Technical Manual

TECHNOLOGIES

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Push Button 55 / Plus 55

BE-TA550x.x2

BE-TA55Px.x2

Further Documents:

Datasheet:

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

Assembly and Operation Instructions:

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

Solution Proposals for MDT products:

https://www.mdt.de/en/for-professionals/tips-tricks.html

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Content

2 Overview

2.1 Overview devices

This manual refers to the following devices (order number in bold).

- **BE-TA5502.02** Push-button 55, 2-fold, white, matt finish
- **BE-TA5502.G2** Push-button 55, 2-fold, white, glossy finish
- **BE-TA5504.02** Push-button 55, 4-fold, white, matt finish
- **BE-TA5504.G2** Push-button 55, 4-fold, white, glossy finish
- **BE-TA5506.02** Push-button 55, 6-fold, white, matt finish
- **BE-TA5506.G2** Push-button 55, 6-fold, white, glossy finish
- **BE-TA5508.02** Push-button 55, 8-fold, white, matt finish
- **BE-TA5508.G2** Push-button 55, 8-fold, white, glossy finish

- **BE-TA55P2.02** Push-button Plus 55, 2-fold, white, matt finish
- **BE-TA55P2.G2** Push-button Plus 55, 2-fold, white, glossy finish
- **BE-TA55P4.02** Push-button Plus 55, 4-fold, white, matt finish
- **BE-TA55P4.G2** Push-button Plus 55, 4-fold, white, glossy finish
- **BE-TA55P6.02** Push-button Plus 55, 6-fold, white, matt finish
- **BE-TA55P6.G2** Push-button Plus 55, 6-fold, white, glossy finish
- **BE-TA55P8.02** Push-button Plus 55, 8-fold, white, matt finish
- **BE-TA55P8.G2** Push-button Plus 55, 8-fold, white, glossy finish

2.2 Functions

Extensive button functions

A function can be triggered by a single button or a pair of buttons. This provides a wide range of operating options. The button functions include "switch", "send values", "scene" , "switch/send values short/long (with 2 objects)", " blinds/shutter" and "dimming".

Innovative group control

Standard functions can be extended with an extra long keypress. For example, the blinds function: a short/long keypress moves a single blind, an extra long keypress then moves all blinds in the living room (group) centrally.

The innovative group control can also be used for lighting: the short keypress switches the individual lighting , the long keypress switches all the lights in the room and the extra long keypress switches the entire floor, for example.

Status LED / Orientation light (only Push-button Plus 55)

Next to the buttons are two-colour status LEDs which can react to internal objects, external objects or button operation. The display behaviour can be set differently (red/green/off and permanently on or flashing).

There is an additional LED in the centre which can be used as an orientation light.

Logic function (only Push-button Plus 55)

A variety of function calls can be realised through a total of 4 logic blocks. The logic function can process both internal and external objects.

Long Frame Support

The push-button supports "long frames" (longer telegrams). These contain more user data per telegram, which significantly reduces the programming time.

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2.3   Connection diagram

The following picture shows the exemplary connection diagram for a push-button:
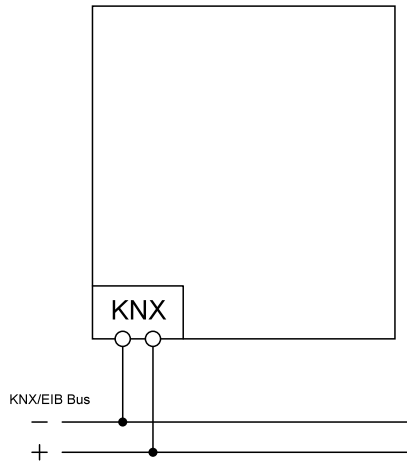
Figure 1: Exemplary connection diagram

2.4 Structure & Handling

The following pictures show the structure of the push-buttons (here using the example of BE-TA55P8.02):
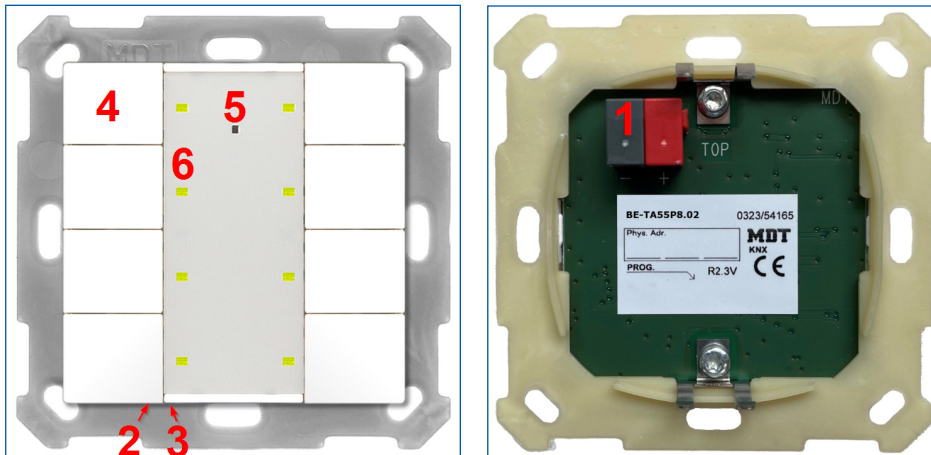
Figure 2: Structure & Handling

1	=	Bus connecting terminal	2	=	Programming button
3	=	Red programming LED	4	=	Operating buttons
5	=	Orientation-LED (only Push-button Plus 55)	6	=	Status LEDs (only Push-button Plus 55)

2.5 Commissioning

1. Wire the device according to the connection diagram.

2. Connect interface to the bus, e.g. MDT USB Interface.

3. Switch on bus voltage.

4. Press the programming button on the device (red programming LED lights up continuously).

5. Set and programme the individual address in the ETS. (Programming LED turns off)

6. Configure and programme the settings in the application programme.

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3 Communication objects

3.1 Standard settings of the communication objects

The following tables show the default settings for the communication objects:

No.	Name	Object Function	Length	C	R	W	T	U
Standard Settings – Buttons									
0	PB1: PB1/2:	Switch	1 Bit	▪			▪	
0	PB1:	Toggle	1 Bit	▪			▪	
0	PB1:	Send state	1 Bit	▪			▪	
0	PB1: PB1/2:	Forcible control	2 Bit	▪			▪	
0	PB1: PB1/2:	Percent value	1 Byte	▪			▪	
0	PB1: PB1/2:	Decimal value	1 Byte	▪			▪	
0	PB1: PB1/2:	Scene	1 Byte	▪			▪	
0	PB1: PB1/2:	Colour temperature	2 Byte	▪			▪	
0	PB1: PB1/2:	Temperature value	2 Byte	▪			▪	
0	PB1: PB1/2:	Brightness value	2 Byte	▪			▪	
0	PB1: PB1/2:	RGB value	3 Byte	▪			▪	
0	PB1: PB1/2:	HSV value	3 Byte	▪			▪	
0	PB1: PB1/2:	Blinds Up/Down	1 Bit	▪			▪	
0	PB1: PB1/2:	Dimming On/Off	1 Bit	▪			▪	
0	PB1 short: PB1/2 short:	Switch	1 Bit	▪			▪	
0	PB1 short: PB1/2 short:	Toggle	1 Bit	▪			▪	

No.	Name	Object Function	Length	C	R	W	T	U
		Standard Settings – Buttons						
0	PB1 short: PB1/2 short:	Forcible control	2 Bit	▪			▪	
0	PB1 short: PB1/2 short:	Percent value	1 Byte	▪			▪	
0	PB1 short: PB1/2 short:	Decimal value	1 Byte	▪			▪	
0	PB1 short: PB1/2 short:	Scene	1 Byte	▪			▪	
0	PB1 short: PB1/2 short:	Colour temperature	2 Byte	▪			▪	
0	PB1 short: PB1/2 short:	Temperature value	2 Byte	▪			▪	
0	PB1 short: PB1/2 short:	Brightness value	2 Byte	▪			▪	
0	PB1 short: PB1/2 short:	RGB value	3 Byte	▪			▪	
0	PB1 short: PB1/2 short:	HSV value	3 Byte	▪			▪	
1	PB1:	Status for Toggle	1 Bit	▪		▪	▪	▪
1	PB1: PB1/2:	Status: Percent value	1 Byte	▪		▪	▪	▪
1	PB1: PB1/2:	Status: Decimal value	1 Byte	▪		▪	▪	▪
1	PB1: PB1/2:	Status: Temperature value	2 Byte	▪		▪	▪	▪
1	PB1: PB1/2:	Status: Brightness value	2 Byte	▪		▪	▪	▪
1	PB1: PB1/2:	Status: Colour temperature	2 Byte	▪		▪	▪	▪
1	PB1: PB1/2:	Dimming relative	4 Bit	▪			▪	
1	PB1: PB1/2:	Stop / Slats Open/Close	1 Bit	▪			▪	
1	PB1 short: PB1/2 short:	Status for toggle	1 Bit	▪		▪	▪	▪

No.	Name	Object Function	Length	C	R	W	T	U
Standard Settings – Buttons								
1	PB1/2 long:	Central: Shutter Up/Down/Stop	1 Bit	■			■	
2	PB1:	Scene	1 Byte	■			■	
2	PB1:	Status for change of direction	1 Bit	■		■	■	■
2	PB1:	Status for toggle	1 Bit	■		■	■	■
2	PB1 long: PB1/2 long:	Switch	1 Bit	■			■	
2	PB1 long: PB1/2 long:	Toggle	1 Bit	■			■	
2	PB1 long: PB1/2 long:	Forcible control	2 Bit	■			■	
2	PB1 long: PB1/2 long:	Percent value	1 Byte	■			■	
2	PB1 long: PB1/2 long:	Decimal value	1 Byte	■			■	
2	PB1 long: PB1/2 long:	Scene	1 Byte	■			■	
2	PB1 long: PB1/2 long:	Colour temperature	2 Byte	■			■	
2	PB1 long: PB1/2 long:	Temperature value	2 Byte	■			■	
2	PB1 long: PB1/2 long:	Brightness value	2 Byte	■			■	
2	PB1 long: PB1/2 long:	RGB value	3 Byte	■			■	
2	PB1 long: PB1/2 long:	HSV value	3 Byte	■			■	
2	PB1 Group long: PB1/2 Group long:	Switch	1 Bit	■			■	
2	PB1 Group long: PB1/2 Group long:	Toggle	1 Bit	■			■	
2	PB1 Group long: PB1/2 Group long:	Forcible control	2 Bit	■			■	
2	PB1 Group long: PB1/2 Group long:	Percent value	1 Byte	■			■	

No.	Name	Object Function	Length	C	R	W	T	U
Standard Settings – Buttons								
2	PB1 Group long: PB1/2 Group long:	Decimal value	1 Byte	■			■	
2	PB1 Group long: PB1/2 Group long:	Scene	1 Byte	■			■	
2	PB1 Group long: PB1/2 Group long:	Colour temperature	2 Byte	■			■	
2	PB1 Group long: PB1/2 Group long:	Temperature value	2 Byte	■			■	
2	PB1 Group long: PB1/2 Group long:	Brightness value	2 Byte	■			■	
2	PB1 Group long: PB1/2 Group long:	RGB value	3 Byte	■			■	
2	PB1 Group long: PB1/2 Group long:	HSV value	3 Byte	■			■	
2	PB1: (2. object) PB1/2: (2. object)	Switch	1 Bit	■			■	
2	PB1: (2. object) PB1/2: (2. object)	Forcible control	2 Bit	■			■	
2	PB1: (2. object) PB1/2: (2. object)	Percent value	1 Byte	■			■	
2	PB1: (2. object) PB1/2: (2. object)	Decimal value	1 Byte	■			■	
2	PB1: (2. object) PB1/2: (2. object)	Scene	1 Byte	■			■	
2	PB1: (2. object) PB1/2: (2. object)	Colour temperature	2 Byte	■			■	
2	PB1: (2. object) PB1/2: (2. object)	Temperature value	2 Byte	■			■	
2	PB1: (2. object) PB1/2: (2. object)	Brightness value	2 Byte	■			■	
2	PB1: (2. object) PB1/2: (2. object)	RGB value	3 Byte	■			■	
2	PB1: (2. object) PB1/2: (2. object)	HSV value	3 Byte	■			■	

No.	Name	Object Function	Length	C	R	W	T	U
		Standard Settings – Buttons						
3	PB1 long: PB1/2 long:	Status for Toggle	1 Bit	■		■	■	■
3	PB1/2:	Status: Percent value	1 Byte	■		■	■	■
3	PB1/2:	Status: Decimal value	1 Byte	■		■	■	■
3	PB1 Group extra long: PB1/2 Group extra long:	Shutter Up/Down	1 Bit	■			■	
4	PB1 Group extra long: PB1/2 Group extra long:	Switch	1 Bit	■			■	
4	PB1 Group extra long:	Toggle	1 Bit	■			■	
4	PB1 Group extra long: PB1/2 Group extra long:	Forcible control	2 Bit	■			■	
4	PB1 Group extra long: PB1/2 Group extra long:	Percent value	1 Byte	■			■	
4	PB1 Group extra long: PB1/2 Group extra long:	Decimal value	1 Byte	■			■	
4	PB1 Group extra long: PB1/2 Group extra long:	Scene	1 Byte	■			■	
4	PB1 Group extra long: PB1/2 Group extra long:	Colour temperature	2 Byte	■			■	
4	PB1 Group extra long: PB1/2 Group extra long:	Temperature value	2 Byte	■			■	
4	PB1 Group extra long: PB1/2 Group extra long:	Brightness value	2 Byte	■			■	
4	PB1 Group extra long: PB1/2 Group extra long:	RGB value	3 Byte	■			■	
4	PB1 Group extra long: PB1/2 Group extra long:	HSV value	3 Byte	■			■	
4	PB1 Group extra long: PB1/2 Group extra long:	Stop / Slats Open/Close	1 Bit	■			■	
9	PB1: PB1/2:	Lock object	1 Bit	■		■	■	■
+10	**next button**							

Table 1: Communication objects – Standard settings: Buttons

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Standard Settings – Logic								
No.	Name	Object Function	Length	C	R	W	T	U
* 20/40/60/80	Logic 1:	Input A	1 Bit	■		■	■	■
* 21/41/61/81	Logic 1:	Input B	1 Bit	■		■	■	■
* 22/42/62/82	Logic 1:	Output: Switch	1 Bit	■	■		■	
* 22/42/62/82	Logic 1:	Output: Value	2 Bit	■	■		■	
* 22/42/62/82	Logic 1:	Output: Value	1 Byte	■	■		■	
* 22/42/62/82	Logic 1:	Output: Scene	1 Byte	■	■		■	
+ 3	**next Logic**							

Table 2: Communication objects – Standard settings: Logic

* Logic objects always come after the buttons in the object list. This means that the object numbers are dependent on the device version.

2-fold Push-button from object no. 20
4-fold Push-button from object no. 40
6-fold Push-button from object no. 60
8-fold Push-button from object no. 80

Standard Settings – Status LED								
No.	Name	Object Function	Length	C	R	W	T	U
* 32/52/72/92	LED 1	Switch	1 Bit	■		■	■	■
+ 1	**next LED**							
* 40/60/80/100	LED 1 Priority	Switch	1 Bit	■		■	■	■
+ 1	**next LED Priority**							
* 48/68/88/108	All LEDs	Lock object	1 Bit	■		■	■	■

Table 3: Communication objects – Standard settings: Status LED

* Objects for Status LEDs always come after the buttons in the object list. This means that the object numbers are dependent on the device version.

2-fold Push-button from object no. 32
4-fold Push-button from object no. 52
6-fold Push-button from object no. 72
8-fold Push-button from object no. 92

Standard Settings – General objects								
No.	Name	Object Function	Length	C	R	W	T	U
* 49/69/89/109	LED Orientation light	Switch	1 Bit	■		■		
* 54/74/94/114	In operation	Output	1 Bit	■	■		■	

Table 4: Communication objects – Standard settings: General objects

* General objects are at the end of the object list. This means that the numbers depend on the number of buttons.

2-fold Push-button from object no. 49
4-fold Push-button from object no. 69
6-fold Push-button from object no. 89
8-fold Push-button from object no. 109

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

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4 ETS Parameter

4.1 General Settings

The following table shows the available settings:

ETS Text	Dynamic range [Default value]	Comment
Startup time	2 ... 240 s **[2 s]**	Sets the time between restart and functional start-up of the device.
Send „In operation" cyclically	**not active** 1 min – 24 h	Activation of a cyclical "In operation" telegram.
Objects „Status for toggle" after bus power return	■ do not request ■ **request**	Setting whether the objects "Status for toggle" are to be automatically queried on bus voltage recovery.

Table 5: General settings

Startup time
This time defines when the unit "boots up" after a restart (reset, reprogramming, bus voltage recovery). This can be important if - example 1 - a bus reset is carried out. If there are many units on a line, all units would start at the same time and load the bus. With a variable time, the units can thus start differently.

„In operation"
"In operation" is used to show on the bus that the unit is "alive". If activated, an ON telegram is sent cyclically.

The table shows the general communication objects:

Number	Name / Object function	Length	Usage
* 54/74/94/114	In operation – Output	1 Bit	Sending a cyclic "In operation" telegram

Table 6: General communication objects

*   Numbers apply to devices with 2/4/6/8 buttons.

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4.2 Button functions - General

The table shows the available settings:

ETS Text	Dynamic range [Default value]	Comment
Buttons 1/2 (top left / right) Buttons 3/4 (2. line left / right) Buttons 5/6 (3. line left / right) Buttons 7/8 (bottom left / right)	■ not active ■ single-button function ■ two-button function	Setting the functions for the respective button pair
Reaction time on keypress	■ **fast** ■ medium ■ slow	Setting the reaction time or debounce time for the buttons.
Time for long keypress (Basic setting)	0,1 s – 30,0 s **[0,4 s]**	Setting from when a long keypress is detected.

Table 7: Settings – Button functions

It is determined in advance how a pair of buttons is to be activated and used.
With the "**single-button function**", only one button is used for one function.
With the " **two-button function**", 2 buttons are always used for one function and the operating concept works like a rocker. It is possible to specify for each button which value (on/off, up/down, brighter/darker, etc.) it is to send.
A corresponding time can be set via "**Time for long keypress (basic setting)**".

Note: This time is the basic setting for all buttons.

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4.3   Button functions

4.3.1   Identical parameter

4.3.1.1   Lock object

The lock object can be activated for grouped buttons as well as for single buttons. If the lock object is active, a communication object is displayed for the respective button or button pair. Depending on the device type, up to 8 lock objects can be activated.

If the disable object is assigned a logical "1", the corresponding button is "locked" and can therefore no longer be switched. A "0" cancels the lock.

The following table shows the associated communication objects:

Number	Name / Object function	Length	Usage
9	T1: – Lock object	1 Bit	Locks the button function

Table 8: Identical communication object – Lock object

4.3.1.2   Button/Object description

A text field is available for each button or button pair for free labelling:

Button/Objekt description	Light - Kitchen

Figure 3: Identical parameter – Text field: Button/Object description

A text with up to 30 characters can be stored for the field.

The text entered in "**Button/Object description**" appears both in the menu behind the corresponding functions and with the communication objects of the functions:

Button functions	Number	Name	Object Function
PB1: Light - Kitchen	0	PB1: Light - Kitchen	Percent value
	9	PB1: Light - Kitchen	Lock object

Figure 4: Button/Object description

4.3.2 Switch (General)

☑ Single-button function
☑ Two-button function

The following figure shows the available settings:

ETS Text	Dynamic range [Default value]	Comment
Button assignment (left/right)	■ **ON / OFF** ■ OFF / ON	**Only for two-button function**. Defines the sending behaviour of the buttons.
Subfunction	■ **switch** ■ toggle ■ send state	**Only for single-button function.** Defines the subfunction and displays further parameters if required.
Value for pressed button	■ OFF ■ **ON**	**Only for single-button function „switch" and „send status".** Defines the sending behaviour of the button.
Value for released button	■ **OFF** ■ ON	**Only for single-button function „send status".** Defines the sending behaviour of the button.
Delay for released button	■ **not active** ■ active	**Only for single-button function „send status".** Setting whether to send with a delay.
Time delay	1 s – 60 min **[1 s]**	**Visible when "Time delay" is active.** Defines a delay of the telegram to be sent.
Innovative group control		
Group long keypress	■ **not active** ■ active	Activation of the group for long keypress.
Group long sends	■ **ON and OFF** ■ only ON ■ only OFF	**Only for two-button function and when „Group long keypress" is active.** Defines the sending behaviour when a long keypress is active. **For single-button functions, the sending behaviour is defined according to the subfunction..**
Group extra long keypress	■ **not active** ■ active	Activation of the group for extra long keypress.

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ETS Text	Dynamic range [Default value]	Comment
Group extra long sends	■ **ON and OFF** ■ only ON ■ only OFF	**Only for two-button function, when „Group long keypress" and "Group extra long keypress" are active.** Defines the sending behaviour when a long keypress is active. **For single-button functions, the sending behaviour is defined according to the subfunction.**
Time for long keypress	**Basic setting** 0,1 s – 30,0 s	Setting from when a long keypress is detected. Basic setting refers to the time at menu "Button functions".
Time for extra long keypress	0,1 s – 30,0 s **[2,0 s]**	Setting from when an extra long keypress is detected

Table 9: Settings – Switch

With the "**Innovative group control**", it is possible to send to up to three different group addresses by touching/pressing a button for a longer time. The time for the long and the extra-long keystroke is set individually.
With the single-button function, the value defined in the sub-function is always sent for the long and the extra-long group.
With the two-button function, the transmission behaviour for the long and the extra-long group can be set individually.

Note: All groups are always sent one after the other.

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

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4.3.2.1 Two-button function – Switch

☑ Two-button function

With the two-button function, the respective value (ON/OFF) can be assigned to the left and right button. Thus, the left or right button sends the set, fixed value.

Button assignment ON/OFF: The left button sends the value "ON", the right button sends the value "OFF".
Button assignment OFF/ON: The left button sends the value "OFF", the right button sends the value "ON".

Note: For details on the **Innovative group control**, see 4.3.2 Switch (General)

The following table shows the available communication objects:

Number	Name / Object function	Length	Usage
0	PB1/2: – Switch	1 Bit	Switch function of the buttons
2	PB1/2 Group long: – Switch	1 Bit	Switch function of the buttons with long keypress
4	PB1/2 Group extra long: – Switch	1 Bit	Switch function of the buttons with extra long keypress

Table 10: Communication objects – Two-button function: Switch

4.3.2.2 Subfunction: Switch

☑ Single-Button function

Here the button sends the respective fixed set value (ON or OFF) when pressed.

Note: For details on the **Innovative group control**, see 4.3.2 Switch (General)

The following table shows the associated communication objects:

Number	Name / Object function	Length	Usage
0	PB1: – Switch	1 Bit	Switch function of the button
2	PB1 Group long: – Switch	1 Bit	Switch function of the button with long keypress
4	PB1 Group extra long: – Switch	1 Bit	Switch function of the button with extra long keypress

Table 11: Communication objects – Single-button function: Switch

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4.3.2.3 Subfunction: Toggle

☑ Single-Button function

With this function, the button sends the respective inverted value in relation to the last received status value.

For this purpose, the status object "Status for toggle" is connected to the status of the actuator to be controlled. If a "1" signal was received as the last value, the button sends a "0" command to the "Toggle" object the next time it is pressed

Note: For details on the **Innovative group control**, see 4.3.2   Switch (General)

The following table shows the available communication objects:

Number	Name / Object function	Length	Usage
0	PB1: – Toggle	1 Bit	Switch function of the button
1	PB1: – Status for Toggle	1 Bit	Status to update the push button. Must be connected to the status of the actuator to be switched.
2	PB1 Group long: – Toggle	1 Bit	Switch function of the button with long keypress
4	PB1 Group extra long: – Toggle	1 Bit	Switch function of the button with extra long keypress

Table 12: Communication objects – Single-button function: Toggle

4.3.2.3 Subfunction: Send State

☑ Single-Button function

With this function, fixed values can be sent for a pressed button (rising edge) and a released button (falling edge).

In addition, it is possible to set a delay for the released button. This means that the value for the pressed button is sent immediately, but the value for the released button is sent only after the respective set delay. For example, a light can be switched on when the button is pressed, but the light remains on for a few seconds after the button is released. This time is then left, for example, to leave a room without walking in the dark.

The following table shows the available communication object:

Number	Name / Object function	Length	Usage
0	PB1: – Send state	1 Bit	Switch function of the button

Table 13: Communication objects – Single-button function: Send state

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4.3.3 Send values

4.3.3.1 Subfunction: Send values
☑ Single-button function
☑ Two-button function

With this function, different values of a datapoint type can be sent.

The following table shows the available settings:

ETS Text	Dynamic range [Default value]	Comment
Datapoint type	▪ 1 Bit DPT 1.001 Switch ▪ 2 Bit DPT 2.001 Switch Control ▪ **1 Byte DPT 5.001 Percent (0…100%)** ▪ 1 Byte DPT 5.005 Decimal factor (0…255) ▪ 1 Byte DPT 17.001 Scene number ▪ 2 Byte DPT 7.600 Colour temperature (Kelvin) ▪ 2 Byte DPT 9.001 Temperature (°C) ▪ 2 Byte DPT 9.004 Brightness (Lux) ▪ 3 Byte DPT 232.600 RGB Value 3x (0…255)	Setting the type of datapoint to be sent.
Left/Right button: Value/Scene number	any value according to set datapoint type	**Only with two-button function.** Setting the values to be sent for the two buttons.
Value/Scene number	any value according to set datapoint type	**Only with single button function.** Setting the value to be sent for the button
Special function	▪ **innovative group control** ▪ additional object	Selection of the possible special function
Special function: Innovative group control		
Group long keypress	▪ **not active** ▪ active	Activation of the group for long keystroke.
Group long sends	▪ **value for left and right button** ▪ only value for left button ▪ only value for right button	**Only with two-button function.** Setting, which button is to send when the button is pressed long.
Group extra long keypress	▪ **not active** ▪ active	Activation of the group for extra long keypress.

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ETS Text	Dynamic range [Default value]	Comment
Group extra long sends	■ **value for left and right button** ■ only value for left button ■ only value for right button	**Only with two-button function**. Setting, which button is to send when the button is pressed extra long.
Time for long keypress	**Basic setting** 0,1 s – 30,0 s	Setting of an individual time from when a long keystroke is detected.
Time for extra long keypress	0,1 s – 30,0 s **[2,0 s]**	Setting of an individual time from when a extra long keystroke is detected.
Special function: Additional object		
Datapoint type (2. object)	■ 1 Bit DPT 1.001 Switch ■ 2 Bit DPT 2.001 Switch Control ■ **1 Byte DPT 5.001 Percent (0...100%)** ■ 1 Byte DPT 5.005 Decimal factor (0...255) ■ 1 Byte DPT 17.001 Scene number ■ 2 Byte DPT 7.600 Colour temperature (Kelvin) ■ 2 Byte DPT 9.001 Temperature (°C) ■ 2 Byte DPT 9.004 Brightness (Lux) ■ 3 Byte DPT 232.600 RGB Value 3x (0...255)	Setting the type of datapoint to be sent.
Left/Right button: Value/Scene number	any value according to set datapoint type	**Only with two-button function.** Setting the values to be sent to the 2nd object.
Value/Scene number	any value according to set datapoint type	**Only with single button function.** Setting the value to be sent to the 2nd object.

Table 14: Settings – Send values - Subfunction: Send values

Note: For details on the **Innovative group control**, see 4.3.2 Switch (General)

When selecting "**additional object**", another communication object appears. It is possible here to send different values to two separate objects when pressing a button. For example, a dimming value in "%" can be sent to a dimming actuator with the first object and at the same time an "RGB value" to an LED controller.

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The following table shows the available communication objects:

Number	Name / Object function	Length	Usage
0	PB1: PB1/2: – Forcible control, Percent value …		Switch function of the button(s). DPT depending on the parameter setting
2	PB1: (2. object) PB1/2: (2. object) – Forcible control, Percent value…		Switch function of the button(s) on the second object. DPT depending on the parameter setting
2	PB1 Group long: PB1/2 Group long – Forcible control, Percent value…		Switch function with long keystroke. DPT depending on the parameter setting.
4	PB1 Group extra long: PB1/2 Group extra long: – Forcible control, Percent value…		Switch function with extra long keystroke. DPT depending on the parameter setting

Table 15: Communication objects – Send values - Subfunction: Send values

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4.3.3.2   Subfunction: Toggle values/scenes (up to 4 values)

☑ Single-button function
☑ Two-button function

This function can be used to switch between up to 4 different values of a datapoint type.

The following table shows the available settings:

ETS Text	Dynamic range [Default value]	Comment
Button assignment (left/right)	■ **next / previous** ■ previous / next	**Only with two-button function.** Setting in which direction to switch when the left/right button is pressed.
Number of values	■ **2** ■ 3 ■ 4	Setting between how many values are to be switched.
Datapoint type	■ 2 Bit DPT 2.001 Switch Control ■ **1 Byte DPT 5.001 Percent (0...100%)** ■ 1 Byte DPT 5.005 Decimal factor (0...255) ■ 1 Byte DPT 17.001 Scene number ■ 2 Byte DPT 7.600 Colour temperature (Kelvin) ■ 2 Byte DPT 9.001 Temperature (°C) ■ 2 Byte DPT 9.004 Brightness (Lux) ■ 3 Byte DPT 232.600 RGB Value 3x (0...255)	Setting the type of datapoint to be sent.
1.-4. Toggle value	any value according to set datapoint type	Setting the respective value for the toggle value.
Time delay between value/scene switchovers	**no delay** 1 s – 10 s	Setting a delay between sending the toggle values.
Long keypress	■ **not active** ■ active	Activating a function with a long keystroke.
Action: Left/Right button	■ 1.-4. Toggle value ■ 4. Toggle value if last 1. Toggle value, otherwise 1.. Toggle value ■ send "0" ■ "OFF" to second object ■ "ON" to second object	**Only with two-button function and when „long keypress" is active.** Setting the action with long keystroke. **Number of possible switching values according to the selection "Number of values".**

ETS Text	Dynamic range [Default value]	Comment
Action on long keypress	■ 1.-4. Toggle value ■ 4. Toggle value if last 1. Toggle value, otherwise 1.. Toggle value ■ send "0" ■ "OFF" to second object ■ "ON" to second object	**Only with single-button function and when „long keypress" is active.** Setting the action with long keystroke. **Number of possible switching values according to the selection "Number of values".**
Time for long keypress	**Basic setting** 0,1 s – 30,0 s	Setting of a time from when a long keystroke is detected.
Switching type	■ **Limit stop** (after the last value, this is repeated) ■ **Overrun** (after the last value, the first value is sent again)	**Only with two-button function** Setting what should happen when the last switching value is reached.

Table 16: Settings – Send Values - Subfunction: Toggle values/scenes (up to 4 values)

Functional principle

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

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

With the selection "**1. – 4. Toggle value**", a fixed toggle value (value corresponding to the assigned toggle values) is always transmitted when a long button is pressed.

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

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

The setting **"ON" to second object** or **"OFF" to second object"** displays another communication object for the long keypress. The fixed value "ON" or "OFF" is then transmitted to this 1 Bit object.

With the setting "**Time delay between value switchovers**", the sending of the telegram is delayed by the set time after the button is pressed. If you press the button again during the delay time, the next toggle value is activated immediately and the delay time is restarted. If, for example, you want to go directly from the 1st toggle value to the 3rd toggle value without activating the second one - with a delay time of 2 seconds - press the key twice within 2 seconds.

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

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

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

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

The following table shows the available communication objects:

Number	Name / Object function	Length	Usage
0	PB1: PB1/2: – Forcible control, Percent value…		Transmission of the toggle value. DPT depending on the parameter setting
1	PB1: PB1/2: – Status: Percent value…		Receiving of the status. DPT depending on the parameter setting. **Status for RGB value, Forcible control and Scene number not available**
2	PB1 long: PB1/2 long – Switch	1 Bit	Switch function of the long button. **Only appears with the setting "ON or OFF to second object".t**

Table 17: Communication objects – Send Values - Toggle values/scenes (up to 4 values)

4.3.3.3 Subfunction: Shift Value

☑ Two-button function

With this function - only with the two-button function - values can be shifted up or down within the set limits.

The following table shows the available settings:

ETS Text	Dynamic range [Default value]	Comment
Left/right buttons shift the values	▪ Down / Up ▪ **Up / Down**	Setting with which button is shifted in which direction.
Datapoint type	▪ **1 Byte DPT 5.001 Percent (0…100%)** ▪ 1 Byte DPT 5.005 Decimal factor (0…255)	Setting the datapoint type for the value shift
Lower limit	0 – 100% / 0 – 255 **[0% / 0]**	Setting the lower limit value for the value shift
Upper limit	0 – 100% / 0 – 255 **[100% / 255]**	Setting the upper limit value for the value shift
Step width	1 – 100% / 1 – 255 **[10% / 10]**	Setting the step width between two sending commands
Repeated sending with pressed button	▪ **not active** ▪ active	Setting whether telegrams are to be repeated with pressed button.
Repetition time	200 ms – 3 s **[1 s]**	Repetition time between two telegrams with button pressed.

Table 18: Settings – Send Values - Subfunction: Shift Values

Functional principle
The "Shift value" function shifts 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 when the "Up" button is pressed, the set step width is added to the last value.

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

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

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

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The following table shows the available communications objects:

Number	Name / Object function	Length	Usage
0	PB1/2: – Percent value, Decimal value	1 Byte	Sending of the value to be shifted. DPT depending on the parameter setting
3	PB1/2: – Status Percent value, Status Decimal value	1 Byte	Receiving of the status value. DPT depending on the parameter setting

Table 19: Communication objects – Send Values - Subfunction: Shift Values

4.3.3.4 Subfunction: Send value by state

☑ Single-button function

This function allows a fixed value to be sent according to the selected datapoint type when pressing or releasing the button.

The following table shows the available settings:

ETS Text	Dynamic range [Default value]	Comment
Datapoint type	■ 2 Bit DPT 2.001 Switch Control ■ **1 Byte DPT 5.001 Percent (0…100%)** ■ 1 Byte DPT 5.005 Decimal factor (0…255) ■ 1 Byte DPT 17.001 Scene number ■ 2 Byte DPT 7.600 Colour temperature (Kelvin) ■ 2 Byte DPT 9.001 Temperature (°C) ■ 2 Byte DPT 9.004 Brightness (Lux) ■ 3 Byte DPT 232.600 RGB Value 3x (0…255)	Setting the type of datapoint to be sent.
Value for pressed / released button	any value according to set datapoint type	Setting of the values to be sent.

Table 20: Settings – Send values - Subfunction: Send value by state

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

The following table shows the available settings:

Number	Name / Object function	Length	Usage
0	PB1: – Forcible control, Percent value…		Sending the value. DPT depending on the parameter setting

Table 21: Communication objects – Send values - Subfunction: Send value by state

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

☑ Single-button function
☑ Two-button function

With this function, 2 different values can be sent for the short and long button. The short and the long button have different objects, whereby it is also possible to send out different datapoint types.

The following table shows the available settings:

ETS Text	Dynamic range [Default value]	Comment
Action on short/long keypress	■ **switch** ■ OFF ■ **ON** ■ toggle ■ send value ■ not active	Setting the function for the short/long button. ■ „Switch" only with two-button function. ■ „OFF/ON" only with single-button function
Datapoint type	■ 2 Bit DPT 2.001 Switch Control ■ **1 Byte DPT 5.001 Percent (0...100%)** ■ 1 Byte DPT 5.005 Decimal factor (0...255) ■ 1 Byte DPT 17.001 Scene number ■ 2 Byte DPT 7.600 Colour temperature (Kelvin) ■ 2 Byte DPT 9.001 Temperature (°C) ■ 2 Byte DPT 9.004 Brightness (Lux) ■ 3 Byte DPT 232.600 RGB Value 3x (0...255)	**Only available when „Action on short/long keypress" is set to „send values".** Setting the datapoint type for the value to be sent..
Left/Right button: Value/Scene number	any value according to set datapoint type	**Only with two-button function.** Setting the values to be sent for the two buttons.
Value/Scene number	any value according to set datapoint type	**Only for single-button function.** Setting the value to be sent for the button.
Colour control	■ **RGB** ■ HSV	Selection of the colour system. **Only for „3Byte DPT...RGB"**
Behaviour on long keypress	■ **do not send „short button"** ■ send „short button"	Setting whether the value for the short button should also be sent with a long keypress.
Sending condition for long keypress	■ **left and right button may send** ■ only left button may send ■ only right button may send	**Only with two-button function.** Set the send condition for the long button.
Time for long keypress	**Basic setting** 0,1 s – 30,0 s	Setting of a time from when a long keystroke is detected.

Table 22: Settings – Switch/Send values short/long (with 2 objects)

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Functional principle

With the two-button function, different values can be sent for the left and right buttons (for the short and the long button). With the single-button function, only one value can be sent for both the short and the long button. The data point type can be set separately for the short and the long button.

The following table shows the available communication objects:

Number	Name / Object function	Length	Usage
0	PB1 short: PB1/2 short: – Switch, Toggle, Forcible control, Percent value...		Sending the value for the short button. DPT depending on the parameter setting
1	PB1 short: PB1/2 short: – Status for toggle	1 Bit	Receive the status for the short button. **Only with the "Toggle" function**
2	PB1 long: PB1/2 long: – Switch, Toggle, Forcible control, Percent value ...		Sending the value for the long button. DPT depending on the parameter setting
3	PB1 long: PB1/2 long: – Status for toggle	1 Bit	Receive the status for the long button. **Only with the "Toggle" function**

Table 23: Communication objects – Switch/send values short/long (with 2 objects)

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4.3.5 Scene

☑ Single-button function

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

The following figure shows the available settings:

ETS Text	Dynamic range [Default value]	Comment
Save scene	■ **not active** ■ active	Release of saving the scenes. The saving is carried out by a long keystroke.
Time for long keypress	Basic setting 0,1 s – 30,0 s **[1,0 s]**	**Only visible if "Save scene" is active.** Setting the time for the long keypress to save a scene.
Scene number	1 – 64 **[1]**	Setting the respective scene number.

Table 24: Settings – Scene

Functional principle: Call up and save scene
With a short keypress, the set scene is sent.
With a long keypress, the set scene is saved (if "Save scene" is active).

The following table shows all available settings:

Number	Name / Object function	Length	Usage
2	PB1: – Scene	2 Byte	Call up/saving of scenes

Table 25: Communication object – Scene

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

Scene No.	Call		Save	
	Decimal	Hexadecimal	Decimal	Hexadecimal
1	0	0x00	128	0x80
2	1	0x01	129	0x81
3	2	0x02	130	0x82
....	....	....	....	....
64	63	0x3f	191	0xBF

Table 26: Codes for calling and saving of scenes

4.3.6 Blinds/Shutter

☑ Single-button function
☑ Two-button function

The blind function is used to control blind actuators, which can be used to adjust and control blinds.

The following table shows all available settings:

ETS Text	Dynamic range [Default value]	Comment
Button assignment (left/right)	■ **Up/Down** ■ Down/Up	**Only with two-button function.** Setting the key assignment (left/right button) for the Up/Down function
Operation function	■ long=Up/Down / short=Stop / Slats Open/Close ■ short=Up/Down / long=Stop / Slats Open/Close ■ short=Up/Down/Stop (MDT Single Object Control) ■ short=Up/Down/Stop / Long=Central object (MDT Single Object Control)	**Only for two-button function.** Setting the concept of how to operate with long/short buttons.
Operation function	■ long=move / short=Stop / Slats Open/Close ■ short=move / long=Stop / Slats Open/Close	**Only with single-button function** Setting the concept of how to operate with long/short buttons.
Time for long keypress	**Basic setting** 0,1 s – 30,0 s	Setting from when a long keypress is detected
Innovative group control **(Only with setting „long=Up/Down (or „move") / short=Stop/Slats Open/Close"**		
Group control extra long	■ **not active** ■ active	Activation of the group for extra long keypress.
Time for extra-long keypress	0,1 s – 30,0 s **[2,0 s]**	Setting a time from when an extra long keystroke is detected

Table 27: Settings – Blinds/Shutter

Two communication objects are displayed for the "blinds/shutter" function: The object "Stop/Slats 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.

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In the case of the two-button function, the button assignment can be set.

The table below shows the relationships:

	Function Up/Down		Function Down/Up	
Input	Button left	Button right	Button left	Button right
Moving object	Up	Down	Down	Up
Stop/Step object	Stop/Slats Open	Stop/Slats Close	Stop/Slats Close	Stop/Slats Open

Table 28: Functionality – Two-button movement blinds/shutter

With the single-button function, the system switches between "Up" and "Down" after each button is pressed.
Since shutter actuators always use a "1" signal for the downward movement and a "0" signal for the upward movement, the push-button outputs this as well.
It is also possible to swap the action for the long and short button presses. In this way, it is possible to select whether the movement is to take place via a long or a short button press. The stop/step object then adopts the other operating concept.

Innovative group control
By activating "**Group control extra long**", it is possible to execute another function with an extra long keystroke.
If the key is pressed extra long, the single blind starts moving after 0.5 s.
After another 1.5 s, the group starts with the same movement.
This activates the group function:
If "Stop" is then pressed briefly, all blinds stop. If the slat is adjusted with "short", the group also adjusts the slat.
After approx. 90 s the group function is deactivated again internally and a "Stop" only affects the individual channel

MDT Single Object Control
☑ Two-button function

Important: MDT Single Object Control enables an operating concept for controlling roller shutters. For use, the following parameter must be set to active in the **MDT Shutter Actuator** to be controlled:

„**Up/Down movement can stop (Single Object Control)**" set to „**active**"!

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

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

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The following table shows the available communication objects:

Number	Name / Object function	Length	Usage
0	PB1: PB1/2: – Blinds Up/Down	1 Bit	Up/down command for the shutter actuator
0	PB1/2 short: – Shutter Up/Down/Stop	1 Bit	**MDT Single Object Control.** Up/Down/Stop function. **Only with two-button function and for roller shutters!**
1	PB1: PB1/2: – Stop / Slats Open/Close	1 Bit	Open/close slats and stop command.
1	PB1/2 long: – Central Shutter Up/Down/Stop	1 Bit	**MDT Single Object Control.** Central object for up/down/stop function. **Only with two-button function and for roller shutters!**
2	PB1: – Status for change of direction	1 Bit	**Only with single-button function.** Receipt of the status with current information about the direction of the shutter actuator
3	PB1 Group extra long: PB1/2 Group extra long: – Blinds Up/Down	1 Bit	Up/down command for the shutter actuator
4	PB1 Group extra long: PB1/2 Group extra long: – Stop / Slats Open/Close	1 Bit	Slat control with open/close and stop command

Table 29: Communication objects – Blinds/Shutter

4.3.7 Dimming

☑ Single-button function
☑ Two-button function

The dimming function can be used to control dimming actuators.
The following table shows the available settings:

ETS Text	Dynamic range [Default value]	Comment
Button assignment (left/right)	■ **brighter/darker** ■ darker/brighter	**Only with two-button function.** Setting the key assignment for the brighter/darker function.
Time for long keypress	**Basic setting** 0,1 s – 30,0 s	Setting of the time from when a long keystroke is to be detected.

Table 30: Settings – Dimming

With the **single-button function "dimming"**, two communication objects appear for this button. Firstly, the function for a short button action, the "Dimming On/Off" switch object, and secondly the function for a long button action, the dimming object "Dimming relative".

The **two-button function "dimming"** can be set either as brighter/darker or as darker/brighter. The relationships are shown in the following table:

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

Table 31: Two-button function – Dimming

With the single-button function "dimming", the direction (brighter/darker) is reversed depending on the communication object "Status for toggle".
The dimming function is a start-stop dimming function, i.e. as soon as the dimming function becomes active, a brighter or darker command is assigned to the input until it is released. After the command is released, a stop telegram is sent which ends the dimming process.

The following table shows the available communication objects:

Number	Name / Object function	Length	Usage
0	PB1: PB1/2: – Dimming On/Off	1 Bit	Switch command for the dimming function
1	PB1: PB1/2: – Dimming relative	1 Bit	Command for relative dimming
2	PB1: – Status for toggle	1 Bit	**Only for single button function.** Receiving the status with information about the status of the actuator to be controlled

Table 32: Communication objects – Dimming

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4.4 Status LED (only Push-button Plus 55)

Depending on the device, up to 8 status LEDs (one LED per button) can be configured. In addition, an extra LED can be configured as an "orientation light" for each device.

4.4.1 LED basic setting

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

ETS Text	Dynamic range [Default value]	Comment
LED orientation light	■ **OFF** ■ ON ■ via external object: 0 = OFF / 1 = ON ■ via external object: 0 = ON / 1 = OFF	Setting the control or functionality of the orientation LED.
Lock object for LEDs	■ **not active** ■ active	Activates a lock object which can disable (= switch OFF) all LEDs.. **Applies only to status LEDs 1 - 8**
Behaviour of the LEDs on bus power return	■ **do not request LED objects** ■ request LED objects	Setting whether to actively request the objects after a reset. **Only active when "LED reacts to external object".**

Table 33: Settings – LED basic settings

4.4.1.1 LED Orientation light

The LED is located in the centre of the upper part of the button. When activated, the LED always lights up green.
There are 4 selection options for the control. On the one hand, the LED can be switched permanently "**OFF**". This deactivates the LED and it has no further function.
If the LED is to be used as an orientation light, for example, the LED can be switched on permanently via the "**ON**" setting. Furthermore, the LED can be controlled **via an external object**. In this case, the polarity for switch-on/switch-off can also be set.
When controlling via an external object, an additional communication object is displayed, which can then be linked with any other 1 Bit communication object.

The following table shows the available communication objects:

Number	Name / Object function	Length	Usage
* 49/69/89/109	LED Orientation light – Switch	1 Bit	Switching the LED

Table 34: Communication objects – Orientation light

* Object numbers depend on the device version (number of buttons).

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4.4.1.2 Lock object for LEDs

Unlike the lock objects for the buttons, there is only one lock object for the LEDs, which affects all LEDs (except the LED orientation light!). If the LED lock object is controlled with a logical "1", all LEDs are locked and can therefore no longer be controlled. LEDs that were previously controlled are switched-off. With a logical "0", the lock is removed and control is possible again. Previous switching states are restored.

The following table shows the available communication objects:

Number	Name / Object function	Length	Usage
* 48/68/88/108	All LEDs – Lock object	1 Bit	Locking all LEDs

Table 35: Communication objects – Lock object for LEDs

* Object numbers depend on the device version (number of buttons).

4.4.2 LED 1 - x

The respective LEDs (per button) can be set here. The number of configurable LEDs depends on the device type.

The following table shows all available settings:

ETS Text	Dynamic range [Default value]	Comment
LED x	■ **not active** ■ active	Activation of the LED. ("x" stands for the LED number)
LED reacts to	■ external object ■ internal object ■ button activation	Setting for how the LED is to be controlled.
Selection of object number	any object (selection of object numbers depends on button type)	Link to internal object. **Only with „LED reacts to: internal object".**
for value „ON"	■ not active ■ red ■ **green**	Display behaviour of the LED when the object value is "ON" or when the button is pressed.
for value „OFF"	■ **not active** ■ red ■ green	Display behaviour of the LED when the object value is "OFF" or when the button is not pressed.
Behaviour for value "ON	■ **permanent** ■ flashing	Setting the lighting behaviour when the LED has the object value "ON" or the button is pressed.
Object for priority	■ **not active** ■ active, if object LED priority value=1 ■ active, if object LED priority value=0	Activation of the LED priority for the individual LEDs.
Colour	■ not active ■ **red** ■ green	Colour for an active LED priority.
Behaviour	■ **permanent** ■ flashing	Setting of the lighting behaviour when LED priority is active.

Table 36: Settings – LED 1 - x

LED reacts to: external object
With this selection, a communication object "LED X: Switch" is displayed. This object can then be connected to any 1 Bit object. In this way, the LED can, for example, indicate the switching status of an actuator that is independent of the button.

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LED reacts to: internal object

With this selection, the object number to which the LED is to be linked is selected. For example, if the LED is to switch when (with setting: button 1 to "Toggle") the "Object 1 - Status for Toggle" has the value "1", the object number 1 must be entered. In this case, the status LED would be switched on with a logical "1" and switched off with a logical "0".

If the LED is linked to an object that does not have the size 1 Bit, the LED is switched off if the object has the value "0" and switched on if the value of the object is "not 0". For an object of the DPT 5.001 - percent, this means that the LED is switched-off at 0% and switched-on at all other values.

LED reacts to: button activation

This selection causes the LED to react to the activation of the respective button. The action of how the LED should react to a pressed or not pressed button can be configured via the parameter "LED display behaviour". The value for "ON" is sent when the button is pressed and the value for "OFF" when the button is not pressed.

The LED display behaviour for the respective state is defined via the parameters "**for value "ON"** and **"for value "OFF"**. Here, the LED can be green, red or off (not active). The setting "**Behaviour for value "ON"**" can also be used to specify whether the LED should hold the colour value permanently or whether it should flash alternately.

The following table shows the available communication objects:

Number	Name / Object function	Length	Usage
* 32/52/72/92	LED 1 – Switch	1 Bit	Control of the LED. Only shown with "LED reacts to: external object".

Table 37: Communication objects – Switch object for LEDs

* Object numbers depend on the device version (number of buttons).

4.4.2.1 Priority

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

As long as the LED priority is active, the configured state for the LED priority is maintained and the LED does not react to the "normal" control via external/internal object or button press.

When selecting "**active, if object LED priority value = 1**", the priority is activated with a logical "1" and cancelled with a logical "0".

When selecting "**active, if object LED priority value = 0**", the priority is activated with a logical "0" and withdrawn with a logical "1".

The following table shows the available communication objects:

Number	Name / Object function	Length	Usage
* 40/60/80/100	LED 1 Priority – Switch	1 Bit	Controlling the LED priority

Table 38: Communication objects – Priority

* Object numbers depend on the device version (number of buttons).

4.5 Logic   (only Push-button Plus 55)

The button has 4 individually activatable and individually programmable logic modules.

4.5.1 Logic basic settings

The following table shows all available settings:

ETS Text	Dynamic range [Default value]	Comment
Setting logic 1-4	■ **not active** ■ AND ■ OR ■ send value on button activation	Activating the logic function and setting the logical operation
Behaviour on bus power return	■ **do not request external logic objects** ■ request external logic objects	Setting whether the objects are to be actively requested after a reset.

Table 39: Settings – Logic basic settings

The logic setting can be used to select either a logical operation (AND / OR) or, with "send value on button activation", a special function for sending a second value for a pressed button (Description follows under 4.5.2 Submenu - Logic 1-4)

Further parameters are then displayed for an activated logic.

4.5.1.1 Settings Logic 1-4

If a logic is activated, the following settings are possible:

ETS Text	Dynamic range [Default value]	Comment
Function/Object description	free text [up to 40 bytes allowed].	Text input for describing the logic function and its objects.
Additional text	free text [up to 40 bytes allowed].	Text input for additional information.
Object type	■ **1 Bit DPT 1.001 Switch** ■ 1 Byte DPT 17.001 Scene number ■ 1 Byte DPT 5.005 Decimal value (0…255) ■ 2 Bit DPT 2.001 Switch control	Setting the object type for the logic output.
Value / Scene number	any value according to DPT	Setting of the value which is to be sent when the logic operation is fulfilled. **Only for object types "Scene", "Decimal value", "Switch control".**
Sending condition	■ not automatic ■ on input telegram ■ on change of output ■ on change of output (send only "0") ■ on change of output (send only "1")	Setting the sending condition for the output object. **Only for object type "Switch".**
Output inverted	■ **not active** ■ active	Setting whether the output signal is to be inverted. **Only for object type "Switch".**

Table 40: Settings – Logic 1-4

There are 2 text fields available:

Function/Objekt description	Light - Terrace
Additional text	Lighting dimmed

Figure 5: Text fields – Function/Object description + Additional text

Texts with up to 40 characters can be stored for both fields.

The text entered in "**Function/Object description**" appears both in the menu behind the corresponding logic and with the communication objects of the logic:

	Number	Name	Object Function
Logic basic settings			
	80	Logic 1: Light - Terrace	Input A
Logic 1: Light - Terrace	81	Logic 1: Light - Terrace	Input B

Figure 6: Function/Object description

The "**Additional text**" is merely additional information to the logic. This is not visible anywhere else.

If a logic operation is fulfilled, a value or a scene can be sent according to the selected object type.

Only for the object type "Switch" can a sending condition or a sending filter be defined for the output. The logic operation can, for example, send with every input telegram, only send when the output of the logic operation changes, or a sending filter can be activated. In this case, only a "1" or a "0" is sent when the output changes. If the setting is "not automatic", no output value is sent, but it can be requested.
In addition, with the object type "Switch" the output can be inverted and thus a "0" can be made into a "1" and a "1" into a "0".

The table shows the available communication objects:

Number	Name / Object function	Length	Usage
* 22/42/62/82	Logic 1 – Output: Switch, Output: Value, Output: Scene		Output of the logic operation. DPT according to parameter setting

Table 41: Communication objects – Logic output

* Object numbers depend on the device version (number of buttons).

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4.5.2 Submenu - Logic 1-4

A new submenu opens for each activated logic. The following settings are possible:

ETS Text	Dynamic range [Default value]	Comment
Logic object A/B (external)	■ **not active** ■ normally active, with preallocation "0" ■ inverted active, with preallocation "0" ■ normally active, with preallocation "1" ■ inverted active, with preallocation „1"	Activation of the external logic objects. The preallocation defines the value of the external logic object after a bus power return if no value has yet been sent to the communication object.
Internal input 1/2	■ **not active** ■ button 1 - 2/4/6/8	Activating the buttons for the logic function.
Taste 1-2/4/6/8	■ **pressed = ON** ■ pressed = OFF	Setting of the value that is sent when the button is pressed. **Only shown if "Internal input" is active for a button.**
Button selection	■ **not active** ■ Taste 1 - 2/4/6/8	Selection of the button that sends. **Only with the setting "Send value on button activation" in menu "Logic basic setting".**

Table 42: Settings – Submenu: Logic 1-4

Up to two external logic objects can be activated for the logic operations "AND"/"OR". The default setting defines the value of the external logic object after a bus power return if no value has yet been sent to the communication object. Up to two buttons can be defined as "internal inputs" and the respective value that the button sends when pressed.

Note: The setting "**Send value on button activation**" is a special function. This can be used to send a second value when a button is pressed - in addition to the normal switch function. The value is determined under "Setting logic X" (previous chapter). Here, the button that is to send the value is selected via the "**Button selection**" parameter.

Depending on the activated inputs, the following communication objects are available:

Number	Name / Object function	Length	Usage
* 20/40/60/80	Logic 1 – Input A	1 Bit	external input for the logic operation
* 21/41/61/81	Logic 1 – Input B	1 Bit	external input for the logic operation

Table 43: Communication objects – Logic inputs

* Object numbers depend on the device version (number of buttons).

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5.1 Register of illustrations

5.2 List of tables

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6   Appendix

6.1   Statutory requirements

The devices described above must not be used in conjunction with devices which directly or indirectly serve human, health, or life-safety purposes. Furthermore, the devices described must not be used if their use may cause danger to people, animals, or property.
Do not leave the packaging material carelessly lying around. Plastic foils/ bags etc. can become a dangerous toy for children.

6.2   Disposal

Do not dispose of the old devices in the household waste. The device contains electrical components that must be disposed of as electronic waste. The housing is made of recyclable plastic.

6.3   Assembly

⚠ **Danger to life from electric current!**

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

The units are approved for operation in the EU and bear the CE mark.

Use in the USA and Canada is not permitted!

6.4   History

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