modes: 0 - Auto, 1 - Heating, 3 - Cooling, 9 - Ventilation, 14 - Dehumidification, others are reserved.</p>					
286	VRF	Fan speed status	1 byte	K, S, Ü, A.	5.010 counting pulses (0...255) 5,100 fan stage (0..255)
<p>The communication object is used to receive the current fan speed from the bus. The value of the telegram is determined by the data type of the parameter setting.</p>					
287	VRF	Fan swinging (1-swinging,0-stop), status	1 bit	K, S, Ü, A.	1.001 Start/Stop
<p>The communication object is visible when the swivel function is activated. Receives the swing status of the leaves from the bus. Telegrams: 1 - Swivel 0 - Stop</p>					
289	VRF	Scene	1 byte	K, S	18.001 Scene control
<p>The communication object is visible when the scene function is activated. Recall and save scenes via the bus.</p>					
290	VRF	Switch on/switch off	1 bit	K, Ü	1.001 Switching
<p>The communication object is used to send the on/off telegram of the VRF in order to control the on/off of the VRF via the KNX bus.</p>					
291	VRF	Current setpoint specification	2 byte	K, Ü	5.010 counting pulses (0...255) 9.001 Temperature (°C)
<p>The communication object is used to set the setpoint temperature via the bus and to send telegram values to the bus.</p>					
292	VRF	Fan speed	1 byte	K, Ü	5.010 counting pulses (0...255) 5,100 fan stage (0..255)
<p>The communication object is used to send the control telegrams for the respective fan speed to the bus. The telegram value is determined by the data type of the parameter setting.</p>					
293	VRF	Swing fan (1-oscillating, 0-stop)	1 bit	K, Ü	1.010 Start/Stop
<p>The communication object is visible when the swivel function is activated. Used to send telegrams to control the swivel movement of the lamellae to the bus. Telegrams: 1 - Swivel 0 - Stop</p>					

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No.	Name	Object function	Length	Flag	DPT
294	VRF	Control system	1 byte	K, Ü	20.105 HVAC mode

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The communication object is used to send the control telegrams of the individual climate modes to the bus. Different telegrams represent different operating modes: 0 - Auto, 1 - Heating, 3 - Cooling, 9 - Ventilation, 14 - Dehumidification, others are reserved.

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**5.6.3 Communication objects - underfloor heating**

If the method is **master**, after power recovery, the external sensor read requests are sent to the bus, as well as the ON/OFF status, the actual temperature (combined), and the current set temperature.

If the method is **Single**, the read requests from the external sensor are sent to the bus after power recovery, as well as the status of the actual temperature (combined).

If the method is **slave**, the status queries for these functions are sent after power recovery: On/off status, external sensor, current set temperature.

295	Fussbodenheizung - ...	Sperrfunktion	1 bit	K - S - -	Freigeben	Niedrig
296	Fussbodenheizung - ...	Ein-/Ausschalten	1 bit	K - S - -	Schalten	Niedrig
297	Fussbodenheizung - ...	Externer Temperatur Sensor	2 bytes	K - S Ü A	Temperatur (°C)	Niedrig
298	Fussbodenheizung - ...	Temperatur Sollwertvorgabe	2 bytes	K - S - A	Temperatur (°C)	Niedrig
300	Fussbodenheizung - ...	Szene	1 byte	K - S - -	Szenensteuerung	Niedrig
301	Fussbodenheizung - ...	Ein/Aus, Status	1 bit	K L - Ü -	Schalten	Niedrig
302	Fussbodenheizung - ...	Aktuelle Temperatur	2 bytes	K L - Ü -	Temperatur (°C)	Niedrig
303	Fussbodenheizung - ...	Aktuelle Sollwertvorgabe, Status	2 bytes	K L - Ü -	Temperatur (°C)	Niedrig
304	Fussbodenheizung - ...	Steuerwert Heizen	1 byte	K - - Ü -	Prozent (0..100%)	Niedrig

Fig. 178: Floor heating

No.	Name	Object function	Length	Flag	DPT
295	Underfloor heating	Disable function	1 bit	K, S	1,003 Release
Operation is blocked.					
296 - 301	Underfloor heating	Switch on/switch off	1 bit	K, S / K, Ü	1.001 Switching
296 - 301	Underfloor heating	On/Off, Status	1 bit	K, L, Ü / K, S, Ü, A	1.001 Switching

The communication object is used to activate or deactivate the underfloor heating.

Telegrams:

- 0 - Activate
- 1 - Disable

If the method is **Master** or **Single**, the function is On/Off and the flag K, S is visible and is used to receive the telegram for switching on and off. For the ON/OFF, STATUS function, the K, L, Ü flag is visible and is used to send the ON and OFF status to the bus.

If the method is **slave**, the On/Off flag is K, Ü and is used to send the On/Off telegram to the bus. The Power On/Off Status flag is K, S, Ü, A and is used to receive power on/off status.

Telegrams:

- 1 - on
- 0 - Off

297	Underfloor heating	External temperature sensor	2 byte	K, S, Ü, A.	9.001 Temperature (°C)
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The communication object is used to receive the room temperature from the bus, send query commands cyclically and display the results on the screen.

298	Underfloor heating	Temperature setpoint specification	2 byte	K, S, A.	9.001 Temperature (°C)
298	Underfloor heating	Current temperature setpoint, status	2 byte	K, S, Ü, A.	9.001 Temperature (°C)

No.	Name	Object function	Length	Flag	DPT
<p>If the method is <b>Master</b>, the indicator is K, S, A and the Temperature Setpoint is displayed and is used to change the current temperature setpoint.</p> <p>If the method is <b>slave</b>, the indicator is K, S, Ü, A and dPresent temperature setpoint, status is visible and is used to receive the status of the current setpoint temperature, which is reported back by the controller via the bus.</p> <p>If the method is <b>Single</b>, this object is not visible.</p>					
300	Underfloor heating	Scene	1 byte	K, S	18.001 Scene control
<p>The communication object is used to transmit the actual temperature value recorded by the combination temperature sensor of the device to the bus.</p>					
302	Underfloor heating	Current temperature	2 byte	K, L, Ü	9.001 Temperature (°C)
303	Underfloor heating	Current setpoint specification, status	2 byte	K, L, Ü	9.001 Temperature (°C)
303	Underfloor heating	Current setpoint specification	2 byte	K, Ü	9.001 Temperature (°C)
<p>If the method is <b>Master</b>, the flag is K, L, Ü and Current setpoint, status is visible and is used to report the status of the current setpoint temperature back to the bus.</p> <p>If the method is <b>slave</b>, the flag is K, Ü and Current setpoint is visible and is used to send the current setpoint temperature to the bus.</p> <p>If the method is <b>Single</b>, this object is not visible.</p>					
304	Underfloor heating	Heating control value	1 bit 1 byte	K, Ü	1.001 Switching 5.001 percent (%)
<p>The communication object is used to send the control value for the underfloor heater to control the switching of the underfloor heater valve. The telegram value depends on the type of temperature control.</p> <p>1-bit telegram value: 1 – On 0 – Off</p> <p>1-byte telegram value: 0..100 %</p> <p>If the method is <b>Slave</b>, this object is not visible.</p>					

**5.6.4 Communication Objects - Ventilation**

The system does not need to send a status poll when the ventilation function is set to power recovery.

305	Lüftung - ...	Sperrfunktion	1 bit	K	-	S	-	-	Freigeben	Niedrig
306	Lüftung - ...	Ein/Aus, Status	1 bit	K	-	S	-	-	Schalten	Niedrig
307	Lüftung - ...	Lüftergeschwindigkeit, Status	1 byte	K	-	S	-	-	Prozent (0..100%)	Niedrig
308	Lüftung - ...	Lüfter Automatikbetrieb, Status	1 bit	K	-	S	-	-	Freigeben	Niedrig
309	Lüftung - ...	Wärmerückgewinnung Ein/Aus, Status	1 bit	K	-	S	-	-	Schalten	Niedrig
310	Lüftung - ...	Aktiv./Deaktiv. Wärmerückgewinnung	1 bit	K	-	S	-	-	Freigeben	Niedrig
311	Lüftung - ...	Änderung Filter Betriebsstundenzähler	2 bytes	K	-	S	-	-	Zeit (h)	Niedrig
312	Lüftung - ...	Filter Zähler Rücksetzung, Status	1 bit	K	-	S	-	-	Reset	Niedrig
314	Lüftung - ...	Szene	1 byte	K	-	S	-	-	Szenensteuerung	Niedrig
315	Lüftung - ...	CO2 Wert	2 bytes	K	-	S	Ü	A	Teile/Million (ppm)	Niedrig
318	Lüftung - ...	Ein-/Ausschalten	1 bit	K	-	-	Ü	-	Schalten	Niedrig
319	Lüftung - ...	Lüftergeschwindigkeit	1 byte	K	-	-	Ü	-	Prozent (0..100%)	Niedrig
320	Lüftung - ...	Lüfter Automatikbetrieb	1 bit	K	-	-	Ü	-	Freigeben	Niedrig
321	Lüftung - ...	Wärmerückgewinnung Ein/Aus	1 bit	K	-	-	Ü	-	Schalten	Niedrig
322	Lüftung - ...	Betriebsstundenzähler Filter	2 bytes	K	L	-	Ü	-	Zeit (h)	Niedrig
323	Lüftung - ...	Filter Alarm	1 bit	K	L	-	Ü	-	Alarm	Niedrig
324	Lüftung - ...	Reset Betriebsstundenzähler Filter	1 bit	K	-	-	Ü	-	Reset	Niedrig

Fig. 179: Ventilation

No.	Name	Object function	Length	Flag	DPT
305	Ventilation	Disable function	1 bit	K, S	1,003 Release
<p>The communication object is used to lock or unlock the ventilation function.</p> <p>Telegrams: 0 – Locks 1 – Unlock</p>					
306	Ventilation	On/Off, Status	1 bit	K, S, Ü, A.	1.001 Switching
<p>The communication object is used to receive the telegram for activating and deactivating the ventilation from the bus.</p> <p>Telegrams: 1 - on 0 - Off</p>					
307	Ventilation	Fan speed status	1 byte	K, S	5.001 Percentage (0...100%)
<p>The communication object is used to receive the current fan speed from the bus. The value of the telegram is determined by the data type setting of the parameter.</p>					
308	Ventilation	Automatic mode fan, status	1 bit	K, S	1,003 Release
<p>The communication object is used to retrieve the status of the automatic fan operation from the bus.</p> <p>Telegrams: 1 – Automatic 0 – Cancel automatic operation</p>					
309	Ventilation	Heat recovery on/off status	1 bit	K, S	1.001 Switching
<p>The communication object is used to receive the status of heat recovery (on/off) from the bus.</p> <p>Telegrams: 1 - Active 0 - Inactive</p>					

No.	Name	Object function	Length	Flag	DPT
310	Ventilation	Active.(Deactive. Heat recovery	1 bit	K, S	1,003 Release
The communication object is used to deactivate or activate heat recovery via the bus.					
311	Ventilation	Modification of the operating hour meter filter	2 byte	K, S	7,007 time (h)
The communication object is used to adjust the duration of filter usage by the bus; the unit is hours.					
312	Ventilation	Filter counter reset, status	1 bit	K, S	1,015 Reset
The communication object is used to reset the filter time via the bus; after resetting the filter, the filter time is used to restart the counting process. Telegram value: 1 - Reset					
314	Ventilation	Scene	1 byte	K, S	18.001 Scene control
The communication object is visible when the scene function is activated. Recall and save scenes via the bus.					
315	Ventilation	CO2 value	2 byte	K, S, Ü, A.	9,008 parts/million (ppm)
316	Ventilation	PM2.5 value	2 byte	K, S, Ü, A.	7.001 pulses
317	Ventilation	VOC value	2 byte	K, S, Ü, A.	7.001 pulses
These communication objects are used to receive the input of the PM2.5/VOC/CO2 value and to retrieve the corresponding value from the bus in order to display it on the display in $\mu\text{g}/\text{m}^3$ or ppm. Area: 0-999 $\mu\text{g}/\text{m}^3$ or 0-4000 ppm If the control value for automatic mode is PM2.5, the ventilation system can be set to automatically adjust the fan speed according to the PM2.5 concentration.					
318	Ventilation	Switch on/switch off	1 bit	K, Ü	1.001 Switching
The communication object is used to send the telegram for switching the ventilation on and off in order to control the switching on and off of the ventilation via the KNX bus. The Auto function is deactivated at the same time after the power is switched off.					
319	Ventilation	Fan speed	1 byte	K, Ü	5.001 Percentage (0...100%) 5,100 fan stage (0..255)
The communication object is used to control the fan speed via the screen and to send the control telegrams for the respective fan speed to the bus. The value of the telegram is determined by the data type of the parameter setting.					
320	Ventilation	Automatic operation fan	1 bit	K, Ü	1,003 Release
The communication object is used to send control telegrams for automatic operation of the fan to the bus. Telegrams: 1 - Automatic 0 - Cancel automatic operation					

No.	Name	Object function	Length	Flag	DPT
321	Ventilation	Heat recoveryOn/Off	1 bit	K, Ü	1.001 Switching
<p>The communication object is used to send telegrams to the bus to switch heat recovery on and off.</p> <p>Telegrams:</p> <p>1 - Active</p> <p>0 - Inactive</p>					
322	Ventilation	Hourmeter filter	2 byte	K, L, Ü	7,007 time (h)
<p>The communication object is used to measure the runtime of the filter and to send a telegram to the bus when the count value is changed. The unit of the filter timer is hours.</p>					
323	Ventilation	Filter alarm	1 bit	K, L, Ü	1.005 Alarm
<p>If the filter is used longer than the set value, the communication object sends an alarm to remind the user to replace the filter.</p> <p>Telegram value: 1 Alarm</p>					
324	Ventilation	Reset the hour meter	1 bit	K, Ü	1,015 Reset
<p>The communication object is used to send the status of the filter timer reset to the bus; alternatively, you can press and hold the 1s button to perform the reset.</p>					

## 5.7 Communication objects - audio control

If status polling is enabled and the power on/off function is disabled, the system must return to the pre-power failure state when power is restored, and send the following status polling messages upon restart:

- Playback status
- Play mode
- Volume in percent
- Mute
- Title name
- Album name
- Artist name (if the corresponding function is activated)

If power on and off is enabled, the requests sent are the same as those sent when power on and off is disabled, but it is important to note that the power on and off status does not need to be sent.

325	Audio	Sperrfunktion	1 bit	K - S - -	Freigeben	Niedrig
326	Audio	Ein/Aus, Status	1 bit	K - S - -	Schalten	Niedrig
327	Audio	Play=1/Pause=0, Status	1 bit	K - S Ü A	Start/Stop	Niedrig
329	Audio	Volume, Status	1 byte	K - S Ü A	Prozent (0..100%)	Niedrig
330	Audio	Mute, Status	1 bit	K - S Ü A	Freigeben	Niedrig
332	Audio	Titel Name	14 bytes	K - S Ü A	Zeichen (ISO 8859-1)	Niedrig
333	Audio	Album Name	14 bytes	K - S Ü A	Zeichen (ISO 8859-1)	Niedrig
334	Audio	Artist Name	14 bytes	K - S Ü A	Zeichen (ISO 8859-1)	Niedrig
335	Audio	Ein-/Ausschalten	1 bit	K - - Ü -	Schalten	Niedrig
336	Audio	Play=1/Pause=0	1 bit	K - - Ü -	Start/Stop	Niedrig
338	Audio	Nächster Titel=1/Vorheriger Titel=0	1 bit	K - - Ü -	Schritt	Niedrig
340	Audio	Volume+=1/Volume-=0	1 bit	K - - Ü -	Schritt	Niedrig
342	Audio	Lautstärke Einstellung Absolut	1 byte	K - - Ü -	Prozent (0..100%)	Niedrig
343	Audio	Mute	1 bit	K - - Ü -	Freigeben	Niedrig

Fig. 180: Audio control

No.	Name	Object function	Length	Flag	DPT
325	Audio	Disable function	1 bit	K, S	1,003 Release
<p>The communication object is used to lock or unlock the Audio Control function.</p> <p>Telegrams: 0 - Locks 1 - Unlock</p>					
326	Audio	On/Off, Status	1 bit	K, S	1.001 Switching
<p>The communication object is visible when the on/off function is activated. It is used to receive the status feedback from the bus to turn the audio module on/off and forward it to the screen.</p>					
327	Audio	Play=1/Pause=0, Status	1 bit	K, S, Ü, A.	1.010 Start/Stop
<p>The communication object is displayed when playback/pause is controlled by an object. It is used to receive the play/pause status feedback in the audio module from the bus and forward it to the on-screen display.</p>					
327	Audio	Play, status	1 bit	K, S, Ü, A.	1,003 Release
<p>The communication object is visible when playback/pause is controlled by two separate objects. It is used to receive the status feedback for playback in the audio module from the bus and forward it to the screen display.</p> <p>Telegram 1 means <b>playback</b>, 0 has no meaning.</p>					
328	Audio	Pause, status	1 bit	K, S, Ü, A.	1,003 Release

No.	Name	Object function	Length	Flag	DPT
<p>The communication object becomes visible when playback/pause is controlled by two separate objects. It is used to receive the pause status feedback in the audio module from the bus and forward it to the screen display.</p> <p>Telegram 1 means 'Stop', 0 has no meaning.</p>					
329	Audio	Volume, status	1 byte	K, S, Ü, A.	5.001 Percentage (0...100%) 5.004 Percentage (0...255%)
<p>The communication object is used to receive the volume status in the audio module and forward it to the screen display. The value of the telegrams depends on the respective object type: 0..100 / 0..255</p>					
330	Audio	Mute, status	1 bit	K, S, Ü, A.	1,003 Release
<p>The communication object is visible when the mute function is activated. It is used to receive the mute status of the audio module from the bus and display it on the screen.</p>					
331	Audio			K, S, Ü, A.	
<p>The communication object is used to receive the status feedback of the playback mode in the audio module. The telegrams to be received must first be preset using parameters before the status can be updated on the screen.</p>					
332	Audio	Title Name	14 byte	K, S, Ü, A.	16,001 characters (ISO 8859-)
<p>The communication object is used to receive the title name over the bus and display it on the screen.</p>					
333	Audio	Album Name	14 byte	K, S, Ü, A.	16,001 characters (ISO 8859-)
<p>The communication object is used to receive the album name over the bus and display it on the screen.</p>					
334	Audio	Artist Name	14 byte	K, S, Ü, A.	16,001 characters (ISO 8859-)
<p>The communication object is used to receive the artist's name over the bus and display it on the screen.</p>					
335	Audio	Switch on/switch off	1 bit	K, Ü	1.001 Switching
<p>The communication object is displayed when playback/pause is controlled by an object. Allows you to start/stop music playback in the audio module.</p> <p>Telegrams: 1 - Play music 0 - Pause music playback</p>					
336	Audio	Play	1 bit	K, Ü	1,003 Release
<p>The communication object is visible when playback/pause is controlled by two separate objects. Used to play the music in the audio module. Telegram 1 means 'playback', 0 has no meaning.</p>					
336	Audio	Play=1/Pause=0	1 bit	K, Ü	1.010 Start/Stop
<p>The communication object is displayed when playback/pause is controlled by an object. Allows you to start/stop music playback in the audio module.</p> <p>Telegrams: 1 - Play music</p>					

No.	Name	Object function	Length	Flag	DPT
0 - Pause music playback					
337	Audio	Break	1 bit	K, Ü	1,003 Release
The communication object is visible when playback/pause is controlled by two separate objects. Allows you to pause the music in the audio module. Telegram 1 means 'Stop', 0 has no meaning.					
338	Audio	Next track	1 bit	K, Ü	1,003 Release
The communication object is visible when the 'Next Title'/'Previous Title' control is performed via two separate objects. Allows you to switch the currently playing audio module title and jump to the next track. Telegram 1 is used to play the next track, 0 has no meaning.					
338	Audio	Next Title=1/Previous Title=0	1 bit	K, Ü	1,007 step
The communication object is visible when the Next Title/Previous Title control is used with an object. Allows you to switch the currently playing audio module title to skip to the previous or next track.					
Telegrams:					
1 - Play the next track					
0 - Play the previous track					
339	Audio	Previous title	1 bit	K, Ü	1,003 Release
The communication object is visible when the 'Next Title'/'Previous Title' control is performed via two separate objects. Allows you to change the currently playing audio module title or switch to the previous title.					
Telegram 1 means 'play previous title', 0 has no meaning.					
340	Audio	Volume+=1/volume-=0	1 bit	K, Ü	1,007 step
The communication object is used to control the volume in the audio module during short-circuit operation.					
Telegrams:					
1 - Increase the volume					
0 - Decrease the volume					
341	Audio	Volume setting relative	4 bit	K, Ü	3.007 dimmer step
The communication object is visible with a relative setting. It is used to adjust the volume in the audio module for prolonged operation; the step value is determined by the parameter.					
342	Audio	Volume setting absolute	1 byte	K, Ü	5.001 Percentage (0...100%) 5.004 Percentage (0...255%)
The communication object is visible when the setting is absolute. Used to control the volume in the audio module during long-term operation; the step value is determined by the parameter.					
The telegram is determined by the respective data type of the object: 0..100 / 0..255					
343	Audio	Mute	1 bit	K, Ü	1,003 Release
The communication object is visible when the mute function is activated. Controls the mute of the audio module via the button.					
Telegrams:					
1 - Mute					

No.	Name	Object function	Length	Flag	DPT
0 - Unmute					

## 5.8 Communication objects - logic functions

### 5.8.1 Communication objects - AND-OR-XOR function






 11	1te Logik	Eingang a	1 bit	K - S Ü A	Boolesch	Niedrig
 12	1te Logik	Eingang b	1 bit	K - S Ü A	Boolesch	Niedrig
 13	1te Logik	Eingang c	1 bit	K - S Ü A	Boolesch	Niedrig
 14	1te Logik	Eingang d	1 bit	K - S Ü A	Boolesch	Niedrig
 15	1te Logik	Eingang e	1 bit	K - S Ü A	Boolesch	Niedrig
 16	1te Logik	Eingang f	1 bit	K - S Ü A	Boolesch	Niedrig
 17	1te Logik	Eingang g	1 bit	K - S Ü A	Boolesch	Niedrig
 18	1te Logik	Eingang h	1 bit	K - S Ü A	Boolesch	Niedrig
 19	1te Logik	Logik Ergebnis	1 bit	K - - Ü -	Boolesch	Niedrig

Fig. 181: LOGIC - AND/OR/XOR

No.	Name	Object function	Length	Flag	DPT
11 ... 18	XTE logic	Input (a...h)	1 bit	K, S	1.002 Boolean

The communication object is used to receive the value of the logical input 'Input x'. The name in parentheses changes according to the parameter 'Description for logic function'. If the description is empty, the default value is '1. Logic'. The same applies to the following entries.

19	XTE logic	Logic result	1 bit	K, S	1.002 Boolean
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The communication object is used to transmit the results of logical operations.

## 5.8.2 Communication objects - Gate forwarding

11	1te Logik	Gateauswahl	1 byte	K - S - -	Szenen Nummer	Niedrig
12	1te Logik	Eingang a	1 bit	K - S - -	Schalten	Niedrig
13	1te Logik	Eingang b	1 bit	K - S - -	Schalten	Niedrig
14	1te Logik	Eingang c	1 bit	K - S - -	Schalten	Niedrig
15	1te Logik	Eingang d	1 bit	K - S - -	Schalten	Niedrig
16	1te Logik	Ausgang A	1 bit	K - - Ü -	Schalten	Niedrig
17	1te Logik	Ausgang B	1 bit	K - - Ü -	Schalten	Niedrig
18	1te Logik	Ausgang C	1 bit	K - - Ü -	Schalten	Niedrig
19	1te Logik	Ausgang D	1 bit	K - - Ü -	Schalten	Niedrig

Fig. 182: Logic - gate forwarding

No.	Name	Object function	Length	Flag	DPT
11	XTE logic	Gate selection	1 byte	K, S	17,001 scenes number
The communication object is used to select the scene for routing through logical gates.					
12 - 15	XTE logic	Input (a...d)	1 bit 4 bit 1 byte	K, S	1.001 Switching 3.007 dimmer step 5.010 counting pulses (0...255)
The communication object is used to receive the value of the logic gate input.					
16 ... 19	XTE logic	Output (A to D)	1 bit 4 bit 1 byte	K, S	1.001 Switching 3.007 dimmer step 5.010 counting pulses (0...255)
The communication object is used to output the value passed by the logic gate. The output value corresponds to the input value, but an input can be routed to one or more outputs, depending on the parameter setting.					

**5.8.3 Communication objects - threshold comparison**

11	1te Logik	Schwellwert Eingang	1 byte	K - S - A	Zählimpulse (0..255)	Niedrig
19	1te Logik	Logik Ergebnis	1 bit	K - - Ü -	Boolesch	Niedrig
20	2te Logik	Schwellwert Eingang	1 byte	K - S - A	Zählimpulse (0..255)	Niedrig
28	2te Logik	Logik Ergebnis	1 bit	K - - Ü -	Boolesch	Niedrig
29	3te Logik	Schwellwert Eingang	1 byte	K - S - A	Zählimpulse (0..255)	Niedrig
37	3te Logik	Logik Ergebnis	1 bit	K - - Ü -	Boolesch	Niedrig

Fig. 183: Logic - Threshold Comparison

No.	Name	Object function	Length	Flag	DPT
11	XTE logic	Threshold value input	4 bit 1 byte 2 bytes unsigned 2 bytes signed 2 bytes flow value 4 bytes unsigned Ext. Temperature value Ext. Moisture value Illuminance value	K, S, A.	3.007 dimmer step 5.015 counting pulses (0...255) 7.001 pulses 8* 2-byte signed 9) 2-byte floating point value 12,001 counts (unsigned) 9.001 Temperature (°C) 9,007 Moisture (%) 9.004 Lux (Lux)

The communication object is used to enter the threshold value.

19	XTE logic	Logic result	1 bit	K, S	1.002 Boolean
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The communication object is used to transmit the results of a logical operation. That is, the value to be sent after the object's input threshold is compared with the set threshold.

### 5.8.4 Communication objects - convert data type

11	1te Logik	Eingang 1bit-bit0	1 bit	K - S - A	Boolesch	Niedrig
12	1te Logik	Eingang 1bit-bit1	1 bit	K - S - A	Boolesch	Niedrig
19	1te Logik	Ausgang 2bit	2 bit	K - - Ü -	Prio. Schalten	Niedrig
20	2te Logik	Eingang 1bit-bit0	1 bit	K - S - A	Boolesch	Niedrig
21	2te Logik	Eingang 1bit-bit1	1 bit	K - S - A	Boolesch	Niedrig
22	2te Logik	Eingang 1bit-bit2	1 bit	K - S - A	Boolesch	Niedrig
23	2te Logik	Eingang 1bit-bit3	1 bit	K - S - A	Boolesch	Niedrig
24	2te Logik	Eingang 1bit-bit4	1 bit	K - S - A	Boolesch	Niedrig
25	2te Logik	Eingang 1bit-bit5	1 bit	K - S - A	Boolesch	Niedrig
26	2te Logik	Eingang 1bit-bit6	1 bit	K - S - A	Boolesch	Niedrig
27	2te Logik	Eingang 1bit-bit7	1 bit	K - S - A	Boolesch	Niedrig
28	2te Logik	Ausgang 1byte	1 byte	K - - Ü -	Zählimpulse (0..255)	Niedrig
29	3te Logik	Eingang 1byte	1 byte	K - S - A	Zählimpulse (0..255)	Niedrig
37	3te Logik	Ausgang 2byte	2 bytes	K - - Ü -	Pulse	Niedrig
38	4te Logik	Eingang 1byte-low	1 byte	K - S - A	Zählimpulse (0..255)	Niedrig
39	4te Logik	Eingang 1byte-high	1 byte	K - S - A	Zählimpulse (0..255)	Niedrig
46	4te Logik	Ausgang 2byte	2 bytes	K - - Ü -	Pulse	Niedrig
47	5te Logik	Eingang 2byte-low	2 bytes	K - S - A	Pulse	Niedrig
48	5te Logik	Eingang 2byte-high	2 bytes	K - S - A	Pulse	Niedrig
55	5te Logik	Ausgang 4byte	4 bytes	K - - Ü -	Zählimpulse (vorzeichen...	Niedrig
56	6te Logik	Eingang 1byte	1 byte	K - S - A	Zählimpulse (0..255)	Niedrig
57	6te Logik	Ausgang 1bit-bit0	1 bit	K - - Ü -	Boolesch	Niedrig
58	6te Logik	Ausgang 1bit-bit1	1 bit	K - - Ü -	Boolesch	Niedrig
59	6te Logik	Ausgang 1bit-bit2	1 bit	K - - Ü -	Boolesch	Niedrig
60	6te Logik	Ausgang 1bit-bit3	1 bit	K - - Ü -	Boolesch	Niedrig
61	6te Logik	Ausgang 1bit-bit4	1 bit	K - - Ü -	Boolesch	Niedrig
62	6te Logik	Ausgang 1bit-bit5	1 bit	K - - Ü -	Boolesch	Niedrig
63	6te Logik	Ausgang 1bit-bit6	1 bit	K - - Ü -	Boolesch	Niedrig
64	6te Logik	Ausgang 1bit-bit7	1 bit	K - - Ü -	Boolesch	Niedrig
65	7te Logik	Eingang 2byte	2 bytes	K - S - A	Pulse	Niedrig
72	7te Logik	Ausgang 1byte-low	1 byte	K - - Ü -	Zählimpulse (0..255)	Niedrig
73	7te Logik	Ausgang 1byte-high	1 byte	K - - Ü -	Zählimpulse (0..255)	Niedrig
74	8te Logik	Eingang 4byte	4 bytes	K - S - A	Zählimpulse (vorzeichen...	Niedrig
81	8te Logik	Ausgang 2byte-low	2 bytes	K - - Ü -	Pulse	Niedrig
82	8te Logik	Ausgang 2byte-high	2 bytes	K - - Ü -	Pulse	Niedrig

Fig. 184: Logic - Convert data type

No.	Name	Object function	Length	Flag	DPT
11	XTE logic	Input	2x1bit --> 1x2 bit 8x1Bit --> 1x1Byte 1x1Byte --> 1x2Byte 2x2Byte --> 1x2Byte 2x2Byte --> 1x4Byte 1x1Byte --> 8x1Bit 1x2Byte --> 2x1Byte 1x4Byte --> 2x2Byte 1x3Byte --> 3x1Byte 3x1Byte --> 1xByte	K, S, A.	1.002 Boolean 1.002 Boolean 5.010 counting pulses (0...255) 5.010 counting pulses (0...255) 7.001 pulses 1.002 Boolean 5.010 counting pulses (0...255) 12,001 counts (unsigned) 5.010 counting pulses (0...255) 5.010 counting pulses (0...255)
19	XTE logic	Output	2x1bit --> 1x2 bit	K, Ü	1.002 Boolean

The communication object is used to enter a value that is to be converted.

No.	Name	Object function	Length	Flag	DPT
			8x1Bit --> 1x1Byte		1.002 Boolean
			1x1Byte --> 1x2Byte		5.010 counting pulses (0...255)
			2x2Byte --> 1x2Byte		5.010 counting pulses (0...255)
			2x2Byte --> 1x4Byte		7.001 pulses
			1x1Byte --> 8x1Bit		1.002 Boolean
			1x2Byte --> 2x1Byte		5.010 counting pulses (0...255)
			1x4Byte --> 2x2Byte		5.010 counting pulses (0...255)
			1x3Byte --> 3x1Byte		5.010 counting pulses (0...255)
			3x1Byte --> 1xByte		12,001 counts (unsigned)
					5.010 counting pulses (0...255)
					5.010 counting pulses (0...255)

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The communication object is used to output the converted value.

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### 5.8.5 Communication objects - gate function

11	1te Logik	Eingang	1 bit	K - S - -	Schalten	Niedrig
12	1te Logik	Gate Eingang	1 bit	K - S - -	Boolesch	Niedrig
19	1te Logik	Ausgang	1 bit	K - - Ü -	Schalten	Niedrig
20	2te Logik	Eingang	1 byte	K - S - -	Prozent (0..100%)	Niedrig
21	2te Logik	Gate Eingang	1 bit	K - S - -	Boolesch	Niedrig
28	2te Logik	Ausgang	1 byte	K - - Ü -	Prozent (0..100%)	Niedrig
29	3te Logik	Eingang	1 byte	K - S - -	Zählimpulse (0..255)	Niedrig
30	3te Logik	Gate Eingang	1 bit	K - S - -	Boolesch	Niedrig
37	3te Logik	Ausgang	1 byte	K - - Ü -	Zählimpulse (0..255)	Niedrig
38	4te Logik	Eingang	2 bytes	K - S - -	Temperatur (°C)	Niedrig
39	4te Logik	Gate Eingang	1 bit	K - S - -	Boolesch	Niedrig
46	4te Logik	Ausgang	2 bytes	K - - Ü -	Temperatur (°C)	Niedrig
47	5te Logik	Eingang	2 bytes	K - S - -	Pulse	Niedrig
48	5te Logik	Gate Eingang	1 bit	K - S - -	Boolesch	Niedrig
55	5te Logik	Ausgang	2 bytes	K - - Ü -	Pulse	Niedrig

Fig. 185: Logic - Gate function

No.	Name	Object function	Length	Flag	DPT
11	XTE logic	Input	1 bit 1 bytes (0..100%) 1 bytes (0..255) 2 bytes float 2 bytes (0..65535)	K, S	1.001 Switching 5.001 Percentage (0...100%) 5.010 counting pulses (0...255) 9.001 Temperature (°C) 7.001 pulses

The communication object is used to enter a value that is to be filtered.

12	XTE logic	Gate input	1 bit	K, S	1.002 Boolean
----	-----------	------------	-------	------	---------------

The communication object is used to control the switching state of the gate input. When the gate is open, the input signal is passed through and then output; when changed, the current input status is still sent. When the gate is closed, the signal will not pass through.

19	XTE logic	Output	1 bit 1 bytes (0..100%) 1 bytes (0..255) 2 bytes float 2 bytes (0..65535)	K, Ü	1.001 Switching 5.001 Percentage (0...100%) 5.010 counting pulses (0...255) 9.001 Temperature (°C) 7.001 pulses
----	-----------	--------	---	------	---

The communication object is used to output the value after gate filtering. The output is only available when the gate input status is open, as defined by the Gate Input object.

**5.8.6 Communication objects - delay mode**

11	1te Logik	Eingang	1 bit	K - S - -	Schalten	Niedrig
19	1te Logik	Ausgang	1 bit	K - - Ü -	Schalten	Niedrig
20	2te Logik	Eingang	1 byte	K - S - -	Zählimpulse (0..255)	Niedrig
28	2te Logik	Ausgang	1 byte	K - - Ü -	Zählimpulse (0..255)	Niedrig
29	3te Logik	Eingang	1 byte	K - S - -	Zählimpulse (0..255)	Niedrig
37	3te Logik	Ausgang	1 byte	K - - Ü -	Zählimpulse (0..255)	Niedrig
38	4te Logik	Eingang	2 bytes	K - S - -	Temperatur (°C)	Niedrig
46	4te Logik	Ausgang	2 bytes	K - - Ü -	Temperatur (°C)	Niedrig
47	5te Logik	Eingang	2 bytes	K - S - -	Pulse	Niedrig
55	5te Logik	Ausgang	2 bytes	K - - Ü -	Pulse	Niedrig

Fig. 186: Logic - Delay mode

No.	Name	Object function	Length	Flag	DPT
11	XTE logic	Input	1 bit 1 bytes (0..100%) 1 bytes (0..255) 2 bytes float 2 bytes (0..65535)	K, S	1.001 Switching 5.001 Percentage (0..100%) 5.010 counting pulses (0...255) 9.001 Temperature (°C) 7.001 pulses

The communication object is used to enter a value that is to be delayed.

19	XTE logic	Output	1 bit 1 bytes (0..100%) 1 bytes (0..255) 2 bytes float 2 bytes (0..65535)	K, Ü	1.001 Switching 5.001 Percentage (0..100%) 5.010 counting pulses (0...255) 9.001 Temperature (°C) 7.001 pulses
----	-----------	--------	---	------	--

The communication object is used to output values that must be output with a delay; the delay time is defined by the parameter.

### 5.8.7 Communication objects - Staircase light

11	1te Logik	Trigger Wert	1 bit	K - S - -	Auslöser	Niedrig
12	1te Logik	Treppenhauslichtzeit	2 bytes	K - S - -	Zeit (s)	Niedrig
19	1te Logik	Ausgang	1 bit	K - - Ü -	Schalten	Niedrig
20	2te Logik	Trigger Wert	1 bit	K - S - -	Auslöser	Niedrig
21	2te Logik	Treppenhauslichtzeit	2 bytes	K - S - -	Zeit (s)	Niedrig
28	2te Logik	Ausgang	1 bit	K - - Ü -	Schalten	Niedrig
29	3te Logik	Trigger Wert	1 bit	K - S - -	Auslöser	Niedrig
30	3te Logik	Treppenhauslichtzeit	2 bytes	K - S - -	Zeit (s)	Niedrig
37	3te Logik	Ausgang	1 bit	K - - Ü -	Schalten	Niedrig
38	4te Logik	Trigger Wert	1 bit	K - S - -	Auslöser	Niedrig
39	4te Logik	Treppenhauslichtzeit	2 bytes	K - S - -	Zeit (s)	Niedrig
46	4te Logik	Ausgang	1 bit	K - - Ü -	Schalten	Niedrig
47	5te Logik	Trigger Wert	1 bit	K - S - -	Auslöser	Niedrig
48	5te Logik	Treppenhauslichtzeit	2 bytes	K - S - -	Zeit (s)	Niedrig
55	5te Logik	Ausgang	1 bit	K - - Ü -	Schalten	Niedrig

Fig. 187: Logic - Staircase light

No.	Name	Object function	Length	Flag	DPT
11	XTE logic	Trigger Value	1 bit	K, S	1.017 Trigger
<p>The communication object is used to output values that must be output with a delay. The delay time is determined by the parameter.</p>					
12	XTE logic	Staircase light time	2 byte	K, S	7,005 time (s)
<p>The communication object is used to adjust the switch-on time of the stair lighting. The customized area is based on the area defined by the parameter. If exceeded, the limit value is applied.</p>					
19	XTE logic	Output	1 bit 1 byte	K, Ü	1.001 Switching 5.010 counting pulses (0...255)
<p>The communication object is used to output the value 1 when triggered and to send the value 2 after the delay time has expired. The value of the telegram is determined by the setting of the data type in the parameter.</p>					

## 5.9 Communication objects - scenes groups function

11	1te Logik	Trigger Wert	1 bit	K - S - -	Auslöser	Niedrig
12	1te Logik	Treppenhauslichtzeit	2 bytes	K - S - -	Zeit (s)	Niedrig
19	1te Logik	Ausgang	1 bit	K - - Ü -	Schalten	Niedrig
20	2te Logik	Trigger Wert	1 bit	K - S - -	Auslöser	Niedrig
21	2te Logik	Treppenhauslichtzeit	2 bytes	K - S - -	Zeit (s)	Niedrig
28	2te Logik	Ausgang	1 bit	K - - Ü -	Schalten	Niedrig
29	3te Logik	Trigger Wert	1 bit	K - S - -	Auslöser	Niedrig
30	3te Logik	Treppenhauslichtzeit	2 bytes	K - S - -	Zeit (s)	Niedrig
37	3te Logik	Ausgang	1 bit	K - - Ü -	Schalten	Niedrig
38	4te Logik	Trigger Wert	1 bit	K - S - -	Auslöser	Niedrig
39	4te Logik	Treppenhauslichtzeit	2 bytes	K - S - -	Zeit (s)	Niedrig
46	4te Logik	Ausgang	1 bit	K - - Ü -	Schalten	Niedrig
47	5te Logik	Trigger Wert	1 bit	K - S - -	Auslöser	Niedrig
48	5te Logik	Treppenhauslichtzeit	2 bytes	K - S - -	Zeit (s)	Niedrig
55	5te Logik	Ausgang	1 bit	K - - Ü -	Schalten	Niedrig

Fig. 188: Scenes groups function

No.	Name	Object function	Length	Flag	DPT
83	XTE scenes group output (1 ... 8)	General scenes trigger	1 byte	K, S	

This communication object causes each output in the scene group to send a specific value to the bus by retrieving the scene number.

Telegrams: 0 - 63

84 ...	XTE scenes group output (1 ... 8)	1 bit value	1 bit	K, Ü	1.001 Switching
		1byte unsigned value	1 byte		5.010 counting pulses (0...255)
		HLK mode	1 byte		20.102 HVAC mode
		2 byte unsigned value	2 byte		7.001 pulses
		Temperature	2 byte		9.001 Temperature (°C)
		RGB value	3 byte		232,600 RGB value 3*(0..255)
		RGBW value	6 byte		251,600 RGB value 4*(0..255)

When a scene is called up, the communication object is used to send the corresponding scene output value to the bus. If the output is not set for this scene, it will not be sent. A total of 8 scene groups with 8 outputs each can be set up. The name in parentheses changes with the parameter 'Description for logic function'. If the description is empty, the default value is '1. Scene group - output x' is displayed. The same applies to the following points.

## 6 Appendix

### 6.1 Technical data

KNX Medium	TP1-256
Configuration mode	S-Mode, E-Controller
KNX supply voltage	21 ... 32 V $\overline{\text{SELV}}$
Current consumption	$\leq 18 \text{ mA}$ -24 V, $\leq 15 \text{ mA}$ -30 V
Power consumption	< 450 mW
Temperature measuring range	-5 ... +60°C
Energy efficiency class	IV (2%)
Operating height	Max. 2000 m
Degree of contamination	2
Overvoltage category	III
Degree of protection	IP20
Air humidity	0 ... 95 %, non-condensing
Operating temperature	-5 ... +45°C
Storage/transport temperature	-25 ... +70°C
Air humidity	< 93%, condensation-free
Dimensions (W x H x D)	70.8 x 70.8 x 19.3 mm

### 6.2 Accessories

#### Optional accessories

KNX bus connection terminals, 2-pole, red/black	TG008
KNX system line Y(ST)Y, 2x2x0.8	TG01x
Floor temperature sensor	EK090

## 6.3 Characteristics

Max. number of group addresses	500
Max. number of assignments	500
Max. Number of communication objects	356
Max. Number of KNX Secure group addresses	338

Table 92: Characteristics

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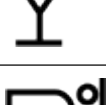
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## 6.6 Symbol overview

### 6.6.1 Symbol overview for push buttons









ETS function	Symbol	ETS function	Symbol
Light ON		General scene 3	
Light OFF		Curtain	
Ceiling lamp		Blind (open/close)	
Recessed downlights		Blind (UP/DOWN)	
Wall lamp		Blind (with slats)	
Spotlight		Blind open	
Chandelier		Blind closed	
Standard lamp		Up arrow	
RGB light		Down arrow	
General scene 1		Plus	
General scene 2		Minus	

ETS function	Symbol	ETS function	Symbol
Brighter		Medium	
Darker		Cleaning	
Coming home 1		Comfort	
Leaving home 1		Standby	
Coming home 2		ECO mode	
Leaving home 2		Protection	
Welcome		Alarm	
Meeting (guest)		TV	
Dinner		CHN socket outlet	
Party		Socket outlet	
Sleeping		Fan	
Reading		Door lock	

ETS function	Symbol	ETS function	Symbol
Power supply		Wind speed	
Window 1		Rain	
Window 2		Current meter	
Alarm		Voltage meter	
Heating		Energy meter	
Cooling		Presence	
Temperature		ON	
Colour temperature		OFF	
Air quality (VOC)		Open	
CO2		Closed	
Humidity		Device ON/OFF	
Brightness		Unlocked	

ETS function	Symbol	ETS function	Symbol
Locked		Text	
Not charged		Message	
Charged		Setting	
Volume ON		Room temperature	
Volume OFF		PM2.5 fine dust measurement	
Day		PM10 fine dust measurement	
Night			

### 6.6.2 Symbol overview for temperature controllers

ETS function	Symbol	ETS function	Symbol
Air conditioning system		Heating	
Floor heating		Cooling	
Warm water heating		Heating/cooling system	
Ventilation system		Temperature	



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