Technical Manual

MDT Glass Push Button II Smart

BE-GT20W.01
BE-GT20S.01
BE-GT2TW.01
BE-GT2TS.01

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1 Content

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2 Overview

2.1 Overview devices

The description refers to the following devices (order number in bold):
- **BE-GT20W.01** Glass Push Button II Smart, white
  - Second generation of Glass Push Button with up to 12 key functions
- **BE-GT20S.01** Glass Push Button II Smart, black
  - Second generation of Glass Push Button with up to 12 key functions
- **BE-GT2TW.01** Glass Push Button II Smart, white, temperature sensor
  - Second generation of Glass Push Button with up to 12 key functions and integrated temperature sensor
- **BE-GT2TS.01** Glass Push Button II Smart, black, temperature sensor
  - Second generation of Glass Push Button with up to 12 key functions and integrated temperature sensor

2.1.1 Special functions of the Glass Push Button II Smart

The Glass Push Button II Smart has a very extensive application with the following special functions:

Large RGB color display for visualization
Large, active color display for function- and status indication can be freely parameterized by the user. The symbols and colors are freely selectable!

Symbols can be reloaded via DCA App
A free DCA app can be used to reload and parameterize any image of the size 64x64 pixels!

Can be used as a 4/6/8/12-button
Up to 3 levels with up to 4 functions per level can be activated. Thus, the button can control up to 12 functions. The levels as well as the functions can be named individually. The selection of the levels is made via the upper two buttons, the call of the individual functions via the 4 buttons below.

Extensive application
The function range of the application exceeds that of a "normal" push button by a multiple. In addition to the usual functions such as blinds, switching, dimming, scene, the user is also provided with functions for controlling the HSV color circle or a function for controlling the color temperature (Tunable White). The button contains special symbols to control and visualize these functions!

RGB State LEDs
An RGB status LED is available to the user for each function. This can visualize both, a keystroke as well as an external or internal status with any color.

Logic functions

By means of a total of 4 logic functions it is also possible to realize interleaved function calls, e.g. to release a scene call only in day mode. The logic function can process both internal and external states.

"Slap" function

The "Slap" function, which is triggered by the simultaneous touching of 3 or more keys, allows intuitive operation. By this function, e.g. the light can be switched on when entering the room without the operator having to search for the exact position of the individual keys.

Info-Display

In standby mode up to 4 status elements can be displayed. These status elements can visualize any values of the KNX bus as well as the time or 14 byte status texts.

Message function

A total of 4 1-bit alarms are available, which can display predefined messages. For example, the opening of a window or a motion can be reported. There is also a 14 byte message object which can display text messages sent via the bus.

Long Frame Support

Supports the transmission of longer telegrams and thus of more user data per telegram. This significantly shortens the programming time (as of ETS5).
Requirement: The use of a programming interface which supports the transmission of long frames, e.g. MDT SCN-USBR.01 or SCN-IP000.02/SCN-IP100.02.

2.2 Usage & Possible Applications

The buttons have all the functions of a modern KNX switch and are designed for flush mounting. By means of a keystroke, the pushbutton can carry out parameterized functions, e.g. scenes or dimming. All models have a large color display and 6 buttons, which are equipped with RGB LEDs. For each function specific symbols and colors can be parameterized. All buttons can be parameterized as 4-/6-/8- or 12-fold push button. The selection of the functions 7 to 12 is controlled via levels. Furthermore, the buttons have a brightness sensor with which the button can dynamically adapt to the ambient brightness. 4 logic blocks, a cleaning function and a "Slap function" complete the performance spectrum of the push buttons.
The pushbuttons of the BE-GT2T version also have an integrated temperature sensor, which can be used for room temperature detection. The BE-GT2T version has additional functions for controlling the integrated controller of the MDT heating actuator.

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2.3 Exemplary Circuit Diagrams

Figure 1: Exemplary circuit diagrams
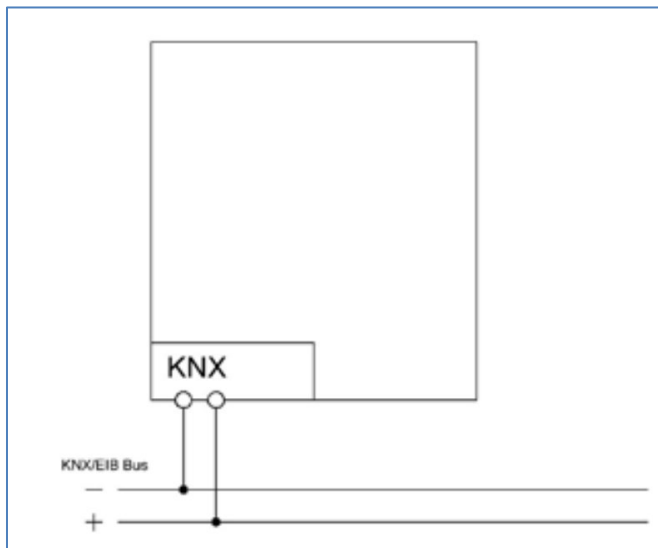
2.4 Structure & Handling

The following figure shows the structure of the Glass Push button II Smart:
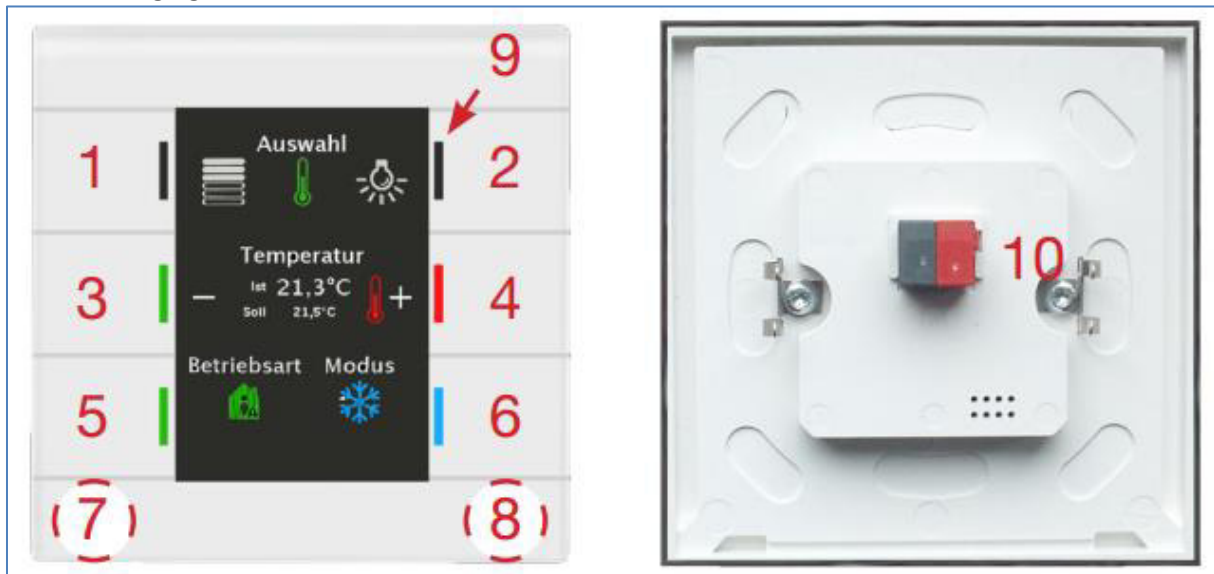
Figure 2: Structure & Handling

1, 2, 3, 4, 5, 6	=	Sensor surfaces for operating the key functions
7, 8	=	To be pressed simultaneously to enter the programming mode
9	=	RGB-Status indication
10	=	Bus connection terminal

2.5 Settings at the ETS-Software

Selection in the product database

<u>Manufacturer:</u> MDT Technologies
<u>Product family</u>: Glass Push Button II Smart
<u>Medium type:</u> Twisted Pair (TP)
<u>Product name:</u> addicted to the used type, e.g.: GT2TW.01
<u>Order number:</u> addicted to the used type, e.g.: GT2TW.01

2.6 Commissioning

After wiring the device, the assignment of the physical address and the programming of the application follows:
  (1) Connect the interface with the bus, e.g. MDT USB Interface
  (2) Set bus power up
  (3) Activate the programming mode by pressing buttons 7 and 8 on the device simultaneously, (Status LEDs on the right and left side of the button alternately flash red)
  (4) Loading of the physical address out of the ETS-Software by using the interface (Red LEDs will turn off 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)

2.7 Reload Symbols

Any symbols can be loaded into the device. To do this, a DCA app "MDT Glass Push Button II Smart" has to be downloaded and installed from the MDT website or the my.knx.org shop. The images to be uploaded must meet the following requirements:
  • Format: Bitmap
  • Size: 64x64 Pixel
  • Color: Black/White
  • Usage: ETS5 or higher

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3 Communication Objects

3.1 Overview and Usage

The following table shows the available objects and their usage:

No.	Name	Object function	Data Point	Direction	Info	Usage	Note
Objects per push button:							
0	Push button 1 Push buttons 1/2	Blind Blind Up/Down	DPT 1.008	send	Push button sends Up/Down command	Shutter actuator	Communication object is displayed when the button is set to "blind"
0	Push button 1 Push buttons 1/2	Dimming On/Off	DPT 1.001	send	Push button sends On/Off command	Dimming actuator	Communication object is displayed when the button is set to "dimming"
0	Push button 1 Push buttons 1/2	Switch Switch On/Off	DPT 1.001	send	Push button sends On/Off command	Switch actoator, etc.	Communication object is displayed when the button is set to "switch"
0	Push Button 1	Toggle	DPT 1.001	send	Push button sends On/Off command	Switch actoator, etc.	Communication object is displayed when the single button is set to "switch – toggle"
0	Push Button 1	Send status	DPT 1.001	send	Push button sends On/Off command	Switch actoator, etc.	Communication object is displayed when the single button is set to "Switch – send status"

0	Push button 1 Push buttons 1/2	HSV control On/Off	DPT 1.001	send	Push button sends On/Off command	LED controller, etc.	Communication object is displayed when the button is set to „HSV color control" and here only at setting „V (Value)"
0	Push button 1 Push buttons 1/2	Decimal value	DPT 5.005	send	Push button sends Decimal value (0-255)	Dimming actuator, Shutter actuator, etc.	Communication object is displayed when the button is set to "send value"
0	Push button 1 Push buttons 1/2	Percentage value	DPT 5.001	send	Push button sends Percent value (0-100%)	Dimming actuator, Shutter actuator, etc.	Communication object is displayed when the button is set to "send value"
0	Push button 1 Push buttons 1/2	Scene	DPT 1.001	send	Push button sends Scene command	any actuators	Communication object is displayed when the button is set to "send value"
0	Push button 1 Push buttons 1/2	Forcible control	DPT 2.002	send	Push button sends forcible control value	Presence detector, etc.	Communication object is displayed when the button is set to "send value"
0	Push button 1 Push buttons 1/2	Temperature value	DPT 9.001	send	Push button sends absolute temperature	Heating actuator, temperature control, etc.	Communication object is displayed when the button is set to "send value"
0	Push button 1 Push buttons 1/2	Brightness value	DPT 9.004	send	Push button sends absolute brightness value	Weather station, Clouding, etc.	Communication object is displayed when the button is set to "send value"

0	Push button 1 Push buttons 1/2	RGB value	DPT 232.600	send	Push button sends absolute RGB value	LED controller, etc.	Communication object is displayed when the button is set to "send value"
0	Push buttons 1/2	Setpoint shift	DPT 1.001/ DPT 6.010/ DPT 9.002/ DPT 9.001	send	Push button sends setpoint shift / new setpoint	Heating actuator, temperature controller	**Only for glass push button with temperature sensor!** Communication object is displayed when the function is set to "temperature shift" ; Size of the object depending on the type of temperature shift
0	Push button 1 Push buttons 1/2	Mode Selection (HVAC Mode)	DPT 20.102	send	Push button sends mode	Heating actuator, temperature controller	**Only for glass push button with temperature sensor!** Communication object is displayed when the function is set to "mode selection"
1	Push buttons 1/2	Stop/Slats Open/Close	DPT 1.001	send	Push button sends Stop/Step command	Shutter actuator	Communication object is displayed when the button is set to "blind" function
1	Push Button 1	Slats/Stop	DPT 1.009	send	Push button sends Stop/Step command	Shutter actuator	Communication object is displayed when the single button is set to "blind" function
1	Push Button 1/ Push Button 1 short	Value for toggle	DPT 1.001	receive	Push button receives status of the switched actuator channel	Switch actuator, Dimming actuator, etc.	Communication object is displayed when the single button is set to "toggle" function

1	Push Button 1 short Push Buttons 1/2 short	State State for display	DPT 1.001	receive	Push button receives status of the switched actuator channel	Switch actuator, Dimming actuator, etc.	Communication object is displayed when the button is to visualize a switching telegram
1	Push Button 1 short Push Buttons 1/2 short	State of percent value	DPT 5.001	receive	Push button receives status value of the switched actuator channel	Shutter actuator, Dimming actuator, etc.	Communication object is displayed when a percentage value is to be visualized
1	Push Button 1 short Push Buttons 1/2 short	State of decimal value	DPT 5.005	receive	Push button receives status value of the switched actuator channel	Shutter actuator, Dimming actuator, etc.	Communication object is displayed when a decimal value is to be visualized
1	Push Button 1 short Push Buttons 1/2 short	State of temperature value	DPT 9.001	receive	Push button receives current temperature/ current setpoint	Heating actuator, temperature control, etc.	Communication object is displayed when a temperature value is to be visualized
1	Push Button 1 short Push Buttons 1/2 short	State of brightness value	DPT 9.004	receive	Push button receives current brightness value	Weather station, Clouding, Status.	Communication object is displayed when a brightness value is to be visualized
1	Push Button 1 short Push Buttons 1/2 short	Dimming	DPT 3.007	send	Push button sends dimming command	Dimming actuator, etc.	Communication object is displayed when the button is activated as "dimming"
1	Push Button 1 short Push Buttons 1/2 short	Change HSV Hue/Saturation/Value relative Change color temperature relative	DPT 3.007	send	Push button sends dimming command	Dimming actuator, LED controller, DALI-Gateway, etc.	Communication object is displayed when the button is set to "HSV color control" or "color temperature"

1	Push buttons 1/2	State actual temperature	DPT 9.001	receive	Push button receives a-temperature value	Temperature sensor, etc.	**Only for glass push button with temperature sensor!** Communication object is displayed when the function is set to "temperature shift" and an external temperature sensor is used
1	Push button 1 Push buttons 1/2	State HVAC Mode/ State HVAC Status	DPT 20.102/ ohne	receive	Push button receives current set mode/state	Heating actuator, temperature control	**Only for glass push button with temperature sensor!** Communication object is displayed when the function is set to "mode selection" and "Status display" is activated
2	Push button 1 long	Switch	DPT 1.001	send	Push button sends On/Off command	Switch actuator, etc.	Communication object is displayed when the button is activated as a short/long switch
2	Push button 1 long	Toggle	DPT 1.001	send	Push button sends On/Off command	Switch actuator, etc.	Communication object is displayed when the button is activated as a short/long switch
2	Push Button 1	Value for toggle	DPT 1.001	receive	Push button receives status of the switched actuator channel	Dimming actuator	Communication object is displayed when single-button-function is set to "dimming"
2	Push Button 1	Value for change of direction	DPT 1.008	receive	Push button receives status of the switched actuator channel	Shutter actuator	Communication object is displayed when single-button-function is set to "blind"

2	Push button 1 long Push buttons 1/2 long	Decimal value	DPT 5.005	send	Push button sends decimal value (0-255)	Dimming actuator, Shutter actuator, etc.	Communication object is displayed when the button is activated as a short/long switch
2	Push button 1 long Push buttons 1/2 long	Percent value	DPT 5.001	send	Push button sends percentage value (0-100%)	Dimming actuator, Shutter actuator, etc.	Communication object is displayed when the button is activated as a short/long switch
2	Push button 1 long Push buttons 1/2 long	Scene	DPT 1.001	send	Push button sends Scene command	Any actuators	Communication object is displayed when the button is activated as a short/long switch
2	Push button 1 long Push buttons 1/2 long	Forcible control	DPT 2.002	send	Push button sends Forcible control value	Presence detector, etc.	Communication object is displayed when the button is activated as a short/long switch
2	Push button 1 long Push buttons 1/2 long	Temperature value	DPT 9.001	send	Push button sends absolute temperature	Heating actuator, temperature control, etc.	Communication object is displayed when the button is activated as a short/long switch
2	Push button 1 long Push buttons 1/2 long	Brightness value	DPT 9.004	send	Push button sends absolute brightness value	Weather station, Clouding, etc.	Communication object is displayed when the button is activated as a short/long switch
2	Push button 1 long Push buttons 1/2 long	RGB value	DPT 232.600	send	Push button sends absolute RGB value	LED controller, etc.	Communication object is displayed when the button is activated as a short/long switch

2	Push buttons 1/2	State current setpoint temperature	DPT 9.001	receive	Push button receives current setpoint temperature	Heating actuator, temperature controller	**Only for glass push button with temperature sensor!** Communication object is displayed when the two-button-function is set to "temperature shift"
3	Push button 1 long	Value for toggle	DPT 1.001	receive	Push button receives status of the switched actuator channel	Switch actuator, Dimming actuator, etc.	Communication object is displayed when the button is activated as a short/long switch
3	Push button 1 Push buttons 1/2	State for display	DPT 1.001	receive	Push button receives status of the switched actuator channel	Switch actuator, Dimming actuator, etc.	Communication object is displayed when the button is to visualize a switching telegram
3	Push button 1 Push buttons 1/2	State for display	DPT 5.001 DPT 5.005	receive	Push button receives status of the switched actuator channel	Switch actuator, Dimming actuator, etc.	Communication object is displayed when a percent/decimal value is to be visualized
3	Push button 1 long Push buttons 1/2 long	State percent value State decimal value	DPT 5.001 DPT 5.005	receive	Push button receives status of the switched actuator channel	Switch actuator, Dimming actuator, etc.	Communication object is displayed when a percent/decimal value is to be visualized
3	Push button 1 Push buttons 1/2	State for Hue (H)	DPT 5.003	receive	Push button receives status of the switched actuator channel	LED controller, etc.	Communication object is displayed when button is set to "HSV color control" and function selection to "H"

3	Push button 1 Push buttons 1/2	State for Saturation (S)/ Value (V)	DPT 5.001	receive	Push button receives status of the switched actuator channel	LED controller, etc.	Communication object is displayed when button is set to "HSV color control" and function selection to "S" or "V"
3	Push button 1 Push buttons 1/2	State for color temperature	DPT 5.001/ DPT 7.xxx	receive	Push button receives status of the switched actuator channel	LED controller, DALI-Gateway etc.	Communication object is displayed when button is set to "color temperature"
3	Push button 1 long Push buttons 1/2 long	State of temperature value	DPT 9.001	receive	Push button receives current temperature/ current setpoint	Heating actuator, temperature control	Communication object is displayed when a temperature value is to be visualized
3	Push button 1 long Push buttons 1/2 long	State of brightness value	DPT 9.004	receive	Push button receives current brightness value	Weather station, Clouding, Status	Communication object is displayed when a brightness value is to be visualized
3	Push buttons 1/2	State Setpoint shift/ State Basis comfort setpointt	DPT 6.010/ DPT 9.002/ DPT 9.001	receive	Push button receives status about current setpoint shift	Further Glass Push Button II Smart which send a Setpoint shift, etc.	**Only for glass push button with temperature sensor!** Communication object is displayed when the function "Temperature shift" has been activated and has to be connected to all objects which cause a setpoint shift in the controller to be controlled
4	Push button 1 Push buttons 1/2	Block object	DPT 1.003	receive	Taster empfängt Befehl zum Sperren der Taste	Visu, Time switch, operating buttons, etc.	Communication object is displayed when the blocking object for this button has been activated
+ 5	**Next button**						

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Objects for the Slap-function:

60	Slap-button short	Switch	DPT 1.001	send	Push button sends switch command	Switch actuator, etc.	Communication object is displayed when the Slap-button has been parameterized to "send value"
60	Slap-button short	Percent value Decimal value Scene Forcible control	DPT 5.001 DPT 5.005 DPT 17.001 DPT 2.001	send	Push button sends value	any actuators, presence detector, etc.	Communication object is displayed when the Slap-button has been parameterized to "send value"
60	Slap-button short	Temperature value	DPT 9.001	send	Push button sends absolute temperature value	Heating actuator, temperature control, etc.	Communication object is displayed when the Slap-button has been parameterized to "send value"
60	Slap-button short	Brightness value	DPT 9.004	send	Push button sends absolute brightness value	Weatherstation, Clouding, etc.	Communication object is displayed when the Slap-button has been parameterized to "send value"
60	Slap-button short	RGB-value	DPT 232.600	send	Push button sends absolute RGB valuet	LED controller, etc.	Communication object is displayed when the Slap-button has been parameterized to "send value"
61	Slap-button short	Value for toggle	DPT 1.001	receive	Push button receives status of actuator	Switch actuator, Dimming actuator, etc.	Communication object is displayed when the Slap-button has been parameterized to "toggle"
62	Slap-button long	Switch	DPT 1.001	send	Push button sends switch command	Switch actuator, etc.	Communication object is displayed when the Slap-button has been parameterized to "send value"

62	Slap-button long	Percent value Decimal value Scene Forcible control	DPT 5.001 DPT 5.005 DPT 17.001 DPT 2.001	send	Push button sends value	any actuators, presence detector, etc.	Communication object is displayed when the Slap-button has been parameterized to "send value"
62	Slap-button long	Temperature value	DPT 9.001	send	Push button sends absolute temperature value	Heating actuator, temperature control, etc.	Communication object is displayed when the Slap-button has been parameterized to "send value"
62	Slap-button long	Brightness value	DPT 9.004	send	Push button sends absolute brightness value	Weatherstation, Clouding, etc.	Communication object is displayed when the Slap-button has been parameterized to "send value"
62	Slap-button long	RGB-value	DPT 232.600	send	Push button sends absolute RGB value	LED controller, etc.	Communication object is displayed when the Slap-button has been parameterized to "send value"
63	Slap-button long	Value for toggle	DPT 1.001	receive	Push button receives status of actuator	Switch actuator, Dimming actuator, etc.	Communication object is displayed when the Slap-button has been parameterized to "toggle"
64	Slap-button	Blocking object	DPT 1.001	receive	Push button receives command for blocking of the slap-button	Visu, Time switch, operating buttons, etc.	Communication object is displayed when the blocking object for the Slap-button has been activated

Objects for the Logic function:

65	Logic	Input 1A	DPT 1.001	receive	Push button receives external logic input	State of actuator, etc.	Communication object is displayed when the logic function 1 and the external logic input have been activated
66	Logic	Input 1B	DPT 1.001	receive	Push button receives external logic input	State of actuator, etc.	Communication object is displayed when the logic function 1 and the external logic input have been activated
67	Logic	Output 1 Output 1 Scene Output 1 Value Output 1 Value	DPT 1.001 DPT 17.001 DPT 5.001 DPT 2.001	send	Push button sendsvalue when logic is fulfilled	any actuators, etc.	Communication object is displayed when logic function 1 has been activated
+ 3	**next logic**						
Objects for the State LEDs:							
77	LED 1	Switch	DPT 1.001	receive	Push button switches status LED on	Time switch, Status actuator, etc.	Communication object is displayed when "LED reacts to - external object /-and button activation" has been activated
+1	**next LED**						
89/ 90	LED A/B	Switch	DPT 1.001	receive	Push button switches status LED on	Time switch, Status actuator, etc.	Communication object is displayed when several levels are active and "LED reacts to - External object/- button activation" has been activated
91	LED 1 Priority	Switch	DPT 1.001	receive	Push button switches status LED on with priority	Time switch, Status actuator, etc.	Communication object is displayed when the status LED and the LED priority have been activated
+ 1	**next LED Priority**						

105	LED	Blocking object	DPT 1.003	receive	Blocking of all status LEDs	Time switch, operating buttons, etc.	Communication object is displayed when "lock object for LEDs" in the menu "LED basic setting" is activated
common objects:							
106	Day/Night	Input	DPT 1.002	receive	Umschalten zwischen Tag/Nacht Modus	Time switch, etc.	Communication object is permanently displayed
107	Presence	Input	DPT 1.001	receive	Taster schaltet in den Präsenz Betrieb	Presence detector, etc.	Communication object is permanently displayed
108	Temperature	Internal measurement / Mixed temperature internal/external	DPT 9.001	send	Taster sendet aktuellen Temperaturwert	Heating actuator, Temperature controller	**Only for glass push button with temperature sensor!** Communication object is displayed when the temperature measurement has been activated and is used to send the current temperature
109	Temperature	External measurement	DPT 9.001	send	Taster empfängt aktuellen Messwert	Temperature sensor	**Only for glass push button with temperature sensor!** Communication object is displayed if the parameter "external temperature value" is at least 10% external

110	Temperature	Maximum temperature	DPT 1.001	send	Push button sends a 1 when the lower message value is exceeded	Generating an alarm, etc.	**Only for glass push button with temperature sensor!** Communication object is displayed when the upper message value has been activated
111	Temperature	Minimum temperature	DPT 1.001	send	Push button sends a 1 when the lower message value is undercut	Generating an alarm, etc.	**Only for glass push button with temperature sensor!** Communication object is displayed when the lower message value has been activated
112	Time	Input	DPT 10.001	receive	Push button receives current time	Time switch, etc.	Communication object is permanently displayed
114	Time/Date	Input	DPT 19.001	receive	Push button receives current time and current date	Time switch, etc.	Communication object is permanently displayed
115 – 118	Message 1-4	Input	DPT 1.005	receive	Push button displays predefined message	Window contact, Status, etc.	Communication object is displayed when message 1-4 has been activated
119	Message Text	Input	DPT 16.000	receive	Push button displays received text as a message	Visu, etc.	Communication object is displayed when message text has been activated

120 121	State text 1 State text 2	Input	DPT 16.000	receive	Push button displays received text as a status	Visu, etc.	Communication object is permanently displayed
122 – 124	State value 1-3	Switch On/Off Value in X (depending on selected unit)	DPT 1.001 DPT 5.001 DPT 5.005 DPT 7.012 DPT 7.013 DPT 9.001 DPT 9.004 DPT 9.005 DPT 9.007 DPT 9.008 DPT 9.021	receive	Push button receives state value	Status actuator, etc.	Communication objects are displayed when status values 1-3 have been activated in the menu "Information screen"
125	In-Operation	Output	DPT 1.001	send	Push button sends cyclic "in-operation" telegram	Device failure detection, etc.	Communication object is displayed when "In-operation cyclic time" has been activated under "General settings"
126	Push button operation*	Active	DPT 1.001	send	Push button sends a 1 when it is operated	Switching a basic lighting, etc.	The communication object is permanently displayed and can, for example, be used to switch a basic lighting

Table 1: Communication Objects - Overview and Usage

* Object available in Glass Push Button II Smart without temperature from R1.2, in Glass Push Buttpm II Smart with temperature from R1.0!

3.2 Default settings of the communication objects

No.	Name	Function	Length	Priority	C	R	W	T	U
		Default settings per button							
0	Push button 1 Push button 1/2	Blind Blind Up/Down	1 Bit	Low	X		X	X	
0	Push button 1 Push button 1/2	Dimming On/Off	1 Bit	Low	X		X	X	
0	Push button 1 Push button 1/2	Switch Switch On/Off	1 Bit	Low	X		X	X	
0	Push button 1	Toggle	1 Bit	Low	X		X	X	
0	Push button 1	Send status	1 Bit	Low	X		X	X	
0	Push button 1 Push button 1/2	HSV control On/Off	1 Bit	Low	X		X	X	
0	Push button 1 Push button 1/2	Color temperature control On/Off	1 Bit	Low	X		X	X	
0	Push button 1 Push button 1/2	Decimal value	1 Byte	Low	X		X	X	
0	Push button 1 Push button 1/2	Percent value	1 Byte	Low	X		X	X	
0	Push button 1 Push button 1/2	Scene	1 Byte	Low	X		X	X	
0	Push button 1 Push button 1/2	Forcible control	2 Bit	Low	X		X	X	
0	Push button 1 Push button 1/2	Temperature value	2 Byte	Low	X		X	X	
0	Push button 1 Push button 1/2	Brightness value	2 Byte	Low	X		X	X	
0	Push button 1 Push button 1/2	RGB value	3 Byte	Low	X		X	X	
0	Push buttons 1/2	Temperature shift	1 Bit / 1 Byte/ 2 Byte	Low	X	X		X	
0	Push button 1 Push button 1/2	Mode selection Mode switching	1 Byte	Low	X	X		X	
1	Push buttons 1/2	Stop/Slats Open/Close	1 Bit	Low	X		X	X	
1	Push button 1	Slats/Stop	1 Bit	Low	X		X	X	
1	Push button 1 Push button 1 short	Value for toggle	1 Bit	Low	X		X	X	X
1	Push button 1 short Push buttons 1/2 short	State for display	1 Bit	Low	X		X	X	X
1	Push button 1 short Push buttons 1/2 short	Status percent value	1 Byte	Low	X		X	X	X
1	Push button 1 short Push buttons 1/2 short	State decimal value	1 Byte	Low	X		X	X	X

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1	Push button 1 short Push buttons 1/2 short	State temperature value	2 Byte	Low	X		X	X	X
1	Push button 1 short Push buttons 1/2 short	State brightness value	2 Byte	Low	X		X	X	X
1	Push button 1 short Push buttons 1/2 short	Dimming	4 Bit	Low	X		X	X	
1	Push button 1 short Push buttons 1/2 short	Change HSV Hue/Saturation/ value relative Change color temperature relative	4 Bit	Low	X		X	X	
1	Push buttons 1/2	State current temperature	2 Byte	Low	X		X	X	X
1	Push button 1 Push buttons 1/2	State HVAC Mode/Status	1 Byte	Low	X		X	X	X
2	Push button 1 long	Switch	1 Bit	Low	X		X	X	
2	Push button 1 long	Toggle	1 Bit	Low	X		X	X	
2	Push button 1	Value for toggle	1 Bit	Low	X		X	X	X
2	Push button 1	Value for change of direction	1 Bit	Low	X		X	X	X
2	Push button 1 long Push buttons 1/2 long	Decimal value	1 Byte	Low	X		X	X	
2	Push button 1 long Push buttons 1/2 long	Percent value	1 Byte	Low	X		X	X	
2	Push button 1 long Push buttons 1/2 long	Scene	1 Byte	Low	X		X	X	
2	Push button 1 long Push buttons 1/2 long	Forcible control	2 Bit	Low	X		X	X	
2	Push button 1 long Push buttons 1/2 long	Temperature value	2 Byte	Low	X		X	X	
2	Push button 1 long Push buttons 1/2 long	Brightness value	2 Byte	Low	X		X	X	
2	Push button 1 long Push buttons 1/2 long	RGB value	3 Byte	Low	X		X	X	
2	Push buttons 1/2	State current setpoint temperature	2 Byte	Low	X		X	X	X
3	Push button 1 long	Value for toggle	1 Bit	Low	X		X	X	X
3	Push button 1 Push buttons 1/2	State State for display	1 Bit	Low	X		X	X	X
3	Push button 1 Push buttons 1/2	State State for display	1 Byte	Low	X		X	X	X
3	Push button 1 Push buttons 1/2	State percent value State of decimal value	1 Byte	Low	X		X	X	X
3	Push button 1 Push buttons 1/2	State for Hue (H)	1 Byte	Low	X		X	X	X
3	Push button 1 Push buttons 1/2	State for Saturation (S)/ Value (V)	1 Byte	Low	X		X	X	X
3	Push button 1 Push buttons 1/2	State for color temperature	1 Byte	Low	X		X	X	X

						C	R	W	T	U
3	Push button 1 Push buttons 1/2	State for display State of temperature value	2 Byte	Low		X		X	X	X
3	Push button 1 Push buttons 1/2	State for display State of brightness value	2 Byte	Low		X		X	X	X
3	Push button 1 Push buttons 1/2	Status setpoint shift	1 Byte/ 2 Byte	Low		X		X	X	X
4	Push button 1 Push buttons 1/2	Blocking object	1 Bit	Low		X		X	X	X
+5	**Next Button**									

Table 2: Communication objects - Default settings per button

No.	Name	Function	Length	Priority	C	R	W	T	U
	Default settings Slap-button								
60	Slap-button Slap-button short	Switch	1 Bit	Low	X		X	X	
60	Slap-button Slap-button short	Percent value Decimal value Scene Forcible control	1 Byte	Low	X		X	X	
60	Slap-button Slap-button short	Temperature value	2 Byte	Low	X		X	X	
60	Slap-button Slap-button short	Brightness value	2 Byte	Low	X		X	X	
60	Slap-button Slap-button short	RGB-value	3 Byte	Low	X		X	X	
61	Slap-button Slap-button short	Value for toggle	1 Bit	Low	X		X	X	X
62	Slap-button Slap-button long	Switch	1 Bit	Low	X		X	X	
62	Slap-button Slap-button long	Percent value Decimal value Scene Forcible control	1 Byte	Low	X		X	X	
62	Slap-button Slap-button long	Temperature value	2 Byte	Low	X		X	X	
62	Slap-button Slap-button long	Brightness value	2 Byte	Low	X		X	X	
62	Slap-button Slap-button long	RGB-value	3 Byte	Low	X		X	X	
63	Slap-button Slap-button long	Value for toggle	1 Bit	Low	X		X	X	X
64	Slap-button	Blocking object	1 Bit	Low	X		X	X	X

Table 3: Communication objects - Default settings slap-button

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No.	Name	Function	Length	Priority	C	R	W	T	U
Default settings Logic function									
65	Logic	Input1A	1 Bit	Low	X		X	X	X
66	Logic	Input 1B	1 Bit	Low	X		X	X	X
67	Logic	Output 1 Output 1 Scene Output 1 Value	1 Bit/ 1 Byte/ 2 Bit	Low	X	X		X	

Table 4: Communication objects - Default settings logic function

No.	Name	Function	Length	Priority	C	R	W	T	U
Default settings Status LEDs									
77	LED 1	Switch	1 Bit	Low	X		X	X	X
+1	**next LED**								
89/ 90	LED A/B	Switch	1 Bit	Low	X		X	X	X
91	LED 1 Priority	Switch	1 Bit	Low	X		X	X	X
+ 1	**next LED Priority**								
105	LED	Blocking object	1 Bit	Low	X		X	X	X

Table 5: Communication objects - Default settings status LEDs

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Default settings common objects										
No.	Name	Function	Length	Priority	C	R	W	T	U
106	Day/Night	Input	1 Bit	Low	X		X	X	X
107	Presence	Input	1 Bit	Low	X		X	X	X
108	Temperature	Internal measurement/ Mixed temperature internal/external	2 Byte	Low	X	X		X	
109	Temperature	External measurement	2 Byte	Low	X		X		
110	Message	Maximum temperature	1 Bit	Low	X		X	X	X
111	Message	Minimum temperature	1 Bit	Low	X		X	X	X
112	Time	Input	3 Byte	Low	X		X	X	X
114	Time/Date	Input	8 Byte	Low	X		X	X	X
115 – 118	Message 1-4 (Message 1 hightest priority)	Input	1 Bit	Low	X		X	X	X
119	Message text (lowest priority)	Input	14 Byte	Low	X		X	X	X
120 121	State text 1 State text 2	Input	14 Byte	Low	X		X	X	X
122 – 124	State value 1-3	Input	1 Bit	Low	X		X	X	X
125	In operation	Output	1 Bit	Low	X		X	X	X
126	Push button operation*	Active*	1 Bit	Low	X	X		X	

Table 6: Communication objects - Default settings common objects

* Object available in Glass Push Button II Smart without temperature from R1.2, in Glass Push Buttpm II Smart with temperature from R1.0!

The preset default settings can be taken from the tables above. The priority of the individual communication objects as well as the flags can be adapted as required by the user. The flags assign the respective task to the communication objects in the programming. C stands for communication, R for reading, W for writing, T for transmission, and U for updating.

4 Reference ETS-Parameter

4.1 Operation / Display

4.1.1 General Settings

The following figure shows the menu for the general settings:
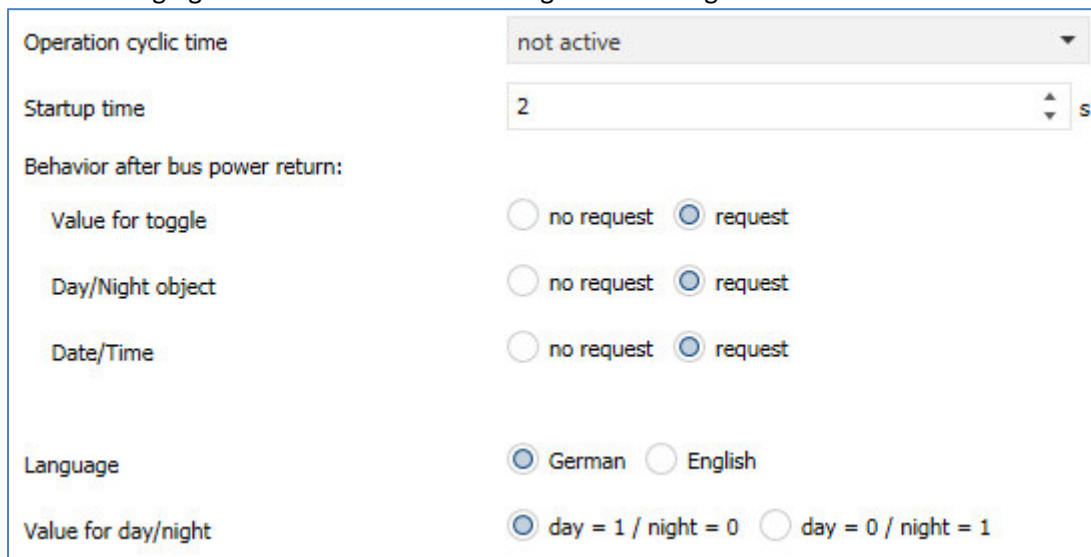
Figure 3: General Settings

The following table shows the possible settings:

ETS-Text	Dynamic range [Default value]	Comment
Operation cyclic time	**not active** 1min - 4h	Setting whether a cyclic in-operation telegram is to be sent
Startup time	2-60s **[2s]**	Sets the time between restart and functional start-up of the device
Behavior after bus power return:		
Value for toggle	▪ no request ▪ **request**	Setting whether the objects "Value for toggle" are to be requested
Day/Night object	▪ no request ▪ **request**	Setting whether the "Day/Night" object is to be requested
Date/Time	▪ no request ▪ **request**	Setting whether the objects for "Date/Time" are to be requested
Language	▪ **German** ▪ English	Sets the language for the display
Value for Day/Night	▪ **Day=1/Night=0** ▪ Day=0/Night=1	Sets the polarity for day / night switching

Table 7: General Settings

4.1.2 Display Settings

Display appearance

The following settings can be used to customize the appearance of the display:

View

Background color	day = black; night = black
Font size in function name	○ small ◉ big
Font size for labeling of push buttons	◉ small ○ big
Behavior if the text is too long	○ text is clipped ◉ text size is reduced

Figure 4: Settings: Display appearance

The following table shows the possible settings:

ETS-Text	Dynamic range [Default value]	Comment
Background color	▪ **Day = black; Night = black** ▪ Day = white; Night = black ▪ Day = black; Night = white ▪ Day = white; Night = white	Sets the background color of the display
Font size in function name	▪ small ▪ **big**	Sets the font size for the function name
Font size for labeling of push buttons	▪ **small** ▪ big	Setting the font size for the button labeling
Behavior if the text is too long	▪ Text is clipped ▪ **Text size is reduced**	Setting of the behavior when the text can not be displayed completely

Table 8: Display appearance

Adaption to ambience

The following settings can be used to influence the adaptation of the display to the ambience:
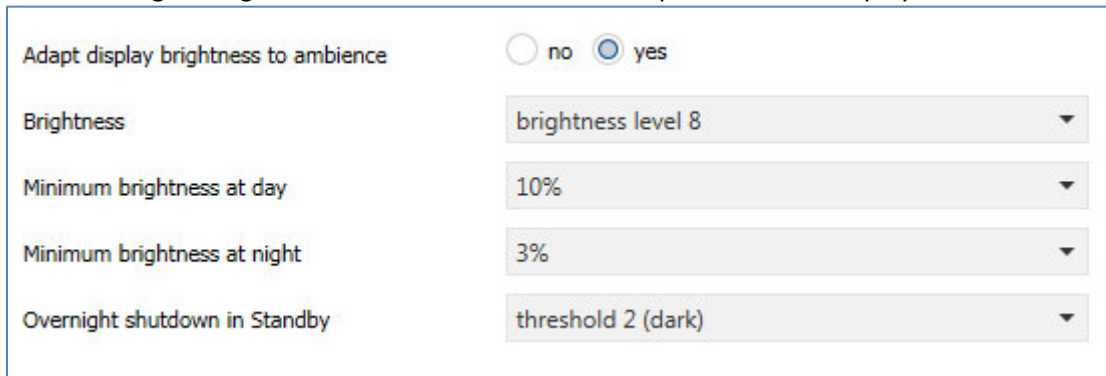
Figure 5: Settings: Adaption to ambience

The following table shows the possible settings:

ETS-Text	Dynamic range [Default value]	Comment
Adapt display brightness to ambience	▪ No ▪ **Yes**	Setting whether the brightness is dynamically adapted to the ambience
Adapt display brightness to ambience: No		
Brightness at day	0-100% **[10%]**	Setting a fixed brightness value in day mode
Brightness at night	0-100% **[3%]**	Setting a fixed brightness value in night mode
Adapt display brightness to ambience: Yes		
Brightness	Brightness level 1-10 **[Brightness level 8]**	Sets the basic brightness of the display
Minimum Brightness at day	0-100% **[10%]**	Setting the minimum brightness of the display; below this value, the display is not dimmed during daytime operation
Minimum Brightness at night	0-100% **[3%]**	Setting the minimum brightness of the display; below this value, the display is not dimmed during night operation
Overnight shutdown in Standby	▪ not active ▪ threshold 1 (moderately dark) ▪ **threshold 2 (dark)** ▪ threshold 3 (very dark)	Setting of the display behavior for the overnight shutdown in standby mode

Table 9: Adaption to ambience

The Glass Push button II Smart has an internal brightness sensor and can adjust the display brightness dynamically to the environment. The parameter "brightness" influences the dimming behavior and the threshold from when the display is dimmed. The parameter for the minimum brightness defines the absolutely lowest threshold up to which the display is dimmed.

In the programmed state, the menu for the brightness adjustment can be called up by pressing the sensor surfaces 7 and 8 simultaneously:

In this menu the end user has the possibility to adjust the brightness settings independently (without ETS). The settings are stored permanently in the device until the next transfer of the database.

If the parameter „**Adapt display brightness to ambience**" is set to "Yes", the following adjustments are available:

Brightness: Defines the basic brightness of the display and influences the dimming behavior of the display according to the measured value for the ambient brightness.

min. Brightness: Defines the minimum brightness at darkness. In day mode, the adjustment for the day mode is set and in night mode the adjustments for the night mode is set.

If the parameter „**Adapt display brightness to ambience**" is set to "Yes", the following adjustments are available:

Brightness: Defines the absolute, fixed brightness. In day mode, the adjustment for the day mode is set and in night mode the adjustments for the night mode is set.

User-defined colors

Up to 3 user-defined colors can be mixed:

Figure 6: User-defined colors

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

Communication objects

The following table shows the available communication objects for the appearance of the display:

Number	Name	Lenght	Usage
106	Day/Night	1 Bit	Switching between day/night operation
107	Presence	1 Bit	Activation/Deactivation of presence
112	Time	3 Bytes	Receiving current time
114	Time/Date	8 Bytes	Receiving current time and date

Table 10: Communication objects - Display

After each restart, the day/night object is set to day; even if the communication object is not linked at all.

The presence object is used to deactivate the display when no one is in the room. It can, for example, be controlled via a presence detector.
If the presence object is set to the value 0, the display turns off and is only switched on again when the object is set to 1 or a key is pressed. If a key is pressed with the value 0 (= no presence), the display remains switched on until the display switches to standby mode. If Standby is deactivated, the display remains active for 120 seconds.
After each restart, the presence object is set to the value 1 (= presence); even if the object is not linked.

Attention: The presence object only switches between the conditions "Standby" and "Display off". It does not switch to normal operation!

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4.1.3 Information screen

The following figure shows the basic settings for the information screen:
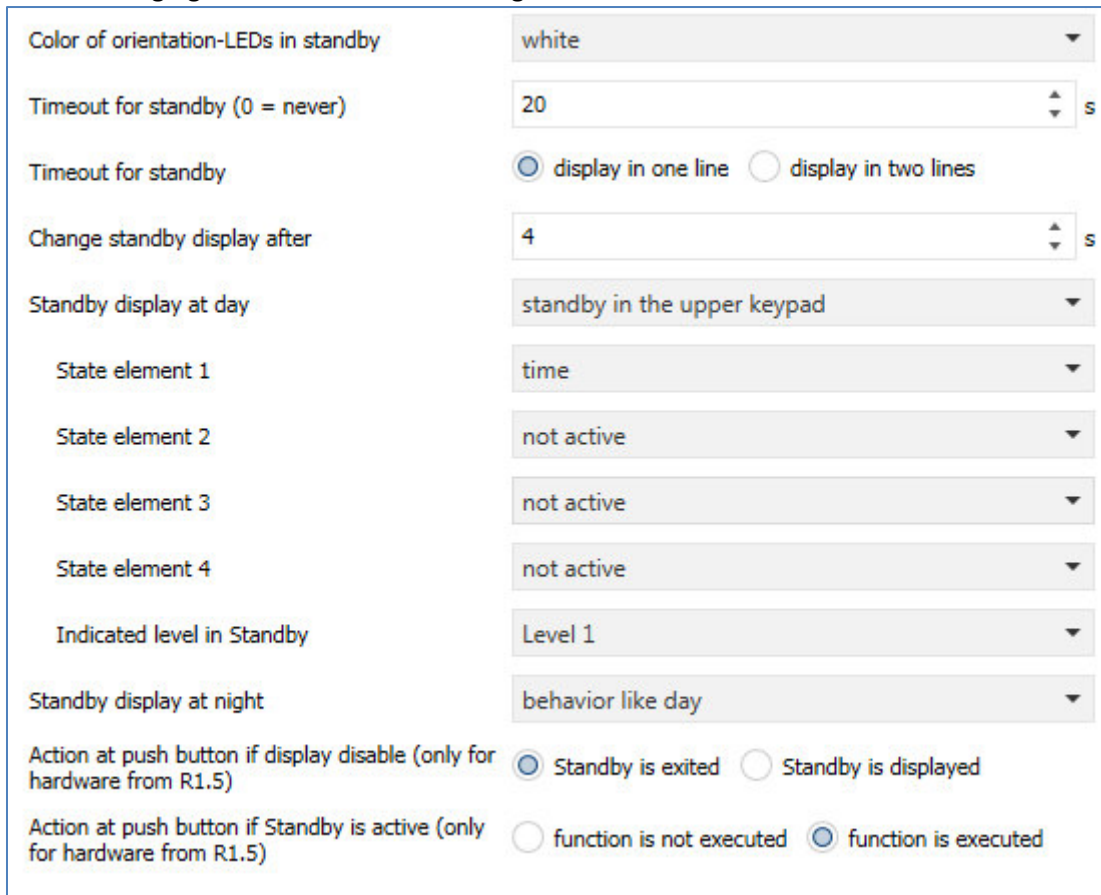
Figure 7: Basic Settings - Information Screen

The following table shows the basic settings for the information screen:

ETS-Text	Dynamic range [Default value]	Comment
Color of the orientation LEDs in standby	Black, White… **[White]**	Adjusting the color of the orientation display; This can be used for day/night operation; RGB states of the buttons are used as orientation indicators
Timeout for standby (0=never)	0-60s **[20s]**	Sets the time between the last touch of a button and switching to standby mode
Standby display	▪ **display in one line** ▪ display in two lines	Setting whether the display is shown in one or two lines during standby
Change standby display after	1-60s **[2s]**	Sets the changeover time between the activated status elements

Standby display at day	▪ no standby ▪ **standby in upper keypad** ▪ standby on full screen ▪ display off ▪ display off and orientation-LED on	Setting the display behavior of the information screen in day mode
State element 1-4	▪ not active ▪ **time** ▪ internal temperature ▪ State value 1 ▪ State value 2 ▪ State value 3 ▪ State text 1 (over object 120) ▪ State text 1 (over object 121)	- „not active" only at State element 2-4! - „Internal temperature" anly available for BE-GT2Tx.01! A maximum of 4 status elements can be activated which are switched according to the setting "Change standby display after".
Indicated level **in/after standby**	▪ **Level 1** ▪ Level 2 ▪ Level 3	When setting to "Standby on the upper keypad" , an active level during standby can be selected; For "Standby on full screen" a level after standby
Standby display at night	▪ no standby ▪ standby in upper keypad ▪ standby on full screen ▪ **Behavior like day** ▪ display off ▪ display off and orientation-LED on	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
State element 1-4	▪ not active ▪ **time** ▪ internal temperature ▪ State value 1 ▪ State value 2 ▪ State value 3 ▪ State text 1 (over object 120) ▪ State text 1 (over object 121)	- „not active" only at State element 2-4! - „Internal temperature" anly available for BE-GT2Tx.01! A maximum of 4 status elements can be activated which are switched according to the setting "Change standby display after".
Indicated level **in/after standby**	▪ **Level 1** ▪ Level 2 ▪ Level 3	When setting to "Standby on the upper keypad" , an active level during standby can be selected; For "Standby on full screen" a level after standby

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Action at push button if display is disabled (only for hardware from R1.5)	▪ **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 (only for hardware from R1.5)	▪ Function is not executed ▪ **Funktion is executed**	Setting whether the key function is to be executed with the first key press while beeing in standby

Table 11: Basic Settings - Information Screen

The setting "Standby over full screen" additionally activates the orientation LEDs.

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Activation of State values 1-3:

The following figure shows the settings for activating the State values 1-3:

State value 1	Percent 0...100% (DPT 5.001) ▼
Text for the unit	%
Description for measurement	State
State value 2	Brightness [Lux] (DPT 7.013) ▼
Text for the unit	Lux
Description for measurement	South
State value 3	not active ▼

Figure 8: Settings: State Values 1 - 3

Communication objects

The following table shows the available communication objects for the information screen:

Number	Name	Length	Usage
120	State text 1	14 Byte	Receiving a status text
121	State text 2	14 Byte	Receiving a status text
122	State value 1		Receiving a status value; DPT according to parameter setting
123	State value 2		Receiving a status value; DPT according to parameter setting
124	State value 3		Receiving a status value; DPT according to parameter setting

Table 12: Communication objects - State Values/State texts

Various measured values can be displayed with unit via the status values.
By means of the status text any strings can be displayed up to a length of 14 characters..

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Messages/Alarms

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

The following table shows the settings for the messages and alarms:

ETS-Text	Dynamic range [Default value]	Comment
Message 1-4 (Bit Objekt)	▪ **not active** ▪ active	Activation of message 1-4; Message 1 (highest priority), Message 4 (lowest priority)
Text	any text (max. 14 characters)	Displayed text when the message is triggered
Display time	▪ not active ▪ **Until key is pressed** ▪ 1s-8h	Setting how long the message should be displayed
Message text (14 Byte Object)	▪ **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** ▪ 1s-8h	Setting how long the message should be displayed
Cancel the messge (only for hardware from version R1.5)	▪ **Over the end of display time or push of button** ▪ Over the value 0 at objects "Message 1-4"	Setting when the message should be taken back

Color of message text	Any color	Setting of the color for the message text
Indicate a message via LEDs	▪ **No** ▪ Yes	Setting if the LEDs should flash at an active message

Table 13: Messages/Alarms

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 14: Behavior of the device to an incoming message during standby

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

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

Standby display	Incoming message while Standby + Displaybrightness „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 16: Behavior when incoming message at standby and the operation switched off

Communication objects

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

Number	Name	Length	Usage
115	Message 1 (highest priority)	1 Bit	Triggering a message
116	Message 2	1 Bit	Triggering a message
117	Message 3	1 Bit	Triggering a message
118	Message 4	1 Bit	Triggering a message
119	Message text (lowest priority)	14 Byte	Triggering a message; Send any message text

Table 17: Communication objects - Alarms/Messages

4.2 Push Button functions

4.2.1 Activation / Selection

In the menu "Push button functions", depending on the activated levels, the individual buttons can be activated / deactivated.
The following settings are available:

Display mode	○ 6 functions / 1 level ◉ 4 functions / several levels
2. level / 8 functions	○ not active ◉ active
3. level / 12 functions	○ not active ◉ active
Level 1 (Push buttons 1/2 central, push buttons 3/4 bottom)	
Push button 1/2 (left, right)	single function of push button ▼
Push buttons 3/4 (left, right)	single function of push button ▼
Level 2 (Push buttons 5/6 central, push buttons 7/8 bottom)	
Push buttons 5/6 (left, right)	single function of push button ▼
Push buttons 7/8 (left, right)	single function of push button ▼
Level 3 (Push buttons 9/10 central, push buttons 11/12 bottom)	
Push buttons 9/10 (left, right)	single function of push button ▼
Push buttons 11/12 (left, right)	single function of push button ▼
Slap / Cleaning function	○ not active ◉ active
Reaction time at the push of button	medium ▼
Time for long push of button	0,6 s ▼

Figure 10: Settings: Menu "Push button functions"

Die nachfolgende Tabelle zeigt die verfügbaren Einstellungen:

ETS-Text	Dynamic range [Default value]	Comment
Display mode	▪ **6 functions / 1 level** ▪ 4 functions / several levels	Setting the display mode
2. level / 8 functions	▪ **not active** ▪ active	Activation of 2nd level; available at display mode "4 functions / several levels"
3. level / 12 functions	▪ **not active** ▪ active	Activation of 3rd level; available at display mode "4 functions / several levels"
Push buttons 1/2 – 11/12	▪ **not active** ▪ single button function ▪ two button function	Activates the push button pair and selection of the function
Slap / Cleaning function	▪ **not active** ▪ active	Activates the Slap- and Cleaning function
Reaction time at push of button	▪ fast ▪ **medium** ▪ slow	Sets the debouncing time of the buttons
Time for long push of button	0,1 s-30 s **[0,6 s]**	Setting from when a long keystroke is detected

Table 18: Menu "Push button functions"

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4.2.2 Level setting

If the display mode is set to "4 functions / several levels", the submenu "Level settings" is displayed.
The following figure shows the available settings for the individual levels:
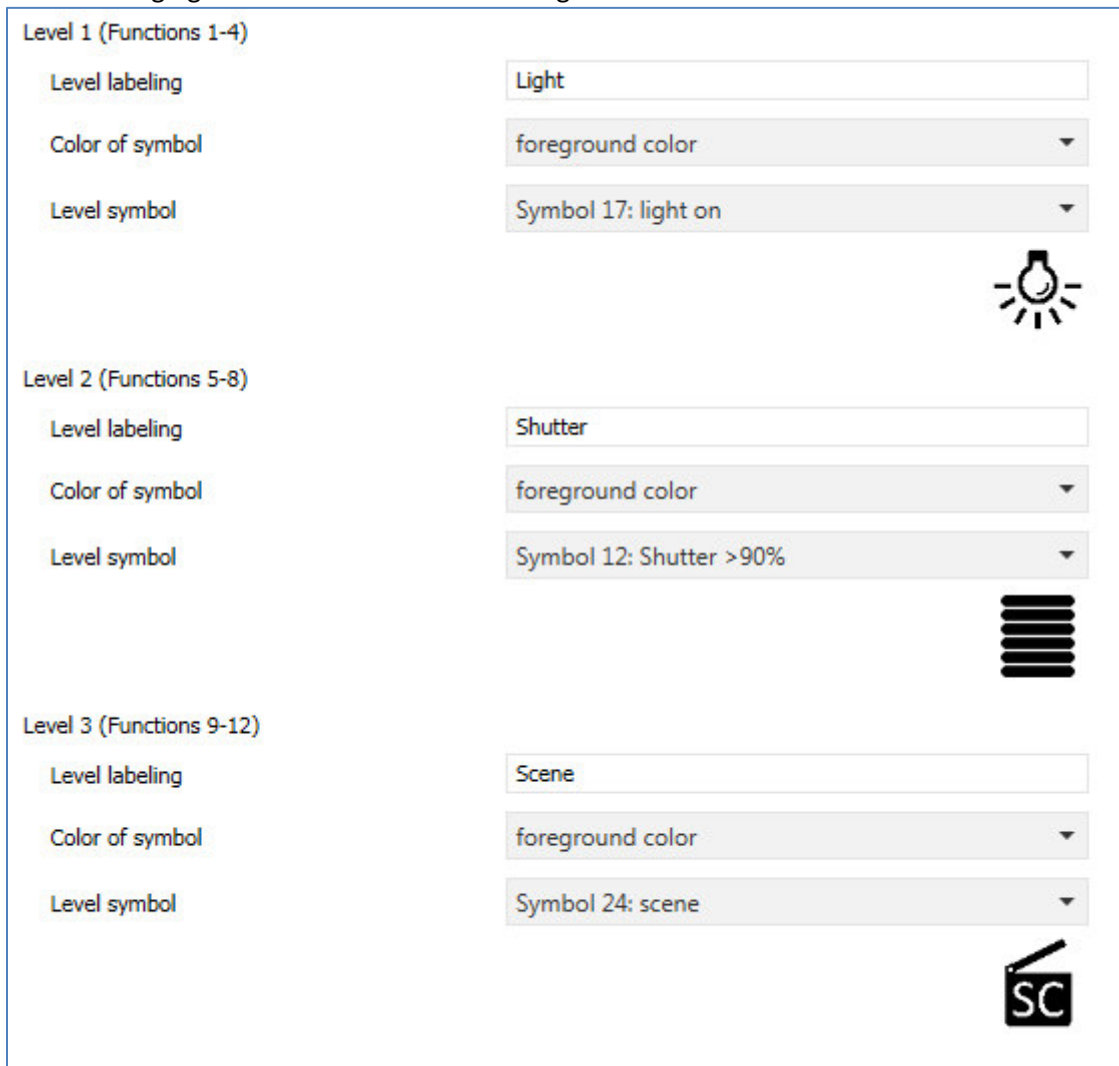
Figure 11: Settings: Menu "Level setting"

The following table shows the available settings:

ETS-Text	Dynamic range [Default value]	Comment
Level 1-3		
Level labeling	any text	Setting the text for the respective level; Maximum text length is 15 characters. The text is displayed above the level symbol
Color of symbol	any color	Sets the color for the symbol
Level symbol	all loaded symbols	Setting of the symbol to be displayed for the appropriate level

Table 19: Menu "Level settings"

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4.2.3 Overview: Two-button function / Single-button function

Each push button pair can be activated as a single-button function or as a two-button function. For the single button function, only one key is used for the function. The two-button function always uses 2 buttons for the function and the operating concept works like a rocker. For each key, you can specify the value (On / Off, Up / Down, Lighter / Darker, etc.) that is to be sent.
A complete line is used for the two-button function in the display. For the single-button function a half line.
With the two-button function, it is possible to give the keys a name, in contrast to the single-button function:

Funktion name	over text input ▼
Text	Light Kitchen
Key label for left push button	Off
Key label for right push button	On

Figure 12: Settings: Button labeling - Two-button function

The function name can be set for both, the single-button function and the two-button function. The button labeling, due to the smaller space on the display is only possible for the two-button function.

The functions of the single-button function and the two-button function are described in more detail in chapter 4.3 Push button function. At the beginning of each function description it is also indicated whether this function is available as a single-button function, as a two-button function or for both operating concepts.

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4.2.4 Slap-/Cleaning function

The following figure shows the settings for the submenu of the Slap / Cleaning function:

Cleaning function	Cleaning = short button, slap = long button ▼
Slap function for long push of button	toggle ▼
Individual time for long push of button	1,0 s ▼
Display behavior of LEDs	blue ▼
Blocking Object	◯ not active ◉ active
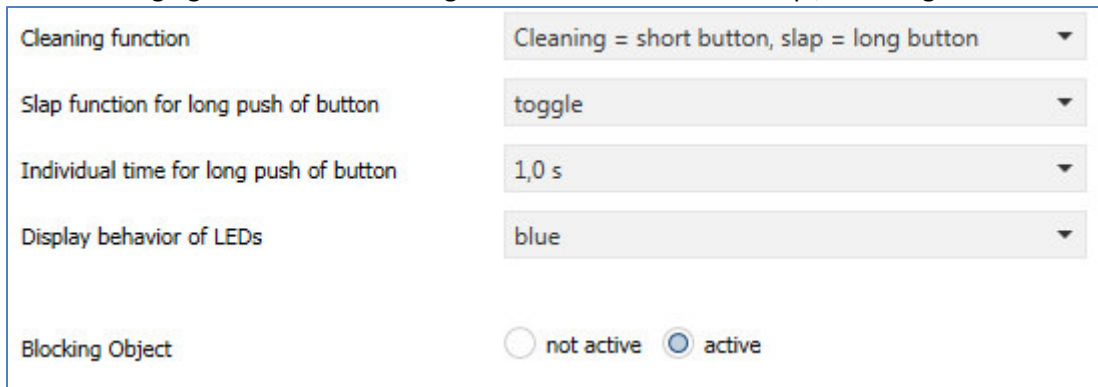
Figure 13: Settings: Slap / Cleaning function

The following table shows the available settings:

ETS-Text	Dynamic range [Default value]	Comment
Cleaning function	▪ not active ▪ **Cleaning = long button, Slap = short button** ▪ Cleaning = short button Slap = long button	Activation of the Cleaning-/ Slap function and setting if activation via short or long keystroke
Slap function	▪ **switch Off** ▪ switch On ▪ toggle ▪ send value ▪ nothing	Setting of the function to be executed at slap function
Send value	▪ DPT 2.001 Switch control ▪ **DPT 5.001 Percent** ▪ DPT 5.005 Decimal factor ▪ DPT 17.001 Scene number ▪ DPT 9.001 Temperature ▪ DPT 9.004 Brightness ▪ DPT 232.600 RGB value	Setting the data point type if slap function is set to "send values"
Individual time for long push of button	▪ **not active** ▪ 0,1s-30s	Setting an individual time from when a long keystroke is detected
Display behavior of LEDs	any color	Indication behavior of the LEDs when the slap function is active
Blocking object	▪ **not active** ▪ active	Activation of the blocking function for the slap function

Table 20: Slap / Cleaning function

The Slap-/Cleaning function will be executed by pressing 3 or more buttons simultaneously. The cleaning function blocks the push button against further operation or sending out a telegram for 10 seconds. If further keys are pressed within these 10 seconds, e.g. when cleaning the glass surface, the device remains locked. The cleaning function is indicated by a white flashing of all status LEDs. The slap function can be used as a further key. This allows the sending of a particular command by simply "slapping" on the button, e.g. when entering a room to turn the light on / off. The slap function is executed when 3 or more keys are pressed simultaneously. The parameter " slap function" can be used to set the value to be transmitted. An active slap function can be signalized with a freely adjustable color via the status LEDs. The status LEDs flash briefly in the set color.
If the cleaning function is deactivated, the slap function can send values for a long keystroke as well as for a short keystroke.

Communication objects
The following table shows the available communication objects for the Slap / Cleaning function:

Number	Name	Length	Usage
60	Slap-button short		Sending the value for the slap button; DPT according to settings in the parameters
61	Slap-button short - Value for toggle	1 Bit	**Only at "toggle" function** Receives the current state of the actuator to be controlled
62	Slap-button long		Sending the value for the slap button; DPT according to settings in the parameters
63	Slap-button long - Value for toggle	1 Bit	**Only at "toggle" function** Receives the current state of the actuator to be controlled
64	Slap-button – Blocking object	1 Bit	Blocking of the slap function

Table 21: Communication object - Slap/Cleaning function

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4.3 Push button functions

For each button function a block object as well as a function name can be defined. The block object inhibits the operation of the button on receipt of a logic 1 and releases it again as soon as a logical 0 is received.
The function name is shown centric above the respective function and can be set steadily ("over text input") or dynamically ("from message or state text) via communication object.

Identical parameters for all button functions are:

ETS-Text	Dynamic range [Default value]	Comment
Function name	- no text - from „message-text" (14 Byte object 119) - from „State object 1" (14 Byte object 120) - from „State object 2" (14 Byte object 121) **over text input**	Sets the data source for the function name
Text	free text with up to 20 characters	Input of the function name; Parameter is displayed if function name is set via text input
Blocking object	**not active** - active	Activation/deactivation of the block object for this button function

Table 22: Identical Parameters - Push button functions

Communication objects
The following table shows the available communication objects for the identical objects:

Number	Name	Length	Usage
4	Blocking object	1 Bit	Blocks the button function

Table 23: Identical objects - Push button functions

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4.3.1 Switch

The following figure shows the available settings for the push button function "Switch"
(here the example with the two-button function):
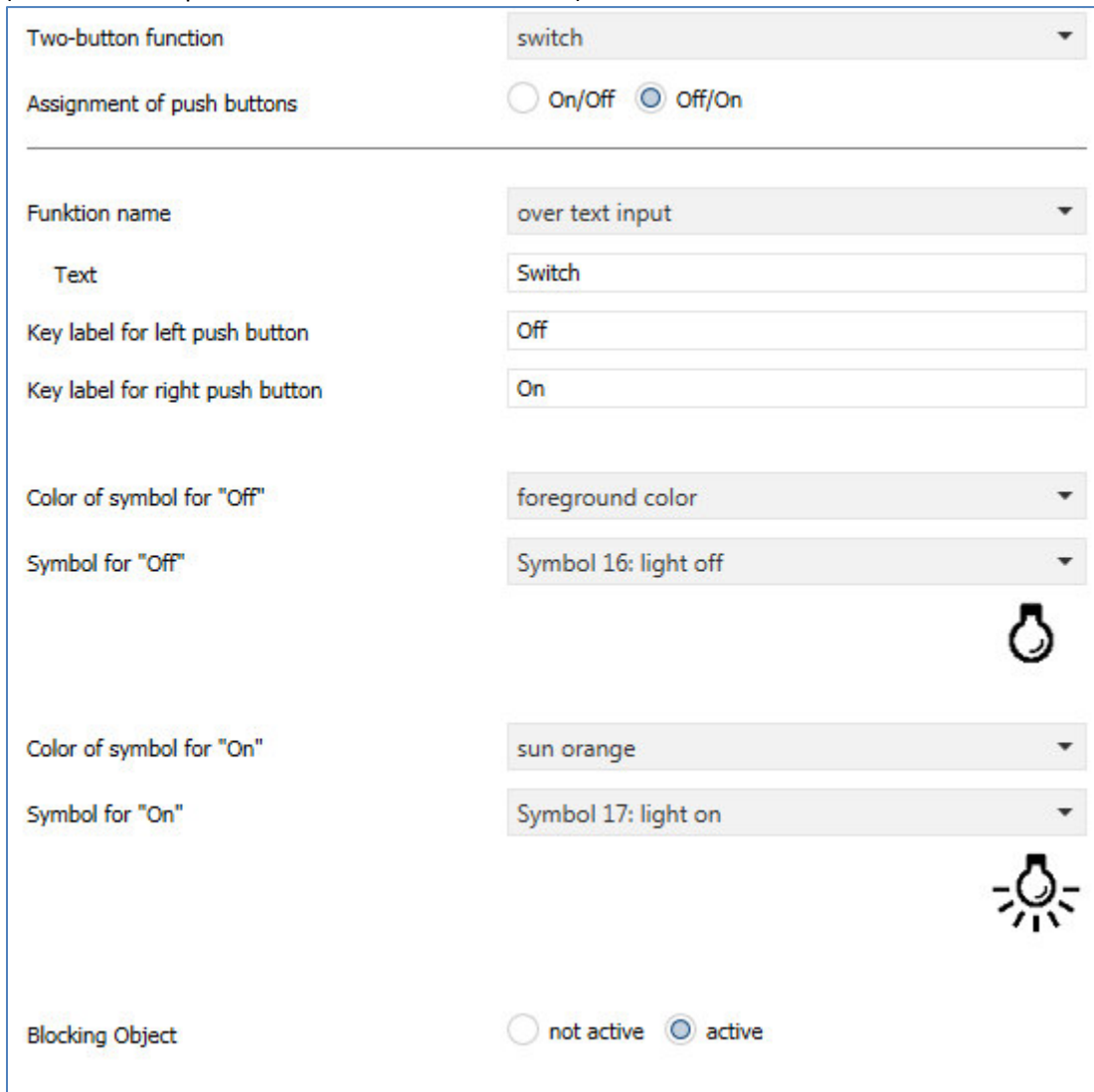
Figure 14: Settings: Push button function - Switch

The following parameters are identical for all sub-functions of the button function "Switch":

ETS-Text	Dynamic range [Default value]	Comment
Assignment of push buttons	▪ On/Off ▪ **Off/On**	Setting available only for the two-button function; defines the sending behavior of the left and right buttons
Subfunction	▪ **switch** ▪ toggle ▪ send status ▪ send status with on-delay ▪ send status with off-delay	Setting available only for the single-button function; defines the subfunction and, if necessary, displays further parameters

Table 24: Identical Parameter - Switch

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4.3.1.1 Switch with the two-button function

☑ Two-button function

In the case of the two-button function, the respective value (On/Off) can be assigned to the left and right buttons. Thus, the left and right buttons sends a set fixed value.
The following figure shows the available settings for the two-button function "switch":

| Two-button function | switch ▼ |
| Assignment of push buttons | ○ On/Off ◉ Off/On |
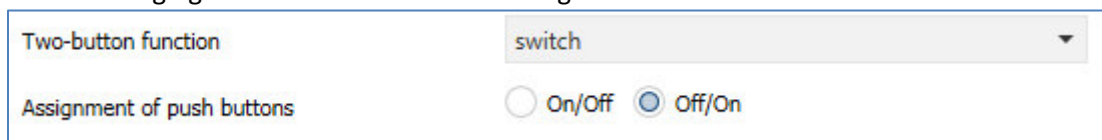
Figure 15: Settings: Two-button function - Switch

Button assignment On / Off: The left button sends the value On and the right button the value Off.
Button assignment Off / On: The left button sends the value Off and the right button the value On.

The following table shows the available communication objects:

Number	Name	Length	Usage
0	Push buttons 1/2 – switch	1 Bit	Switch function of the buttons
3	Push buttons 1/2 – State for display	1 Bit	State to refresh the display/symbol on the button; has to be connected to the state of the actuator to be switched

Table 25: Communication objects - Two-button function

4.3.1.2 Sub-function: Switch

☑ Single-button function

With the single-button function "switch" - Sub-function: switch, the button sends the respective fixed value when pressed.
The following figure shows the available settings:

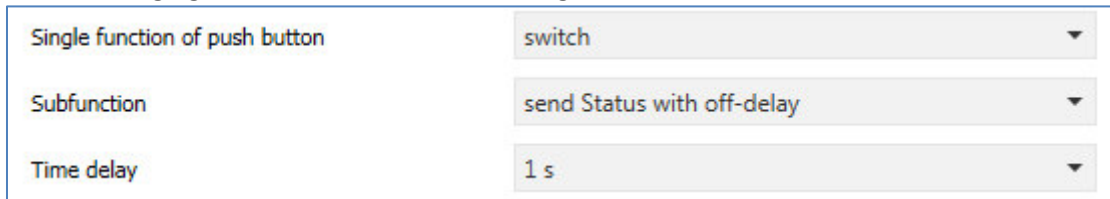| Single function of push button | switch ▼ |
| Subfunction | Switch ▼ |
| Value for pushed button | ○ off ◉ on |
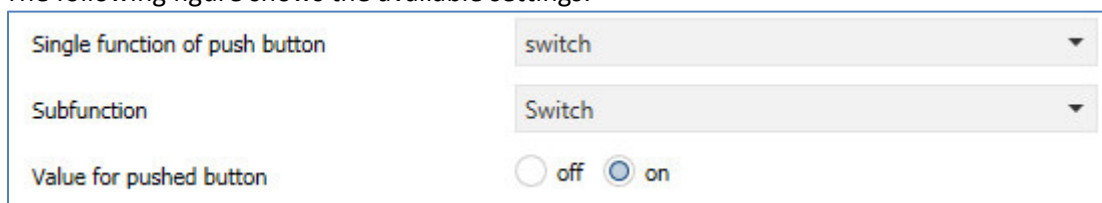
Figure 16: Settings: Single-button function "switch" - switch

The following table shows the available communication objects:

Number	Name	Length	Usage
0	Push button 1	1 Bit	Switch function of the button
3	Push button 1 – State for display	1 Bit	State to refresh the display/symbol on the button; has to be connected to the state of the actuator to be switched

Table 26: Communication objects Single-button function "switch" - switch

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4.3.1.3 Sub-function: Toggle
☑ Single-button function

With the single button function "Switch" - Subfunction: Switch, the key sends the respective inverted value with respect to the last received status value.For this purpose, the status object "value for toggle" has to be connected with the status of the actuator to be switched. If an "on" signal has been received as last value, the push button sends an "off" command at the next keystroke and vice versa..
The following figure shows the available settings:

Single function of push button	switch	▼
Subfunction	toggle	▼
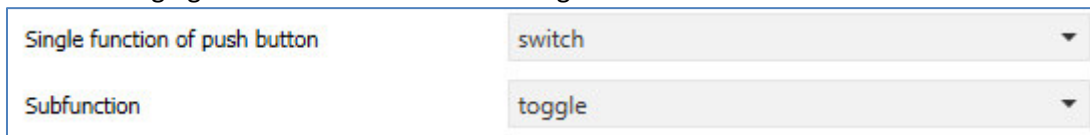
Figure 17: Settings: Single-button function „Switch" - Toggle

The following table shows the available communication objects:

Number	Name	Length	Usage
0	Push button 1 – switch	1 Bit	Switch function of the button
1	Push button 1 – Value for toggle	1 Bit	Status to refresh the display/symbol on the button; has to be connected to the status of the actuator to be switched so that the correct (inverted) value is always transmitted

Table 27: Communication objects Single-button function „Switch" - Toggle

4.3.1.4 Sub-function: Send status
☑ Single-button function

With the single button function "Switch" - Subfunction: Send status, fixed values for an activated key (rising edge) and a released key (falling edge) can be sent. With this function, scanning applications can be realized.
The following figure shows the available settings:

Single function of push button	switch	▼
Subfunction	send Status	▼
Value for pushed button	○ off ● on	
Value for released button	● off ○ on	
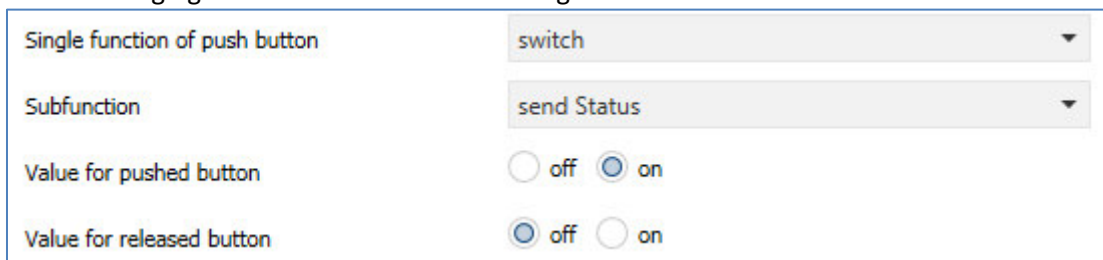
Figure 18: Settings: Single-button function „Switch" - send status

The following table shows the available communication objects:

Number	Name	Length	Usage
0	Push button 1 – send status	1 Bit	Switch function of the button
3	Push button 1 – State for display	1 Bit	State to refresh the display/symbol on the button; has to be connected to the state of the actuator to be switched

Table 28: Communication objects Single-button function „Switch" - send status

4.3.1.5 Sub-function: Send status with on-delay

☑ Single-button function

With the single-button function "switch" - Sub-function: Send status with on-delay, the key sends the value "On" for pressing the key and the value "Off" for releasing the key. However, the value "On" is delayed by the set time delay. If the key is released before the set time delay has elapsed, no "On" value is sent.
The following figure shows the available settings:

Single function of push button	switch
Subfunction	send Status with on-delay
Time delay	3 s

Figure 19: Settings: Single-button function „Switch" -"send status with on-delay"

The following diagram illustrates the behavior of this subfunction:
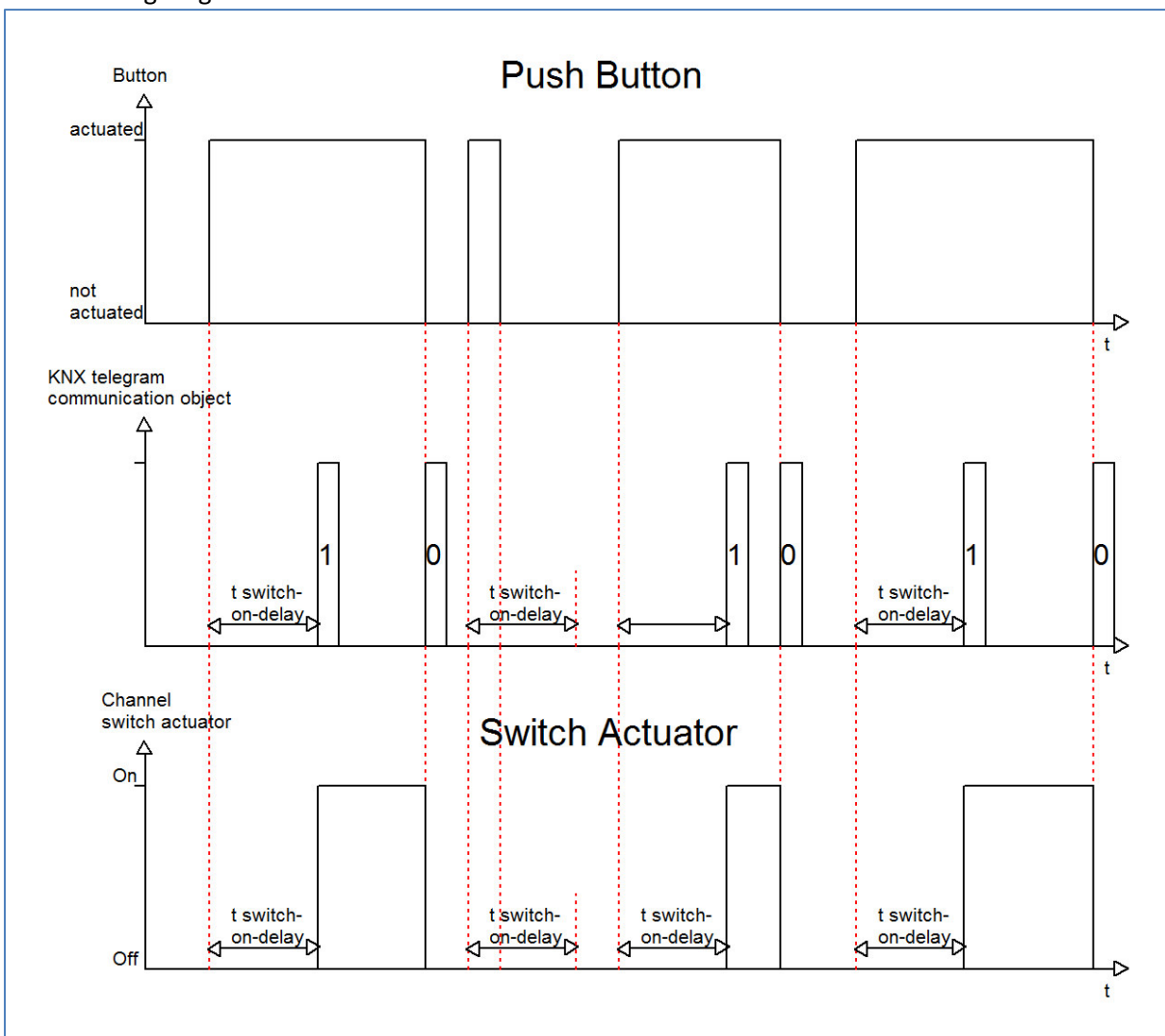
Figure 20: Diagram - behavior "send status with on-delay"

The following table shows the available communication objects:

Number	Name	Length	Usage
0	Push button 1 – send status	1 Bit	Switch function of the button
3	Push button 1 – State for display	1 Bit	State to refresh the display/symbol on the button; has to be connected to the state of the actuator to be switched

Table 29: Communication objects - Single-button function „Switch" -"send status with on-delay"

4.3.1.6 Sub-function: Send status with off-delay
☑ Single-button function

In the single-button function "Switch" - Sub-function: Send status with switch-off delay, the key sends the value "On" for pressing the key and the value "Off" for releasing the key. However, the value "Off" is delayed by the set time delay.
The following figure shows the available settings:

Figure 21: Settings: Single-button function „Switch" -"send status with off-delay"

The following table shows the available communication objects:

Number	Name	Length	Usage
0	Push button 1 – send status	1 Bit	Switch function of the button
3	Push button 1 – State for display	1 Bit	State to refresh the display/symbol on the button; has to be connected to the state of the actuator to be switched

Table 30: Communication objects - Single-button function „Switch" -"send status with off-delay"

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4.3.1.7 Presentation on display

☑ Single-button function
☑ Two-button function

The switching function can display the two possible states (on/off) by freely selectable symbols with a freely selectable color. Though the evaluated status is visualized:

Figure 22: Presentation of switch-function on display

4.3.2 Send values

4.3.2.1 Switching values/scenes (up to 4 values)
☑ Single-button function
☑ Two-button function

With the function "Send values – - Switching values/scenes (up to 4 values)" can be switched between up to 4 different values of one data point type.
The following figure shows the available settings:

Two-button function	send value ▾
Subfunction	◉ Switching value/scene (up to 4 value) ◯ shift value
Switch values	◉ previous / next ◯ next / previous
Number of values	4 ▾
Datapoint type	1Byte DPT 5.001 Percent (0...100%) ▾
1. Switching value	0% ▾
2. Switching value	40% ▾
3. Switching value	70% ▾
4. Switching value	100% ▾
Push button long	◉ not active ◯ active
Switching type	◉ limit stop (after the last value in turn is the last val... ◯ overrun (after the last value is sent the first value)
Switching considered status object	◉ yes ◯ no

Figure 23: Settings: Send values - switching values/scenes (up to 4 values)

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The table below shows all available settings:

ETS-Text	Dynamic range [Default value]	Comment
Switch values	▪ **Previous/next** ▪ next/previous	**Only available with two-button function!** Setting to which direction is to be moved at pressing left/right buttons
Number of values	▪ **2** ▪ 3 ▪ 4	Setting between how many values should be switched
Datapoint type	▪ DPT 2.001 Switch control ▪ **DPT 5.001 Percent** ▪ DPT 5.005 Decimal factor ▪ DPT 17.001 Scene number ▪ DPT 9.001 Temperature ▪ DPT 9.004 Brightness ▪ DPT 232.600 RGB value	Sets the data point type to be sent
$1^{st} – 4^{th}$ Switching value	any value according to the selected datapoint type	Sets the respective value for the switching value
Push button long	• **not active** • active	Activation of a function with a long keystroke
Left / Right push button: Action with a long push of button	• 1st-4th Switching value • 4th Switching value if previous was 1st value, otherwise 1st value • Send 0 • "Off" at second object • "On" at second object	**Only available with two-button function!** Setting the action with long keystroke
Action at long push of button	• 1st-4th Switching value • 4th Switching value if previous was 1st value, otherwise 1st value • Send 0 • "Off" at second object • "On" at second object	**Only available with single-button function!** Setting the action with long keystroke
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

Table 31: Settings „Send values" - switching values/scenes (up to 4 values)

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Principle of operation:
The function "switching values/scenes" can send up to 4 different values by shortly pressing a button. The values are then switched one after the other. Depending on the set parameters, for example, at a keystroke the second switching value is sent if the 1st switching value has been sent before or the third switching value will be sent if the second switching value has been sent before.…

Parameter "Push button long":
Additionally to a switch over at a short keystroke, a fixed value can be sent at a long keystroke. For example, the 1st-4th switching value can be sent. Thus, the selected fixed switching value (independent of the last switching value) would always be sent with a long keystroke.
The setting "4th Switching value if previous was 1st value, otherwise 1st value " represents a toggle function, which switches back and forth between the 1st and 4th switching values. If the 1st switching value was sent last, the 4th changeover value is sent, for each other value the 1st switching value is sent.
The setting "send 0" causes sending the value 0 to the switch object.The setting "On at second object" or "Off at second object" shows another communication object for the long keystroke. The fixed value On or Off is then sent to this object with the size 1 bit.

Parameter "Switching type":
Limit stop: When the switching type "limit stop" is activated, the 4th switching value is sent again after the 4th switching value has been sent.
Overrun: When the switching type "overrun" is activated, the 1st switching value is sent again after the 4th switching value.
For the single-button function, the parameter is set permanently to "overrun".

Parameter "Switchover considers status object":
If the status value is not taken into account during the changeover, the button memorizes the last sent value and sends the next or previous value on the next actuation without observing whether another value has been sent to the object in the meantime.
If the status value is taken into account during the changeover, the next keystroke will send the next higher or the next lower shift value - with respect to the last received status value. Example: the 2nd switching value is set to 40% and the 3rd switching value is set to 70%. Now, after a received status value of 50%, the value 70% is sent at next keystroke if the next switching value is to be sent and the value 40% if the previous switching value is to be sent.

The following table shows the available communication objects:

Number	Name	Length	Usage
0	Push button 1 – switch control, percent value…		Sending the switching value; DPT depending on the parameter setting
1	Push button 1– State switch control, state of percent value….		Receiving the status; DPT depending on the parameter setting
2	Push button 1 long - switch	1 Bit	Switch function of long button

Table 32: Communication objects "send values" - switching values/scenes (up to 4 values)

4.3.2.2 Shift value
☑ Two-button function

With the function "send values - shift values", values can be moved up or down within the set limits.

The following figure shows the available settings:
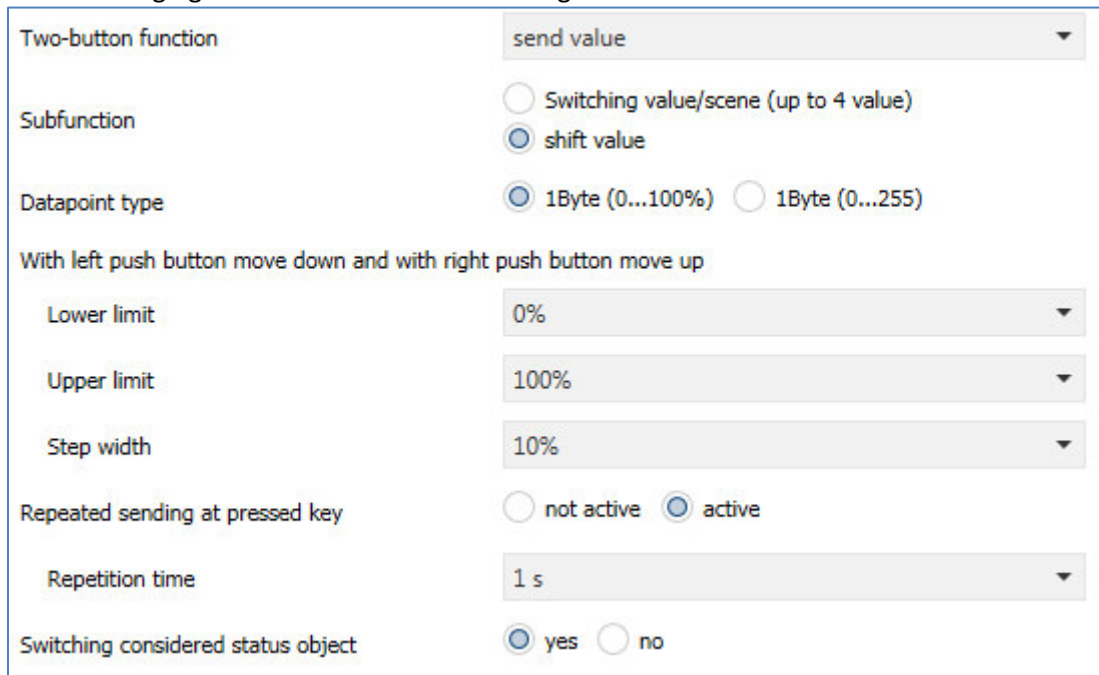
Figure 24: Settings "send values" - shift values

The table below shows all available settings:

ETS-Text	Dynamic range [Default value]	Comment
Datapoint type	▪ **1 Byte (0…100%)** ▪ 1 Byte (0…255)	Sets the datapoint type for the value shift
Lower limit	0-100%/0-255 **[0/0]**	Sets the lower limit value for the value shift
Upper limit	0-100%/0-255 **[100%/255]**	Sets the upper limit value for the value shift
Step width	0-100%/0-255 **[10%/10]**	Sets the step width between two sending commands
Repeated sending at pressed key	▪ **not active** ▪ active	Activation of the sending repetition while pressing the button
Repetition time	200ms-3s **[1s]**	Repetition time between two telegrams while pressing the button
Switching considers status object	● Yes ● **No**	Setting whether the value should be moved according to the current status

Table 33: "send values" - shift values

Principle of operation:
The function "shift value" moves the set datapoint type within the set limits. When the "Down" button is pressed, the set step width is subtracted from the last value and sent. When the "Up" button is pressed, the set step width is added to the last value and sent.

Lower/Upper limit:
Within these limits, the value is shifted. The function never falls below the lower limit value and does not exceed the upper limit value.

Step width:
The step width indicates the difference between two transmitted telegrams. Example: step witdth is set to 10%. If the value 10% was sent with the previous transmission, the value 20% is sent with the next "up" command..

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

Switching considers status object:
If the status value is taken into account, the key function sends the next value depending on the last received status value. If a status value of 15% and a step size of 10% were selected, then the value of 25% would be sent with the next "up" command. If the status value is not taken into account, the push button memorizes the last value that was sent and sends the next value regardless of the status value.

The following table shows the available communication objects:

Number	Name	Length	Usage
0	Push buttons 1/2 - percent value/decimal value…	1 Byte	Sending the switching value; DPT depending on the parameter setting
1	Push buttons 1/2 – State for display	1 Byte	Receiving the status; DPT depending on the parameter setting

Table 34: Communitcation objects "send values" - Shift value

4.3.2.3 Send value
☑ Single-button function

The function "Send values" - "send value" can send a fixed value according to the set datapoint type.
The following figure shows the available settings:

Single function of push button	send value
Subfunction	send value
Datapoint type	1Byte DPT 5.001 Percent (0…100%)
Percent value (0…100%)	13%
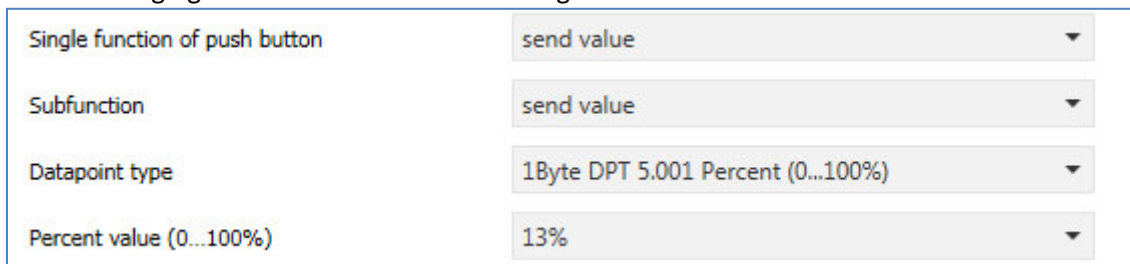
Figure 25: Settings "Send values" - send value

The table below shows all available settings:

ETS-Text	Dynamic range [Default value]	Comment
Datapoint type	- DPT 2.001 Switch control **DPT 5.001 Percent** - DPT 5.005 Decimal factor - DPT 17.001 Scene number - DPT 9.001 Temperature - DPT 9.004 Brightness - DPT 232.600 RGB value	Sets the data point type to be sent

Figure 26: "Send values" - send value

The value to be sent can be set according to the datapoint type.
The following table shows the available communication objects:

Number	Name	Length	Usage
0	Push button 1 – switch control, percent value…		Sending the switching value; DPT depending on the parameter setting
3	Push button 1 – State for display		Receiving the status; DPT depending on the parameter setting

Table 35: Communication objects - "Send values" - send value

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4.3.2.4 Send value after state
☑ Single-button function

The function "Send values - Send value after state" can send a fixed value according to the set datapoint type and when the key is released a fixed value according to the set datapoint type. The following figure shows the available settings:

Single function of push button	send value
Subfunction	send value after state
Datapoint type	1Byte DPT 5.001 Percent (0...100%)
Value for pushed button	13%
Value for released button	7%

Figure 27: Settings "Send value" - "Send value after state"

The following table shows all available settings:

ETS-Text	Dynamic range [Default value]	Comment
Datapoint type	▪ DPT 2.001 Switch control ▪ **DPT 5.001 Percent** ▪ DPT 5.005 Decimal factor ▪ DPT 17.001 Scene number ▪ DPT 9.001 Temperature ▪ DPT 9.004 Brightness ▪ DPT 232.600 RGB value	Sets the data point type to be sent

Table 36: "Send value" - "Send value after state"

The value to be sent can be set according to the set datapoint type for pressing and releasing the key. The following table shows the available communication objects:

Number	Name	Length	Usage
0	Push button 1 – switch control, percent value…		Sending the switching value; DPT depending on the parameter setting
3	Push button 1 – State for display		Receives the state; DPT dependent on parameter settings

Table 37: Communication objects "Send value" - "Send value after state"

4.3.2.5 Presentation
☑ 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 data point types:

Datapoint type	Adjustable symbols	Comment
2 Bit Switch control, DPT 2.001	4 symbols can be set: 1 symbol for each possible state	
1 Byte Percent, DPT 5.001	3 symbols can be set for the ranges 0, 1 to 229 and larger 229. 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 fator, DPT 5.005	Three icons can be set for the ranges 0%, 1% to 90% and greater than 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 Scene Number, DPT 17.001	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 value, DPT 232.600	1 fixed symbol can be set	

Table 38: Presentation - Send values

Special presentation:
For certain data point types, a special presentation (see table above) is possible. In this presentation, the status is shown on a larger scale on the display.
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 39: Send values - Special display

4.3.3 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 value short/long (with 2 objects) ▼
Action for short push button	Switch ▼
Selection for value for left button	◉ off ◯ on
Selection for value for right button	◯ off ◉ on
Action for long push button	send value ▼
Datapoint type	1Byte DPT 5.001 Percent (0...100%) ▼
Left push button: Percent value (0...100%)	10% ▼
Right push button: Percent value (0...100%)	30% ▼
Individual time for long push of button	not active ▼
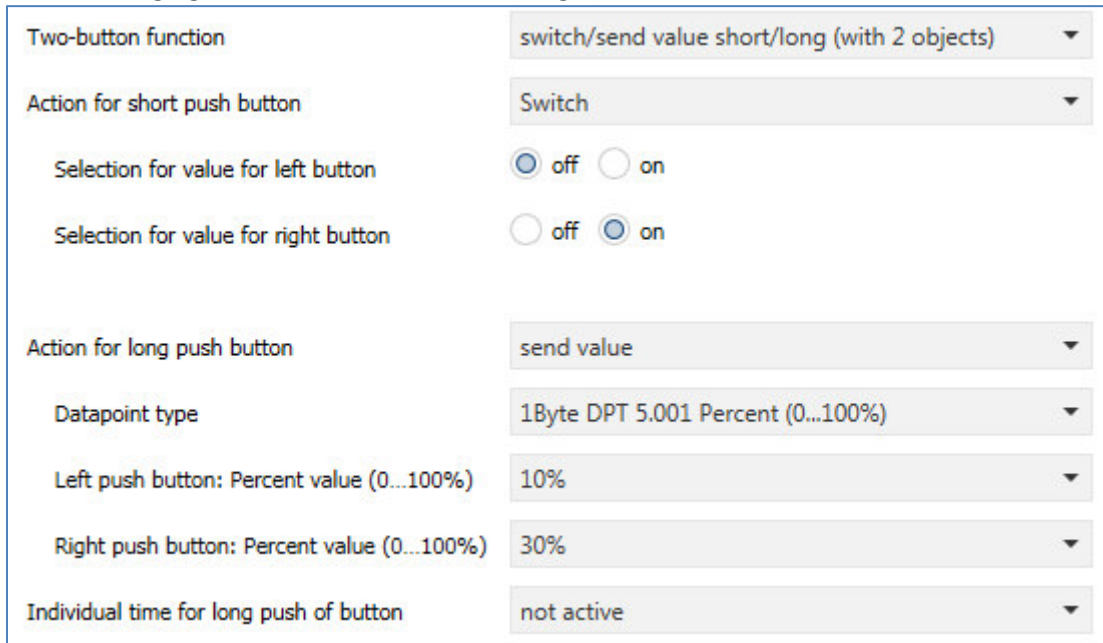
Figure 28: switch/send value short/long (with 2 objects)

The table below shows all available settings:

ETS-Text	Dynamic range [Default value]	Comment
Action for short/long push button	▪ **switch** **(two-button function)** ▪ switch On (Single-button function) ▪ Switch Off (Single-button function) ▪ toggle ▪ send value ▪ nothing	Setting the function for the short/long key
Datapoint type	▪ DPT 2.001 Switch control ▪ **DPT 5.001 Percent** ▪ DPT 5.005 Decimal factor ▪ DPT 17.001 Scene number ▪ DPT 9.001 Temperature ▪ DPT 9.004 Brightness ▪ DPT 232.600 RGB value	**Setting only available when "Action for short/long push button" is set to "send values"** Sets the datapoint type for the value to be sent

Table 40: switch/send value short/long (with 2 objects)

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In case of the two-button function, different values for the left and the right button can be sent (for the short as well as for the long button). With the single-button function only one value can be sent for the short as well as for the long button. The datapoint type can be set separately for the short and long button.

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 following table shows the available communication objects:

Number	Name	Length	Usage
0	Button 1 short – Switch control, Percent value…		Sending the value for the short button; DPT depending on the parameter setting
1	Button 1 short – State for display		Receiving the value for the short button; DPT depending on the parameter setting
2	Button 1 long – Switch control, Percent value …		Sending the value for the long button; DPT depending on the parameter setting
3	Button 1 long – State for display		Receiving the value for the long button; DPT depending on the parameter setting

Table 41: Communication objects - switch/send value short/long (with 2 objects)

Presentation:
With the button function "switching short/long", the function of the short button or the function of the long button can be displayed. The displayed settings depend on whether the function to be displayed has been parameterized as "switch" (switch, switch on, switch off, toggle) or "send values". If the function has been parameterized as "switch", the following presentation settings are possible: The switching function can display the two possible states (on / off) by freely selectable symbols with a freely selectable color. The evaluated status is visualized :
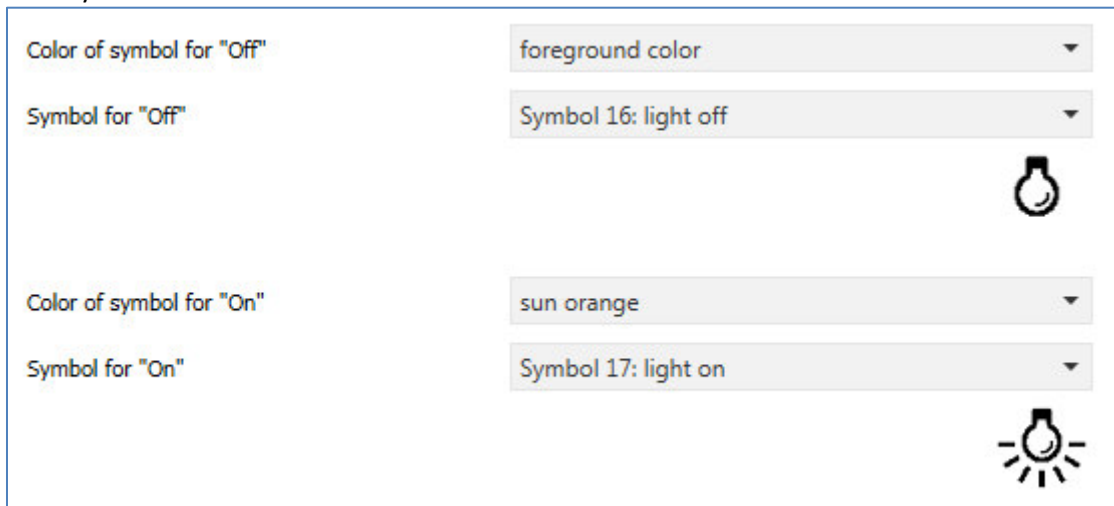
Figure 29: Presentation of the "switch" function

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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:

Dataponit type	adjustable symbols	Comment
2 Bit Switch control, DPT 2.001	4 symbols can be set: 1 symbol for each possible state	
1 Byte Percent, DPT 5.001	3 symbols can be set for the ranges 0, 1 to 229 and larger 229. 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 fator, DPT 5.005	Three icons can be set for the ranges 0%, 1% to 90% and greater than 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 Scene Number, DPT 17.001	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 value, DPT 232.600	1 fixed symbol can be set	

Table 42: Presentation - send values

Special presentation:
For certain data point types, a special presentation (see table above) is possible. In this presentation, the status is shown on a larger scale on the display.
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 43: Send values - Special display

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4.3.4 Scene

☑ Single-button function

The scene function makes it possible to call up and store scenes. If the memory function is activated, this can be activated by a long key stroke.

The following figure shows the available settings:

Single function of push button	scene ▼
Save scane	⦿ no save ◯ save
Scene number	1 ▼
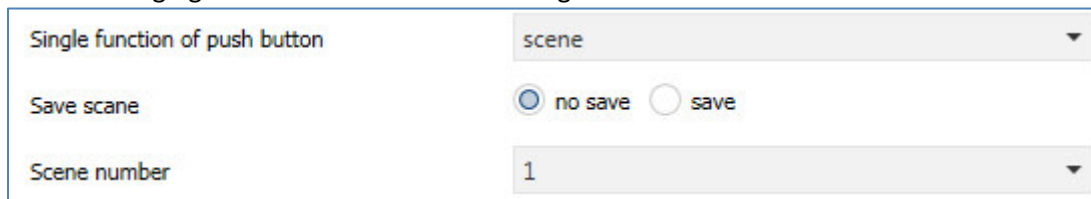
Figure 30: Scene

The table below shows all 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
Scene number	1-64 **[1]**	Setting the respective scene number

Table 44: 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.	Dec.
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

Table 45: Scene call and save

The following table shows the available communication objects:

Number	Name	Length	Usage
0	Push button 1 – Scene	1 Byte	Call/Save of a scene

Table 46: Communication objects - Scene

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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	dark green ▼
Symbol	Symbol 24: scene ▼
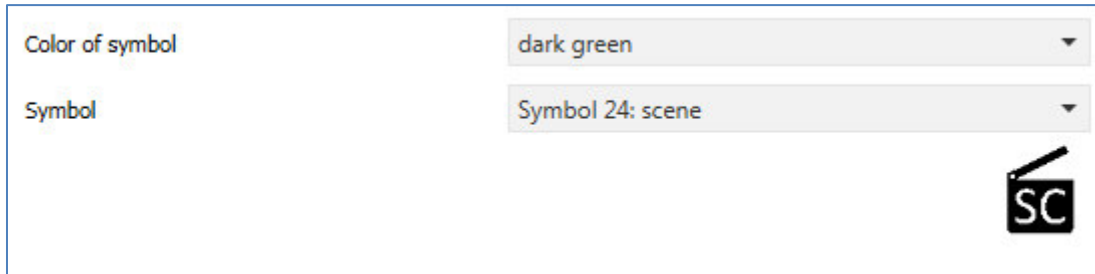
Figure 31: Presentation - Scene

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4.3.5 Blind
☑ Single-button function
☑ Two-button function

The blind 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:
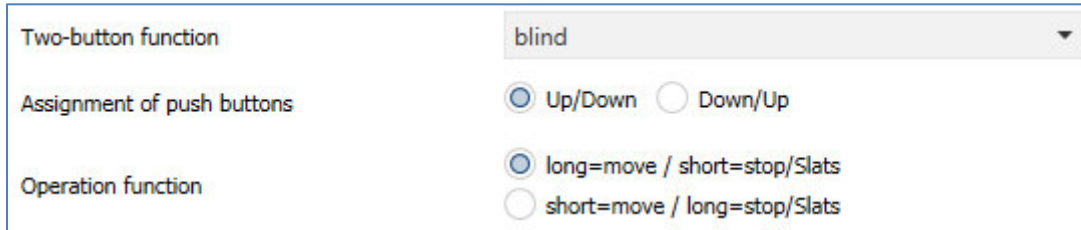
Figure 32: Settings - Blind

The table below shows all available settings:

ETS-Text	Dynamic range [Default value]	Comment
Assignment of push buttons	▪ Up/Down ▪ **Down/Up**	**Only available at Two-button function!** Setting the key assignment (left/right button) for the up/down function
Operation function	▪ **Long=move / Short=Stop/Slats Up/Down** ▪ Short=move / Long=Stop/Slats Up/Down	Setting whether to use a long key or a short key for movement

Table 47: Settings - Blind

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 48: Two-button function - Blind function

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

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Since shutter actuators always use a 1 signal for the down movement and a 0 signal for the up movement, the button also emits this. It is also possible to change the action for long and short keystrokes. It is thus possible to select whether to move via a long or a short keystroke. The stop/step object then adopts the other operating concept.
The following table shows the available communication objects:

Number	Name	Length	Usage
0	Push button 1 – blind up/down	1 Bit	Up/Down command for the shutter actuator
1	Push button 1 –Slats/Stop	1 Bit	Slats open/close; Stop-command
2	Push button 1 – value for change of direction	1 Bit	**only for single-button function** Receiving the status with current information about the direction of the shutter actuator
2	Push button 1/2 – State of slat for display	1 Byte	**only for two-button function** Receiving the status of the current slat position
3	Push button 1 – State of blind for display	1 Byte	Receiving the status of the current blind/shutter position

Table 49: Communication objects - blind

Presentation:
☑ Single-button function
☑ Two-button function

The blind function can be displayed with 3 freely selectable symbols and freely selectable color. The button evaluates the information of the "Object 3 - State of blind for display". In addition, the current status can be displayed as text under the symbol:
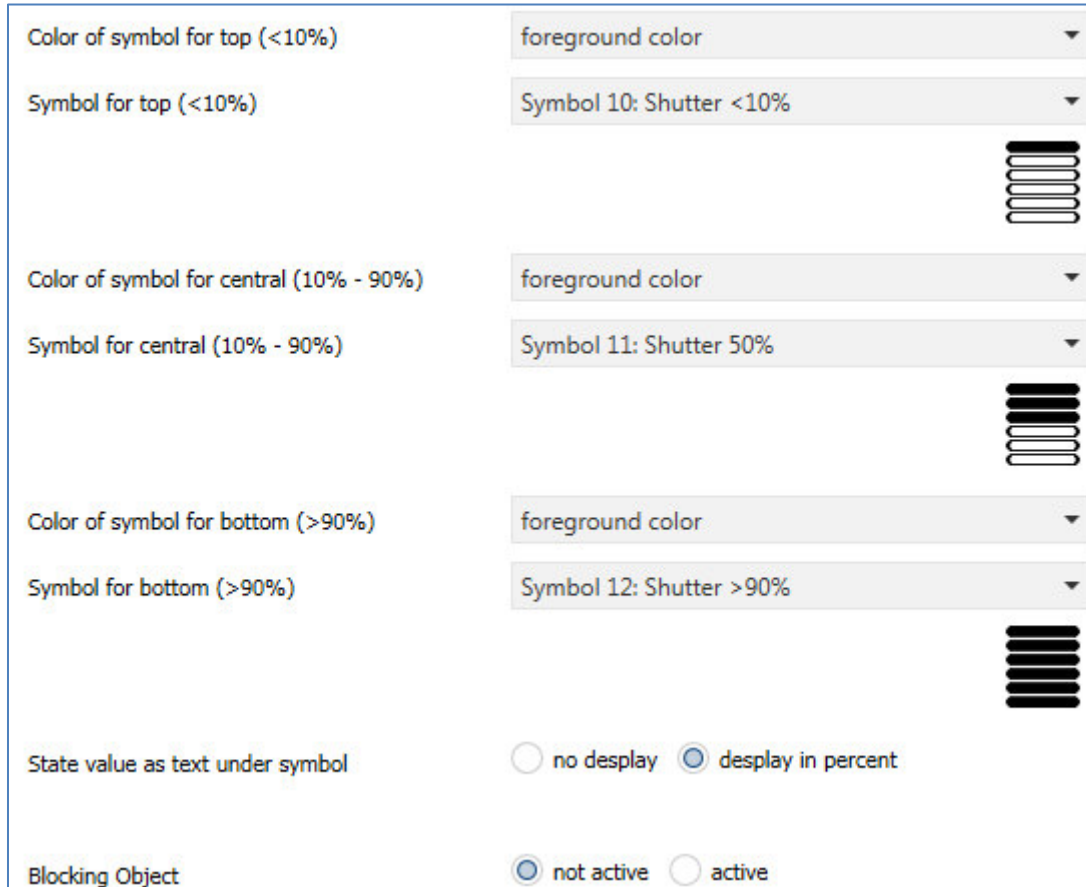
Figure 33: Presentation - Blind function

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Additional Presentation:
☑ Two-button function

The position of the slats can also be displayed with the two-button function. The symbol for the slats is displayed on the right button. The button evaluates the information from "Object 2 - State of slats for display". The position of the slats can be represented by 3 freely selectable symbols and freely selectable colors:

Figure 34: Presentation - Slat function

4.3.6 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 two-button function):

Two-button function	dimming ▼
Assignment of push buttons	◯ brighter / darker ⦿ darker / brighter
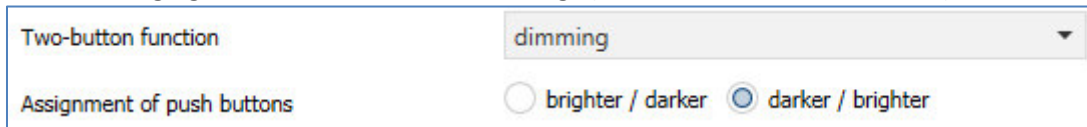
Figure 35: Settings - Dimming

The table below shows all available settings:

ETS-Text	Dynamic range [Default value]	Comment
Assignment of push buttons	▪ brighter/darker ▪ **darker/brighter**	**only available with two-button function!** Setting the key assignment (left/right key) for the direction (brighter/darker)

Table 50: Settings - Dimming

If a button is parameterized as a dimming function, this button shows 2 communication objects, on the one hand the function for the short keystroke, the switching object "dimming on/off", and on the other hand the function for the long keystroke, the dimming object "dimming".
The two-button function "dimming" can be parameterized either as brighter/darker or as darker/brighter. The following table shows the relationships:

	Function brighter/darker		Function darker/brighter	
Input	Push button left	Push button right	Push button right	Push button left
Dimming function	brighter	darker	darker	brighter
Switch function	ON	OFF	OFF	ON

Table 51: Two-button function - Dimming

With the one-button function "dimming", the direction (brighter/darker) is reversed as a function of the communication object "value for toggle". The dimming function is a start-stop dimming, that means as soon as the dimming function becomes active, a light or dark command is assigned to the input until it 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 – dimming on/off	1 Bit	Switch command for the dimming function
1	Push button 1 – dimming	4 Bit	Dimming command
2	Push button 1 – Value for toggle	1 Bit	**only for single-button operation** Feedback signal about the current state of the actuator to be switched
3	Push button 1 – State for display	1 Byte	Receive of the status of the current, absolute brightness

Table 52: Communication objects - Dimming

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Presentation:
☑ Single-button function
☑ Two-button function

The parameter "display type" defines whether the dimming function should be displayed in the normal presentation with 3 symbols or by a special symbol representing the status in percent.

Normal view:
The dimming function can be displayed with 3 freely selectable symbols and freely selectable colors. The button evaluates the information of object 3 "State for display". In addition, the current status can be displayed as text under the symbol:

Figure 36: Normal view - Dimming

Special presentation:
In the special presentation, the status (in percent) is shown on a larger scale on the display. The following illustrations are possible:

ETS-Text	Dynamic range [Default value]	Comment
Special display	▪ **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.

Table 53: Special display - Dimming

4.3.7 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:

Two-button function	HSV color control ▼
HSV function selection	Hue (H) ▼
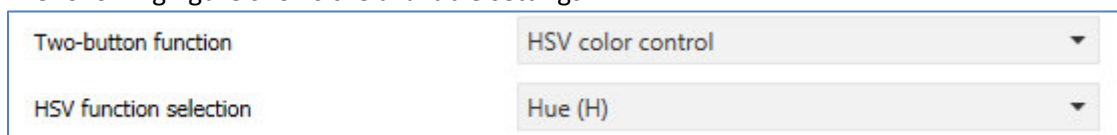
Figure 37: Settings - HSV color control

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 54: 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.

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The following table shows the available communication objects:

Number	Name	Length	Usage
0	Push button 1 / 1/2– HSV control On/Off	1 Bit	**only for sub-function "value"** Switch command for color control
1	Push button 1 / 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 operation and sub-function "value"** Feedback signal about the current state of the actuator to be switched
3	Push button 1 / 1/2 – State for Hue/ Saturation/ Value	1 Byte	Receiving the state of the HSV chromatic circle

Table 55: 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 56: Special symbols - HSV color control

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4.3.8 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):
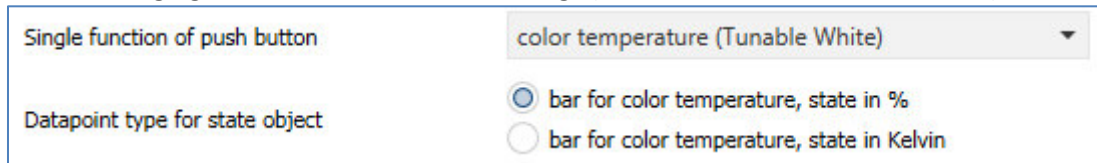
Figure 38: Settings - Tunable White

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 57: Settings - 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 dycle 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 / 1/2 – Change color temperature relative	4 Bit	Cycle through the color temperature
3	Push button 1 / 1/2 – State for color temperature	1 Byte	Receiving the state of the color temperature

Table 58: Communication objects - 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 59: Special symbol - Color temperature

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4.3.9 Mode selection
Function only available for Glass Push Button II Smart with temperature sensor
☑ Single-button function
☑ Two-button function

With the function "Mode selection" the HVAC mode can be toggled in heating actuators or temperature controllers.
The following figure shows the available settings:

Two-button function	mode switching ▾
Switching values	Comfort / Standby / Night / Frost ▾
Push button long	◯ not active ⦿ active
Left button: Action with a long push of button	Comfort ▾
Right push button: Action at long push of button	Standby ▾
Switching type	⦿ limit stop (after the last value in turn is the last val... ◯ overrun (after the last value is sent the first value)
Switching considered status object	⦿ yes ◯ no
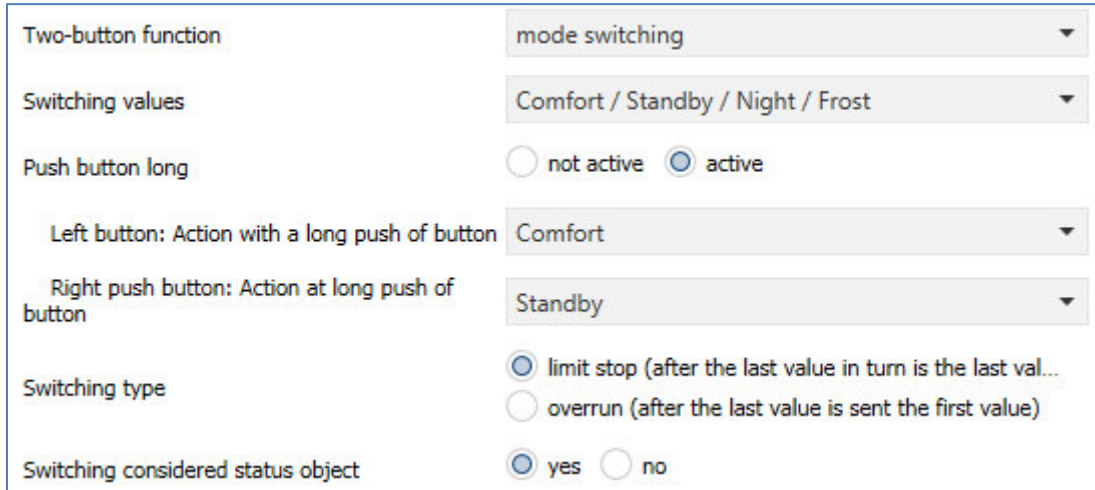
Figure 39: Settings - Mode selection

The table below shows all 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
Left button: Action at long push of button	▪ **Comfort** ▪ Standby ▪ Night ▪ Frost	Setting which operating mode should be called with a long keystroke to the left button **Only available with two-button function!**
Right button: Action at long push of button	▪ **Comfort** ▪ Standby ▪ Night ▪ Frost	Setting which operating mode should be called with a long keystroke to the right button **Only available with two-button function!**
Action at long push of button	▪ **Comfort** ▪ Standby ▪ Night ▪ Frost	Setting which operating mode should be called with a long keystroke **Only available with single-button function!**

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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

Table 60: 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 "Long push button":
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".

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The following table shows the available communication objects:

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

Table 61: 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:

Figure 40: Presentation - Mode selection

4.3.10 Temperature shift
Function only available for Glass Push Button II Smart with temperature sensor
☑ Two-button function

The temperature shift can be used to move the setpoint of the heating control.
The following figure shows the available settings:

Two-button function	temperature shift ▼
Temperature shift	1Bit temperature shift ▼
Use internal temperature	○ not active ◉ active
With left push button move down and with right push button move up	
Repeated sending at pressed key	○ not active ◉ active
Repetition time	1 s ▼
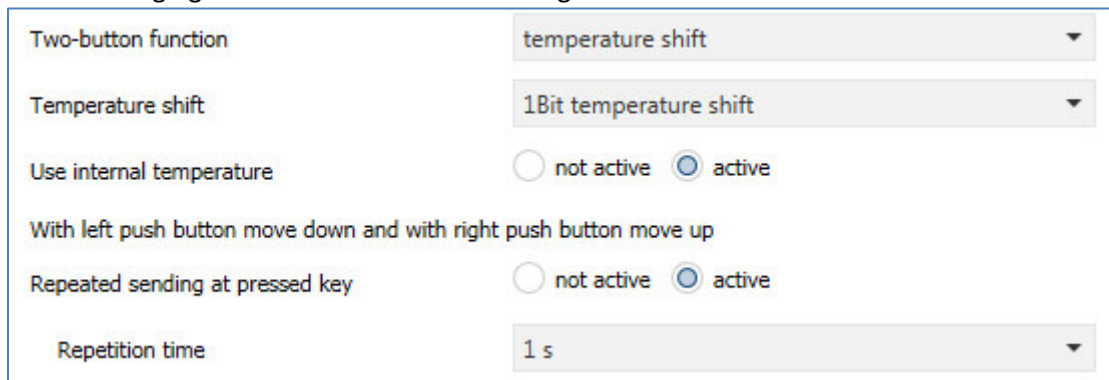
Figure 41: Settings - Temperature shift

The table below shows all 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
Use internal temperature	▪ **not active** ▪ active	Setting whether the internal temperature measurement value is to be used to display the actual 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	200ms – 3s **[1s]**	Sets the time between two telegrams of the temperature shift when repetition is activated

Table 62: Settings - Temperature shift

The temperature can be shifted in 4 different ways:

1 Bit temperature shift

With the 1-bit temperature shift the glass push button 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 – State 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 – State current setpoint temperature	2 Byte	Receiving the current setpoint temperature of the temperature controller; to display the status

Table 63: Communication objects - Temperature shift via 1 bit

1 Byte temperature shift

With the 1-byte temperature shifting, the glass push button 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 glass push button.

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 – State 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 – State current setpoint temperature	2 Byte	Receiving the current setpoint temperature of the temperature controller; to display the status
3	Push buttons 1/2 – State setpoint shift	1 Byte	Receives the current setpoint shift; has to be connected to all 1 byte objects which send the setpoint shift to the controller in order to correctly evaluate the current status of the setpoint shift

Table 64: Communication objects - Temperature shift via 1 byte

2 Byte temperature shift
With the 2-byte temperature shift, the glass push button sends a 2-byte temperature value which is added or subtracted from the set basic comfort value.
The Glass Push Button 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 must be specified in the Glass Push Button 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	1 Bit	Sends the Setpoint shift
1	Push buttons 1/2 – State 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 – State current setpoint temperature	2 Byte	Receiving the current setpoint temperature of the temperature controller; to display the status
3	Push buttons 1/2 – State setpoint shift	1 Byte	Receives the current setpoint shift; has to be connected to all 1 byte objects which send the setpoint shift to the controller in order to correctly evaluate the current status of the setpoint shift

Table 65: Communication objects - Temperature shift via 2 byte

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2 Byte shift of basis comfort setpoint

In the case of the 2-byte shift of basic comfort setpoint, the Glass Push Button sends a new basic comfort setpoint to the controller. It evaluates the object "state basis comfort setpoint" and sends the new setpoint +/- the set step width to the controller.

The range of the setpoint shift can be adjusted via the upper and lower limits.

The following table shows the available communication objects:
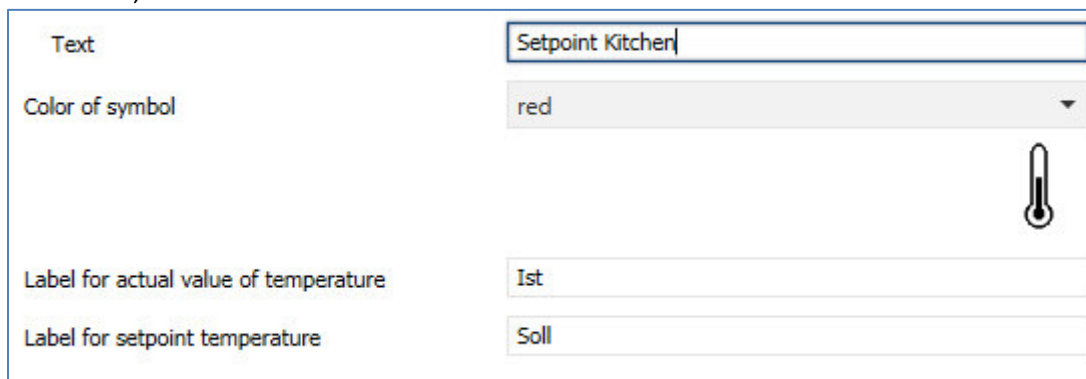
Number	Name	Length	Usage
0	Push buttons 1/2 – basis comfort setpoint	2 Byte	Sends the Setpoint shift
1	Push buttons 1/2 – State actual temperature	2 Byte	Receiving an external temperature for the display of the current temperature - is only displayed if the parameter "Use internal temperature value" is set to "not active"
2	Push buttons 1/2 – State current setpoint temperature	2 Byte	Receiving the current setpoint temperature of the temperature controller; to display the status
3	Push buttons 1/2 – State basis comfort setpoint	2 Byte	Receives the current setpoint shift; has to be connected to the basic comfort setpoint value of the controller so that the basic comfort setpoint can be correctly displaced even when changing to a different operating mode

Table 66: Communication objects - 2 Byte shift of comfort setpoint value

Presentation:

☑ Two-button function

The temperature shift is represented by the temperature symbol. The display is fixed to the symbol 9. In addition, the actual value and the desired value can be labeled as desired:

Figure 42: Presentation - Temperature shift

4.4 State LED

Depending on the configuration of the push button (1, 2 or 3 levels), up to 14 status LEDs can be configured. One LED can be configured for each function, which is then marked with 1-12 in the parameters. For 2 or 3 levels, the upper two LEDs (at the buttons for the level switching) can also be configured. These LEDs are labeled A and B in the parameters.

4.4.1 LED basic settings

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

LED-Color at button activation, only by setting "Object and button activation"	sun orange ▼
Lock object for LEDs	⦿ not active ○ active
Behaviour of LEDs at bus power up	⦿ no read LED objects ○ read LED objects
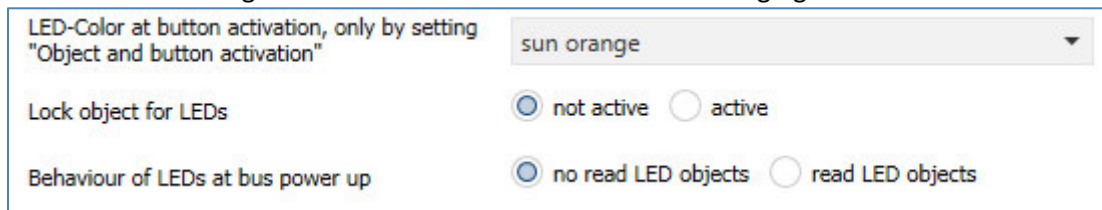
Figure 43: LED basic settings

The table below shows all available settings:

ETS-Text	Dynamic range [Default value]	Comment
LED-color at button activation, only by setting "Object and button activation"	Any color	Parameter is only used at double assignment: "Keystroke + internal / external object"
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 read LED objects** ▪ read LED objects	Setting whether to actively request the objects after a reset; only active at "LED reacts to external object"

Table 67: LED basic settings

The parameter "LED color at button activation" defines the color change of all status LEDs at pushing a button, when these are double assigned by the setting "LED reacts to: - external / internal object and pushbutton activation".In this case, the settings in the menu LED 1-12/A/B refer to the control via the object and the global parameter "LED color at button activation" defines the behavior at the keystroke

The following table shows the available communication objects:

Number	Name	Length	Usage
105	LED – Blocking object	1 Bit	Blocking of all LED´s

Table 68: Communication object - LED blocking object

4.4.2 LED 1-12/A/B

The following figure shows the available settings for each of the active LEDs:
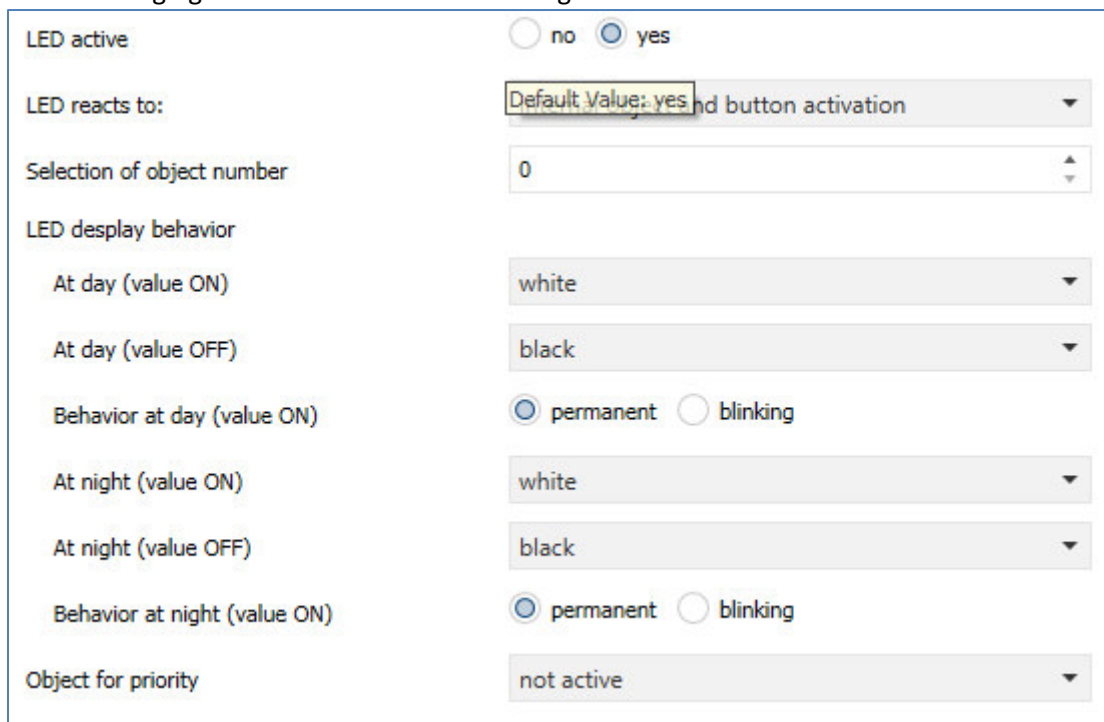
Figure 44: Settings - LED 1-12/A/B

The table below shows all available settings:

ETS-Text	Dynamic range [Default value]	Comment
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
Selection of object number	any object	Parameters only available when LED reacts to internal object; Link to internal object

LED display behaviour

At day (value ON)	Any color	Color for the object value ON / activated button in day mode
At day (value OFF)	Any color	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
At night (value ON)	Any color	Color for the object value ON / activated button in night mode
At night (value OFF)	Any color	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 1-12/A/B

Each LED can either react to any external object, such as the status of an actuator, an internal object, or key operation. In addition, an LED can also react to an external or internal object and the key operation. With this setting, the adjustments in the menu LED 1-12 / A / B refer to the control of the LEDs via the object. In this case, the behavior of the button actuation is set globally for all LEDs and is described in menu 4.4.1 LED. The behavior for the key operation has priority.

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

If, for example, button 2 is set to "switch" - "toggle" in the one-button function and the LED is to respond to the object "value for toggle", the object number "6" has to be entered. In this case, the status LED would turn on when the object has a 1 and turn off when the object has a 0. If the LED is linked to an object which is not 1-bit, the LED is switched off when the object is set to 0 and turned on when the value of the object is not 0. For an object of the DPT 5.001 (percent) would mean that the LED is switched off at 0% and is switched on at all other values.

Each LED can accept different colors and behavior for day and night operation and switches depending on the object "106 - day/night".

The following table shows the available communication object:

Number	Name	Length	Usage
77	LED 1	1 Bit	Controlling the LED; Object is only displayed if LED reacts to external object

Table 70: Communication object - LED

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4.4.2.1 Priority

The LED priority can force the status LED into a defined state and thus exceed the control via an external / internal object or the key actuation.

The following figure shows the available settings for each of the active LEDs:
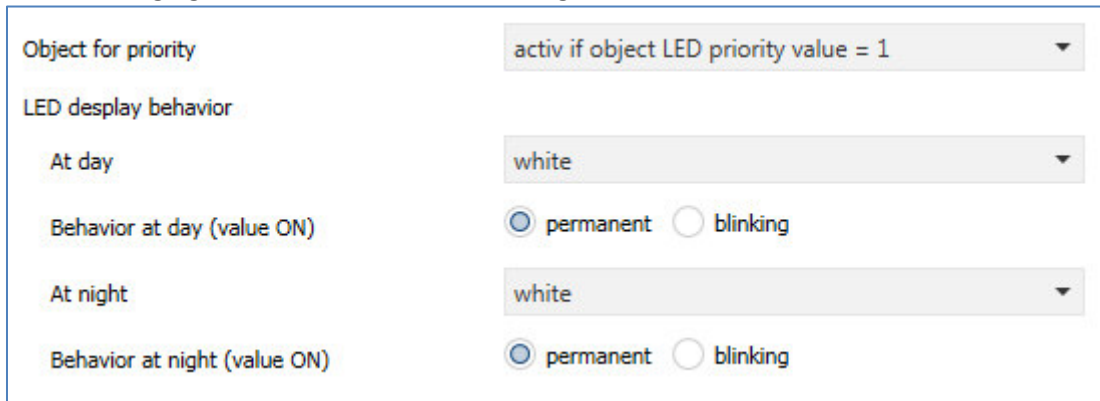
Figure 45: Setting - LED Priority

The table below shows all 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
At day	any color	Color for an active LED priority in day mode
Behavior at day (value ON)	▪ **permanent** ▪ blinking	Setting the lighting behavior for an active LED priority in day mode
At night	any color	Color for an active LED priority in night mode
Behavior at night (value ON)	▪ **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 4.4.2 LED 1-12/A/B.

The following table shows the available communication objects:

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

Table 72: Communication object - LED Priority

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4.5 Logic

4.5.1 Logic basic settings

The Glass Push Button II Smart has 4 additional logic functions.
The following figure shows the activation and basic functions of the logic functions:

Setting Logic 1	disabled ▼
Settings for logic 2	disabled ▼
Settings for logic 3	disabled ▼
Settings for logic 4	disabled ▼
Behaviour at Bus power up	◉ no read ext. logic objekts ○ read ext. logic objects

Figure 46: 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.

4.5.2 Logic 1-4

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

Setting Logic 1	And ▼
Objecttype 1	Switch ▼
Send condition	not automatic ▼
Invert output	◉ no ○ yes

Figure 47: Settings - Logic 1-4

The table below shows all available settings:

ETS-Text	Dynamic range [Default value]	Comment
Setting Logic 1-4	▪ **disabled** ▪ And ▪ Or	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	any value according to DPT	Setting only available with Object type Scene / Value / Forcible control 2 Bit
Sending condition (only at object type Switch)	▪ **not automatic** ▪ at input telegram ▪ at change output ▪ at change output (send only 0) ▪ at change output (send only 1)	At the object type "Switch" the transmission condition can be defined as well as a transmission filter
Invert output (only at object type Switch)	▪ **No** ▪ Yes	Determines whether the output signal should be inverted or not

Table 73: Settings - Logic 1-4

The corresponding communication object is displayed depending on the object type of the logic operation:

Number	Name	Length	Usage
67	Logic – Output 1	1 Bit/ 1Byte/ 2 Bit	Output of the logic operation

Table 74: Communication object - Logic 1-4

If a logic operation is fulfilled, the corresponding value is transmitted.
For the object type "Switch", a send condition or a send filter for the output can be defined. The logic operation may e.g. at each input telegram, send only when the output of the logic operation changes, or only 1 or 0 are sent out. In addition, the output can be inverted with the object type "Switching", thus making a 0 to a 1 and a 1 to a 0.

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4.5.2.1 Logic 1-4 submenu

A submenu is activated for each activated logic. 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:
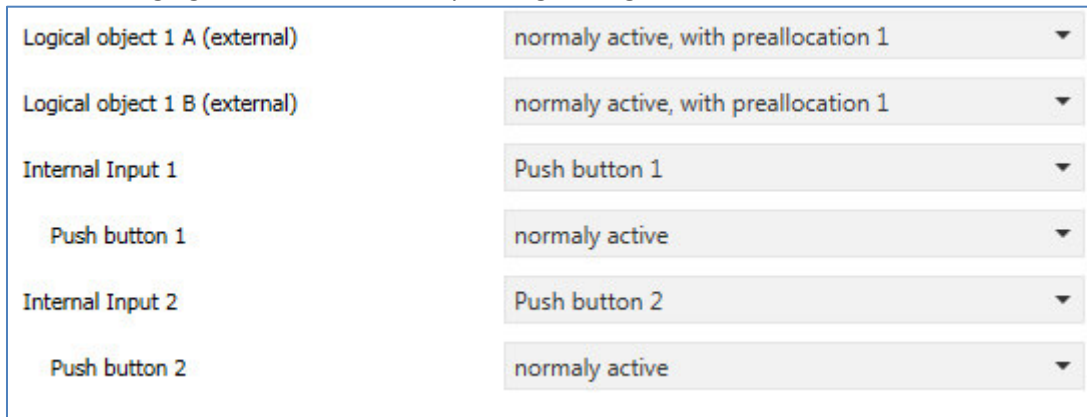
Figure 48: Settings "Logic 1-4" - Submenu

The table below shows all available settings:

ETS-Text	Dynamic range [Default value]	Comment
Logical object 1 A/B (external)	▪ **disabled** ▪ normal 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 1-12	Activation of the buttons for the logic function, each button can be activated normally or inverted

Figure 49: Settings - Activation of Logic inputs

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

Number	Name	Length	Usage
65	Logic – Input 1 A	1 Bit	external input for the logic function
66	Logic – 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 shown, which can be connected to any other communication object of the size 1 bit, e.g. the status of an actuator.
Further, the logic operation can respond to the operation of the keys.
Each logic input can be either normal or inverted.

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4.6 Temperature measurement
Function only available for Glass Push Button II Smart with temperature sensor

The following figure shows the menu for temperature measurement:

Figure 50: Settings - Temperature measurement

The table below shows all available settings:

ETS-Text	Dynamic range [Default value]	Comment
Temperature measurement	▪ **not active** ▪ active	Activation of temperature measurement
External temperature value	▪ **not active (internal 100%)** ▪ external 10% (internal 90%) ▪ external 20% (internal 80%) ▪ … ▪ external 90% (internal 10%)	Activation of an extension for temperature measurement
Send measurement value cyclic	▪ **not active** ▪ 1min – 4h	Activation of the cyclic sending for the temperature measurement value
Send measurement value at change	▪ **not send** ▪ 0,1°C – 5°C	Activates the sending of the current temperature value from a certain change
Adjustment value for internal temperature	-5K-5K **[0 K]**	Increase / decrease the internal temperature to correct the measured temperature
Temperature for upper message value	▪ **not active** ▪ 20°C – 45°C	Activation of a message when a certain temperature is reached
Temperature for lower message value	▪ **not active** ▪ 3°C – 30°C	Activation of a message if the temperature falls below a certain temperature

Table 76: Settings - Temperature measurement

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Using the internal temperature sensor, the current temperature of the room can be recorded and output to the bus. The current temperature value can be sent cyclically as well as at a certain change. By the parameter "External temperature value", an additional temperature measuring station can be activated. For example in large rooms, the average value can be formed from two temperatures, so the parameter is set to 50% external / 50% internally. The external measured value is then connected to the object 109 - external measurement.
Via the parameter "adjustment value for internal temperature" the measured value can be raised or lowered by an offset value, e.g. to compensate an unfavorable installation position or similar.
Furthermore, an upper / lower message value can be activated, which can output a 1-bit message if the value is exceeded or undercut.

The following table shows the corresponding communication objects:

Number	Name	Length	Usage
108	Internal measurement / Mixed temperature internal/external	2 Byte	Output of the internally measured temperature value or of the mixed temperature from the internal and external temperature value
109	External measurement	2 Byte	Receipt of an externally measured temperature
110	Message – Maximum temperature	1 Bit	Sending of a 1 when the upper message value is reached
111	Message – Minimum temperature	1 Bit	Sending of a 1 when the lower message value is reached

Table 77: Communication objects - Temperature measurement

5 Index

5.1 Register of illustrations

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5.2 List of tables

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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 Routine disposal

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

⚠ **Risk for life of electrical power!**

All activities on the device should only be done by an electrical specialist. The county specific regulations and the applicable EIB-directives have to be observed.

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MDT Glass Push Button II Smart 2/4/6/8/12-fold , flush mounted

Version		
BE-GT20W.01	Glass Push Button II Smart	Flush mounted, White
BE-GT20S.01	Glass Push Button II Smart	Flush mounted, Black
BE-GT2TW.01	Glass Push Button II Smart	Flush mounted, White, integrated Temperature Sensor
BE-GT2TS.01	Glass Push Button II Smart	Flush mounted, Black, integrated Temperature Sensor

The MDT Glass Push Button II Smart releases KNX telegrams after touching the sensor areas on top, 1 or 2 Button operation can be adjusted. The device provides extensive functions like switching of lighting, operation of blinds and shutters, switching/sending values and block communication objects for each channel. The Glass Push Button has 4 integrated logical modules. The sending of an second object is possible by the logical modules.

Furthermore the MDT Glass Push Button II Smart has an integrated cleaning function and an additional switching channel that operates if 3 or more of the sensor area were touched (e.g. slap function).

The Glass Push Button II Smart has a large, colored active display to indicate funtion and status. For each button are symbols and plain text adjustable. The 2 buttons on top are used to enter the function levels directly, the other 4 buttons can be reserved with 2 or 3 function levels (8/12-fold). The Glass Push Button II Smart can be also used as 6-fold push button without function levels.

The Glass Push Button II Smart offers additional functions to set temperature and operation mode of the heating. In combination with the MDT Heating Actuator an efficient room temperature regulation can be configured and vizualized. Furthermore user defined 1Bit messages and 14Byte text telegrams can be indicated.

The Glass Push Button II Smart has a RGB status indicator for each sensor area. These can be set from internal or external objects.
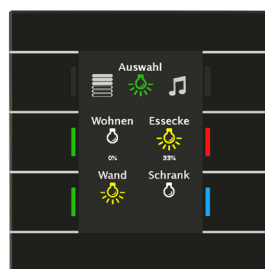
The Glass Push Button II Smart is a flush mounted device for fixed installations in dry rooms.

For project design and commissioning of the MDT KNX Glass Push Button II Smart it is recommended to use the ETS. Please download the application software at www.mdt.de/downloads.html
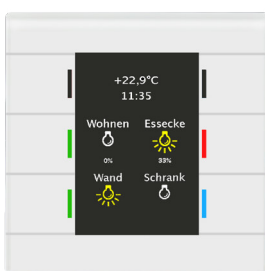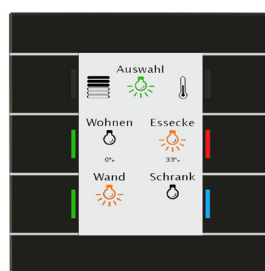
BE-GT20W.01
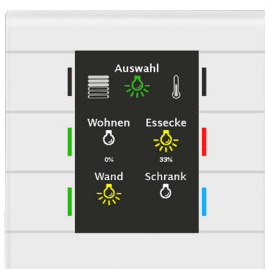
BE-GT20S.01

BE-GT2TW.01

BE-GT2TS.01

- Production in Germany, certified according to ISO 9001
- The buttons can be adjusted for 1 or 2 button operation
- **4 buttons can be reserved with 2 or 3 function levels (8/12-fold)**
- 2 buttons to enter the function levels directly
- **Large, colored active display to indicate function and status**
- **Symbols and plain text adjustable for each button/function**
- 1 or 2 button operation for switching, dimming, shutters, values
- Short/long button push with 2 objects
- **RGB status for each button separate controlable from each level**
- Indication of inside/outside temperature and time
- Automatic display brightness via light sensor and day/night object
- **Slap function with additional switch channel**
- Installation in socket, Dimensions (W x H): 92mm x 92mm
- No additional power supply require
- Integrated bus coupling unit, 3 years warranty
- **Additional functions BE-GT2Tx.01 (with temperature sensor)**
  - **With temperature sensor to measure room temperature**
  - **Additional functions to set temperature and operating mode**
  - **Indication of individual messages/text telegramms (1Bit/14Byte)**
  - **Application as RTC in combination with AKH heating actuator**
  - **RGB Status for each button controlable from each level**

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Technical Data	BE-GT20W.01	BE-GT20S.01	BE-GT2TW.01	BE-GT2TS.01
Number of sensor areas	6	6	6	6
Measurement range temperature	--	--	0 to + 40°C	0 to + 40°C
Recommended mounting height	1,10 - 1,25m (as Push Button)		1,50 - 1,60m* (as operating device)	
Specification KNX interface	TP-256	TP-256	TP-256	TP-256
Available application software	ETS 4/5	ETS 4/5	ETS 4/5	ETS 4/5
Permitted wire gauge				
KNX busconnection terminal	0,8mm Ø, solid core	0,8mm Ø, solid core	0,8mm Ø, solid core	0,8mm Ø, solid core
Power supply	KNX bus	KNX bus	KNX bus	KNX bus
Power consumption KNX bus typ.	< 0,6W	< 0,6W	< 0,6W	< 0,6W
Operation temperature range	0 to + 45°C	0 to + 45°C	0 to + 45°C	0 to + 45°C
Enclosure	IP 20	IP 20	IP 20	IP 20
Dimensions (W x H x D)	92mm x 92mm x 29,2mm	92mm x 92mm x 29,2mm	92mm x 92mm x 29,2mm	92mm x 92mm x 29,2mm
Required outlet sockets for installation	1	1	1	1

*   If the push button is used with adjustment for given value the recommended mounting height is 1,6m for better clearness of the display.
** Device has to be calculated with two bus loads. No additional power supply required.

Examplary circuit diagram BE-GTxxx.01

KNX

KNX/EIB Bus

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