

Technical Manual



MDT Push Button Smart 55/63

BE-TAS5504.01

BE-TAS55T4.01

BE-TAS6304.01

BE-TAS63T4.01

Further Documents :

Datasheets :

https://www.mdt.de/EN_Downloads_Datasheets.html

Assembly and Operation Instructions :

https://www.mdt.de/EN_Downloads_Instructions.html

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2 Overview

2.1 Overview devices

The description refers to the following devices (order number in bold):

- **BE-TAS5504.01** 4-fold with colour display, white glossy finish
 - Version with 4 push buttons, 4 RGBW Status LEDs
- **BE-TAS55T4.01** 4-fold with colour display, white glossy finish, with temperature and humidity sensor
 - Version with 4 push buttons, 4 RGBW Status LEDs
- **BE-TAS6304.01** 4-fold with colour display, studio white glossy finish
 - Version with 4 push buttons, 4 RGBW Status LEDs
- **BE-TAS63T4.01** 4-fold with colour display, studio white glossy finish, with temperature and humidity sensor
 - Version with 4 push buttons, 4 RGBW Status LEDs

2.2 Special functions

Extensive application

The functional range of the application exceeds that of a "normal" push button many times over. Thus, in addition to the usual functions such as blinds, switching, dimming, scene, the user also has access to functions for controlling various values such as HSV colour values, colour temperature, etc. In addition to a long key stroke, the push-button also has an extra long keystroke as well as the possibility of transmitting up to 4 values with one button via the multi-tip function using the same or different objects.

RGBW status LEDs

One RGBW status LED per button is available to the user, which can be used to visualise not only a button press but also an external or internal status with an adjustable colour.

Logic functions

A total of 4 logic functions can also be used to implement nested function calls, such as enabling a scene call in day mode only. The logic function can process both internal and external status.

Room temperature and humidity (*Only for the push buttons BE-TASxxT4.01*)

The integrated temperature sensor can be used for room temperature control and can send measured temperature values to control equipment such as the AKH-0x00.02. This eliminates the need for an additional temperature sensor. In addition, a humidity sensor is also integrated which can display the measured value for relative humidity and send it to other devices via object. Settings for transmission conditions of the measured values and status objects for a lower and an upper threshold value can be set

Long Frame Support

Support of sending longer telegrams and thus the hosting of more user data per telegram. This considerably reduces the programming time (from ETS5).

Prerequisite: Use of a programming interface which supports the transmission of long frames, e.g. MDT SCN-USBR.02 or SCN-IP000.02/03 / SCN-IP100.02/03

Innovative group control

With the function group long/extra long key press, it is possible to send telegrams via separate communication objects by means of a long and/or extra long press of the key. This can be used for a group function, for example. The short key press switches the room On/Off, the long key press switches the floor and the extra long key press switches the building. The status LED signals the time of pressing the key as follows: short press - LED on for as long as the key is pressed, time for long key press is reached - LED starts flashing. Time for extra long key press reached - LED turns off.

Updateable via DCA (from Hardware Version R1.0)

The MDT Update Tool can be used to update the push buttons if necessary.

The behaviour of the programming LEDs in bootloader mode differs from "normal" mode:

Normal mode:	upper and lower LEDs flash alternately red
Bootloader mode:	MDT symbol red when in programming mode

2.3 Exemplary Circuit Diagram

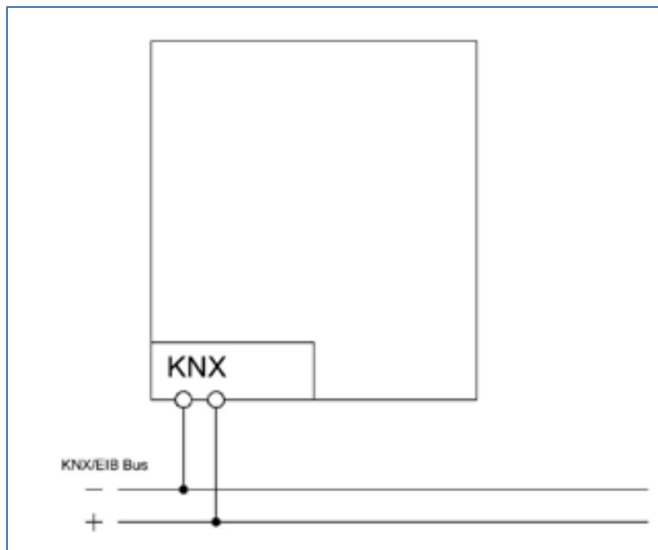


Figure 1: Exemplary circuit diagram

2.4 Structure & Handling

The following picture shows the structure of the push-button Smart (here: Smart 63):

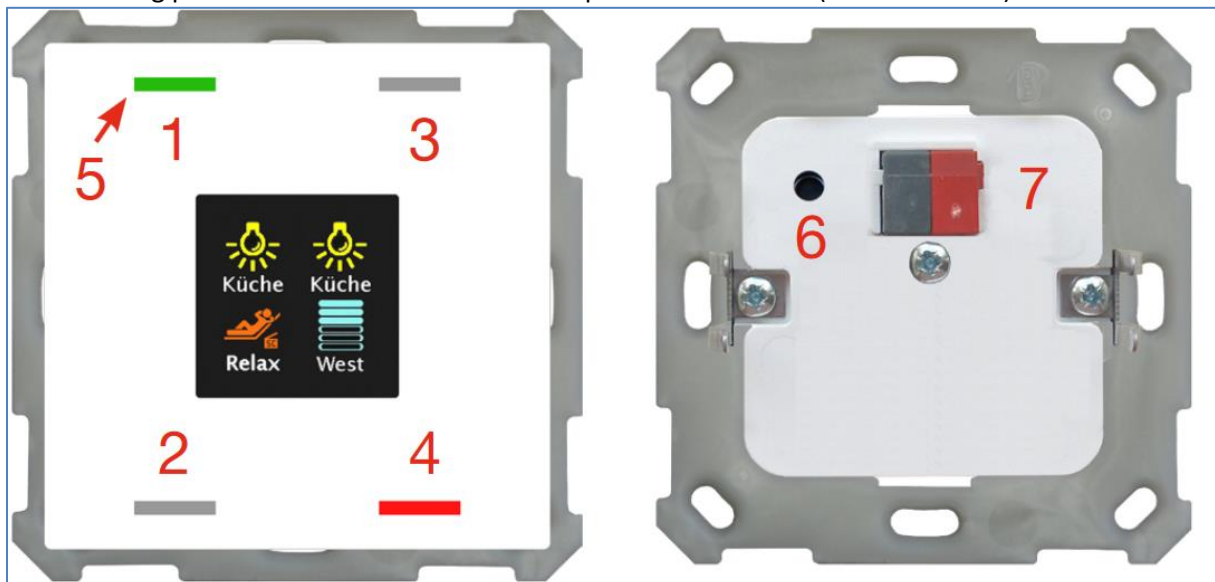


Figure 2: Structure & Handling

- | | | |
|------------|---|---|
| 1, 2, 3, 4 | = | Sensor areas for operating the button functions |
| 5 | = | RGBW- Status indication |
| 6 | = | Programming button |
| 7 | = | Bus connection terminal |

2.5 Commissioning

After wiring the device, the assignment of the physical address and the programming of the application are following:

- (1) Connect the programming interface with the bus, e.g. MDT USB Interface
- (2) Set bus power up
- (3) Press the programming key on the unit (status LEDs flash alternately red)
- (4) Load the physical address from the ETS software via the interface (status LED goes out as soon as this is successfully completed)
- (5) Loading of the application, with requested parameterization
- (6) If the device is enabled you can test the requested functions (also possible by using the ETS-Software)

3 Communication Objects

3.1 Standard settings of the communication objects

The following table shows the standard settings for the communication objects:

Standard Settings – Push Buttons									
No.	Name	Function	Length	C	R	W	T	U	
0	Push button 1: Push buttons 1/2:	Switch	1 Bit	X			X		
0	Push button 1:	Toggle	1 Bit	X			X		
0	Push button 1:	Send status	1 Bit	X			X		
0	Push button 1: Push buttons 1/2:	Forcible control	2 Bit	X			X		
0	Push button 1: Push buttons 1/2:	Percent value	1 Byte	X			X		
0	Push button 1: Push buttons 1/2:	Decimal value	1 Byte	X			X		
0	Push button 1: Push buttons 1/2:	Scene	1 Byte	X			X		
0	Push button 1: Push buttons 1/2:	Color temperature	2 Byte	X			X		
0	Push button 1: Push buttons 1/2:	Temperature	2 Byte	X			X		
0	Push button 1: Push buttons 1/2:	Brightness value	2 Byte	X			X		
0	Push button 1: Push buttons 1/2:	RGB value HSV value	3 Byte	X			X		
0	Push button 1: Push buttons 1/2:	Blind Up/Down	1 Bit	X			X		
0	Push button 1: Push buttons 1/2:	Dimming On/Off	1 Bit	X			X		
0	Push Button 1 short: Push Buttons 1/2 short:	Switch	1 Bit	X			X		
0	Push Button 1 short: Push Buttons 1/2 short:	Toggle	1 Bit	X			X		
0	Push Button 1 short: Push Buttons 1/2 short:	Forcible control	2 Bit	X			X		
0	Push Button 1 short: Push Buttons 1/2 short:	Percent value	1 Byte	X			X		

0	Push Button 1 short: Push Buttons 1/2 short:	Decimal value	1 Byte	X			X	
0	Push Button 1 short: Push Buttons 1/2 short:	Scene	1 Byte	X			X	
0	Push Button 1 short: Push Buttons 1/2 short:	Color temperature	2 Byte	X			X	
0	Push Button 1 short: Push Buttons 1/2 short:	Temperature	2 Byte	X			X	
0	Push Button 1 short: Push Buttons 1/2 short:	Brightness value	2 Byte	X			X	
0	Push Button 1 short: Push Buttons 1/2 short:	RGB value HSV value	3 Byte	X			X	
0	Push Button 1, 1x tip:	Switch	1 Bit	X			X	
0	Push Button 1, 1x tip:	Forcible control	2 Bit	X			X	
0	Push Button 1, 1x tip:	Percent value	1 Byte	X			X	
0	Push Button 1, 1x tip:	Decimal value	1 Byte	X			X	
0	Push Button 1, 1x tip:	Scene	1 Byte	X			X	
0	Push Button 1, 1x tip:	Color temperature	2 Byte	X			X	
0	Push Button 1, 1x tip:	Temperature	2 Byte	X			X	
0	Push Button 1, 1x tip:	Brightness value	2 Byte	X			X	
0	Push Button 1, 1x tip:	RGB value HSV value	3 Byte	X			X	
0	Push Buttons 1/2 short:	Shutter Up/Down/Stop	1 Bit	X			X	
1	Push Buttons 1/2 short:	Central shutter Up/Down/Stop	1 Bit	X			X	
1	Push Button 1	Status for toggle/display	1 Bit	X		X	X	X
1	Push button 1 Push buttons 1/2	Dimming relative	4 Bit	X			X	
1	Push Button 1, 2x tip:	Switch	1 Bit	X			X	
1	Push Button 1, 2x tip:	Forcible control	2 Bit	X			X	
1	Push Button 1, 2x tip:	Percent value	1 Byte	X			X	
1	Push Button 1, 2x tip:	Decimal value	1 Byte	X			X	
1	Push Button 1, 2x tip:	Scene	1 Byte	X			X	
1	Push Button 1, 2x tip:	Color temperature	2 Byte	X			X	
1	Push Button 1, 2x tip:	Temperature	2 Byte	X			X	
1	Push Button 1, 2x tip:	Brightness value	2 Byte	X			X	
1	Push Button 1, 2x tip:	RGB value HSV value	3 Byte	X			X	

1	Push Button 1 short: Push Buttons 1/2 short:	Status for toggle/display	1 Bit	X		X	X	X
1	Push button 1: Push buttons 1/2:	Stop/Slats Open/Close	1 Bit	X			X	
1	Push button 1: Push buttons 1/2:	Status for display	2 Bit 1 Byte 2 Byte	X		X	X	X
2	Push button 1 Group long: Push buttons 1/2 Group long:	Schalten	1 Bit	X			X	
2	Group long: Push Button 1	Toggle	1 Bit	X			X	
2	Push button 1 Group long: Push buttons 1/2 Group long:	Forcible control	2 Bit	X			X	
2	Push button 1 Group long: Push buttons 1/2 Group long:	Percent value	1 Byte	X			X	
2	Push button 1 Group long: Push buttons 1/2 Group long:	Decimal value	1 Byte	X			X	
2	Push button 1 Group long: Push buttons 1/2 Group long:	Scene	1 Byte	X			X	
2	Push button 1 Group long: Push buttons 1/2 Group long:	Color temperature	2 Byte	X			X	
2	Push button 1 Group long: Push buttons 1/2 Group long:	Temperature	2 Byte	X			X	
2	Push button 1 Group long: Push buttons 1/2 Group long:	Brightness value	2 Byte	X			X	
2	Push button 1 Group long: Push buttons 1/2 Group long:	RGB value HSV value	3 Byte	X			X	
2	Push Button 1, 3x tip:	Switch	1 Bit	X			X	
2	Push Button 1, 3x tip:	Forcible control	2 Bit	X			X	
2	Push Button 1, 3x tip:	Percent value	1 Byte	X			X	
2	Push Button 1, 3x tip:	Decimal value	1 Byte	X			X	
2	Push Button 1, 3x tip:	Scene	1 Byte	X			X	
2	Push Button 1, 3x tip:	Color temperature	2 Byte	X			X	
2	Push Button 1, 3x tip:	Temperature	2 Byte	X			X	
2	Push Button 1, 3x tip:	Brightness value	2 Byte	X			X	
2	Push Button 1, 3x tip:	RGB value HSV value	3 Byte	X			X	
2	Push button 1 long: Push buttons 1/2 long:	Switch	1 Bit	X			X	
2	Push button 1 long: Push buttons 1/2 long:	Toggle	1 Bit	X			X	

2	Push button 1 long: Push buttons 1/2 long:	Forcible control	2 Bit	X			X	
2	Push button 1 long: Push buttons 1/2 long:	Percent value	1 Byte	X			X	
2	Push button 1 long: Push buttons 1/2 long:	Decimal value	1 Byte	X			X	
2	Push button 1 long: Push buttons 1/2 long:	Scene	1 Byte	X			X	
2	Push button 1 long: Push buttons 1/2 long:	Color temperature	2 Byte	X			X	
2	Push button 1 long: Push buttons 1/2 long:	Temperature	2 Byte	X			X	
2	Push button 1 long: Push buttons 1/2 long:	Brightness value	2 Byte	X			X	
2	Push button 1 long: Push buttons 1/2 long:	RGB value HSV value	3 Byte	X			X	
2	Push Button 1:	Scene	1 Byte	X			X	
2	Push Button 1:	Value for change of direction	1 Bit	X		X	X	X
2	Push Button 1:	Value for toggle	1 Bit	X		X	X	X
2	Push Button 1 (2.Object): Push Buttons 1/2 (2.Object):	Switch	1 Bit	X			X	
2	Push Button 1 (2.Object): Push Buttons 1/2 (2.Object):	Forcible control	2 Bit	X			X	
2	Push Button 1 (2.Object): Push Buttons 1/2 (2.Object):	Percent value	1 Byte	X			X	
2	Push Button 1 (2.Object): Push Buttons 1/2 (2.Object):	Decimal value	1 Byte	X			X	
2	Push Button 1 (2.Object): Push Buttons 1/2 (2.Object):	Scene	1 Byte	X			X	
2	Push Button 1 (2.Object): Push Buttons 1/2 (2.Object):	Color temperature	2 Byte	X			X	
2	Push Button 1 (2.Object): Push Buttons 1/2 (2.Object):	Temperature	2 Byte	X			X	
2	Push Button 1 (2.Object): Push Buttons 1/2 (2.Object):	Brightness value	2 Byte	X			X	
2	Push Button 1 (2.Object): Push Buttons 1/2 (2.Object):	RGB value HSV value	3 Byte	X			X	
3	Push button 1 long: Push buttons 1/2 long:	Status for toggle/display	1 Bit	X		X	X	X
3	Push Button 1 Group extra long:	Blind Up/Down	1 Bit	X			X	

3	Push Button 1 : Push Buttons 1/2 :	State for display	1 Bit 1 Byte 2 Byte	X		X	X	X
4	Push Button 1 Group extra long: Push Buttons 1/2 Group extra long:	Switch	1 Bit	X			X	
4	Push Button 1 Group extra long: Push Buttons 1/2 Group extra long:	Forcible control	2 Bit	X			X	
4	Push Button 1 Group extra long: Push Buttons 1/2 Group extra long:	Percent value	1 Byte	X			X	
4	Push Button 1 Group extra long: Push Buttons 1/2 Group extra long:	Decimal value	1 Byte	X			X	
4	Push Button 1 Group extra long: Push Buttons 1/2 Group extra long:	Scene	1 Byte	X			X	
4	Push Button 1 Group extra long: Push Buttons 1/2 Group extra long:	Color temperature	2 Byte	X			X	
4	Push Button 1 Group extra long: Push Buttons 1/2 Group extra long:	Temperature	2 Byte	X			X	
4	Push Button 1 Group extra long: Push Buttons 1/2 Group extra long:	Brightness value	2 Byte	X			X	
4	Push Button 1 Group extra long: Push Buttons 1/2 Group extra long:	RGB value HSV value	3 Byte	X			X	
4	Push Button 1 Group extra long: Push Buttons 1/2 Group extra long:	Blind Up/Down	1 Bit	X			X	
4	Push Button 1 Group extra long:	Toggle	1 Bit	X			X	
5	Push Button 1 Group extra long: Push Buttons 1/2 Group extra long:	Stop/Slats Open/Close	1 Bit	X		X	X	X
9	Push Button 1: Push Buttons 1/2:	Blocking object	1 Bit	X		X	X	X
+10	next Push Button							

Table 1: Communication objects – Push Buttons

Standard Settings – Status/Messages								
No.	Name	Object Function	Length	C	R	W	T	U
61	Message 1 (first priority)	Input	1 Bit	X		X	X	X
62	Message 2	Input	1 Bit	X		X	X	X
63	Message 3	Input	1 Bit	X		X	X	X
64	Message 4	Input	1 Bit	X		X	X	X
65	Message text (lowest priority)	Input	14 Byte	X		X	X	X
66	Status text 1	Input	14 Byte	X		X	X	X
67	Status text 2	Input	14 Byte	X		X	X	X
68	Status value 1	Switch On/Off Percent value 0...100% Value 0...255 Value in mA Value in Lux Value in °C Value in m/s Value in % Value in ppm	1 Bit 1 Byte 1 Byte 2 Byte 2 Byte 2 Byte 2 Byte 2 Byte 2 Byte	X		X	X	X
+1	next Status value							

Table 2: Communication objects – Status/Messages

Standard Settings – Status LEDs								
No.	Name	Object Function	Length	C	R	W	T	U
52	LED 1	Switch Percent value Decimal value	1 Bit 1 Byte 1 Byte	X		X	X	X
+1	next LED							
56	LED 1 Priority	Switch	1 Bit	X		X	X	X
+ 1	next LED Priority							
60	LED	Blocking object	1 Bit	X		X	X	X
76	LED synchron	Blinking status as Slave	1 Bit	X		X		
76	LED synchron	Blinking status as Master	1 Bit	X			X	

Table 3: Communication objects – Status LEDs

Standard Settings – Logic function								
No.	Name	Object Function	Length	C	R	W	T	U
40	Logic 1k	Input 1 A	1 Bit	X		X	X	X
41	Logic 1	Input 1 B	1 Bit	X		X	X	X
42	Logic 1	Output 1	1 Bit	X	X		X	
		Output 1 Scene	1 Byte					
		Output 1 Value	2 Bit					
		Output 1 Value	1 Byte					
+ 3	next Logic							

Table 4: Communication objects – Logic Function

Standard Settings – Temperature and Air Humidity Measurement								
No.	Name	Object Function	Length	C	R	W	T	U
80	Temperature	Send measured value	2 Byte	X	X		X	
81	Temperature	External sensor	2 Byte	X		X		
82	Temperature	Max. value exceeded	1 Bit	X	X		X	
83	Temperature	Min. value fallen below	1 Bit	X	X		X	
84	Relative air humidity	Send measured value	2 Byte	X	X		X	
85	Relative air humidity	External humidity sensor	2 Byte	X		X	X	X
86	Relative air humidity	Max. value exceeded	1 Bit	X	X		X	
87	Relative air humidity	Min. value fallen below	1 Bit	X	X		X	
88	Dew point temperature	Send measured value	2 Byte	X	X		X	
89	Dew point temperature	Comparison value	2 Byte	X		X		
90	Dew point temperature	Send alarm	1 Bit	X	X		X	

Table 5: Communication objects – Temperature and Air Humidity Measurement

Standard Settings – General Objects								
No.	Name	Object Function	Length	C	R	W	T	U
71	In operation	Output	1 Bit	X	X		X	
72	Day/Night	Day = 1 / Night = 0 Night = 1 / Day = 0	1 Bit	X		X	X	X
73	Presence	Input	1 Bit	X		X	X	X
74	Buttons activation	Output	1 Bit	X			X	X
75	Brightness	Input for dynamic brightness	1 Byte	X		X	X	X
75	Brightness	Input for dynamic brightness	2 Byte	X		X	X	X
77	Time	Receive current value	3 Byte	X		X	X	X
78	Date	Receive current value	3 Byte	X		X	X	X
79	Time/Date	Receive current values	8 Byte	X		X	X	X

Table 6: Communication objects – General Objects

The table above shows the preset default settings. The priority of the individual communications objects and the flags can be adjusted by the user as required. The flags assign the communication objects their respective tasks in programming, where C stands for communication, R for read, W for write, T for transmit and U for update.

4 Reference-ETS-Parameter

4.1 General Settings

The following picture shows the menu for the general settings:

Figure 3: General Settings

The following table shows the possible settings:

ETS-Text	Dynamic range [Default value]	Comment
Startup time	2 – 240 s [2 s]	Sets the time between restart and functional start-up of the device
Send „Operation“ cyclically	not active 1 min – 4 h	Setting whether a cyclic in-operation telegram is to be sent
Value for Day/Night	▪ Day = 1 / Night = 0 ▪ Night = 1 / Day = 0	Sets the polarity for day / night switching
Behavior after bus power return		
Values for toggle	▪ no request ▪ request	Setting whether the values/objects should be requested automatically on bus voltage return.
Day/Night object	▪ no request ▪ request	
Time/Date	▪ no request ▪ request	
Language	▪ German ▪ English	Setting the language. (see description next page)

Table 7: General Settings

„In-operation“

The "in operation" telegram is used to show on the bus that the device is "alive". If activated, an ON telegram is sent cyclically.

Value for Day/Night

This is where the polarity for Day/Night is set. Regardless of this polarity, the unit always starts in Day mode after reprogramming.

Language

The language affects, among other things, the display of HVAC status, status 2Bit forced control and days at "date".

The following table shows the available communication objects:

Number	Name	Length	Usage
71	In operation	1 Bit	Sending a cyclic "In operation" telegram
72	Day/Night	1 Bit	Receiving the status for day/night
74	Buttons activation	1 Bit	Send out a 1 when a button is pressed, e.g. to switch on an orientation light. Info: A timeout of 30 sec. is started after each keystroke - no telegram is sent during this time!
77	Time	3 Byte	Receiving the time
78	Date	3 Byte	Receiving the date
79	Time / Date	8 Byte	Receiving time and date via a common combination object

Table 8: General communication objects

4.2 Display Settings

4.2.1 Presentation & Brightness

The following picture shows the menu for the general display settings:

Display

Background color

day = white; night = black

Font size for Function name / Value / Key labeling

☐ small
 ☒ big

Behavior at presence

☒ Display(LEDs) is switched on
 ☐ Display(LEDs) is switched on and Standby is exited

Brightness

Display brightness Day

dynamic

Display brightness Night

dynamic

Global brightness for LEDs Day

as display

Global brightness for LEDs Night

as display

i Note: The brightness of the LEDs depends on the display brightness => Level 1: 0-20%; Level 2: 21-40%; Level 3: 41-60%; Level 4: 61-80%; Level 5: 81-100%

i Without a valid object value, the brightness is set to 100% during the day and 50% at night

Datapoint type for dynamic brightness

☒ 2Byte DPT 9.004 Ambient Brightness (Lux)
 ☐ 1Byte DPT 5.001 Percent value (0...100%)

Minimum brightness Day

10%

Minimum brightness Night

3%

Ambient brightness for 100% brightness

500

Lux

Night shutdown Display / LEDs in standby

25

Lux

Figure 4: Display settings – Presentation and Brightness

The following table shows the possible settings:

ETS-Text	Dynamic range [Default value]	Comment
Background colour	- Day = black; Night = black Day = white; Night = black - Day = black; Night = white - Day = white; Night = white	Sets the background colour of the display
Font size for Function name / Value / Key labelling	- Small Big	Setting the font size in which the listed positions are shown on the display. Status elements in standby are always shown small!
Behaviour at presence	Display (LEDs) is switched on - Display (LEDs) is switched on and Standby is exited	Setting the action for a "1" or "0" telegram on the presence object
Brightness		
Display brightness Day/Night	dynamic 0 – 100 %	Setting whether the display brightness should be dynamic or whether the display should have fixed brightness values for Day/Night.
Global brightness for LEDs Day/Night	disabled - as display - Brightness level 1 – 5	Brightness setting for all status LEDs for Day and Night
Datapoint type for dynamic brightness	2 Byte DPT 9.004 Ambient Brightness (Lux) 1 Byte DPT 5.001 Percent value (0 ... 100%)	Setting of the DPT to control the dynamic brightness. Only visible if at least one "Display brightness Day/night" parameter is "dynamic".
Control via brightness values: if "2 byte DPT 9.004 ambient brightness (lux)" is active		
Minimum Brightness Day	0 – 100% [10%]	Setting a minimum brightness level in daytime operation
Minimum Brightness Night	0 – 100% [3%]	Setting a minimum brightness level in nighttime operation
Ambient brightness for 100% brightness	0 ... 1000 Lux [500 Lux]	Defines the brightness level at which the display reaches its full brightness
Night shutdown Display/LEDs in Standby	0 ... 100 Lux [25 Lux]	Setting a brightness threshold for the display and LEDs to switch off completely when the brightness falls below the threshold or to switch on again when it rises above it. Applies only at Night!
Control via percentage values: if "1 byte DPT 5.001 percentage value (0 ... 100%)" is active		
Minimum Brightness Day	0 – 100% [10%]	Setting a minimum brightness level in daytime operation
Minimum Brightness Night	0 – 100% [3%]	Setting a minimum brightness level in night time operation

Table 9: Display settings – Presentation and Brightness

Behaviour at presence

Here, the display and the LEDs can be switched on and off via a separate object. It can be determined whether a "1" telegram is used to switch the display on in its current state (standby or operation) or whether it switches on automatically and exits standby. A "0" telegram switches the display off. A possible application would be control via a motion detector, which switches the display on when presence is detected in the room and switches it off again after the follow-up time has expired.

Font size for Function name / Value / Key labelling

This setting defines the font size of the display. This setting applies generally to all key settings for the assignment of "function name", "value" and "key labelling". The labels of the status elements in standby are always shown in small letters!

Display/LED brightness control

Firstly, the brightness can be defined using fixed values (percentage values for display, brightness levels 1-5 for LEDs). These cannot then be changed. Secondly, the brightness can be adjusted "dynamically" via objects. The following options are available for this purpose:

Control via brightness values (Lux)

The "**Ambient brightness for 100%**" parameter defines the basic range at which lux value the display has its full brightness.

With "**Night shutdown Display/LEDs in Standby**", you can set whether the display switches off completely when the brightness falls below a certain level and at what level it switches back on. This setting only applies to Night mode!

Control via percentage values (%)

A percentage value is sent to the push-button via object 75. The display brightness is set via 5 internal brightness levels. The LED brightness is based on the display brightness. The gradation is made as described in the information window:

 Note: The brightness of the LEDs depends on the display brightness => Level 1: 0-20%; Level 2: 21-40%; Level 3: 41-60%; Level 4: 61-80%; Level 5: 81-100%

The following applies to both settings:

- Without value on object 75, the brightness is set to 100% for Day and 50% for Night.
- If the push-button is operated by pressing a key while the display is off, the display is switched on - even if the restart value has not yet been reached - to enable operation. After the last key press, the display switches off again after a fixed time of approx. 20 seconds. The same behaviour applies to switching on via presence object. The display only switches back on permanently once the brightness level has been exceeded
- "**Minimum brightness Day/Night**" defines the brightness at which the display shows a received brightness value of 0 lux.
- After bus voltage failure and subsequent return, the last value set via object is no longer valid and a value must be sent again.

The following communications objects are available:

Number	Name	Length	Usage
73	Presence – Input	1 Bit	Input for presence to switch the display on and off, e.g. from a presence detector.
75	Brightness – Input for dynamic brightness	1 Byte 2 Byte	Receive the brightness for the display. DPT according to the selection of the control object type.

Table 10: Communication objects – Presentation and Brightness

4.2.2 User defined colours

Up to 3 user-defined colors can be mixed:

user-defined color 1	
Red part	0% ▼
Green part	0% ▼
Blue part	0% ▼
user-defined color 2	
Red part	0% ▼
Green part	0% ▼
Blue part	0% ▼
user-defined color 3	
Red part	0% ▼
Green part	0% ▼
Blue part	0% ▼

Figure 5: Settings – User-defined colours

The user-defined colours can be mixed with the corresponding red / green / blue share and then be used for the display of the symbols.

4.2.3 Priority of HVAC Status

This setting affects various functions such as mode switching.

The following setting is available here:

Priority of HVAC Status	☒ Frost/Comfort/Night/Standby ☐ Frost/Night/Comfort/Standby
-------------------------	---

Figure 6: Display setting - Priority of HVAC Status

The order of priority is defined here.

Important: For correct presentation the sequence has to be set the same on the controller.

4.3 Info Display

The following figure shows the basic settings for the info display:

Timeout until standby	20 s
Standby display	☒ individually in change ☐ in 1 or 2 rows without change
Change standby display after	5 s
Standby display at day	standby on full screen, LEDs active
State element 1	Time
State element 2	internal temperature
State element 3	State value 1
State element 4	State value 2
Standby display at night	behavior like day
Action at push button if display is disabled	☒ standby is exited ☐ standby is displayed
Action at push button if Standby is active	☐ function is not executed ☒ function is executed

Figure 7: Basic Settings - Info display

The following table shows the basic settings for the display:

ETS-Text	Dynamic range [Default value]	Comment
Time until Standby	0 ... 60 s [20 s]	Setting the time between the last key touch and switching to standby
Standby display	▪ Individually in change ▪ In 1 or 2 lines without change	Setting the display during standby
Change standby display after	1 ... 60 s [5 s]	Setting the changeover time between the activated status elements. Only available for "Individually in change"!
Standby display Day	▪ No standby ▪ Standby in upper keypad, LEDs active ▪ Standby on full screen, LEDs active ▪ Display off, LEDs off ▪ Display off, LEDs active	Setting the display behavior of the information screen in day mode

State element 1 – 4 <i>(for Day and Night)</i>	▪ Not active ▪ Time ▪ Date ▪ Time with Date ▪ Internal temperature ▪ Internal relative humidity ▪ Dew point temperature ▪ State value 1 ▪ State value 2 ▪ State value 3 ▪ State text 1 (over object 66) ▪ State text 2 (over object 67)	"Not active" only for status element 2 - 4! "Internal temperature", "internal relative humidity", "dew point temperature" only for BE-TASxxT.01. Description of the possible number of status elements, see explanation below * State elements
Standby display Night	▪ No standby ▪ Standby in upper keypad, LEDs active ▪ Standby on full screen, LEDs active ▪ Behaviour like Day ▪ Display off, LEDs off ▪ Display off, LEDs active	Setting the display behavior of the information screen in night mode; When set to "Behavior like Day" the settings are accepted by day mode and there are no settings for the standby mode
Action at push button if display is disabled	▪ Standby is exited ▪ Standby is displayed	Setting the behavior when a key is pressed when the display is off (e.g. via presence object)
Action at push button if standby is active	▪ Function is not executed ▪ Funktion is executed	Setting whether the key function is to be executed with the first key press while being in standby

Table 11: Basic Settings – Info display

* State elements

The possible number of status elements depends on the following settings:

With "**individually in change**" up to 4 status elements can be activated, which are switched according to the setting "**Standby display change after**".

With "**in 1 or 2 lines without change**", only one or two status elements can be displayed, depending on the setting "Standby display".

If the parameter "**Standby in upper keypad, LEDs active**" is selected here, only one status element is possible. The following info text appears:

 Only one line can be displayed in the upper keypad.

If the parameter "**Standby on full screen, LEDs active**" is selected here, a status element can be activated for line 1 and line 2.

Please note:

Time and date are reset to default values "00:00" and "01.01.20 Wed" after bus voltage failure and subsequent return.

4.4 Status/Messages

4.4.1 State values 1-3

Here the status values, which are available for selection in the info display as state elements, can be defined.

The following picture shows the possible settings:

State value 1	Air quality [ppm] (DPT 9.008) ▼
Text for the unit	ppm
Description for measurement	Kitchen
State value 2	Brightness [Lux] (DPT 7.013) ▼
Text for the unit	Lux
Description for measurement	South
State value 3	not active ▼
Description for Time	Time
Description for internal temperature	Temperature
Description for internal humidity	rel. Humidity
Description for internal dew point	Dew point

Figure 8: Settings – State Values 1 - 3

The following table shows the possible settings:

ETS-Text	Dynamic range [Default value]	Comment
State value 1 – 3	▪ Not active ▪ ON/Off (DPT 1.001) ▪ Percent 0...100% (DPT 5.001) ▪ Value 0...255 (DPT 5.005) ▪ Current [mA] (DPT 7.012) ▪ Brightness [Lux] (DPT 7.013) ▪ Temperature [°C] (DPT 9.001) ▪ Brightness [Lux] (DPT 9.004) ▪ Wind speed [m/s] (DPT 9.005) ▪ Humidity [%] (DPT 9.007) ▪ Air quality [ppm] (DPT 9.008) ▪ Current [mA] (DPT 9.021)	Setting the DPT to be displayed as status value

Text for the unit	Freely settable, up to 5 bytes possible	A free text consisting of letters and special characters can be entered here, which then appears on the display
Description for measurement	Freely settable, up to 15 bytes possible	
Description for - Time - internal temperature - Internal humidity - internal dew point	Freely settable, up to 15 bytes possible	

Table 12: Settings – State Values 1 - 3

The following table shows the available communication objects:

Number	Name	Length	Usage
66	Status text 1	14 Byte	Receiving a status text
67	Status text 2	14 Byte	Receiving a status text
68	Status value 1		Receiving a status value; DPT according to parameter setting
69	Status value 2		Receiving a status value; DPT according to parameter setting
70	Status value 3		Receiving a status value; DPT according to parameter setting

Table 13: Communication objects – Status values/Status texts

The status values can be used to display various measured values with units.
By means of the status text any strings up to a length of 14 characters can be displayed.

4.4.2 Messages

The following figure shows the possible settings for messages and alarms:

Message 1 (Bit Object) (highest priority) ☐ not active ☒ active

Text

Display time

Message 2 (Bit Object) ☒ not active ☐ active

Message 3 (Bit Object) ☒ not active ☐ active

Message 4 (Bit Object) ☒ not active ☐ active

Message text (14Byte Object) (lowest priority) ☐ not active ☒ active

Display time

Cancel the message via object ☒ not active, only push of button and duration
☐ active, additionally with value 0 over objects Messa...

Color of message text

Indicate a message via LEDs ☐ not active ☒ active

Color of LEDs

Figure 9: Settings – Messages

The following table shows the possible settings:

ETS-Text	Dynamic range [Default value]	Comment
Message 1-4 (Bit Object)	- not active - active	Activation of message 1-4; Message 1 (highest priority)
Text	Any text (15 Bytes allowed)	Displayed text when the message is triggered
Display time	- not active Until key is pressed 1 s – 8 h	Setting how long the message should be displayed
Message text (14 Byte Object) (lowest priority)	- not active - active	Activation of the message text via the 14 byte object; Message text has the lowest priority of all messages
Display time	- not active Until key is pressed 1 s – 8 h	Setting how long the message should be displayed
Cancel the message via object	not active, only push of button and duration - Active, also with a "0" via object "Message (1-4)"	Setting when the message should be taken back

Color of message text	any color [red]	Setting of the color for the message text
Indicate a message via LEDs	▪ not active ▪ active	Setting if the LEDs should flash at an active message
Color of LEDs	any color [red]	Select the colour in which the LEDs display the message Only visible if "Indicate a message via LEDs" is activated

Table 14: Settings – Messages

The message behavior depends on the parameter "Standby display at day / night". The different behaviors are shown below:

Standby display	Incoming message during standby
no Standby	▪ No message is displayed but saved
Standby in upper keypad	▪ Message is displayed on upper button pair and the upper LEDs change between parameterized color and black at 600ms pulse ▪ At the same time, the parameterized color is set to double brightness in order to increase the signal effect ▪ The message is only acknowledged by pressing to one of the upper buttons. ▪ A keystroke on the middle and lower buttons performs the displayed switching functions
Standby on full screen	▪ Message is displayed in the middle of the screen and all LEDs change between parameterized color and black ▪ At the same time, the parameterized color is set to double brightness in order to increase the signal effect. ▪ The message is acknowledged by pressing to any key
Display off	▪ No message is displayed during standby but saved. ▪ The message with the highest priority is indicated by the keystroke after standby ▪ The displayed messages are acknowledged by means of further key strokes ▪ Message is displayed in the middle of the screen and all LEDs change between parameterized color and black ▪ At the same time, the parameterized color is set to double brightness in order to increase the signal effect.
Display off and orientation-LED on	▪ Message is displayed in the middle of the screen and all LEDs change between parameterized color and black ▪ At the same time, the parameterized color is set to double brightness in order to increase the signal effect. ▪ After the "timeout for standby", the LEDs will stop flashing and the message disappears. ▪ If any button is pressed after the LEDs have stopped flashing, the message with the highest priority is displayed again. Further keystrokes acknowledge the messages

Table 15: Behavior of the device to an incoming message during standby

Standby display	Incoming message during operation
no Standby	No message is displayed but saved

Table 16: Behavior of the device to an incoming message during operation

Standby display	Incoming message while Standby + Display brightness „Off“ via brightness sensor
no Standby	No message is displayed but saved
Standby in upper keypad	- Brings display back to life (dark background lighting) - After the "timeout for standby" has expired, the backlight is switched off again. - Otherwise as in Standby
Standby on full screen	- Brings display back to life (dark background lighting) - After the "timeout for standby" has expired, the backlight is switched off again. - Otherwise as in Standby
Display off	Like in Standby
Display off and orientation-LED on	- Brings display back to life (dark background lighting) - After the "timeout for standby" has expired, the backlight is switched off again. - Otherwise as in Standby

Table 17: Behavior when incoming message at standby and the operation switched off

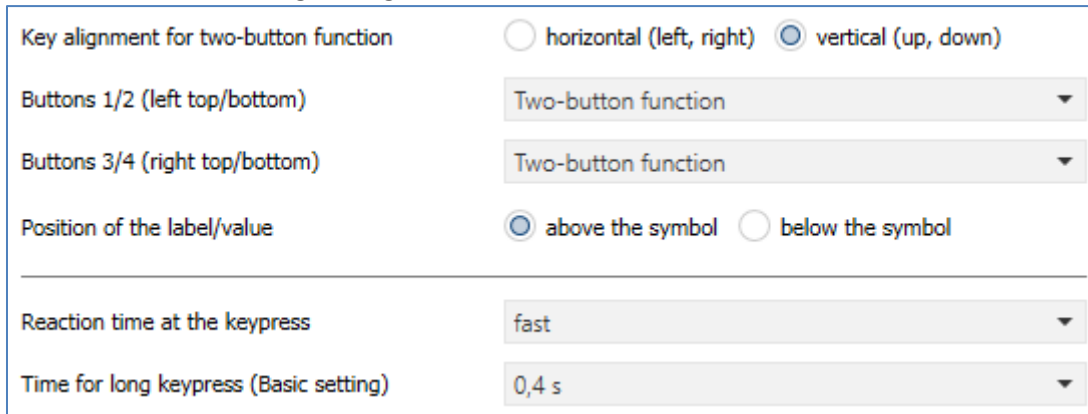
The following table shows the available communication objects for alarms/messages:

Number	Name	Length	Usage
61	Message 1 (highest priority)	1 Bit	Triggering a message
62	Message 2	1 Bit	Triggering a message
63	Message 3	1 Bit	Triggering a message
64	Message 4	1 Bit	Triggering a message
65	Message text (lowest priority)	14 Byte	Triggering a message; Send any message text

Table 18: Communication objects – Messages

4.5 Button Setting

In the menu "Button settings", you can activate/deactivate the individual buttons independently of each other. The following settings are available:



Key alignment for two-button function ☐ horizontal (left, right) ☒ vertical (up, down)

Buttons 1/2 (left top/bottom) Two-button function

Buttons 3/4 (right top/bottom) Two-button function

Position of the label/value ☒ above the symbol ☐ below the symbol

Reaction time at the keypress fast

Time for long keypress (Basic setting) 0,4 s

Figure 10: Basic Settings – Push buttons

The following table shows the possible settings:

ETS-Text	Dynamic range [Default value]	Comment
Key alignment for two-button function	- horizontal (left/right) - vertical (top/bottom)	Setting the alignment for a key pair
Buttons 1/2 – 3/4	- not active - Two button function - Single button function	Operating mode of the respective keys
Position of the label/value	- Above the symbol - Below the symbol	Determines whether the label appears below or above the symbol in the display
Reaction time on keystroke	- fast - medium - slow	Setting the reaction time or debounce time for the keys
Time for long keystroke (Basic setting)	0,1 s – 30 s [0,4 s]	Setting from when a long key press is detected

Table 19: Basic Settings – Push buttons

With the **key alignment**, you can freely set **for the two-button function** whether the rocker should work right/left or top/bottom.

For the **buttons 1/2 or 3/4**, you can choose between a single-button or two-button function. A mixture, e.g. two single keys and a rocker, is also possible. When deactivated, no parameters are displayed..

The parameter "**Position of the label/value**" defines whether a label or value is to be displayed as text/character above or below the symbol. This is a general specification and applies in the following to all buttons for which either a function name or a value is stored under the parameter "Display".

The **reaction time** is the debouncing of the keys. It can be selected as slow, medium or fast and defines how long a key has to be pressed to generate a function call.

Note: A fast response time is recommended for the tip function.

With the help of the parameter "**time for long keystroke**", a fixed time value can be assigned to the key, from when on the key recognises a keystroke as long. This parameter is important for objects which have both short and long keystroke functions.

4.6 Push Button Functions

4.6.1 Identical Parameter – Blocking Object

The blocking object can be activated both for grouped buttons, e.g. button pair 1/2, and for individual buttons, e.g. button 1. If the blocking object is active, a communication object is displayed for the corresponding push-button. In this way, up to 4 blocking objects can be parameterised for one device. If the blocking object is assigned a logical 1, the corresponding push-button is "blocked" and can therefore no longer be switched. A logical 0 cancels the lock.

The following table shows the associated communication object:

Number	Name	Length	Usage
9	Blocking Object	1 Bit	blocks associated pushbutton if the group address gets logical 1

Table 20: Identical communication object – Blocking object

4.6.2 Identical Parameter – Display/Presentation

The display/presentation of a button function is configured identically for all keys or key pairs. This determines how the keys are labelled and whether a function name or a value is to be stored with the symbol.

The display/presentation of the symbols is described under the corresponding key functions.

The following parameters for the type of presentation are identical (here: two-button function):

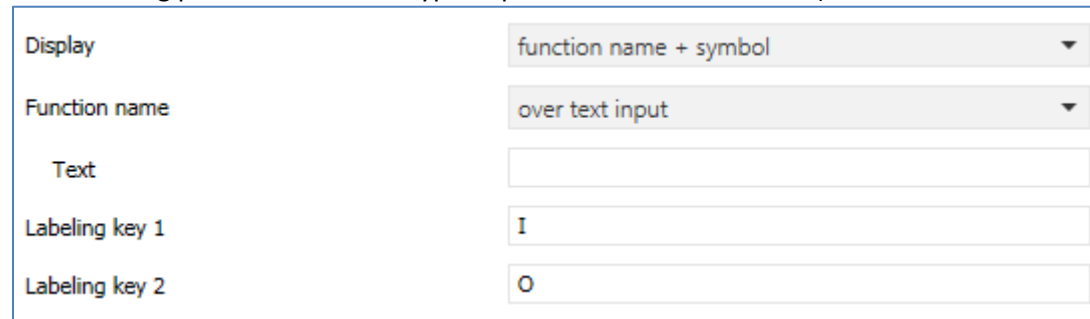


Figure 11: Identical Parameter – Display/Presentation

A symbol is always displayed for the buttons. In addition, a function name or a value can be displayed. The setting for whether these appear above or below the symbol is made in the menu "Button settings".

Only with the two-button function is it also possible to insert a button label for the two buttons. Two text fields are available for texts of up to 6 bytes.

The **function name** can be accessed via various parameter settings. This can be done, for example, from text or status messages, via text input or as dynamic text according to status.

If you select **value + symbol**, the respective status value received on the "Status for display" object is displayed.

If the status object for a function is not linked, the switching status is visualised; otherwise the transmitted value of the button is displayed.

Identical parameters for the display are:

ETS-Text	Dynamic range [Default value]	Comment
Display	- function name + symbol - value + symbol - only symbol	Setting the presentation for the buttons
Function name + symbol		
Function name	- no text - from „Message text“ (14Byte-object 65) - from „Status text 1“ (14Byte-object 66) - from „Status text 2“ (14Byte-object 67) over text input - dynamic text according to status value	Setting how to create the function name. “dynamic text according to status value” only available for “Switching”
Value + symbol		
Labeling key 1/2 , 3/4	- none - over text input “-“ Symbol +“ Symbol “down arrow“ Symbol “up arrow“ Symbol	Setting how the buttons are to be labelled. Available with "Send values" and only for two-button function

Table 21: Identical Parameters – Push Buttons

4.6.3 Identical Parameter – Object Description + Additional Text

Two text fields are available for each button or button pair for free labelling:

Object description	Bathroom Light
Additional text	Lamp right, dimming

Figure 12: Identical Parameter – Text fields per button/button pair

Texts with up to 30 characters can be stored for the text field "Object description", for the text field "Additional text" up to 80 characters.

The text entered for the **object description** appears both in the menu behind the corresponding keys and for the communication objects of the keys

Button setting					
T1/2: Bathroom Light	<table border="1"> <tr> <td>0</td> <td>T1/2: Bathroom Light</td> </tr> <tr> <td>1</td> <td>T1/2: Bathroom Light</td> </tr> </table>	0	T1/2: Bathroom Light	1	T1/2: Bathroom Light
0	T1/2: Bathroom Light				
1	T1/2: Bathroom Light				

The **additional text** is merely additional information on the function. This text is not visible anywhere else.

4.6.4 Switch

- ☒ Single-Button function
- ☒ Two-Button function

The following figure shows the available settings for the button function "Switch", here an example of the two-button function:

Figure 13: General Settings – Switch

The following parameters are identical for all subfunctions of the "Switch" button function:

ETS-Text	Dynamic range [Default value]	Comment
Button assignment (1/2)	▪ On/Off ▪ Off/On	Only for two-button function. Defines the sending behaviour of the buttons
Subfunction	▪ Switch ▪ Toggle ▪ Send status	Only for single-button function. Defines the sub-function and displays further parameters if necessary
Value pushed button	▪ Off ▪ On	Only for single-button function, „switch“ and „send status“. Defines the sending behaviour of the button
Value released button	▪ Off ▪ On	Only for single-button function, „send status“. Defines the sending behaviour of the button
Delay released button	▪ Not active ▪ Active	Only for single button function, „send status“. Defines a delay of the telegram to be sent
Innovative group control		
Group long keypress	▪ ON and OFF ▪ Only ON ▪ Only OFF	Only shown when a long keypress is active! Defines the sending behaviour when a long keypress is active. For single button functions, the sending behaviour is defined according to the subfunction.

Group extra long keypress	▪ ON and OFF ▪ Only ON ▪ Only OFF	Only shown when a long and extra long keypress is active! Defines the sending behaviour when a extra long keypress is active. For single button functions, the sending behaviour is defined according to the subfunction.
Time for long keypress	Basic setting 0,1 s – 30,0 s	Setting from when a long keypress is detected
Time for extra long keypress	0,1 s – 30,0 s [2,0 s]	Setting from when an extra long keypress is detected

Table 22: General Settings – Switch

Innovative group control

With the innovative group control, it is possible to send to up to three different group addresses by pressing and holding a key. The time for the long and extra long keypress is set individually. With the two-button function, you can also set the sending behaviour for the long and extra long group. All groups are always sent one after the other.

Example:

Time long key press: 2 s

Time extra long key press: 4 s

If the key is now pressed for at least 4 seconds, the first value is transmitted immediately, after 2 seconds the value for "group long" and after 4 seconds the value for "group extra long".

4.6.4.1 Switching with the two-button function

☒ Two-Button function

With the two-button function, the respective value (on/off) can be assigned to the two buttons (depending on the horizontal/vertical key setting). This means that the upper/left or lower/right key sends the set, fixed value.

The following figure shows the available settings for the two-button switching function:

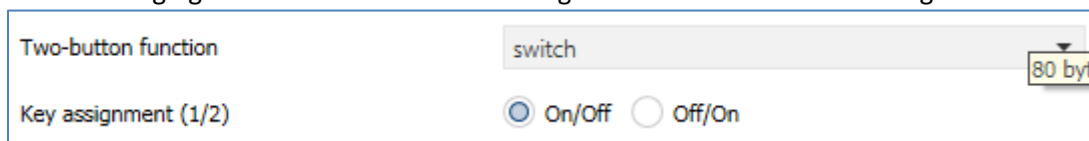


Figure 14: Settings – Two-button function: Switch

Key assignment On/Off: Key 1 sends the value ON and Key 2 sends the value OFF.

Key assignment Off/On: Key 1 sends the value OFF and Key 2 sends the value ON.

For details of the **innovative group control**, see 4.6.4 Switch.

The following table shows the available communication objects:

Number	Name	Length	Usage
0	Push buttons 1/2 – Switch	1 Bit	Switching function of the buttons
2	Push buttons 1/2 group long: – Switch	1 Bit	Switching function of the buttons with long keystroke
3	Push buttons 1/2 – Status for display	1 Bit	Status to update display/symbol. Has to be connected to the status of the actuator to be switched
4	Push buttons 1/2 group extra long: – Switch	1 Bit	Switching function of the buttons with extra long keystroke

Table 23: Communication objects – Two-button function: Switch

4.6.4.2 Subfunction: Switch

☒ Single-Button function

Here the key sends the respective fixed value when pressed.

The following figure shows the available settings:

Single-button function

switch

Subfunction

switch

Value pushed button

☐ off
☒ on

innovative group control

Group long keypress

☐ not active
☒ active

Group extra long keypress

☐ not active
☒ active

Time for long keypress

basic setting

Time for extra long keypress

2,0 s

Figure 15: Settings – Single-button function: Switch - Subfunction: Switch

For details of the **innovative group control**, see 4.6.4 Switch.

The following table shows the available communication objects:

Number	Name	Length	Usage
0	Push button 1 – Switch	1 Bit	Switching function of the button
2	Push button 1 Group long: – Switch	1 Bit	Switching function of the button with long keystroke
3	Push button 1 – Status for display	1 Bit	Status to update display/symbol. Has to be connected to the status of the actuator to be switched
4	Push button 1 Group extra long: – Switch	1 Bit	Switching function of the button with extra long keystroke

Table 24: Communication objects – Single-button function: Switch - Subfunction: Switch

4.6.4.3 Subfunction: Toggle

☒ Single-Button function

With the single button function: Switch - Sub-function: Toggle - the button sends the respective inverted value in relation to the last received status value.

For this purpose, the "Status for toggle" status object is linked to the status of the actuator to be controlled. If an ON signal was received as the last value, the push-button sends an OFF command to the "Toggle" object the next time it is pressed.

The following figure shows the available settings:

Figure 16: Settings – Single-button function: Switch - Subfunction: Toggle

For details of the **innovative group control**, see 4.6.4 Switch.

The following table shows the available communication objects:

Number	Name	Length	Usage
0	Push button 1 – Toggle	1 Bit	Switching function of the button
1	Push button 1 – Status for toggle/display	1 Bit	Status to update the push button; has to be connected to the status of the actuator to be switched so that the correct (inverted) value is always transmitted
2	Push button 1 Group long: – Toggle	1 Bit	Switching function of the button with long keystroke
4	Push button 1 Group extra long: – Toggle	1 Bit	Switching function of the button with extra long keystroke

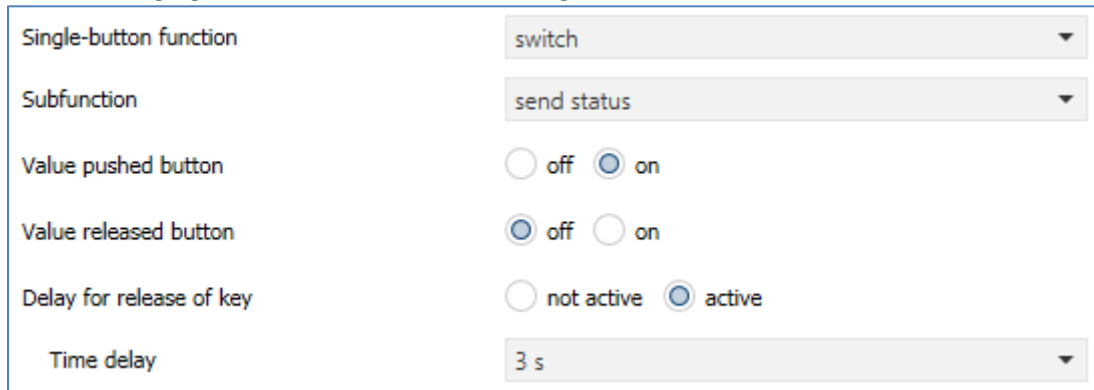
Table 25: Communication objects – Single-button function: Switch - Subfunction: Toggle

4.6.4.4 Subfunction: Send Status

☒ Single-Button function

With the single button function: switch - subfunction: send status - fixed values can be sent for a button pressed (rising edge) and a button released (falling edge). This function can be used to implement triggering applications.

The following figure shows the available settings:



Single-button function	switch
Subfunction	send status
Value pushed button	☐ off ☒ on
Value released button	☒ off ☐ on
Delay for release of key	☐ not active ☒ active
Time delay	3 s

Figure 17: Settings – Single-button function: Switch - Subfunction: Send Status

It is also possible to set a delay for the released button. This means that the value for the pressed button is transmitted immediately but the value for the released button is transmitted only after the delay set accordingly.

The following table shows the available communication objects:

Number	Name	Length	Usage
0	Push button 1 – Send Status	1 Bit	Switching function of the button
3	Push button 1 – Status for display	1 Bit	Status to update the display/symbol on the key. Has to be connected to the status of the actuator to be switched

Table 26: Communication objects – Single-button function: Switch - Subfunction: Send Status

4.6.4.5 Presentation

- ☒ Single-Button function
- ☒ Two-Button function

The switching function can represent the two possible states (on/off) by means of freely selectable symbols with a freely selectable colour. The evaluated status is always visualised:

Color of symbol for "Off"	foreground color
Symbol for "Off"	Symbol 16: light off
	
Color of symbol for "On"	sun orange
Symbol for "On"	Symbol 17: light on
	

Figure 18: Settings – Presentation of Switch-function

4.6.5 Send Values

4.6.5.1 Subfunction: Send Values

☒ Single-Button function

☒ Two-Button function

With the function: Send values - Subfunction: Send values – different values of a datapoint type can be sent.

The following figure shows the available settings (here: for the two-button function):

Figure 19: Settings – Send values - Subfunction: Send values

The following table shows the available settings:

ETS-Text	Dynamic range [Default value]	Comment
Datapoint type	1Bit DPT 1.001 Switch 2Bit DPT 2.001 Switch Control 1Byte DPT 5.001 Percent (0...100%) 1Byte DPT 5.005 Decimal factor (0...255) 1Byte DPT 17.001 Scene number 2Byte DPT 7.600 Color Temperature (Kelvin) 2Byte DPT 9.001 Temperature (°C) 2Byte DPT 9.004 Brightness (Lux) 3Byte DPT 232.600 RGB Value 3x(0...255)	Setting the type of datapoint to be sent
Value button 1–4	any value according to set datapoint type	Only with two-button function! Setting the action for the buttons
Value	any value according to set datapoint type	Only for single button function! Setting the action for the button
Special function	Innovative group control - Additional object	Selection of the possible special function

Special function: Innovative Group control		
Group long keypress	▪ not active ▪ active	Activating a function with a long keystroke
Group long sends	▪ Value for upper/left and lower/right button ▪ Only value for upper/left button ▪ Only value for lower/right button	Only with two-button function! Setting which key reacts to the long keystroke. Value upper/lower or left/right button depends on the key alignment horizontal or vertical
Group extral long keypress	▪ not active ▪ active	Activating a function with an extra long keystroke
Group extral long sends	▪ Value for upper/left and lower/right button ▪ Only value for upper/left button ▪ Only value for lower/right button	Only with two-button function! Setting which key reacts to the extra long keystroke. Value upper/lower or left/right button depends on the key alignment horizontal or vertical
Time for long keypress	Basic setting 0,1 s – 30 s	Setting of an individual time from when a long keystroke is detected
Time for extral long keypress	0,1 s – 30 s [2,0 s]	Setting of an individual time from when an extra long keystroke is detected
Special function: Additional object		
Datapoint type (2. object)	▪ 1Bit DPT 1.001 Switch ▪ 2Bit DPT 2.001 Switch Control ▪ 1Byte DPT 5.001 Percent (0...100%) ▪ 1Byte DPT 5.005 Decimal factor (0...255) ▪ 1Byte DPT 17.001 Scene number ▪ 2Byte DPT 7.600 Color Temperature (Kelvin) ▪ 2Byte DPT 9.001 Temperature (°C) ▪ 2Byte DPT 9.004 Brightness (Lux) ▪ 3Byte DPT 232.600 RGB Value 3x(0...255)	Only available if "additional object" is selected. Setting the datapoint type to be sent for the additional object
Value button 1–4	any value according to set datapoint type	Only with two-button function! Setting the action for the additional object
Value	any value according to set datapoint type	Only for single button function! Setting the action for the additional object

Table 27: Settings – Send values - Subfunction: Send values

For details of the **innovative group control**, see 4.6.4 Switch.

If you select "**Additional object**", a further communication object appears. Here, it is possible to send different values to two separate objects when a key is pressed. For example, the first object can be used to send a dimming value in % to a dimming actuator and simultaneously send an RGB value to an LED controller.

The following table shows the available communication objects:

Number	Name	Length	Usage
0	Push Button 1: Push Buttons 1/2: – Switch control, Percent value.....		Switching function of the button(s). DPT depending on the parameter setting
2	Push Button 1 (2.Object): Push Buttons 1/2 (2.Object): – Switch control, Percent value.....		Switching function of the button(s) for the 2 nd object. DPT depending on the parameter setting
2	Push button 1 group long: Push buttons 1/2 group long: – Switch control, Percent value.....		Switching function of the long button. DPT depending on the parameter setting
3	Push Button 1: Push Buttons 1/2: – Status for display		Receive the status for the display. DPT depending on the parameter setting. RGB 3 bytes cannot be displayed.
4	Push button 1 group extra long: Push buttons 1/2 group extra long: – Switch control, Percent value.....		Switching function of the extra long button. DPT depending on the parameter setting

Table 28: Communication objects – Send values - Subfunction: Send values

4.6.5.2 Subfunction: Toggle Values/Scenes (up to 4 Values)

- ☒ Single-Button function
- ☒ Two-Button function

With the function: Send values - Toggle values/scenes you can switch between 4 different values of a datapoint type.

The following figure shows the available settings for the Two-button function:

Two-button function	send values
Subfunction	toggle values/scenes (up to 4 values)
Key assignment (1/2)	☒ next / previous ☐ previous / next
Number of values	2
Datapoint type	1Byte DPT 5.001 Percent (0...100%)
1. Toggle value	0%
2. Toggle value	40%
Time delay between the toggle values	no delay
Long keypress	☒ not active ☐ active
Switching type	☒ limit stop (after the last value, this is repeated) ☐ overrun (after the last value, the first value is sent...)

Figure 20: Settings – Send Values - Subfunction: Send Values/Scenes (up to 4 values)

The following table shows the available settings:

ETS-Text	Dynamic range [Default value]	Comment
Key assignment (1/2)/(3/4)	▪ next / previous ▪ previous / next	Only for two-button function! Setting in which direction to switch when the keys are pressed
Number of values	▪ 2 ▪ 3 ▪ 4	Setting between how many values to be switched
Datapoint type	▪ 2Bit DPT 2.001 Switch Control ▪ 1Byte DPT 5.001 Percent (0...100%) ▪ 1Byte DPT 5.005 Decimal factor (0...255) ▪ 1Byte DPT 17.001 Scene number ▪ 2Byte DPT 7.600 Color Temperature (Kelvin) ▪ 2Byte DPT 9.001 Temperature (°C) ▪ 2Byte DPT 9.004 Brightness (Lux) ▪ 3Byte DPT 232.600 RGB Value 3x(0...255)	Setting the type of data point to be sent
1.-4. Toggle value	any value according to set datapoint type	Setting the respective value for the toggle value
Time delay between the toggle values	no delay 1 s – 10 s	Setting a delay between sending the toggle values
Long keypress	▪ not active ▪ active	Activating a function with a long keystroke
Button 1-4: Action at long keypress	• 1.-4. Toggle value • 4. Toggle value if last 1. Toggle value, otherwise 1. Toggle value • Send 0 • "Off" to second object • "On" to second object	Only for two-button function! Setting the action with long keystroke
Action with a long keypress	• 1.-4. Toggle value • 4. Toggle value if last 1. Toggle value, otherwise 1. Toggle value • Send 0 • "Off" to second object • "On" to second object	Only for single-button function! Setting the action with long keystroke
Time for long keypress	Basic setting 0,1 s – 30 s	Setting of a time from when a long keystroke is detected
Switching type	• Limit stop (after the last value, this is repeated) • Overrun (after the last value, the first value is sent again)	Only for two-button function! Setting what should happen when the last switching value is reached

Table 29: Settings – Send Values - Subfunction: Send Values/Scenes (up to 4 values)

Functional principle:

The Toggle Values/Scenes function can send up to 4 different values when a button is pressed shortly. The values are toggled one after the other. Depending on the set parameters, for example, when the button is pressed, the 2nd toggle value is transmitted if the 1st toggle value was previously transmitted and the 3rd toggle value if the 2nd toggle value was previously transmitted.

The parameter "**Long keypress**" can be used to transmit a fixed value for a long keypress in addition to the changeover by a short keypress.

If you select "**1st - 4th toggle value**", a fixed toggle value (value corresponding to the assigned toggle values) is always transmitted when a long key is pressed.

The setting "**4th toggle value if last 1st toggle value, otherwise 1st toggle value**" represents a toggle function which switches between the 1st and 4th toggle value. If the 1st toggle value was transmitted last, the 4th toggle value is transmitted; for every other value the 1st toggle value is transmitted.

The setting "**Send 0**" sends the value 0 to the switchover object. If, for example, the data point type is set to percentage, the value 0% is sent.

The setting "**On to second object**" or "**Off to second object**" displays another communication object for the long keypress. The fixed value On or Off is then transmitted to this 1-bit object.

With the setting "**Time delay between the toggle values**", the sending of the telegram is delayed by the set time after the key is pressed. If you press the key again during the delay time, the next toggle value is activated immediately and the delay time is restarted. If, for example, you want to go directly from the first toggle value to the third toggle value without activating the second one - with a delay time of 2 seconds - press the key twice within 2 seconds.

Parameter "Switching type" (only available with two-button function):

Limit stop: With the switching type limit stop, the 4th switching value is sent again after sending the 4th switching value.

Overrun: With the overrun switching type, the 1st switching value is sent again after the 4th switching value.

For the single button function, this parameter is permanently set to overrun.

The following table shows the available communication objects:

Number	Name	Length	Usage
0	Push button 1: Push buttons 1/2: – forcible control, percentage value...		Transmission of the toggle value; DPT depending on the parameter setting
1	Push button 1 Push buttons 1/2 – status forcible control, percentage value...		Receiving of the status; DPT depending on the parameter setting
2	Push button 1 long: Push buttons 1/2 long: - Switch	1 Bit	Switching function of the long button. Only appears with the setting "On or Off to second object".

Table 30: Communication objects – Send Values - Subfunction: Send Values/Scenes (up to 4 values)

4.6.5.3 Subfunction: Shift Value

☒ Two-Button function

With the function Send values - Shift values, values can be shifted up or down within the set limits.

The following figure shows the available settings:

Two-button function	send values
Subfunction	shift value
Buttons (1/2) shift the values	☒ down / up ☐ up / down
Datapoint type	☒ 1Byte (0...100%) ☐ 1Byte (0...255)
Lower limit	0%
Upper limit	100%
Step width	10%
Repeated sending at pressed key	☐ not active ☒ active
Repetition time	1 s

Figure 21: Settings – Send Values - Subfunction: Shift Values

The following table shows the available settings:

ETS-Text	Dynamic range [Default value]	Comment
Buttons (1/2) (3/4) shift the values	- down / up - up / down	Setting which key shifts up and which key shifts down
Datapoint type	1 Byte (0...100%) 1 Byte (0...255)	Setting the datapoint type for the value shift
Lower limit	0 – 100% / 0 – 255 [0%/0]	Setting the lower limit value for the value shift
Upper limit	0 – 100% / 0 – 255 [100%/255]	Setting the upper limit value for the value shift
Step width	1 – 100% / 1 – 255 [10%/10]	Setting the step width between two sending commands
Repeated sending at pressed key	- not active - active	Activating the transmission repetition while holding down the key
Repetition time	200 ms – 3 s [1 s]	Repetition time between two telegrams with pressed key

Table 31: Settings – Send Values - Subfunction: Shift Values

Functional principle:

The "Shift value" function shifts the set datapoint type within the set limits. When the "Down" key is pressed, the set step size is subtracted from the last value and when the "Up" key is pressed, the set step size is added to the last value.

Lower/Upper limit:

The value is shifted within these limits. The function never falls below the lower limit value and never exceeds the upper limit value.

Step Width:

The step width indicates the distance between two sent telegrams. If the value 10% was sent during the previous transmission, the value 20% is sent with the next "Up" command - with a set step size of 10%..

Repeated sending at pressed key:

Repeated sending while holding down the key allows the function to increase/decrease the value until the upper/lower limit is reached.

The following table shows the available communications objects:

Number	Name	Length	Usage
0	Push buttons 1/2: – Percent value, Decimal value	1 Byte	Transmission of the value to be shifted. DPT depending on the parameter setting
3	Push buttons 1/2: – Status for display	1 Byte	Receiving of the status value. DPT depending on the parameter setting

Table 32: Communication objects – Send Values - Subfunction: Shift Values

4.6.5.4 Subfunction: Send value by state

☒ Single-Button function

The function "Send values - send value by state" can send a fixed value according to the set datapoint type when the key is pressed and a fixed value according to the set datapoint type when the key is released.

The following figure shows the available settings:

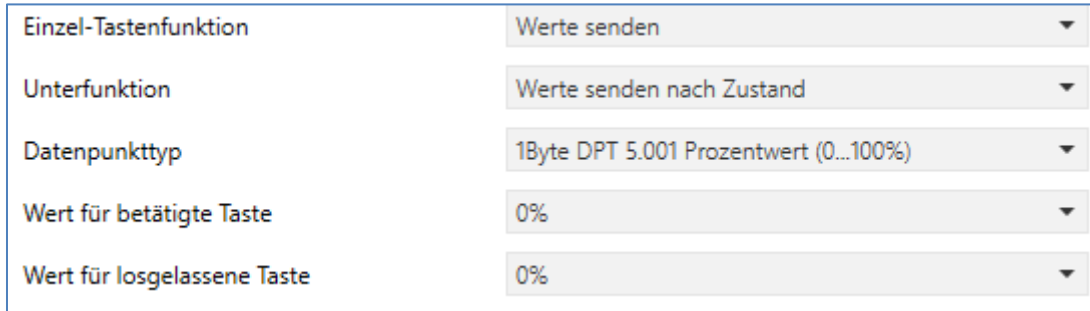


Figure 22: Settings – Send values - Subfunction: Send value by state

The following table shows the available settings:

ETS-Text	Dynamic range [Default value]	Comment
Datapoint type	2Bit DPT 2.001 Switch Control 1Byte DPT 5.001 Percent (0...100%) 1Byte DPT 5.005 - Decimal factor (0...255) 1Byte DPT 17.001 Scene number 2Byte DPT 7.600 - Color Temperature (Kelvin) 2Byte DPT 9.001 Temperature (°C) 2Byte DPT 9.004 Brightness (Lux) 3Byte DPT 232.600 - RGB Value 3x(0...255)	Setting the type of data point to be sent

Table 33: Settings – Send values - Subfunction: Send value by state

The value to be sent can be set according to the set datapoint type for **pressing** as well as for **releasing** the key.

The following table shows the available communication objects:

Number	Name	Length	Usage
0	Push button 1 – Forcible control, Percent value...		Transmission of the switching value; DPT depending on the parameter setting
3	Push buttons 1: – Status for display	1 Byte 2 Byte	Receiving of the status value. Not available for "switch control", "scene" and "RGB value"

Table 34: Communication objects – Send values - Subfunction: Send value by state

4.6.5.5 Subfunction: Multi-Tip Function (Send values after number of operations)

☒ Single-Button function

Depending on how often the key is pressed, the multi-tip function can send a fixed value according to the set data point type.

Note: A fast response time is recommended for the tip function.

The following figure shows all available settings:

Single-button function	send values
Subfunction	Multi-tip function (Send values after number of operations)
Output objects	☒ common object /DPT ☐ different objects / DPT
Number of tip-operations	☒ 2x ☐ 3x
Datapoint type	1Byte DPT 5.001 Percent (0...100%)
Value tip once	25%
Value tip twice	75%
3. function (long keypress)	☐ not active ☒ active
Datapoint type for long keypress	1Byte DPT 5.001 Percent (0...100%)
Value for long keypress	0%
Time for long keypress	basic setting
Max. time between two actuations	0,5 s

Figure 23: Settings – Send values - Subfunction: Multi-tip function

The following table shows the available settings:

ETS-Text	Dynamic range [Default value]	Comment
Output objects	- Common object / DPT - Different objects / DPT	Setting the available data points (single or separate objects)
Numbers of tip-operations	2x 3x	Settings of the possible tip-functions
Datapoint type	1Bit DPT 1.001 Switch 2Bit DPT 2.001 Switch Control 1Byte DPT 5.001 Percent (0...100%) 1Byte DPT 5.005 Decimal factor (0...255) 1Byte DPT 17.001 Scene number 2Byte DPT 7.600 Color Temperature (Kelvin) 2Byte DPT 9.001 Temperature (°C) 2Byte DPT 9.004 Brightness (Lux) 3Byte DPT 232.600 RGB Value 3x(0...255)	Set the data point type for the value to be sent. Available for selection: only one datapoint type if "Common object/DPT" or: Datapoint type 1x/2x/3x pressed if "Different objects/DPT"

Value tip once/twice/triple	any value according to set datapoint type	Setting the respective value for the switching value
3./4. Function (long keypress)	▪ not active ▪ active	Setting an additional function with a long keypress
Datapoint type for long keypress	▪ 1Bit DPT 1.001 Switch ▪ 2Bit DPT 2.001 Switch Control ▪ 1Byte DPT 5.001 Percent (0...100%) ▪ 1Byte DPT 5.005 Decimal factor (0...255) ▪ 1Byte DPT 17.001 Scene number ▪ 2Byte DPT 7.600 Color Temperature (Kelvin) ▪ 2Byte DPT 9.001 Temperature (°C) ▪ 2Byte DPT 9.004 Brightness (Lux) ▪ 3Byte DPT 232.600 RGB Value 3x(0...255)	Setting the action for a long keystroke
Value for long keypress	any value according to set datapoint type	Setting the respective value for the toggle value
Time for long keypress	Basic setting 0,1 s – 30,0 s	Setting from when a long keystroke is detected
Max. time between two operations	0,1 s – 30 s [0,5 s]	Setting an individual time between two button operations

Table 35: Settings – Send values - Subfunction: Multi-tip function

There is a special feature in the way the status value is displayed:

If a "**common object/DTP**" is selected for the multi-tip function, i.e. all tip values are from the same DTP, then the displayed status is also from this DTP.

If "**different objects/DTP**" is selected for the multi-tip function, an additional parameter "**Datapoint type object for display**" appears. Here - independent of the tip values - a separate DTP can be selected for the status to be displayed. For some settings, e.g. temperature, the display of the value can also be specified. For example, whether in "°C" or "K".

The following table shows the available communication objects:

Number	Name	Length	Usage
0	Push button 1 – Forcible control, Percent value...		Sending the tip value if common object/DTP . DPT depending on the parameter setting
0	Push button 1, 1x tip:		Sending the tip value when different objects/DTP . DPT depending on the parameter setting and number of operations.
1	Push button 1, 2x tip:		
2	Push button 1, 3x tip:		
3	Push button 1 long: – Forcible control, Percent value...		Transmission of the value for long keystroke; DPT depending on the parameter setting
4	Push button 1 – Status for display		Receiving the status. DPT depending on the parameter setting

Table 36: Communication objects – Send values - Subfunction: Multi-tip function

4.6.5.6 Presentation (Symbols)

- ☒ Single-Button function
- ☒ Two-Button function

The display of the function "Send values" depends on the selected data point type. Depending on the selected data point type, 1-4 different symbols and their color can be selected.

The following table provides an overview of the settings for the various datapoint types:

Datapoint type	Adjustable symbols	Comment
1 Bit Switch, DPT 1.001	2 Symbols, for ON and OFF	
2 Bit Switch control, DPT 2.001	4 symbols can be set: 1 symbol for each possible state	
1 Byte Percent, DPT 5.001	Three icons can be set for the ranges 0%, 1% - 90% and > 90%. Therefore the button evaluates the information of the "Status for display" object	Special presentation possible! Additionally it is possible to display the status value below the symbol.
1 Byte Decimal factor, DPT 5.005	3 symbols can be set for the ranges 0, 1-229 and 230-255. Therefore, the button evaluates the information of the "Status for display" object	Special presentation possible! Additionally it is possible to display the status value below the symbol.
1 Byte Scene Number, DPT 17.001	1 fixed symbol can be set	
2 Byte Color temperature (Kelvin), DPT 7.600	1 fixed symbol can be set	
2 Byte Temperature, DPT 9.001	1 fixed symbol can be set	Special presentation possible!
2 Byte Bgightness, DPT 9.004	1 fixed symbol can be set	
3 Byte RGB Wert, DPT 232.600	1 fixed symbol can be set	

Table 37: Presentation (Symbols) – Send values

Special presentation:

For certain data point types, a special presentation (see table above) is possible

The following presentations are possible:

ETS-Text	Dynamic range [Default value]	Comment
Special display (DPT 5.001, DPT 5.005)	▪ bar symbol ▪ bar symbol with fan ▪ value as text (0-100%) ▪ value as text (0-255)	At the settings "bar symbol" and "bar symbol with fan", the corresponding symbol is displayed and the bar is filled according to the current status. With the settings "value as text" the text is displayed large on the display.
Special display (DPT 9.001)	▪ value as symbol + "°C" ▪ value as symbol without unit ▪ value as symbol + "°K"	With the settings "value as symbol" the text is displayed large on the display.

Table 38: Special presentation – Send values

Additional bar display:

If "normal view" is selected, the parameter "additional bar display" appears for the data point types DPT 5.001 (percentage value) and DTP 5.005 (decimal value). If this is active, a bar display appears in the display next to the symbol, which visualises the current status by filling the bar. As with the display of the symbols, the object "status for display" is also evaluated here.

Display type	☒ normal view	☐ special symbols
Additional bar display	☐ not active	☒ active

Figure 24: Activation – Additional bar display

4.6.6 Switch/send value short/long (with 2 objects)

- ☒ Single-Button function
- ☒ Two-Button function

With the function "switch/send values short/long (with 2 objects)", 2 different values can be sent for the short and long key. The short and the long key have different objects, whereby it is also possible to send out different data point types.

The following figure shows the available settings (here for the two-button function):

Two-button function	switch/send values short/long (with 2 objects)
Action short keypress	switch
Value button 1	☒ off ☐ on
Value button 2	☐ off ☒ on
Behavior at long keypress	☒ no send short ☐ send short
Action long keypress	send values
Send condition for long keypress	left and right keys may transmit
Datapoint type	1Byte DPT 5.001 Percent (0...100%)
Value button 1	0%
Value button 2	100%
Time for long keypress	basic setting
Display of function short/long	☒ display action of short push button ☐ display action of long push button

Figure 25: Settings – Switch/send value short/long (with 2 objects)

The following table shows the available settings:

ETS-Text	Dynamic range [Default value]	Comment
Action short/long keypress	▪ Switch ▪ Switch Off ▪ Switch On ▪ Toggle ▪ Send values ▪ Not active	Setting the function for the short/long key. "Switch On/Off" only for single-button function. "Switch" only with two-button function
Datapoint type	▪ 2Bit DPT 2.001 Switch Control ▪ 1Byte DPT 5.001 Percent (0...100%) ▪ 1Byte DPT 5.005 Decimal factor (0...255) ▪ 1Byte DPT 17.001 Scene number ▪ 2Byte DPT 7.600 Color Temperature (Kelvin) ▪ 2Byte DPT 9.001 Temperature (°C) ▪ 2Byte DPT 9.004 Brightness (Lux) ▪ 3Byte DPT 232.600 RGB Value 3x(0...255)	Setting the datapoint type for the value to be sent Setting only available if "Action short/long keypress" is set to "Send values".
Value button 1-4	any value according to set datapoint type	Only for two-button function! Setting the respective value on operation
Value	any value according to set datapoint type	Only for single-button function! Setting the respective value on operation
Behavior at long keypress	▪ Do not send "short" ▪ Send "short"	Setting whether the value for the short button is also transmitted when the long button is pressed
Sending condition for long keypress	▪ Upper/left and lower/right buttons may send ▪ Only upper/left button may send ▪ Only lower/right button may send	Only for two-button function! Setting the sending condition for the long button. Value upper/lower or left/right key depends on the key alignment "horizontal/vertical"
Time for long keypress	Basic setting 0,1 s – 30,0 s	Setting from when a long keypress is detected
Display of function short/long	▪ Display action of short button ▪ Display action of long button	Setting which button should be shown on the display as the status

Table 39: Settings – Switch/send values short/long (with 2 objects)

Functional principle:

With the two-button function you can send different values for the two buttons (for the short and long buttons). With the single-button function, only one value can be sent for both the short and the long button. You can define the type of data point separately for the short and long keys.

Presentation of the function:

Since different data point types can be set for the short and long button, either the function for the long button or the function for the short button can be displayed.

The object "Status for display" therefore appears only for the function which is displayed.

The following table shows the available communication objects:

Number	Name	Length	Usage
0	Push button 1 short: Push buttons 1/2 short: – Forcible control, Percent value...		Transmission of the switching value for short button; DPT depending on the parameter setting
1	Push button 1 short: Push buttons 1/2 short: – Status for toggle/display	1 Bit	Receiving the status for short button. Only for function "Toggle"
1	Push button 1 short: Push buttons 1/2 short: – Status for display		Receive the status for the short button. DPT depending on the parameter setting. For 2-bit, scene, RGB no status
2	Push button 1 long: Push buttons 1/2 long: – Forcible control, Percent value...		Transmission of the switching value for long button; DPT depending on the parameter setting
3	Push button 1 long: Push buttons 1/2 long: – Status for toggle/display	1 Bit	Receiving the status for long button. Only for function "Toggle"
3	Push button 1 long: Push buttons 1/2 long: – Status for display	1 Bit	Receive the status for the long button. DPT depending on the parameter setting. For 2-bit, scene, RGB no status

Table 40: Communication objects – Switch/send values short/long (with 2 objects)

Presentation:

If the button function "Switch short/long" is selected, either the function of the short key or the function of the long key can be displayed. The display settings which are shown depend on whether the function to be displayed was configured as switching (switching, switching on, switching off, toggling) or as sending values.

If the function was parameterised as "switch", the following settings are possible for the display:

The switching function can represent the two possible states (On/Off) by means of freely selectable symbols with a freely selectable colour. The evaluated status is always visualised:

Color of symbol for "Off"

foreground color

Symbol for "Off"

Symbol 16: light off



Color of symbol for "On"

sun orange

Symbol for "On"

Symbol 17: light on



Figure 26: Presentation of the "switch" function

If the function has been parameterized as "**Send values**", the following settings are possible.

The presentation of the function "send values" depends on the selected datapoint type. Depending on the selected datapoint type, 1-4 different symbols and their color can be selected.

The following table provides an overview of the settings for the various datapoint types:

Datapoint type	Adjustable symbols	Comment
1 Bit Switch, DPT 1.001	2 Symbols, for ON and OFF	
2 Bit Switch control, DPT 2.001	4 symbols can be set: 1 symbol for each possible state	
1 Byte Percent, DPT 5.001	Three icons can be set for the ranges 0%, 1% - 90% and > 90%. Therefore the button evaluates the information of the "Status for display" object	Special presentation possible! Additionally it is possible to display the status value below the symbol.
1 Byte Decimal factor, DPT 5.005	3 symbols can be set for the ranges 0, 1-229 and 230-255. Therefore, the button evaluates the information of the "Status for display" object	Special presentation possible! Additionally it is possible to display the status value below the symbol.
1 Byte Scene Number, DPT 17.001	1 fixed symbol can be set	
2 Byte Color temperature (Kelvin), DPT 7.600	1 fixed symbol can be set	
2 Byte Temperature, DPT 9.001	1 fixed symbol can be set	Special presentation possible!
2 Byte Brightness, DPT 9.004	1 fixed symbol can be set	
3 Byte RGB Wert, DPT 232.600	1 fixed symbol can be set	

Table 41: Presentation (Symbols) – Send values

Special presentation:

For certain data point types, a special presentation (see table above) is possible

The following presentations are possible:

ETS-Text	Dynamic range [Default value]	Comment
Special display (DPT 5.001, DPT 5.005)	▪ bar symbol ▪ bar symbol with fan ▪ value as text (0-100%) ▪ value as text (0-255)	At the settings "bar symbol" and "bar symbol with fan", the corresponding symbol is displayed and the bar is filled according to the current status. With the settings "value as text" the text is displayed large on the display.
Special display (DPT 9.001)	▪ value as symbol + "°C" ▪ value as symbol without unit ▪ value as symbol + "K"	With the settings "value as symbol" the text is displayed large on the display.

Table 42: Special presentation – Send values

4.6.7 Temperature Shift

☒ Two-Button function

Function only available with Push Button Smart 55/63 with temperature sensor.

The temperature shift can be used to shift the setpoint value of the heating control.
The following picture shows the available settings (here shifting over 1 bit):

Two-button function	temperature shift
Temperature shift	1Bit temperature shift
Key assignment (1/2)	☒ shift temperature up / down ☐ shift temperature down / up
Use internal temperature	☐ not active ☒ active
Repeated sending at pressed key	☐ not active ☒ active
Repetition time	1 s

Figure 27: Settings – Temperature shift

The following table shows the available settings:

ETS-Text	Dynamic range [Default value]	Comment
Temperature shift	▪ 1 Bit temperature shift ▪ 1 Byte temperature shift ▪ 2 Byte temperature shift ▪ 2 Byte shift of basis comfort setpoint value	Setting how the temperature is to be shifted
Key assignment (1/2)	▪ Shift temperature up/down ▪ Shift temperature down/up	Assignment of which key is used to shift up and which key is used to shift down
Use internal temperature	▪ not active ▪ active	Setting whether the internal temperature measurement value is to be used to display the actual value
Step width	0,1 ... 1 K [0,5 K]	Set the step width between two send commands. Not visible when shifting over 1 bit
Lower limit	-10 ... 10 K [-5 K]	Setting of the lower limit value for the setpoint shift. Only for shifting over 1Byte/2Byte
Upper limit	-10 ... 10 K [5 K]	Setting of the upper limit value for the setpoint shift. Only for shifting over 1Byte/2Byte

Lower limit	0 ... 45 °C [19 °C]	Setting of the lower limit value for the setpoint shift. Only for "2Byte shift over basis comfort setpoint value"
Upper limit	0 ... 45 °C [23 °C]	Setting of the upper limit value for the setpoint shift. Only for "2Byte shift over basis comfort setpoint value"
Repeated sending at pressed key	▪ not active ▪ active	Setting whether the shift should be repeated at fixed intervals while the key is held
Repetition time	200 ms – 3 s [1 s]	Sets the time between two telegrams of the temperature shift when repetition is activated
Switchover considers status object	▪ yes ▪ no	Setting whether to perform shifting according to the current status. Not for shifting over 1 bit

Table 43: Settings – Temperature shift

Functional principle:

This function shifts the current setpoint within the set limits. When the "-" key is pressed, the setpoint is subtracted from the last value by the set step width and when the "+" key is pressed, the setpoint is added to the last value by the set step width.

Upper/lower limit:

The value is shifted within these limits. The function never falls below the lower limit value and never exceeds the upper limit value.

Step width:

The step width indicates the distance between two transmitted telegrams. For example, with a step width of 0.5 K and a setpoint value of 21°C, pressing the "-" key would cause 20.5°C and set to 21.5°C when the "+" key is pressed.

Switchover considers status object:

If the **status value is not taken into account** when switching over, the device remembers the last value sent and sends the next or previous value the next time it is pressed, regardless of whether another value has been sent to the object in the meantime.

If the **status value is taken into account** in the changeover, the device sends the next higher or next lower changeover value - with reference to the last received status value - the next time it is pressed. If, for example, the value "1K" was sent when the last key was pressed and then the value "2K" was sent from another location, the value "2.5K" is sent the next time the "+" key is pressed.

The temperature can be shifted in 4 different ways:

1 Bit temperature shift

With the 1-bit temperature shift the Push Button Smart 55/63 merely transmits the command 1 for a shift of the setpoint upwards and a 0 for a shift of the setpoint downwards.

The following table shows the available communication objects:

Number	Name	Length	Usage
0	Push buttons 1/2 – Setpoint shift	1 Bit	Sends the Setpoint shift
1	Push buttons 1/2 – Status actual temperature	2 Byte	Receiving an external temperature for the display of the current temperature - is only displayed if the parameter "Use internal temperature value" is set to "not active"
2	Push buttons 1/2 – Status actual setpoint	2 Byte	Receiving the current setpoint temperature of the temperature controller; to display the status

Table 44: Communication objects – Temperature shift via 1 Bit

1 Byte temperature shift

With the 1-byte temperature shifting, the Push Button Smart 55/63 sends a 1-byte value which is multiplied by the step width set in the controller. In order for the display and the current setpoint value to be synchronous, the step width and the limits of the setpoint shift have to be specified in the Push Button Smart 55/63.

The following table shows the available communication objects:

Number	Name	Length	Usage
0	Push buttons 1/2 – Setpoint shift	1 Byte	Sends the Setpoint shift
1	Push buttons 1/2 – Status current temperature	2 Byte	Receiving an external temperature for the display of the current temperature - is only displayed if the parameter "Use internal temperature value" is set to "not active"
2	Push buttons 1/2 – Status current setpoint	2 Byte	Receiving the current setpoint temperature of the temperature controller; to display the status
3	Push buttons 1/2 – Status setpoint shift	2 Byte	Receives the current status of setpoint shift from the controller.

Table 45: Communication objects – Temperature shift via 1 Byte

2 Byte temperature shift

With the 2-byte temperature shift, the Push Button Smart 55/63 sends a 2-byte temperature value which is added or subtracted from the set basic comfort value.

The Push Button Smart 55/63 sends the shift by the set step width at each keystroke.

In order for the display and the current reference value to be synchronous, the limits of the setpoint shift have to be specified in the Push Button Smart 55/63 and have to be set to the same values as in the controller.

The following table shows the available communication objects:

Number	Name	Length	Usage
0	Push buttons 1/2 – Setpoint shift	2 Byte	Sends the Setpoint shift
1	Push buttons 1/2 – Status current temperature	2 Byte	Receiving an external temperature for the display of the current temperature - is only displayed if the parameter "Use internal temperature value" is set to "not active"
2	Push buttons 1/2 – Status current setpoint	2 Byte	Receiving the current setpoint temperature of the temperature controller; to display the status
3	Push buttons 1/2 – Status setpoint shift	2 Byte	Receives the current status of setpoint shift from the controller.

Table 46: Communication objects – Temperature shift via 2 byte

2 Byte shift of basis comfort setpoint

With the "2 byte shift of the basic comfort setpoint" the push-button sends a new basic comfort setpoint to the controller to be activated. It evaluates the object "Status basis comfort setpoint" and sends the new setpoint +/- the set step width to the controller to be actuated.

The range for the setpoint adjustment can be limited via the limits of the setpoint adjustment to be set.

The following table shows the available communication objects:

Number	Name	Length	Usage
0	Push buttons 1/2 – Basis comfort setpoint	2 Byte	Sends the Setpoint shift
1	Push buttons 1/2 – Status current temperature	2 Byte	Receiving an external temperature for the display of the current temperature - is only displayed if the parameter "Use internal temperature value" is set to "not active"
2	Push buttons 1/2 – Status current setpoint	2 Byte	Receiving the current setpoint temperature of the temperature controller; to display the status
3	Push buttons 1/2 – Status basis comfort setpoint	2 Byte	Receives the current status of basis comfort setpoint from the controller.

Table 47: Communication objects – 2 Byte shift of comfort setpoint value

Presentation:

☒ Two-Button function

The temperature shift is represented by the temperature symbol. The representation is fixed to this symbol.

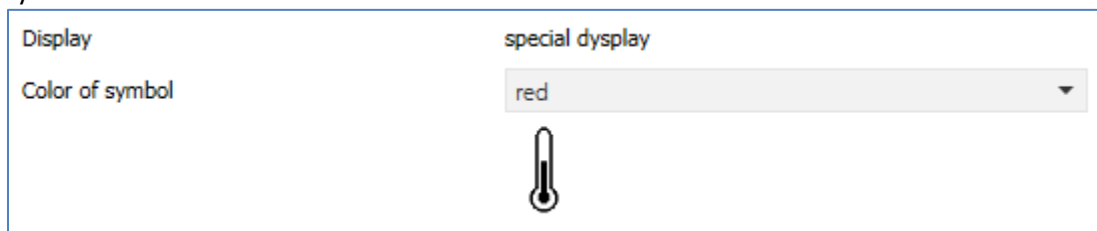


Figure 28: Presentation – Temperature shift

4.6.8 Mode selection

- ☒ Single-Button function
- ☒ Two-Button function

Function only available with Smart 55/63 button with temperature sensor

With the function "Mode selection" the HVAC mode in temperature controllers can be switched. The following figure shows the available settings (here for the two-button function):

Figure 29: Settings – Mode selection

The following table shows the available settings:

ETS-Text	Dynamic range [Default value]	Comment
Switching values	▪ Comfort /Standby ▪ Comfort/Night ▪ Comfort/Standby/ Night ▪ Comfort/Standby/ Night/Frost	Setting between which operating modes can be toggled.
Push Button long	▪ not active ▪ active	Activates an action for the long keystroke
Button 1: Action with long keypress	▪ Comfort ▪ Standby ▪ Night ▪ Frost	Setting which operating mode should be called with a long keystroke to the upper/left button Only available with two-button function!
Button 2: Action with long keypress	▪ Comfort ▪ Standby ▪ Night ▪ Frost	Setting which operating mode should be called with a long keystroke to the lower/right button Only available with two-button function!

Action with long keypress	▪ Comfort ▪ Standby ▪ Night ▪ Frost	Setting which operating mode should be called with a long keystroke Only available with single-button function!
Switching type	▪ Limit stop ▪ Overrun	Only available with two-button function! Setting what should happen when the last switching value is reached
Switchover considers status object	• Yes • No	Setting whether the changeover should send the next switching value according to the current status
Status display	▪ HVAC-Mode ▪ HVAC-Status	Setting how to display the status

Table 48: Settings – Mode selection

Function principle:

The function "mode selection" can send up to 4 different operating modes by shortly pressing a button. The operating modes are switched one after the other. Depending on the set parameters, for example, at a keystroke the second operating mode is sent if the 1st operating mode has been sent before or the third operating mode will be sent if the second operating mode has been sent before...

Parameter "Push button long":

In addition to switchover by a short keystroke, a fixed operating mode can be sent at a long keystroke.

Here one of the 4 operating modes can be sent. This means that a fixed operating mode (independent of the last switching value) would always be sent with a long keystroke.

Parameter "Switching type":

Limit stop: With the switching type "Limit stop" the 4th operating mode is sent again after sending the 4th operating mode.

Overrun: In the switching type "Overrun", the 1st operating mode is sent again after the 4th operating mode.

For the single-button function, this parameter is set permanently to "Overrun".

Switchover considers status object:

If the **status value is not taken into account** when switching over, the device remembers the last value sent and sends the next or previous value the next time it is pressed, regardless of whether another value has been sent to the object in the meantime.

If the **status value is taken into account** in the changeover, the device sends the next higher or next lower changeover value - with reference to the last received status value - the next time it is pressed. If, for example, the value "1K" was sent when the last key was pressed and then the value "2K" was sent from another location, the value "2.5K" is sent the next time the "+" key is pressed.

The following table shows the available communication objects:

Number	Name	Length	Usage
0	Push button 1: Push buttons 1/2: – Mode selection (HVAC Mode)	1 Byte	Switchover of operating mode
1	Push button 1: Push buttons 1/2: – Status HVAC Mode	1 Byte	Receives the status of the heating actuator / temperature controller
1	Push button 1: Push buttons 1/2: – HVAC Status	1 Byte	Receives the status of the heating actuator / temperature controller

Table 49: Communication objects – Mode selection

Presentation:

- ☒ Single-Button function
- ☒ Two-Button function

To each operating mode, a fixed symbol is assigned. The color of the symbol can be adjusted for any operating mode:

Color of symbol for comfort mode
foreground color


Color of symbol for standby mode
foreground color


Color of symbol for night mode
foreground color


Color of symbol for frost protection mode
foreground color


Figure 30: Presentation – Mode selection

4.6.9 Scene

☒ Single-Button function

The scene function allows you to call up and save scenes that cover different trades. If the memory function is activated, it can be executed by pressing and holding down a key.

The following figure shows the available settings:

Single-button function	scene
save scene	☐ no save ☒ save
Time for long keypress	1,0 s
Scene number	1

Figure 31: Settings – Scene

The following table shows the available settings:

ETS-Text	Dynamic range [Default value]	Comment
Save scene	- no save - save	Release of saving the scenes; the saving is carried out by a long keystroke
Time for long keypress	Basic setting 0,1 s – 30,0 s [1,0 s]	Only visible if "Save scene" is active. Setting the time for the long keypress to save a scene
Scene number	1 – 64 [1]	Setting the respective scene number

Table 50: Settings – Scene

The following table shows the available communication objects:

Number	Name	Length	Usage
2	Push button 1 – Scene	1 Byte	Call up/saving of scenes

Table 51: Communication object – Scene

Presentation:

☒ Single-Button function

The scene function is represented by a fixed symbol. Since the scene function does not get a status, the function is represented by a fixed symbol:

Color of symbol	foreground color
Symbol	Symbol 24: scene



Figure 32: Presentation – Scene

To call a scene or store a new value for the scene, the corresponding code is sent to the corresponding communication object for the scene:

Scene	Call		Save	
	Hex.	Dec.		Hex.
1	0x00	0	0x80	128
2	0x01	1	0x81	129
3	0x02	2	0x82	130
4	0x03	3	0x83	131
5	0x04	4	0x84	132
6	0x05	5	0x85	133
7	0x06	6	0x86	134
8	0x07	7	0x87	135
9	0x08	8	0x88	136
10	0x09	9	0x89	137
11	0x0A	10	0x8A	138
12	0x0B	11	0x8B	139
13	0x0C	12	0x8C	140
14	0x0D	13	0x8D	141
15	0x0E	14	0x8E	142
16	0x0F	15	0x8F	143
17	0x10	16	0x90	144
18	0x11	17	0x91	145
19	0x12	18	0x92	146
20	0x13	19	0x93	147
21	0x14	20	0x94	148
22	0x15	21	0x95	149
23	0x16	22	0x96	150
24	0x17	23	0x97	151
25	0x18	24	0x98	152
26	0x19	25	0x99	153
27	0x1A	26	0x9A	154
28	0x1B	27	0x9B	155
29	0x1C	28	0x9C	156
30	0x1D	29	0x9D	157
31	0x1E	30	0x9E	158
32	0x1F	31	0x9F	159
....				
64	0x3f	63	0xBF	191

Table 52: Scene call and save

4.6.10 Blinds/Shutter

- ☒ Single-Button function
- ☒ Two-Button function

The blinds/shutter function is used to control shutter actuators, which can be used for the adjustment and control of blinds/shutters.

The following figure shows the available settings (here: Two-button function):

Figure 33: Settings – Blinds/Shutter

The following table shows the available settings:

ETS-Text	Dynamic range [Default value]	Comment
Key assignment (1/2)	▪ Up/Down ▪ Down/Up	Only with two-button function! Setting the key assignment (upper/left or lower/right key) for the up/down function
Operation function	▪ Long=Up/Down (or "move")/ Short=Stop/slats open/close ▪ Short=Up/Down (or "move") / Long=Stop/slats open/close ▪ Short=Up/Down/Stop (MDT Single Object Control) ▪ Short=Up/Down/Stop / Long=Central object (MDT Single Object Control)	Setting the concept of how to operate with long/short buttons. Functions with "MDT Single Object Control" only available with two-button function!
Time for long keypress	Basic setting 0,1 s – 30 s	Setting of an individual time from when a long keystroke is detected
Group control extra long	▪ not active ▪ active	Activation of a further function with extra long keystroke
Time for extra-long keypress	0,1 s – 30 s [2,0 s]	Setting of an individual time from when an extra long keystroke is detected

Table 53: Settings – Blinds/Shutter

Two communication objects are displayed for the "blind" function: the object "Stop/slat open/close" and the object "blinds up/down ".The moving object is used to move the blinds/shutters up and down. The stop/step object is used to adjust the slats. In addition, this function stops the up/down movement as far as the end position has not yet been reached.

In the case of the two-button function, the key assignment can be set; the table below shows the relationships:

	Function Up/Down			Function Down/Up	
Input	Push button left	Push button right		Push button left	Push button right
Moving object	Up	Down		Down	Up
Stop/Step object	Stop/slats open	Stop/slats close		Stop/slats close	Stop/slats open

Table 54: Two-button function – Blind function

The single-button function is used to toggle between the up and down movement after each keystroke.

As blind actuators always use a 1 signal for down movement and a 0 signal for up movement, the push-button also outputs this signal.

It is also possible to swap the action for the long and short push-button action. Thus, it is possible to select whether a long or a short keystroke is to be used. The stop/step object then adopts the other operating concept.

Only one object is available as "Status for display". It refers to the height position. A position for the slat cannot be visualised.

Group control extra long

If the key is pressed extra long, the single blind starts moving after 0.5 s.

After another 1.5 s, the group starts with the same movement.

This activates the group function:

If Stop is then pressed briefly, all blinds stop. If the slat is adjusted with "short", the group also adjusts the slat.

After approx. 90 s the group function is deactivated again internally and a Stop only affects the individual channel.

MDT Single Object Control:

☒ Two-Button function

MDT Single Object Control enables a new operating concept for controlling roller shutters. For use, the following parameter has to be set to active in the MDT shutter actuator to be controlled:

Up/Down movement can stop (Single Object Control)
☒ not active
☐ active

Now it is possible to start the up/down movement with a short keystroke and also to stop an active up/down movement with a short keystroke.

With the setting "Short = Up/Down/Stop / Long = Central object (MDT Single Object Control)" an additional object is displayed, which can start the up/down movement with a long keystroke and can also stop an active up/down movement with a long keystroke. This function can be used, for example, to move a single shutter in a room with a short keystroke and to move the entire room with a long keystroke

The following table shows the available communication objects:

Number	Name	Length	Usage
0	Push Button 1: Push Buttons 1/2: – Blinds Up/Down	1 Bit	Up/down command for the shutter actuator
0	Push Buttons 1/2 short:– Shutter Up/Down/Stop	1 Bit	MDT Single Object Control: Central object for up/down/stop function. Only with two-button function and for roller shutters!
1	Push Button 1 Push Buttons 1/2 – Stop/Slats Open/Close	1 Bit	Open/close slats; stop command
1	Push Buttons 1/2 long: – Central Shutter Up/Down/Stop	1 Bit	MDT Single Object Control: Central object for up/down/stop function. Only with two-button function and for roller shutters!
2	Push Button 1 – Status for change of direction	1 Bit	Only with single button function Receipt of the status with current information about the direction of the blind actuator
3	Push Button 1 Push Buttons 1/2 – Status for display	1 Byte	Receive the status of the current blind/roller shutter position.
4	Push Button 1 Group extra long: Push Buttons 1/2 Group extra long – Blinds Up/Down	1 Bit	Up/down command for the shutter actuator
5	Push Button 1 Group extra long: Push Buttons 1/2 Group extra long – Stop/Slats Open/Close	1 Bit	Open/close slats; stop command

Table 55: Communication objects – Blinds/Shutter

Presentation:

- ☒ Single-Button function
- ☒ Two-Button function

The blind/shutter function can be displayed with 3 freely selectable symbols and freely selectable color. The button evaluates the information of the "Object 3 - Status of blind for display". In addition, the current status can be displayed as text under the symbol.

Optionally, the current status can be displayed next to the symbol by activating the parameter **"additional bar display"**. Here the value is visualised by the filling of the bar:

Additional bar display	☐ not active ☒ active
Color of symbol for top (<10%)	foreground color
Symbol for top (<10%)	Symbol 10: Shutter <10%
Color of symbol for central (10% - 90%)	foreground color
Symbol for central (10% - 90%)	Symbol 11: Shutter 50%
Color of symbol for bottom (>90%)	foreground color
Symbol for bottom (>90%)	Symbol 12: Shutter >90%

Figure 34: Presentation – Blinds/Shutter

4.6.11 Dimming

- ☒ Single-Button function
- ☒ Two-Button function

The dimming function can be used to control dimming actuators.

The following figure shows the available settings (here: for the two-button function):

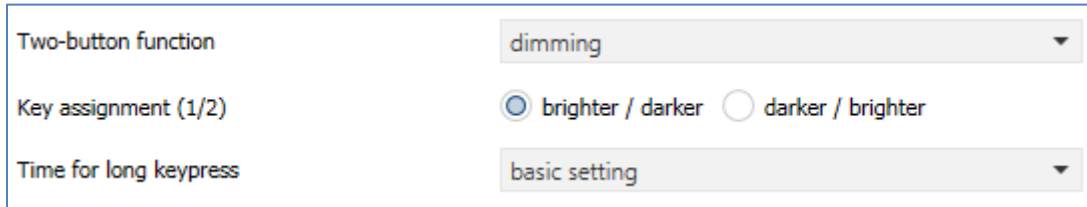


Figure 35: Setting – Dimming

The following table shows the available settings:

ETS-Text	Dynamic range [Default value]	Comment
Key assignment (1/2)	▪ brighter/darker ▪ darker/brighter	Only with two-button function! Setting the key assignment for the direction (brighter/darker)
Time for long keypress	Basic setting 0,1 s – 30,0 s	Setting an individual time from when a long key press is detected

Table 56: Setting – Dimming

If a push-button is parameterised as a dimming function, two communication objects appear for this push-button, firstly the function for a short push-button action, the "Dimming On/Off" switch object, and secondly the function for a long push-button action, the dimming object "Dimming relative".

The two-pushbutton function dimming can be parameterised either as brighter/darker or as darker/brighter. The relationships are shown in the following table:

	Function brighter/darker			Function darker/brighter	
Button - Input	Button 1	Button 2		Button 1	Button 2
Dimming function	brighter	darker		darker	brighter
Switching function	ON	OFF		OFF	ON

Table 57: Functionality – Two-button Dimming

With the one-button function dimming, the direction (brighter/darker) is reversed depending on the communication object "Status for toggle".

The dimming function is a start-stop dimming function, i.e. as soon as the dimming function becomes active, a brighter or darker command is assigned to the input until it is released. After the command is released, a stop telegram is sent which ends the dimming process.

The following table shows the available communication objects:

Number	Name	Length	Usage
0	Push button 1 Push buttons 1/2 – Dimming On/Off	1 Bit	Switching command for the dimming function
1	Push button 1 Push buttons 1/2 – Dimming relative	4 Bit	Command for relative dimming
2	Push button 1 – Status for toggle	1 Bit	Only for single button function; Receipt of the status with current information about the status of the actuator to be controlled
3	Push button 1 Push buttons 1/2 – Status for display	1 Byte	Receive the status of the current blind/roller shutter position.

Table 58: Communication objects – Dimming

Type of presentation:

- ☒ Single-Button function
- ☒ Two-Button function

Normal view:

The dimming function can be displayed with 3 freely selectable symbols and freely selectable colour. The push-button evaluates the information of the "Object 3 - Status for display".

Special symbols:

Here you can alternatively select a "bar symbol", a "value as text (0 – 100%)" or a "value as text (0...255)". The information from "Object 3 - Status for display" is also evaluated here.

Additional bar display:

Only with "normal view" there is the option of showing a bar display next to the symbol. By filling the bar, this visualises the status of the dimming value.

Display type

☒ normal view
 ☐ special symbols

Additional bar display

☐ not active
 ☒ active

Color of symbol for 0%

foreground color

Symbol for 0%

Symbol 16: light off



Color of symbol for 0% - 90%

sun orange

Symbol for 0% - 90%

Symbol 17: light on



Color of symbol for >90%

sun orange

Symbol for >90%

Symbol 17: light on



Figure 36: Presentation – Dimming

4.6.12 HSV color control

- ☒ Single-Button function
- ☒ Two-Button function

With the HSV color control, LED dimmers with RGB/RGBW function can be controlled and their status can be displayed on the display.

The following figure shows the available settings:

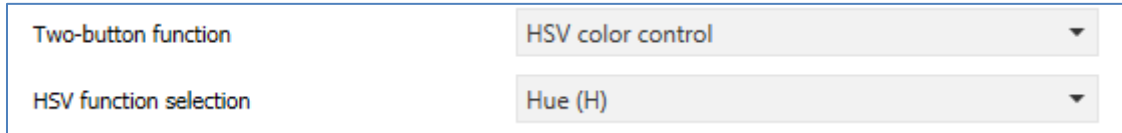


Figure 37: Settings – HSV color control

The table below shows all available settings:

ETS-Text	Dynamic range [Default value]	Comment
HSV function selection	▪ Hue (H) ▪ Saturation (S) ▪ Value (V)	Setting of the function to be controlled

Table 59: Settings – HSV color control

The HSV color control can control the 3 parameters (hue, saturation, brightness) of the HSV chromatic circle. A 4 bit dimming command and a switching command are available for the control. The switching command is used to switch the LED strip on/off. With the 4 bit dimming command, a cycle through the HSV chromatic circle can be performed. This is a start-stop dimming, that means as soon as the dimming function becomes active, it will move inside the chromatic circle until the button is released. After releasing, a stop telegram is sent which terminates the dimming process.

The following table shows the available communication objects:

Number	Name	Length	Usage
0	Push button 1: Push buttons 1/2: – HSV control On/Off	1 Bit	Only for subfunction “Value” Switch command for color control
1	Push button 1: Push buttons 1/2: – Change HSV Hue (H)/ Saturation (S)/ Value (V) relative	4 Bit	Cycle through the HSV chromatic circle
2	Push button 1 – Value for toggle	1 Bit	Only for single-button function and subfunction “Value” Feedback signal about the current state of the actuator to be switched
3	Push button 1: Push buttons 1/2: – Status for Hue/ Saturation/ Value	1 Byte	Receiving the state of the HSV chromatic circle

Table 60: Communication objects – HSV color control

Presentation:

- ☒ Single-button function
- ☒ Two-button function

Hue, Saturation and Value are each represented by a special symbol. The current status is evaluated by the push button and the current position is displayed with an arrow on the respective special symbol.

The 3 special symbols are shown below:

ETS-Text	Symbol	Comment
Hue		
Saturation		Color of the symbol can be switched between red, green, blue
Value		

Table 61: Special symbols – HSV color control

4.6.13 Color temperature (Tunable White)

- ☒ Single-Button function
- ☒ Two-Button function

With the Tunable White function the color temperature can be controlled in compatible KNX dimmers and its status can be displayed.

The following figure shows the available settings (here for the two-button function):

Two-button function

color temperature (Tunable White) ▼

Datapoint type for state object

☒ bar for color temperature, state in %
☐ bar for color temperature, state in Kelvin

Figure 38: Settings – Color temperature (Tunable White)

The table below shows all available settings:

ETS-Text	Dynamic range [Default value]	Comment
Datapoint type for state object	▪ Bar for color temperature, state in % ▪ Bar for color temperature, state in Kelvin	Setting the datapoint type for the state; If the state is output in Kelvin, this is scaled from 2700K (= 0%) to 6000K (= 100%)

Table 62: Settings – Color temperature (Tunable White)

With color temperature (Tunable White), the light temperature can be controlled. A 4 bit dimming command is available for the control. This allows a cycle through the color temperature. It is a start-stop dimming that means as soon as the dimming function becomes active the control loop runs through the entire range. The dimming process ends either when the lower or upper end is reached or when the push button is released again. A stop telegram is sent with the release.

The following table shows the available communication objects:

Number	Name	Length	Usage
1	Push button 1: Push buttons 1/2: – Change color temperature relative	4 Bit	Cycle through the color temperature
3	Push button 1: Push buttons 1/2: – Status for color temperature	1 Byte	Receiving the status of the color temperature

Table 63: Communication objects – Color temperature (Tunable White)

Presentation:

- ☒ Single-Button function
- ☒ Two-Button function

The color temperature is represented by a special symbol. The current status is evaluated by the button and the current position is displayed with an arrow on the special symbol.

The special symbol is shown below:

ETS-Text	Symbol	Comment
Color temperature		

Table 64: Special symbol – Color temperature (Tunable White)

The keys can also be labelled. Therefore you have the following possibilities:

ETS-Text	Dynamic range [Default value]	Comment
Labelling key 1/2	▪ None ▪ Over text input ▪ “_” Symbol ▪ “+” Symbol ▪ “down arrow” - Symbol ▪ “up arrow” - Symbol	Selection how to label the buttons. Only with two-button function
Text	Any text	Appears when “over text input” is active. Text with up to 6 Bytes for each button is allowed
Function name	▪ No text ▪ From “Message text” (14Byte object 65) ▪ From “State text” (14Byte object 66) ▪ From “State text” (14Byte object 67) ▪ Over text input	Selection how to label the buttons. Only with single-button function
Text	Any text	Appears when “over text input is active”. Text with up to 14 Bytes for the button is allowed

Table 65: Labelling of buttons – Color temperature (Tunable White)

4.7 Status LED

4.7.1 LED basic settings

The LED basic settings affect all active status LEDs. The following figure shows the available settings:

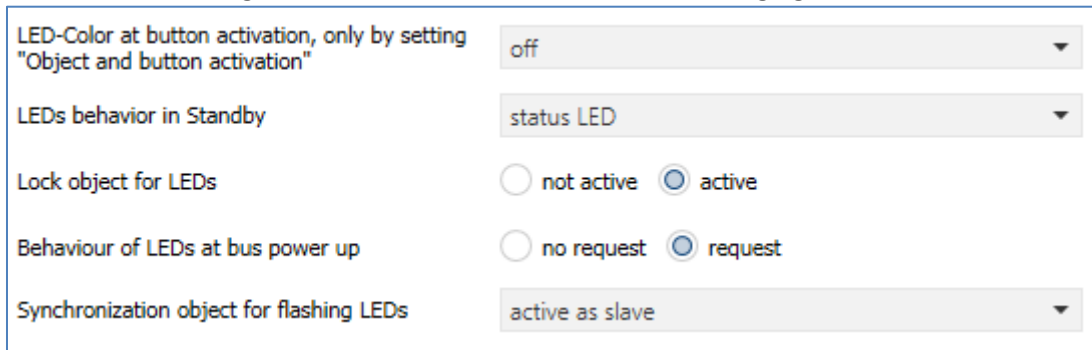


Table 66: Basic settings – LED

The following table shows the available settings:

ETS-Text	Dynamic range [Default value]	Comment
LED-color at button activation, only by setting "Object and button activation"	off , red, green, yellow, blue, pink, cyan, white	Parameter is only used at double assignment: "Keystroke + internal / external object"
LEDs behavior in Standby	- Off - Orientation LED Status-LED	Setting how the LEDs are used during Standby mode
Color of orientation-LEDs in Standby	off, red, green, yellow, blue, pink, cyan, white	Colour adjustment when used as orientation LEDs
Lock object for LEDs	not active - active	Activates a lock object which can disable (= switch off) all LEDs
Behaviour of LEDs at bus power up	- no request request	Setting whether to actively request the objects after a reset. Only active when "LED reacts to external object"
Synchronisation object for flashing LEDs	not active - active as Master - active as Slave	Setting whether the synchronous LED object is active and whether it is used as Master/Slave. This allows the flashing of several buttons to be synchronised.

Table 67: Basic settings – LED

The parameter "LED color at button activation" defines the colour change of all status LEDs when a button is pressed if they are assigned twice by the setting "LED reacts to external/internal object and button activation". In this case, the settings in menu LED 1-4 refer to control via the object; the default setting "LED color at button activation" defines the behaviour when a button is pressed.

The following table shows the available communication objects:

Number	Name	Length	Usage
60	LED – Blocking object	1 Bit	Blocking of all LED's
76	LED synchron – Blinking status as master/slave	1 Bit	Sends the flashing status for Master or receives the status as Slave

Table 68: Communication objects – LED basic settings

4.7.2 LED 1-4

The following figure shows the available settings for the LEDs:

LED active

☐ no
 ☒ yes

LED reacts to:

buttons activation

Brightness Day (global)

level 3

Brightness Night (global)

level 1

LED display behavior

Color at Day (value ON)

white

Color at Day (value OFF)

off

Behavior at day (value ON)

☒ permanent
 ☐ blinking

Color at Night (value ON)

white

Color at Night (value OFF)

off

Behavior at night (value ON)

☒ permanent
 ☐ blinking

Object for priority

not active

Figure 39: Settings – LED 1-4

The following table shows the available settings:

ETS-Text	Dynamic range [Default value]	Comment
LED active	- no yes	Activation of the LED
LED reacts to	- external object - internal object button activation - external object and button activation - internal object and button activation	Setting how LED is to be controlled
Datapoint type	1Bit DPT 1.001 Switch 1Byte DPT 5.001 Percent (0...100%) 1Byte DPT 5.005 Decimal factor (0...255)	Parameter only available if LED reacts to "external object". Setting the DTP of the external object
ON if greater than	0 – 99 % [50 %]	Only available with the setting "1 byte Percent value". Defines the value at which the LED switches on
Selection of object number	any object	Parameters only available when LED reacts to internal object. Linked to internal object
Brightness Day (global)	level 3 (Value not changeable)	Brightness of the LED for "Day" according to the setting in the "Display setting" menu
Brightness Night (global)	level 1 (Value not changeable)	Brightness of the LED for "Night" according to the setting in the "Display setting" menu
LED display behaviour (only for selection with "external object" and setting "1Bit Switch" or "1Byte Percent")		
Color at „Day“ (value ON)	off, red, green, yellow, blue, pink, cyan, white	Color for the object value ON / activated button in Day mode
Color at „Day“ (value OFF)	off , red, green, yellow, blue, pink, cyan, white	Color for the object value ON / non-activated button in Day mode
Behavior at „Day“ (value ON)	permanent - blinking	Setting the lighting behavior when LED has the object value ON or the key is pressed
Color at „Night“ (value ON)	off, red, green, yellow, blue, pink, cyan, white	Color for the object value ON / activated button in Night mode
Color at „Night“ (value OFF)	off , red, green, yellow, blue, pink, cyan, white	Color for the object value OFF / non-activated button in Night mode
Behavior at „Night“ (value ON)	permanent - blinking	Setting the lighting behavior when LED has the object value ON or the key is pressed

Table 69: Settings – LED 1-4

Each LED can either react to any external object, such as the status of an actuator, an internal object or keystroke. In addition, an LED can also react to an external or internal object and key activation. With this setting, the settings in menu LED 1-4 refer to the control of the LED via the object. In this case, the behaviour of key activation is set globally for all LEDs and is described in menu 4.7.1 LED basic settings. The behaviour for key activation has priority.

If the setting LED reacts to "**internal object**" is selected, the object number to which the LED is to be linked is selected.

If, for example, single-button 1 is set to "Switch" – "Toggle" and the LED is to respond to the object "value for toggle", the object number "1" has to be entered. In this case the status LED would be switched on if the object has a 1 and switched off if the object has a 0.

With the setting LED reacts to "**external object**", different DPTs can be selected.

If the LED reacts to "**1Bit Switch**", the values for ON and OFF can be parameterised.

If the LED reacts to the DPT **1Byte Percent value**, the value can be specified here from which the LED is considered to be ON. For example, if a pre-set value of 50% is entered, this means that the LED is switched on from a value of 50% and switched off at values <50%.

If the LED reacts to "**1Byte decimal value**", the following colours apply to the following values

Object value: 0 = black, 1 = white, 2 = red, 3 = green, 4 = blue, 5 = yellow, 6 = pink, 7 = cyan

Each LED can assume different colours and **behaviour for Day and Night operation**. It switches depending on the object 72 - Day/Night.

The following table shows the available communication objects:

Number	Name	Length	Usage
52	LED 1 – Switch, Percent value, Decimal value	1 Bit 1 Byte	Control of the LED. Object is only shown if LED reacts to external object

Table 70: Communication object – LED

4.7.2.1 LED Priority

The LED priority can force the status LED into a defined state and thus override control via an external/internal object or button activation.

The following figure shows the available settings for each of the active LEDs:

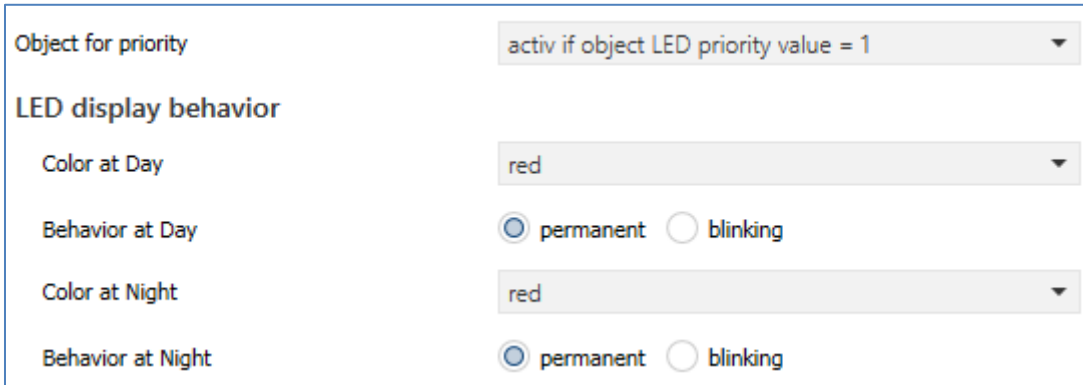


Figure 40: Settings – LED Priority

The following table shows the available settings:

ETS-Text	Dynamic range [Default value]	Comment
Object for priority	▪ active if object LED priority value = 1 ▪ active if object LED priority value = 0	Sets the polarity of the LED priority
Color at Day	off, red , green, yellow, blue, pink, cyan, white	Color for an active LED priority in Day mode
Behavior at Day	▪ permanent ▪ blinking	Setting the lighting behavior for an active LED priority in Day mode
Color at Night	off, red , green, yellow, blue, pink, cyan, white	Color for an active LED priority in Night mode
Behavior at Night	▪ permanent ▪ blinking	Setting the lighting behavior for an active LED priority in Night mode

Table 71: Setting – LED Priority

As long as the LED priority is active, the parameterized state for the LED priority is kept and the LED does not react to the "normal" control as described in 4.7.2 LED 1-4.

The following table shows the available communication objects:

Number	Name	Length	Usage
56	LED 1 Priority	1 Bit	Controlling the LED priority

Table 72: Communication object – LED Priority

4.8 Logic

4.8.1 Logic basic settings

The following figure shows the activation and the basic functions of the logic functions:

Setting Logic 1	not active ▼
Setting Logic 2	not active ▼
Setting Logic 3	not active ▼
Setting Logic 4	not active ▼
Behaviour at Bus power up	☐ no read ext. logic objekts ☒ read ext. logic objects

Figure 41: Basic settings – Logic

The "Behavior on bus power up" parameter defines whether the external objects are to be requested after a bus voltage return.

Additional parameters are then displayed for an activated logic.

4.8.2 Logic 1-4

If a logic is activated, the logical operation and the object type for the output can be specified:

Setting Logic 1	Or ▼
Description of function	Logic 1
Additional text	
Objecttype 1	switch ▼
Send condition	at change output ▼
Invert output	☒ no ☐ yes

Figure 42: Settings – Logic 1-4

2 text fields are available:

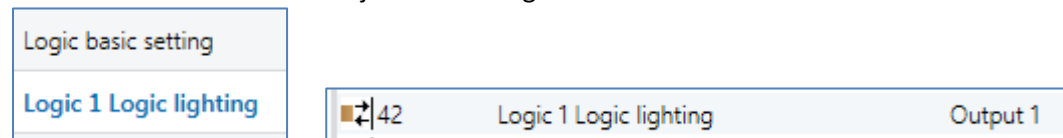
Description of function	Logic lighting
Additional text	Outdoor lighting terrace, south

Figure 43: Settings – Text fields Logic 1-4

Texts with up to 30 bytes can be entered for the text field "Description of function".

Up to 80 bytes are allowed for the text field "Additional text".

The text entered to **describe the function** appears both in the menu behind the corresponding logic and in the communication objects of the logic



The **additional text** is merely additional information on the logic. It is not visible anywhere else.

The following table shows the available settings:

ETS-Text	Dynamic range [Default value]	Comment
Setting Logic 1-4	▪ not active ▪ And ▪ Or ▪ Send value when button is pressed	Activates the logic function and set the logical operation
Object type 1-4	▪ Switch ▪ Scene ▪ Value ▪ Forcible control 2 Bit	Sets the object type for sending a value when the logic operation is fulfilled
Scene number/ value/ forcible control 2Bit	any value according to DPT	Setting the value which is sent when the logic operation is fulfilled. Only available for object type: Scene / value / forcible control 2Bit
Sending condition	▪ not automatic ▪ at input telegram ▪ at change output ▪ at change output (send only 0) ▪ at change output (send only 1)	Only for object type "Switch". The sending condition can be specified and a sending filter can be set
Invert output	▪ no ▪ yes	Only for object type "Switch". Determines whether the output signal should be inverted or not

Table 73: Settings – Logic 1-4

The following communication objects are available:

Number	Name	Length	Usage
42	Logic – Output 1	1 Bit 2 Bit 1Byte	Output of the logic operation. DPT depending on the parameter setting

Table 74: Communication object – Logic 1-4

If a logic operation is fulfilled, the corresponding value is transmitted.

For the "Switching" object type, a transmission condition or a transmission filter can also be defined for the output. The logic operation can, for example, send with each input telegram, only send if the output of the logic operation changes or only send a 1 or 0. In addition, the output can be inverted for the switching object type and thus a 0 can be made into a 1 and a 1 into a 0

4.8.2.1 Logic 1-4 submenu

A submenu is activated for each activated logic. In this submenu up to 2 external logic objects and up to 2 buttons can be integrated into the logic operation.

The following figure shows the corresponding settings:

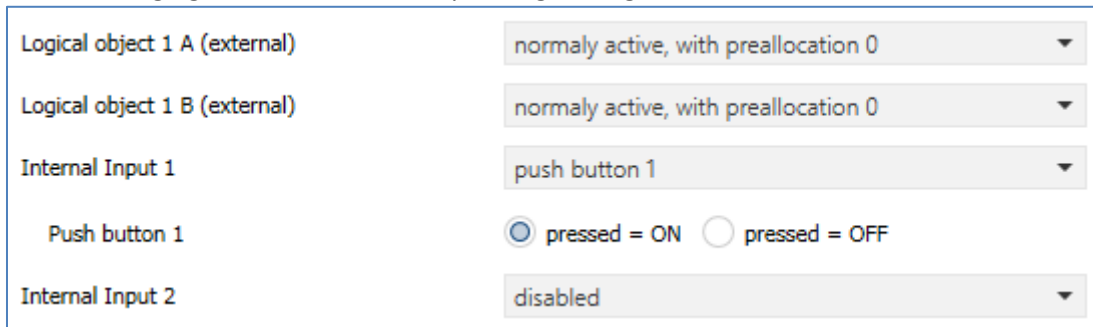


Figure 44: Settings – Submenu Logic 1-4

The following table shows the available settings:

ETS-Text	Dynamic range [Default value]	Comment
Logic object 1 A/B (external)	- disabled - normally active, with preallocation 0 - inverted active, with preallocation 0 - normal active, with preallocation 1 - inverted active, with preallocation 1	Activation of the external logic object, the preallocation value defines the value of the external logic object after a bus voltage recovery if no value has yet been sent to the communication object
Internal Input 1 / 2	- disabled - Push Button 1-4	Activation of the buttons for the logic function, each button can be activated normally or inverted

Figure 45: Settings – Activation of Logic inputs

Depending on the activated inputs of the logic operations, the corresponding communication objects are displayed:

Number	Name	Length	Usage
40	Logic 1 – Input 1 A	1 Bit	external input for the logic function
41	Logic 1 – Input 1 B	1 Bit	external input for the logic function

Table 75: Communication objects – Inputs Logic 1-4

For each external logic input, a communication object is displayed which can be connected to any other communication object of 1 bit size, e.g. the status of an actuator.

Furthermore, the logic operation can react to the operation of the buttons.

Each logic input can be inserted either normally or inverted.

4.9 Temperature Setting

Function only available for BE-TASxxT4.01

4.9.1 Temperature- and Humidity measurement

4.9.1.1 Temperature measurement

The following figure shows the menu for temperature measurement:

Figure 46: Settings – Temperature measurement

The following table shows the available settings:

ETS-Text	Dynamic range [Default value]	Comment
Send measured value on change	- not active - active	Setting whether the measured value should be sent on change
Send measured value on change of	0,1 ... 2 K [0,1 K]	Setting at which change the measured value should be sent. Only visible if "Send measured value on change" is activated
Send measurement value cyclic	not send, 1 min – 60 min [5 min]	Cyclic sending of the measured value
Messages	- not active - active	Activation of the message function
Upper message value	20 ... 45 °C [28 °C]	Setting range of the upper/lower message value. Only visible when parameter "Messages" is activated
Lower message value	3 ... 30 °C [18 °C]	
Calibration value for internal sensor	-5 ... 5 K [0 K]	Adjustment for internal sensor
Sensor internal/external	100% internal 90% internal/ 10% external 80% internal/ 20% external ... 100% external	Setting the weighting between internal and external sensor

Table 76: Settings – Temperature measurement

The setting **"Send measured value on change"** can be used to set the change on which the sensor sends its current temperature value. If set to "do not send", the sensor does not send a value, regardless of the size of the change.

The setting **"Send measured value cyclically"** can be used to set the intervals at which the sensor sends its current temperature value. The cyclical transmission function can be activated or deactivated independently of the setting "Send measured value on change". Measured values are also sent if the sensor has not detected a change. If both parameters are deactivated, a value is never sent.

In addition, a correction value can be parameterised for the internal sensor under the setting **"Calibration value for internal sensor"**. This correction value serves to increase/decrease the actual measured value. The adjustment range is from -5 to 5 K, i.e. the measured value can be lowered by - 5 Kelvin and raised to a maximum of 5 Kelvin. For example, if a value of 2 is set, the measured temperature value is raised by 2 Kelvin. This setting makes sense if the sensor is installed in an unfavourable location, such as above a radiator or in a draught area. The temperature sensor sends the corrected temperature value when this function is activated.

Important: After initial installation/programming the measured values are stable after approx. 30 minutes.

An external sensor can be activated or deactivated via the weighting **"Sensor internal/external"**. If the weighting is set to 100% internal, no external sensor is activated and no communication objects appear for the external sensor. With any other weighting, an external sensor is activated and the associated communication objects are also displayed. The "External temperature sensor" object receives the temperature currently measured by the sensor. The "mixed" temperature is shown in the display, and this measured temperature value is transmitted via object 80.

Example:

Weighting: 50% internal / 50% external, internal sensor 25°C, external temperature 15°C
=> transmitted temperature 20°C.

The external temperature sensor is monitored with a time of 30 min. In case of an error only the internal sensor is used!

If the **"Messages"** function is activated, two messages can be parameterised. One is the message function for the lower response value, the "lower message value ", and the other is the upper response value, the " upper message value ".

The two message functions each have a separate communication object.

Principle:

If the maximum value is exceeded, a "1" is transmitted. If the value falls below it, a "0" is transmitted. If the value falls below the minimum value, a "1" is transmitted. If it is exceeded, a "0" is transmitted.

The following table shows the available communication objects:

Number	Name	Length	Usage
80	Temperature – Send measured value	2 Byte	Sends the current temperature
81	Temperature – External sensor	2 Byte	Receives the temperature of the external sensor
82	Temperature – Max. value exceeded	1 Bit	Sends a message if the upper message value is exceeded
83	Temperature – Min. value fallen below	1 Bit	Sends a message when the value falls below the lower message value

Table 77: Communication objects – Temperature measurement

4.9.1.2 Relative Air Humidity

The relative humidity indicates how much the air is saturated with water (%).
The following picture shows the menu for the relative humidity:

Relative air humidity

Send measured value on change ☐ not active ☒ active

Send measured value on change of %

Send measurement value cyclic

Messages ☐ not active ☒ active

Upper message value %

Lower message value %

Calibration value for internal sensor %

Sensor internal/external

Figure 47: Settings – Relative air humidity

The following table shows the available settings:

ETS-Text	Dynamic range [Default value]	Comment
Send measured value on change	- not active - active	Setting whether the measured value should be sent on change
Send measured value on change of	1 ... 10 % [1 %]	Setting at which change the measured value should be sent. Only visible if "Send measured value on change" is activated
Send measurement value cyclic	not send, 1 min – 60 min [5 min]	Cyclic sending of the measured value
Messages	- not active - active	Activation of the message function
Upper message value	25 ... 100 % [70 %]	Setting range of the upper/lower message value. Only visible when parameter "Messages" is activated
Lower message value	0 ... 75 % [30 %]	
Calibration value for internal sensor	-20 ... 20 % [0 %]	Adjustment for internal sensor
Sensor internal/external	100% internal 90% internal/ 10% external 80% internal/ 20% external ... 100% external	Setting the weighting between internal and external sensor

Table 78: Settings – Relative air humidity

The setting "**Send measured value on change**" can be used to set the change on which the sensor sends its current relative humidity measured value. If the setting is "do not send", the sensor does not send a value, regardless of the size of the change.

The setting "**Send measurement value cyclically**" can be used to set the intervals at which the sensor sends its current relative humidity measurement value. The cyclical sending function can be activated or deactivated independently of the setting "Send measured value on change". Measured values are also sent if the sensor has not detected a change. If both parameters are deactivated, no value is ever sent.

In addition, a correction value can be parameterised for the internal sensor under the setting "**Calibration value for internal sensor**". This correction value serves to increase/decrease the actual measured value. The adjustment range is from -20 to 20 %, i.e. the measured value can be lowered by -20 % and raised to a maximum of 20 %. For example, if a value of 10 is set, the measured humidity value is increased by 10 %. The humidity sensor sends the corrected humidity value when this function is activated.

Important: After initial installation/programming, the measured values are stable after approx. 30 minutes.

An external sensor can be activated or deactivated via the weighting "**Sensor internal/external**". If the weighting is set to 100% internal, no external sensor is activated and no communication objects appear for the external sensor. With any other weighting, an external sensor is activated and the associated communication objects are also displayed. The "External humidity sensor" communication object receives the relative humidity currently measured by the sensor. The "mixed" relative humidity is shown in the display and this humidity value is transmitted via object 84.

Example:

Weighting: 50% internal / 50% external, internal sensor 40%, external relative humidity 20%.
=> transmitted relative humidity 30 %.

The external humidity sensor is monitored with a time of 30 min. In case of an error, only the internal sensor is used!

If the function "**Messages**" is activated, two messages can be parameterised. One is the message function for the lower response value, the "minimum message value", and the other the upper response value, the "maximum message value".

The two message functions each have a separate communication object.

Principle:

If the maximum value is exceeded, a "1" is transmitted. If the value falls below it, a "0" is transmitted. If the value falls below the minimum value, a "1" is transmitted. If it is exceeded, a "0" is transmitted.

The following table shows the available communication objects:

Number	Name	Length	Usage
84	Relative air humidity – Send measured value	2 Byte	Sends the currently measured relative humidity
85	Relative air humidity – External humidity sensor	2 Byte	Receives the humidity of the external sensor
86	Relative air humidity – Max. value exceeded	1 Bit	Sends a message if the upper message value is exceeded
87	Relative air humidity – Min. value fallen below	1 Bit	Sends a message when the value falls below the lower message value

Table 79: Communication objects – Relative air humidity

4.9.1.3 Dew point temperature

The following figure shows the available settings:

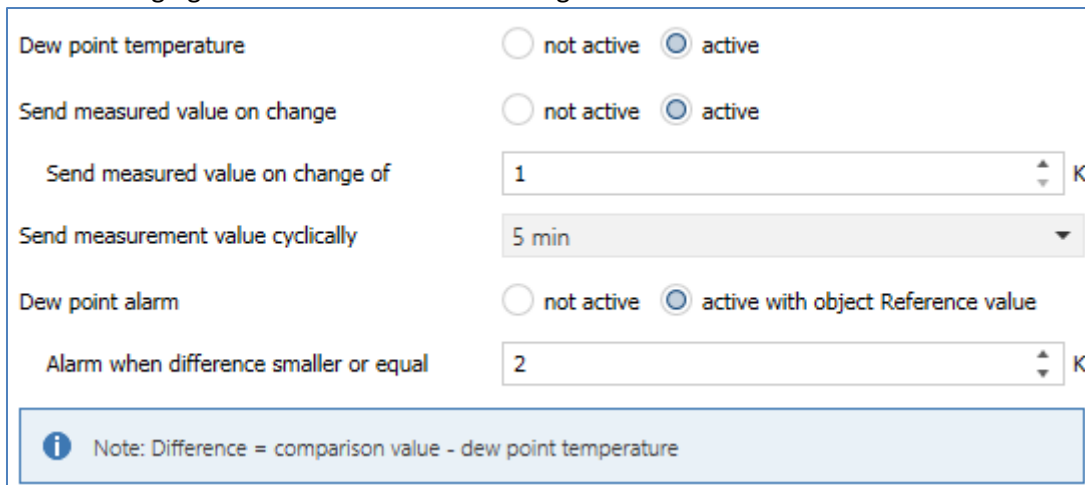


Figure 48: Settings – Dew point temperature

The following table shows the available settings:

ETS-Text	Dynamic range [Default value]	Comment
Dew point temperature	- not active - active	Setting to activate the dew point temperature
Send measured value on change	- not active - active	Setting whether the measured value should be sent on change
Send measured value on change of	1 ... 10 K [1 K]	Setting at which change the measured value should be sent.
Send measurement value cyclically	not send, 1 min – 60 min [5 min]	Cyclic sending of the measured value
Dew point alarm	- not active - active with object	Setting to activate a dew point alarm using a comparison value
Alarm when difference smaller or equal	-10 ... 10 K [2 K]	Setting the difference when to send an alarm

Table 80: Settings – Dew point temperature

The dew point temperature is calculated from the absolute air humidity and describes the temperature at which the air is completely saturated with water.

Condensation may form on surfaces that are colder than the dew point temperature.

The following table shows the available communication objects:

Number	Name	Length	Usage
88	Dew point temperature – Send measured value	2 Byte	Sends the current dew point temperature
89	Dew point temperature – Comparison value	2 Byte	Receipt of the comparison value for calculation
90	Dew point temperature – Send alarm	1 Bit	Sends the Dew point alarm

Table 81: Communication objects – Dew point temperature

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6 Attachment

6.1 Statutory requirements

The above-described devices must not be used with devices, which serve directly or indirectly the purpose of human, health- or lifesaving. Further the devices must not be used if their usage can occur danger for humans, animals or material assets.

Do not let the packaging lying around careless, plastic foil/ -bags etc. can be a dangerous toy for kids.

6.2 Disposal routine

Do not throw the waste equipment in the household rubbish. The device contains electrical devices, which must be disposed as electronic scrap. The casing contains of recyclable synthetic material.

6.3 Assemblage



Danger to life from electric current!

The device may only be installed and connected by qualified electricians. Observe the country-specific regulations and the applicable KNX guidelines

6.4 History

Version 1.0 - First version of Manual

DB V1.0

- State 10/2020